

**EUROPE-INBO 2014**

Bucharest, Romania, November 2014

# **Workshop on River Restoration and NWRM**



## **River Órbigo Restoration Project: an example of synergic implementation of different European Directives**



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CONFEDERACIÓN  
HIDROGRÁFICA  
DEL DUERO

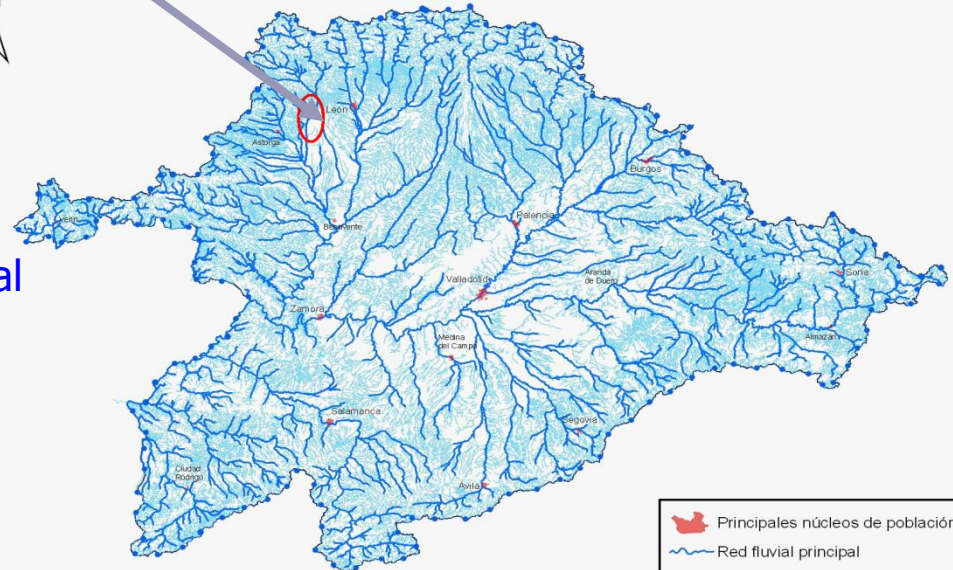
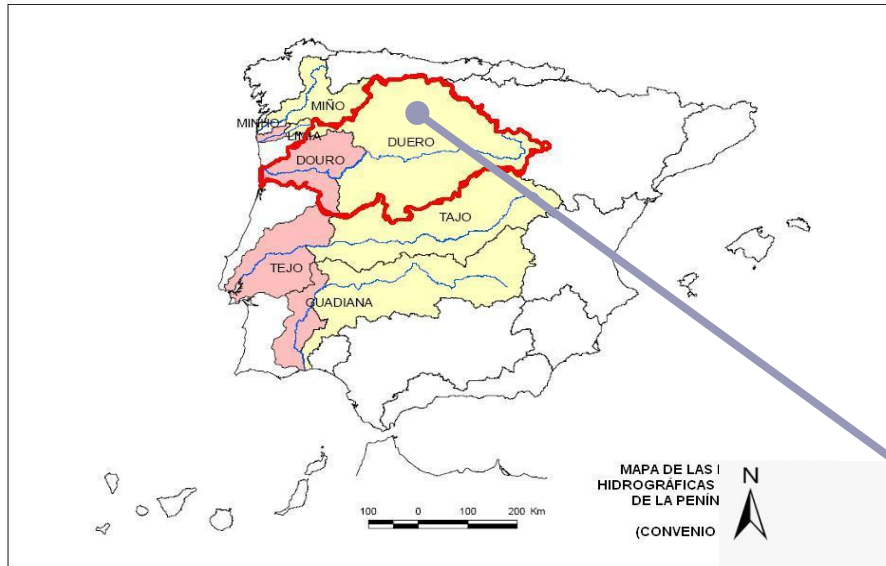
**Rosa Huertas González  
Duero Basin Agency  
(Spain)**



# River Órbigo Restoration Project

Some data about River Órbigo:

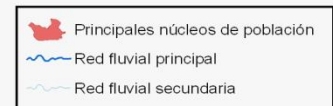
- Basin surface: 4,990 km<sup>2</sup>
- Length: 108 km, part in Natura Network
- Altitude range: 1,584 m
- Regime: rainfall-snowfall
- Average discharge under the natural regime: 40 m<sup>3</sup>/s
- Peak discharge registered: 600 m<sup>3</sup>/s
- Original geomorphology: braided (wandering) and meandering



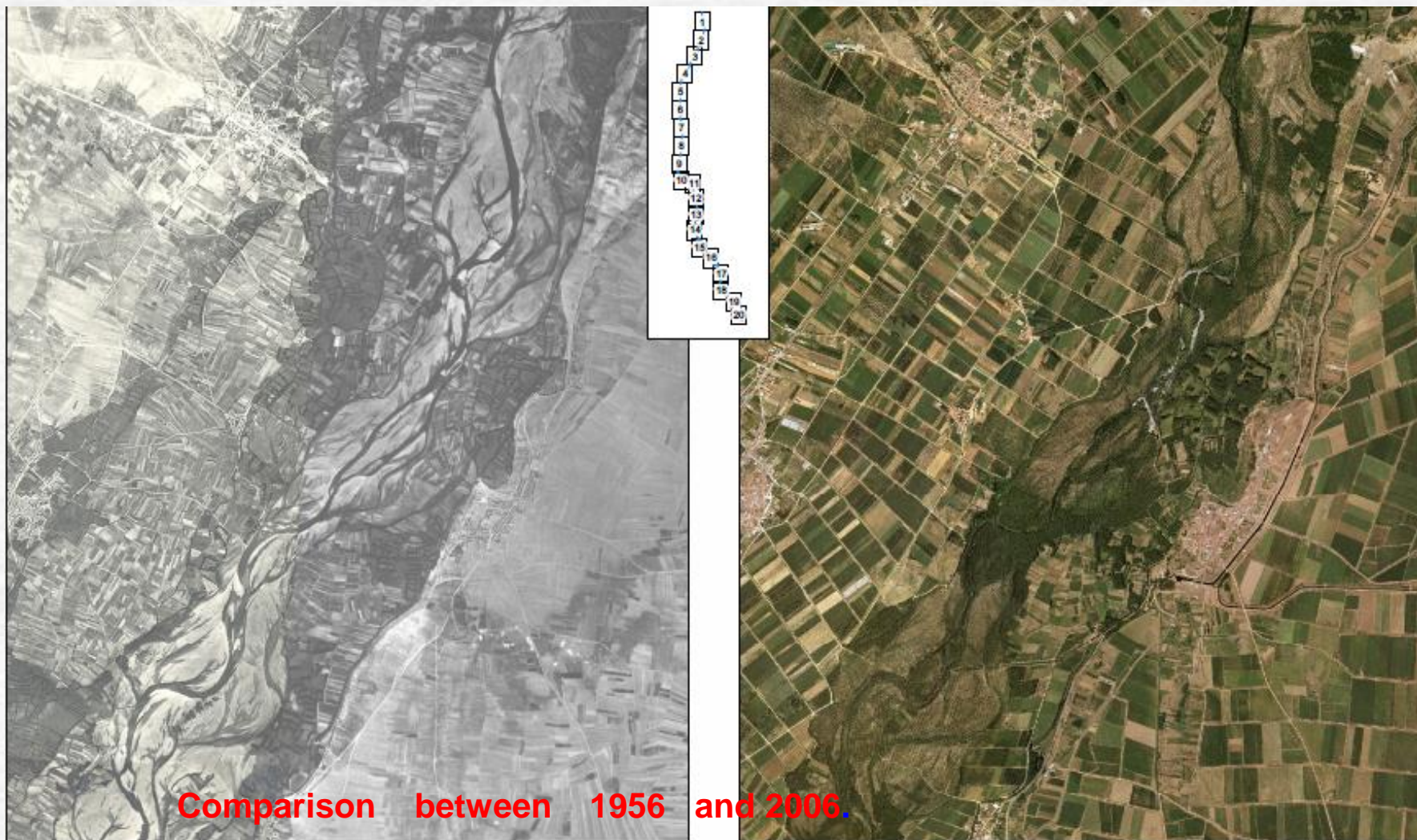
Project and works funded by the Ministry of Agriculture, Food and Environment, belonging to the National Strategy for River Restoration Project under the management of Duero Basin Authority



0 25 50 75 100 km



# River Órbigo Restoration Project



Comparison between 1956 and 2006.

# River Órbigo Restoration Project

## Previous situation:

Enbankment and channelization

## Problems:

- Hydraulic malfunctioning
- Flood problems
- Urban planning and housing under risk conditions
- Impacts on aquatic ecosystems
- Expensive maintenance



➔ Different policies facing problems caused by the same situation

**Approach:** integrated approach, and river catchment scale in the design of the project, but 3 stretches to manage the works



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# River Órbigo Restoration Project

## Specific objectives:

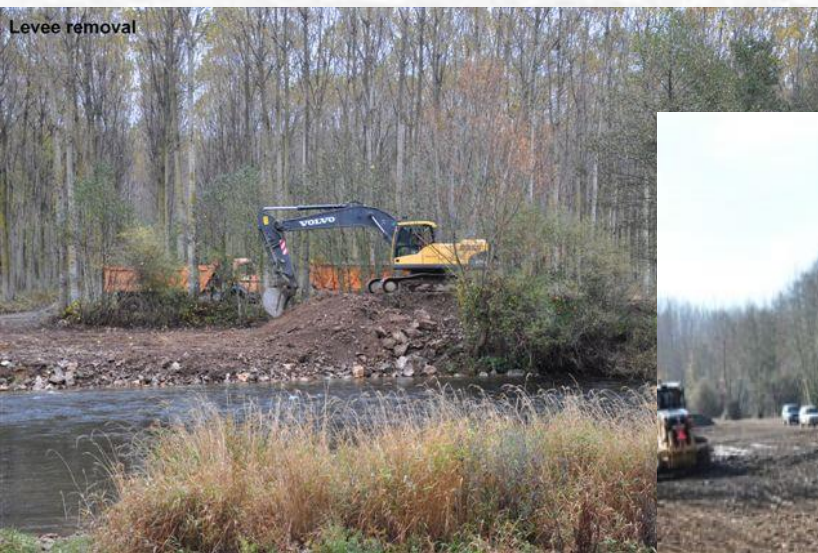
- Recovering morphology and hydraulic capacity of the former stream bed of the river and its connectivity with the floodplain and improving longitudinal continuity
- Achievements in doing so:
  - Increasing concentration times -> flood abatement -> flood risk attenuation (Floods Directive 2007/60/EC)
  - Improving ecological conditions of the riparian corridor and the diversity of habitats (Water Framework Directive 2000/60/EC and 92/43/ECC Habitats Directive).
- Demonstrative value: example of synergic implementation of different European Directives, and fits perfectly in the concept of Natural Water Retention Measures (Green Infrastructure)
- Costs reduction



# River Órbigo Restoration Project: main actions

## Works to improve lateral connectivity and dynamics by recovering natural floodplains along 25 km:

- Elimination of rock armour: 4.720 m
- Elimination of earth embankments: 8.710 m
- Movement of earth embankments away from the channel: 5.220 m
- Recovery of secondary arms: 10.063 m



Rest of levee after removal and setback in an urban stretch wich remains as an example



# River Órbigo Restoration Project: other actions

## -Works to improve longitudinal continuity:



Modification of a transversal obstacle to allow the passage of fauna and sediment



## -Forest actions: Revegetation with riparian vegetation



# River Órbigo Restoration Project: benefits

- Recovery of 480 ha of flood prone areas with a high capacity to attenuate floods naturally
- Greater infiltration rate and rate of recharge of the alluvial natural floodplains, soil fertilization
- Higher habitat diversity thanks to the increasing both longitudinal and lateral continuity and the recovering adjacent fluvial areas
- Integration of the river in the urban setting so improvement of the landscape and strengthening of tourism and leisure opportunities
- Drastical reduction in maintenance costs



Soil fertilization of floodplain recovery after flood



after



before



# River Órbigo Restoration Project: monitoring

- Winter 2013 160 m<sup>3</sup>/s flood and 2014 250 m<sup>3</sup>/s flood– comparable to those in 1995 and 2000 causing serious damages – flood abatement, no damages now.

➔ *Recovering room from the river proved to prevent damages caused by floods (Floods Directive)*

- Monitoring of topographic changes and morphological changes: hydromorphological indicators

➔ *Change in the ecological status of the water body (WFD and HDirective)*

**THESE ARE REAL FACTS THAT HELP  
TO COMMUNICATE AND CONVINC**



# Órbigo river monitoring by drone



# Public Participation Process: communication is a key to success

## Why was it needed?

- Recovering floodplain natural functioning implied losing some using possibilities: housing, farming, limitation to poplar plantation
- Project based on the principles of flood attenuation clashes with a mentality stemming from several decades of channelization and reduction of natural floodplain works
- To overcome the local approach: importance of the river as a corridor where every action involves upstream-downstream effects

## How was it carried out?

- More than 3 years and 50 meetings throughout all the project: project drafting, implementation and monitoring, with local authorities, stakeholders and population as a whole



**MEDIO AMBIENTE**  
**El 'chip' mental para entender las obras de mejora ecológica del río**  
Los trabajos para decauzar el Órbigo recuperan el paisaje natural inundable

**Medio Ambiente eligió el Órbigo como actuación preferente porque soporta una gran presión humana**

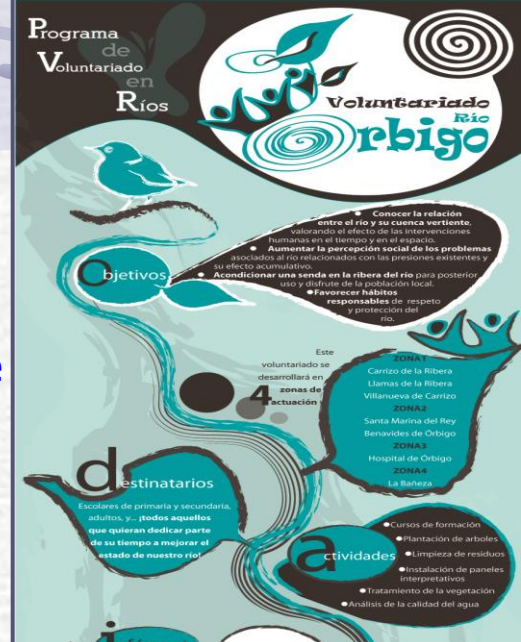


*Change of mentality to understand the ecological improvement of the river*  
*The dechannelization works recover the natural floodplain*

News about the difficulties to get through to riparian communities the new concept of "room for the river", after years watching channelization works, and how eventually the new approach is understood.

# Volunteering and environmental education program

- Goal: encourage active participation and raise awareness about river ecosystems
- Targeted to all kinds of people, particularly those not taking part in the public participation process (children, youth, families...)

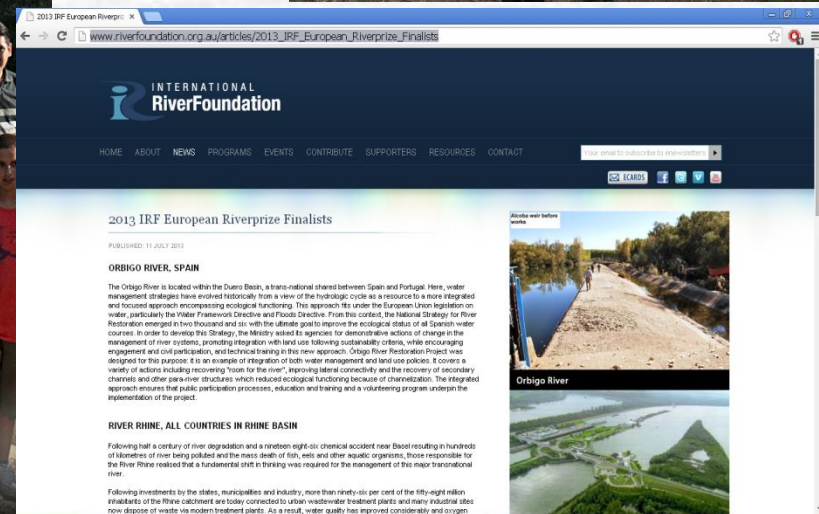


# Dissemination and training: demonstration value of the project to mobilize and convince

- Become a reference piece of work, visited by students, technicians and professionals, authorities...
- Selected by several Universities to be studied in degrees and masters and by the Ministry for its training program
- Selected for the field visit of the First Iberian Congress on River Restoration
- Video shooting
- Orbigo basin is one of the pilot basins in the ECRR River Restoration Community of Practice emerging from the last World Water Forum
- Finalist 2013 European Riverprize awarded by the International River Foundation



ECRR's CoP Public Participation meeting  
Orbigo River, León (Spain) September 2014



# Conclusions

## IMPORTANT THINGS TO REMEMBER:

- INTEGRATED APPROACH OF DIFFERENT POLICIES
- CATCHMENT SCALE OF THE PROJECT
- CLEAR IDENTIFICATION OF THE BENEFITS OF THE PROJECT
- RELEVANCE OF SOCIAL TOOLS TO COMMUNICATE THIS BENEFITS
- NECESSITY OF DISSEMINATION TO CONVINCe, MOBILIZE AND GET SUPPORT FOR NEW PROJECTS: this kind of solutions works!! and can be replicated in other rivers suffering the same problems

HOW TO INTEGRATE EUROPEAN DIRECTIVES AND POLICIES THROUGH RR AND NWRM?

SHOWING WITH EVIDENCE THE SOCIO-ECONOMIC AND ENVIRONMENTAL BENEFITS THEY INVOLVE FOR PEOPLE



# River Órbigo Restoration Project



**Watch our video about the project**

**RIVER RESTORATION & FLOOD PREVENTION:  
RIVER ÓRBIGO CASE STUDY**

**<http://www.chduero.es/Inicio/Publicaciones/DVDsyAudiovisuales/tabid/586/Default.aspx>**



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