



MINISTERIO
DE MEDIO AMBIENTE

CONFEDERACIÓN
HIDROGRÁFICA
DEL JÚCAR

Measure Programme in Júcar: Pilot case of the Serpis River

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Júcar River Basin Authority

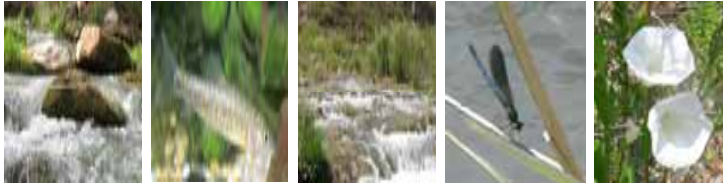
Debrecen, Hungría

Junio de 2007

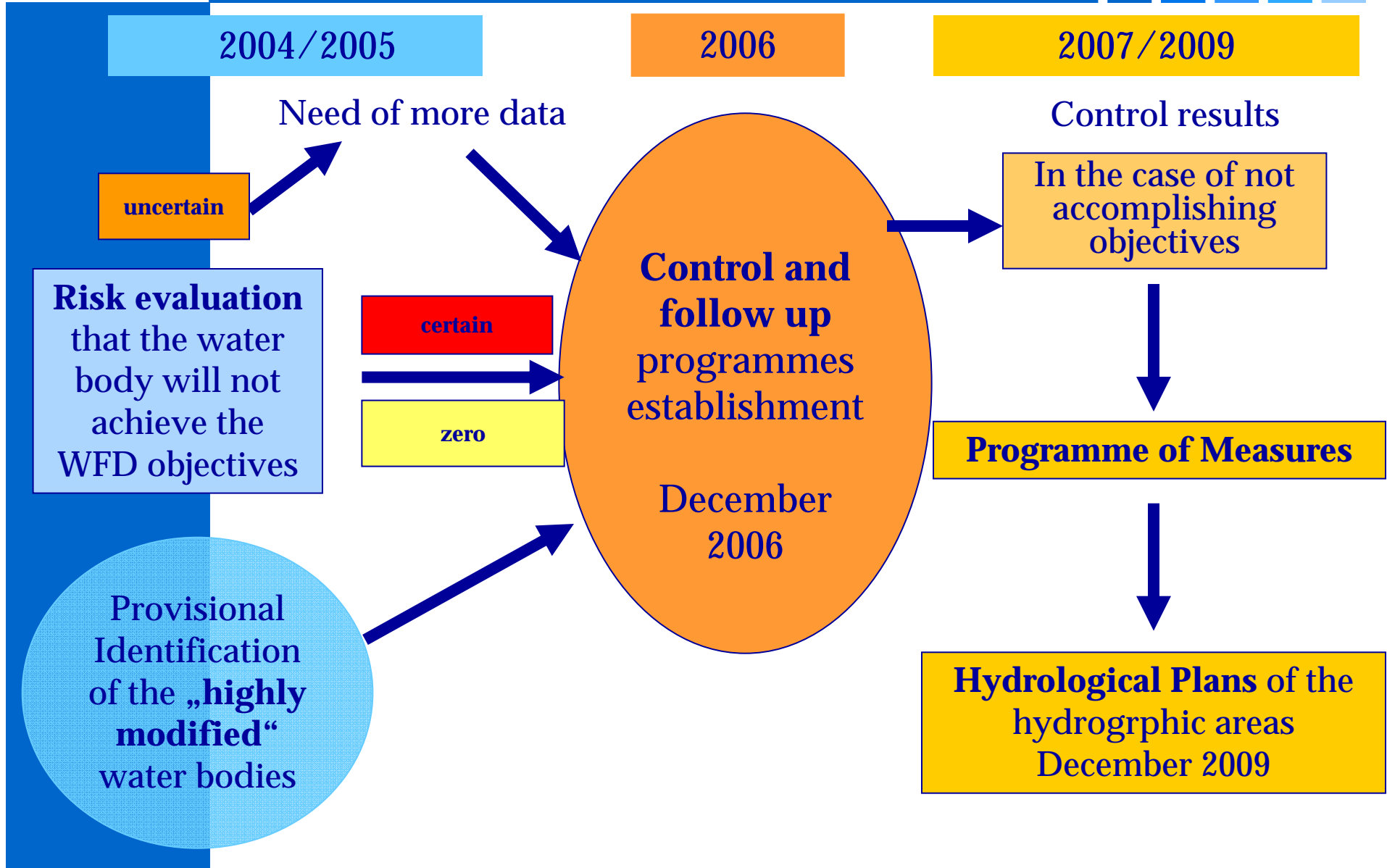


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1. Programme of Measures in WFD: effectiveness analysis
2. Initial Risk Evaluation: art. 5 WFD
3. Partial Risk Analysis
4. Gap Estimation
5. Effectiveness Analysis of the Measures Programme (POM)
6. Conclusions



1. Programme of Measures in WFD: efficiency analysis





a. Risk Evaluation Art 5



b. Key Pressure Identification



c. Partial analysis of “key” pressure risk / “representative” impact



d. POM establishment



e. Measure validation

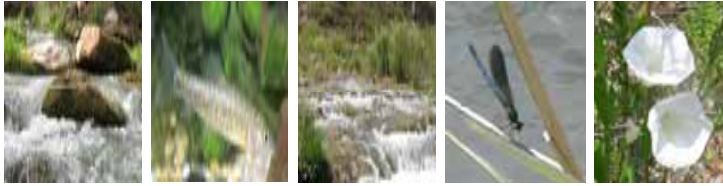
Possible non-compliance of environmental objectives

- Quantitative
- Qualitative
- Hydromorphological

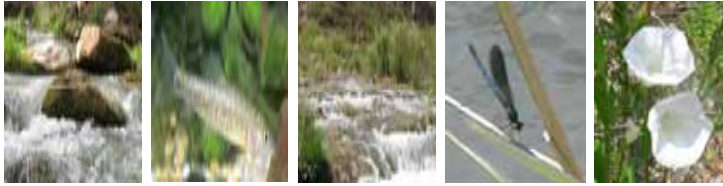
Gap calculation

Measure characterisation

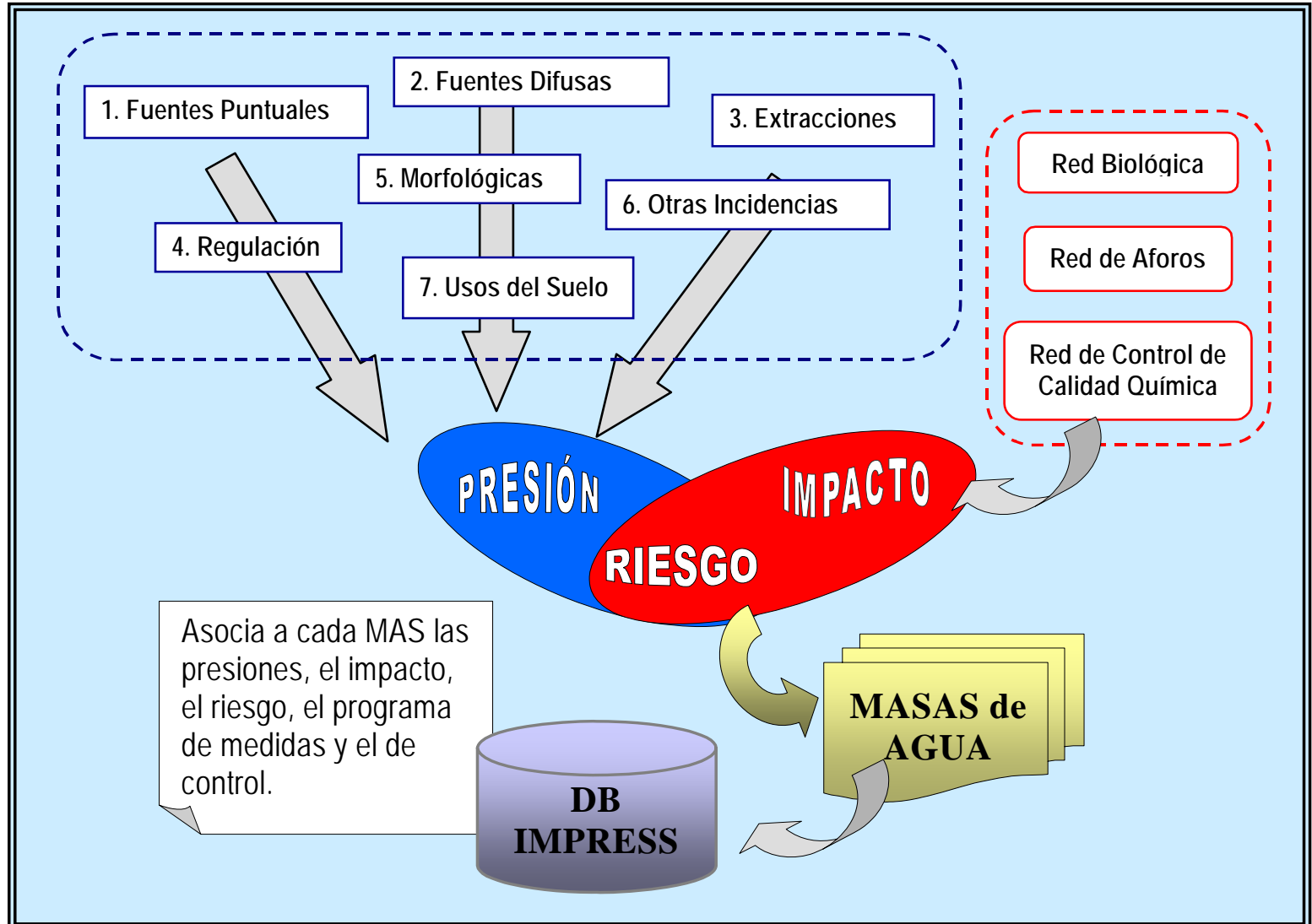
Efficacy analysis of measures:
Need for modelation

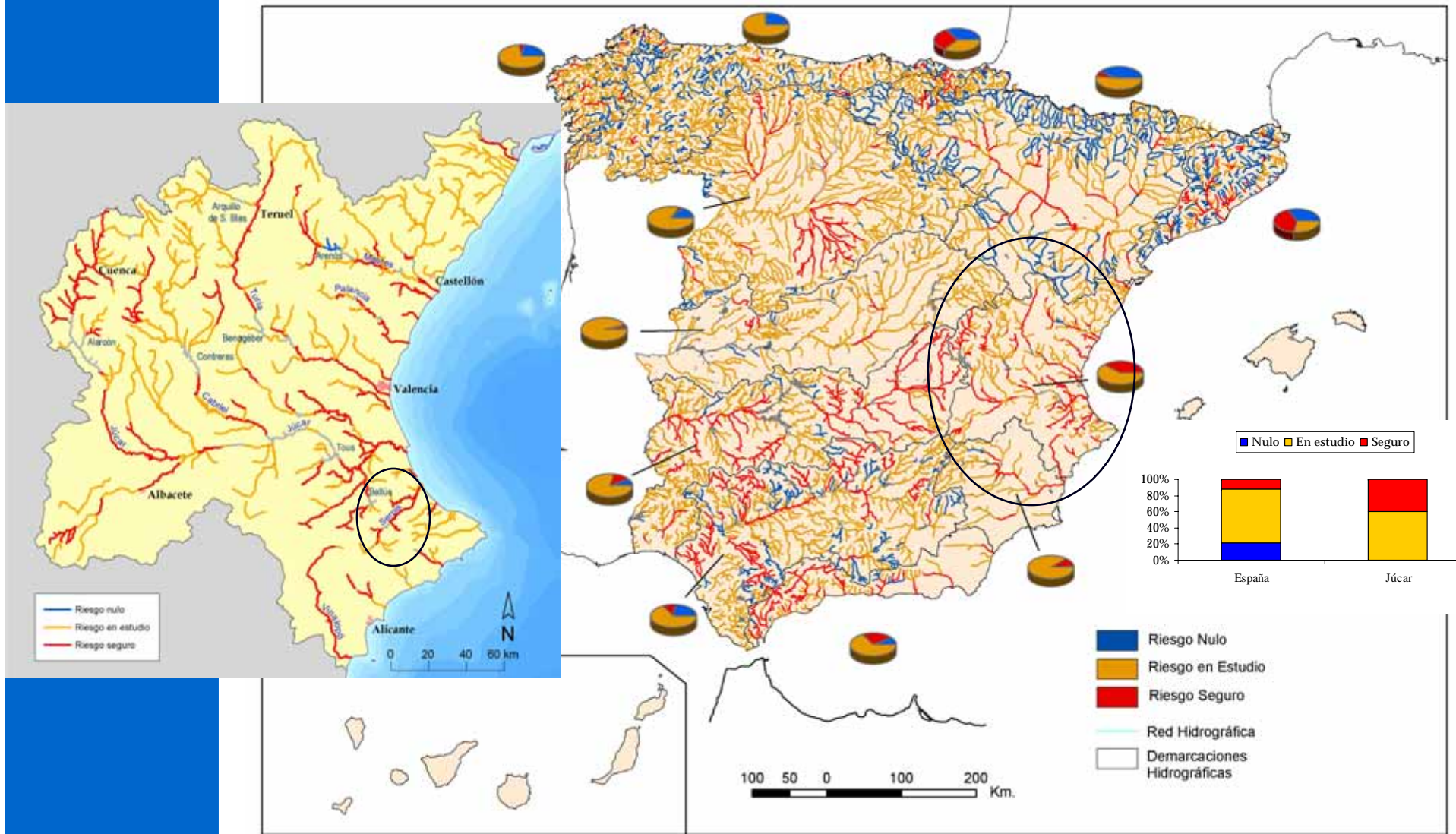


2. Initial Risk Evaluation: Art. 5 WFD



Risk Evaluation Art. 5



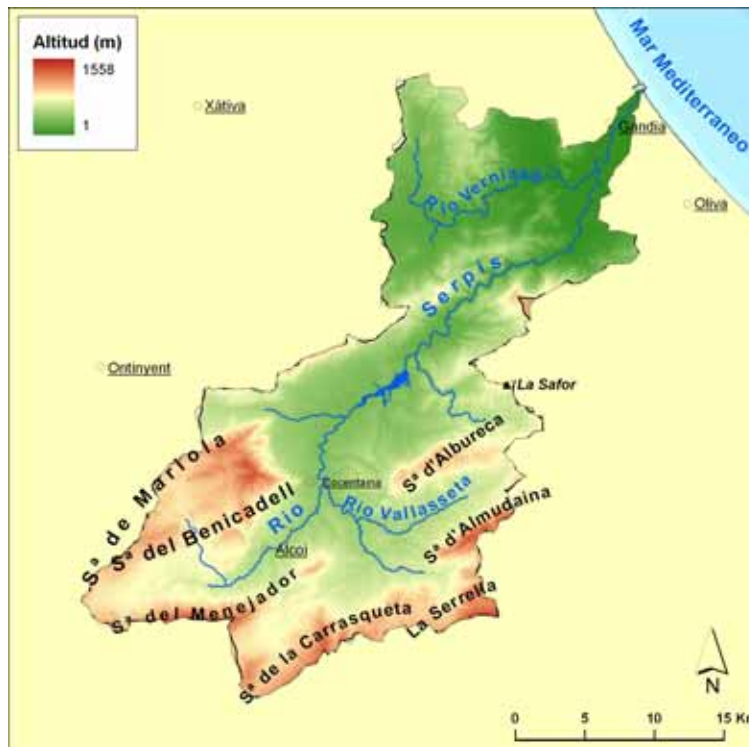


Spanish superficial water bodies at risk



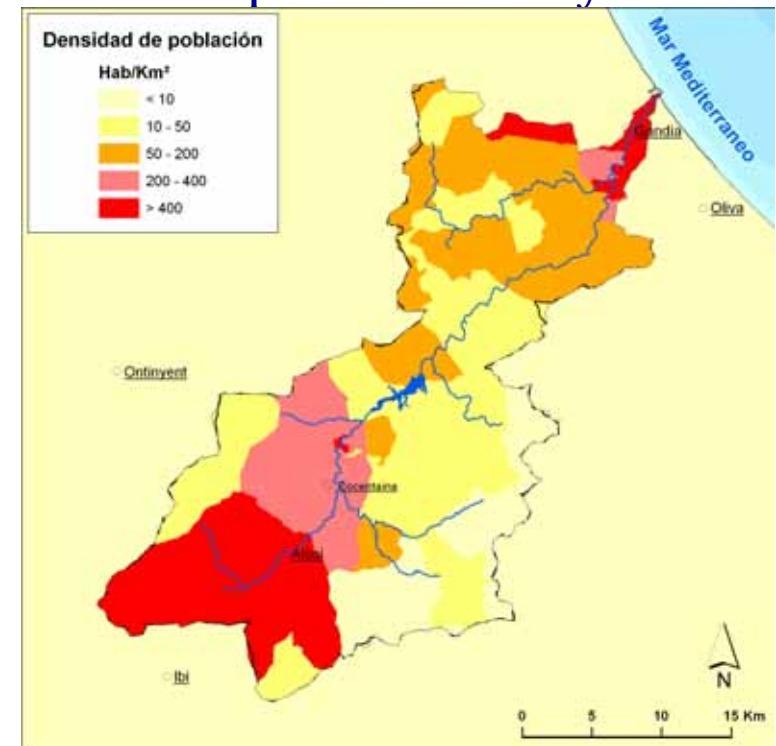
Serpis River Basin: pilot case

Physical Environment



Surface 755 km²

Population Density



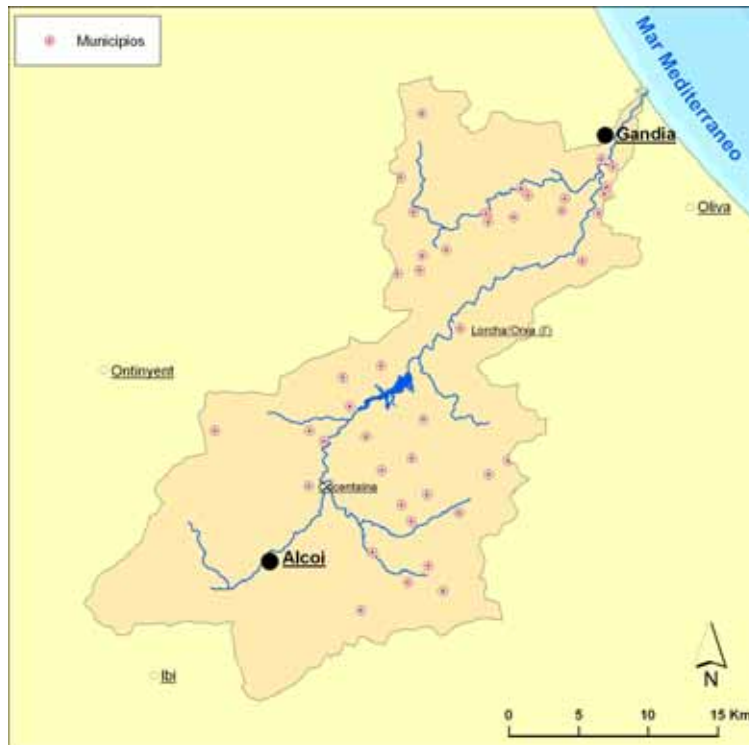
Population 219.942 inhab
Seasonal pop. 39.785 inhab



Current Demand

Supply

Agricultural



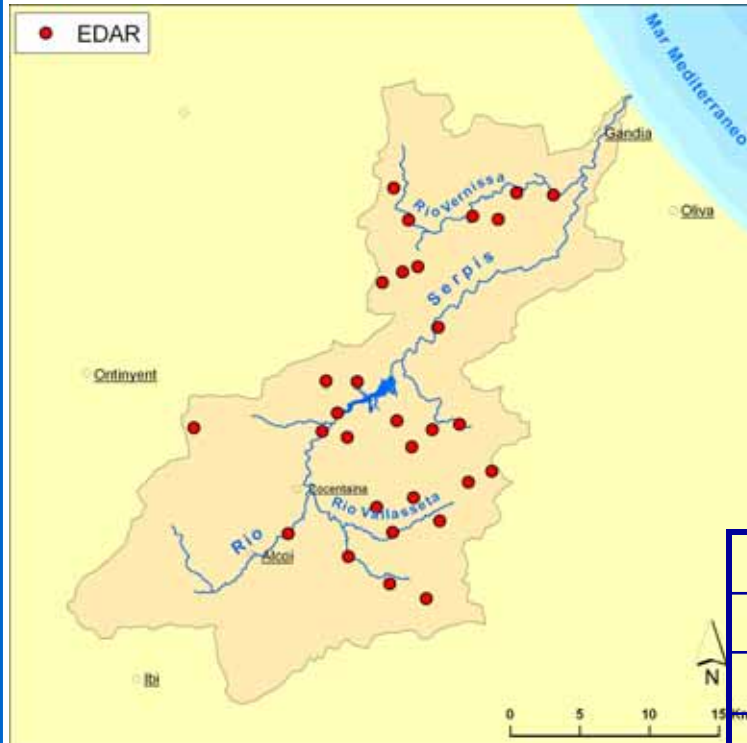
Supply + industrial
 31 hm³

Agricultural: 78 hm³
 Irrigated surface: 10.200 ha



Spills from - EDARes

Main Spills EDARes river Serpis

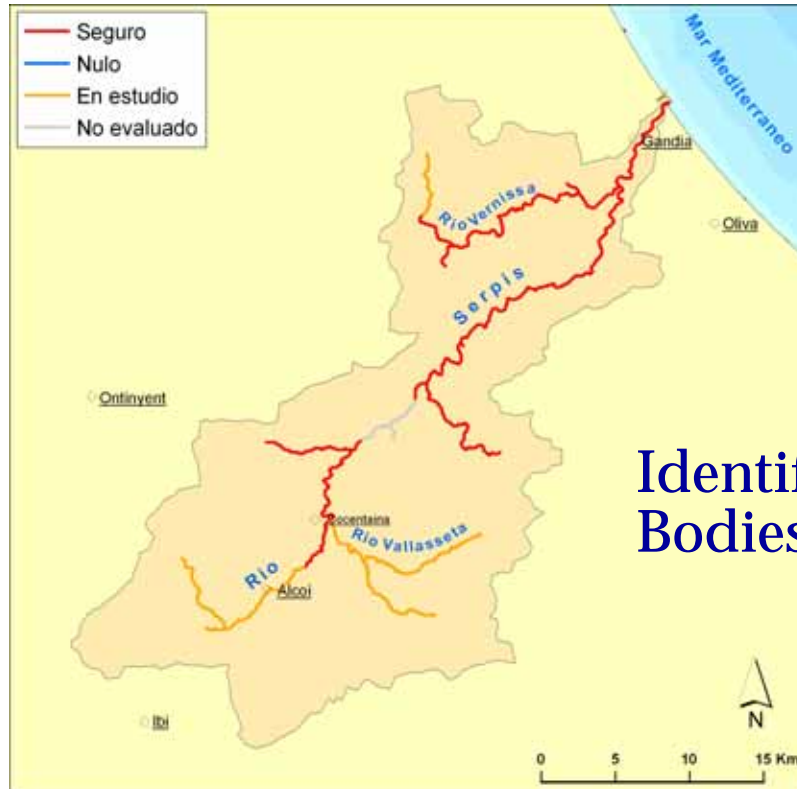


EDARes

NOMBRE	M3	HE
	V	HE
GANDIA-LA SAFOR	15.416.168	152.015
ALCOI	6.562.015	106.933
FONT DE LA PEDRA	4.431.647	58.896
XERACO	739.620	7.144
TAVERNES - CASCO	701.730	10.538
TAVERNES - BASA	460.227	6.535
SIMAT DE LA VALLDIGNA	374.761	2.595
TAVERNES - GOLETA	349.674	3.132
BENIFAIRO DE LA VALLDIGNA	303.936	2.571
PALMA DE GANDIA - ADOR	241.141	2.953
QUATRETONDETA	218.632	1.936
XERESA	176.152	2.606

	Domestic	Industrial
BOD5 (t/year)	4.039,03	404,67
COD (t/year)	8.636,27	1.191,91
Suspension Solids (t/year)	4.760,17	209,91
Phosphorous (t/year)	101,04	7,27

Source: Entitat de Sanejament D'Aigues



Identification of Superficial Water Bodies at Risk

RIESGO		IMPACTO			
		COMPROBADO	PROBABLE	SIN IMPACTO	SIN DATOS
PRESIÓN	SIGNIFICATIVA	RIESGO SEGURO	RIESGO SEGURO	RIESGO NULO	RIESGO EN ESTUDIO
	NO SIGNIFICATIVA		RIESGO EN ESTUDIO		
	SIN DATOS		---		



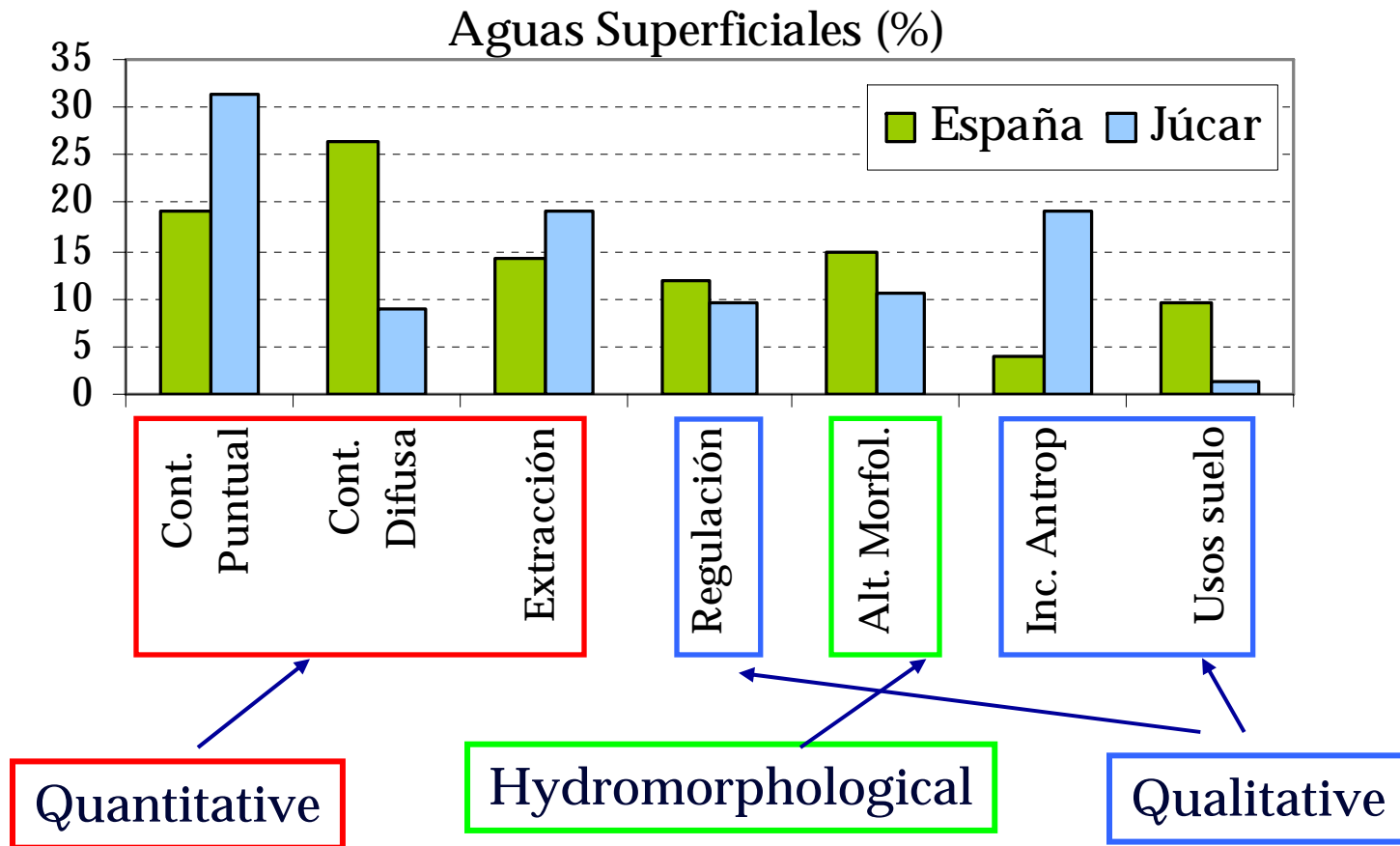
3.- Partial Risk Analysis:

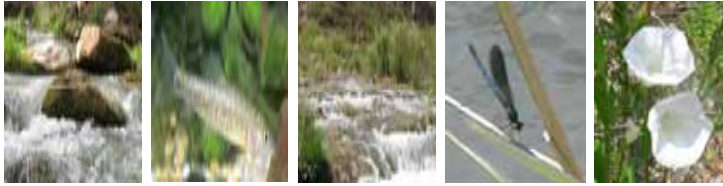
- Key Pressures Identification
- Relationship *Key Pressure* – Representative *Impact*
- Environmental objectives



Key Pressures Identification

- According to calculation methodology





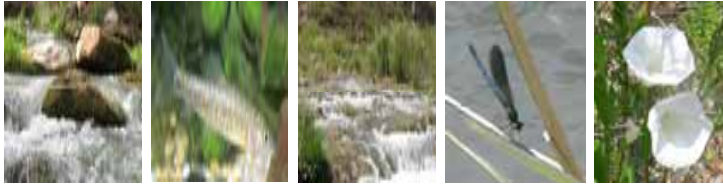
Relation *Key Pressure* / Representative *Impact*

Identified *Key Pressures*:

- Punctual: organic and nutrients
- Difuse: nitrogen, biocides, contaminated soil
- Extracctions
- Regulation
- Hydromorphological

Representative *Impact*:

- BOD5 (mg/l) and P total (mg/l)



Threshold proposal: Good Status

The criteria taken into account are the following:

- Provisional value
- Current regulations
- Same threshold for all ecotypes
- Coherent value with reference conditions

Threshold

Estado	DBO5 (mg O/l)	Fósforo (mg P/l)
Muy bueno	<3	<0,05
Bueno	3 - 5	0,05 - 0,20
Moderado	5 - 7	0,20 - 0,40
Malo	7 - 9	0,40 - 1,00
Muy malo	>9	>1,00

Directive 75/440 related to required quality for superficial water destined to drinking water production.

Directive 78/659 related to continental water requiring protection or improvement to be acceptable for fish survival.

Values to revise depending on ecotype and reference conditions

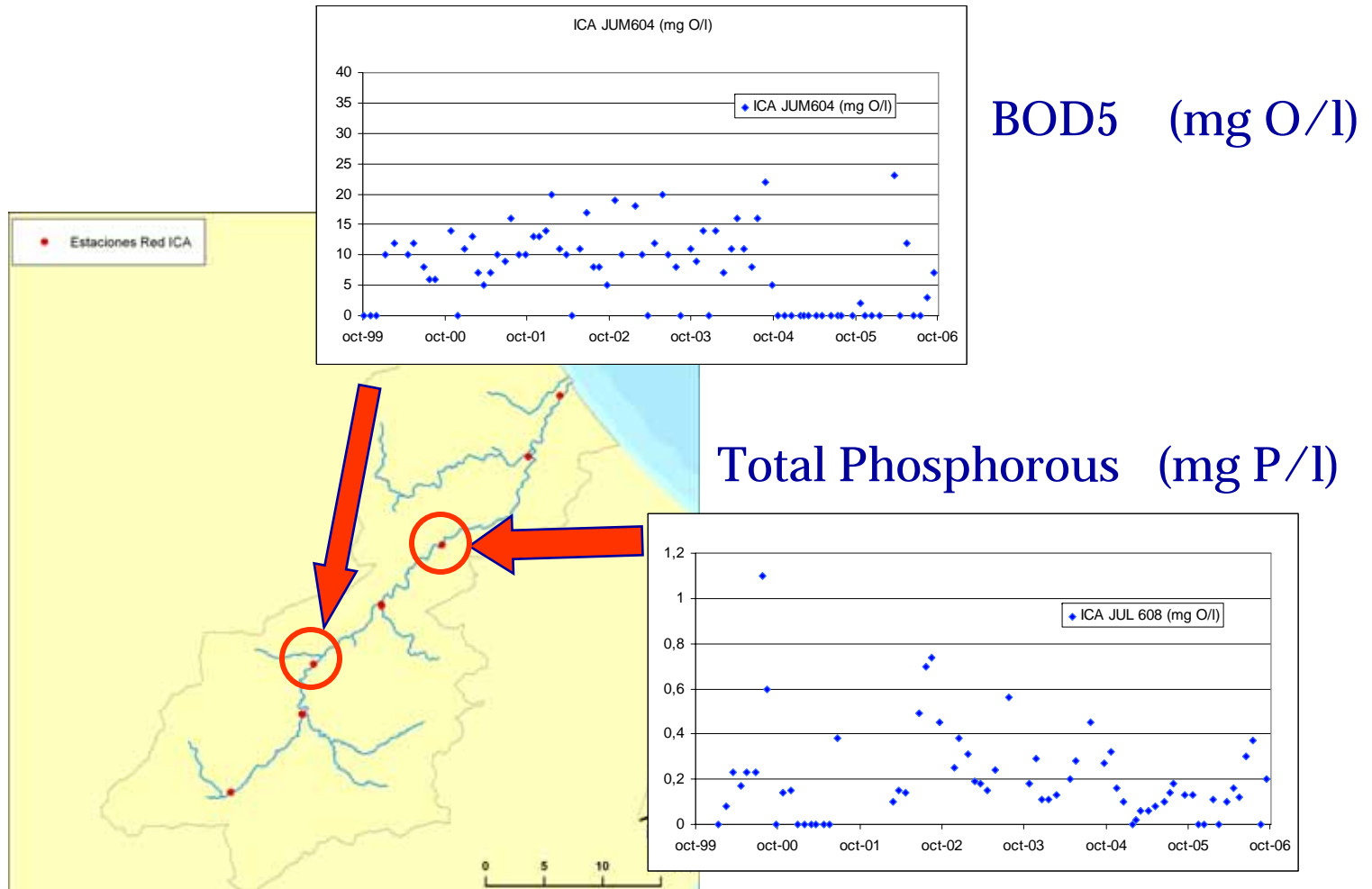


4.- Gap estimation:

- Current Gap characterisation
- *Key pressure modelation – representative impact*
- Gap Estimation Scenario 2015



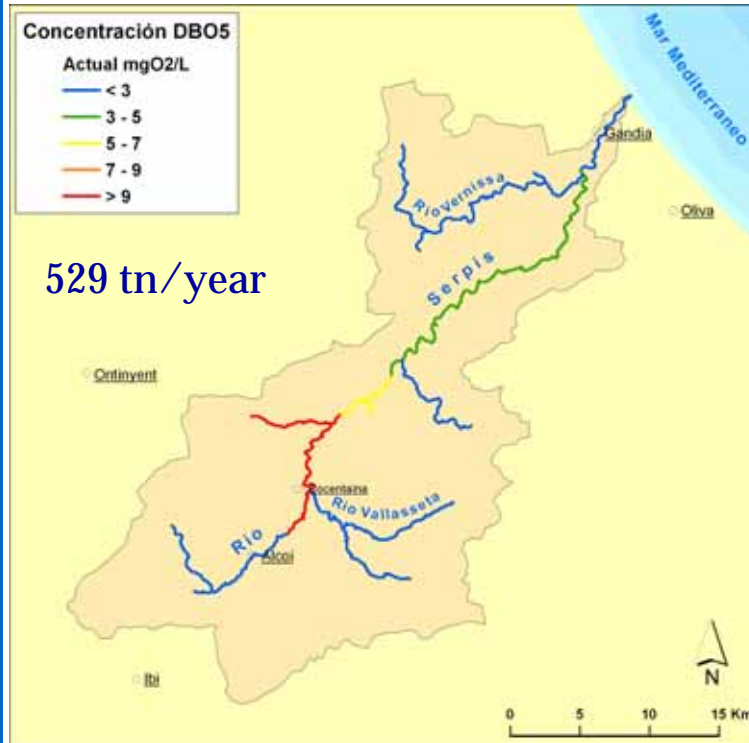
Current Gap Characterisation: Quality Control Network



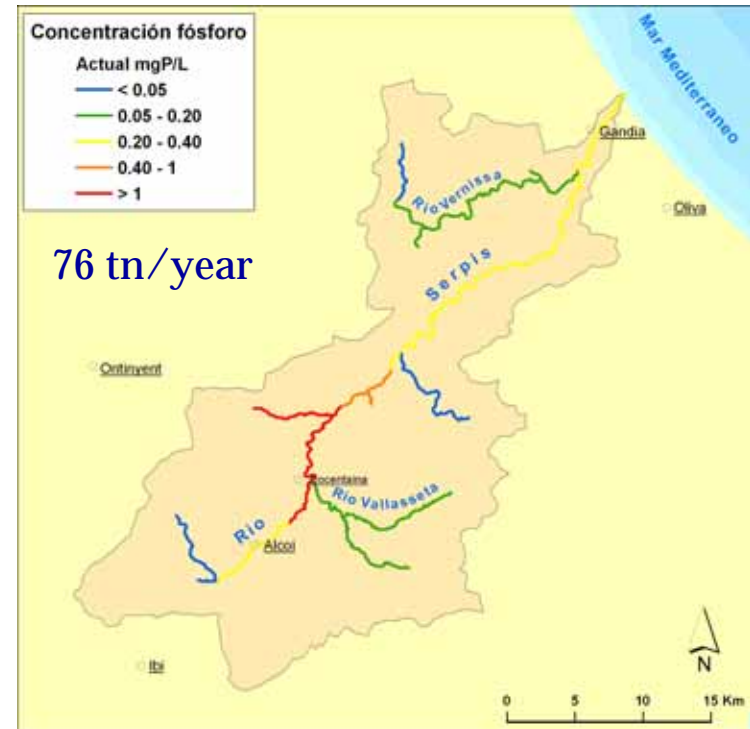


Current Gap Characterisation

Impact BOD5



Total Phosphorous Impact





Key Pressure Modelation – Representative *Impact*

➤ Through a GIS model

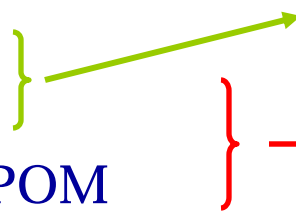
Variable	Modelation	Design
BOD ₅	Accumulation, Decrease, Dilution	MEASURE PROGRAMME Spills Management Sanitation and Waste Water Treatment
Phosphorous	Accumulation, Dilution	

Scenarios to modelate :

Current
Year 2015
Year 2015 + POM

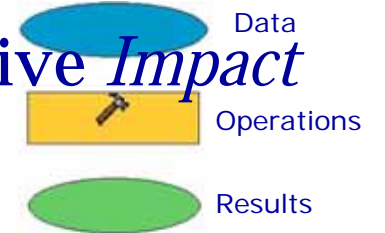
Information on future situation

Information on POM efficiency

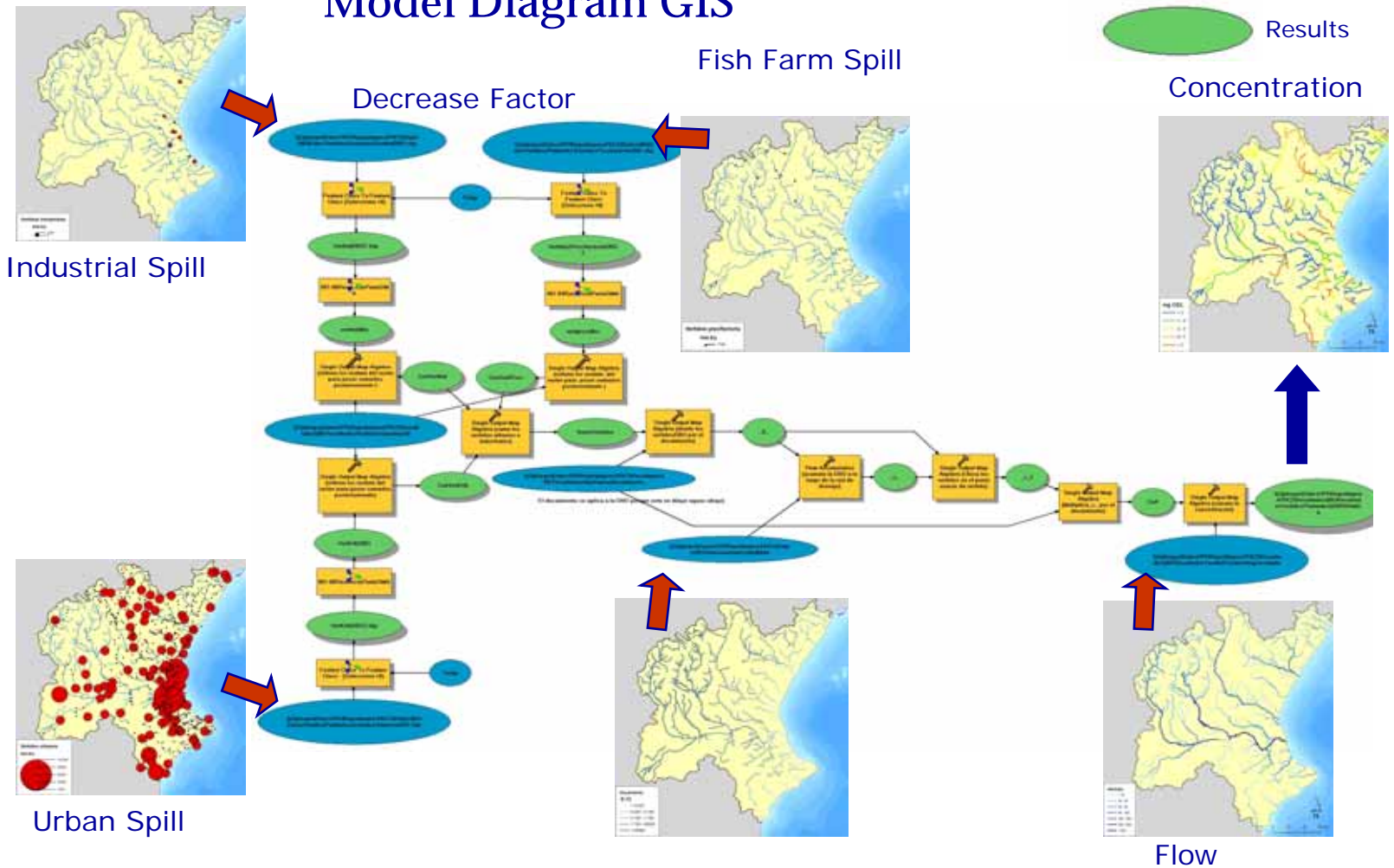


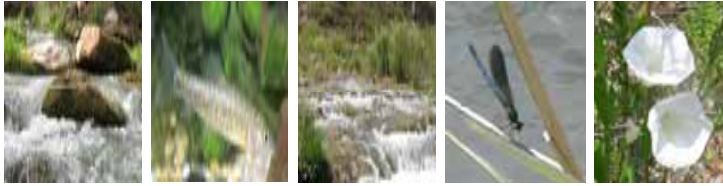


Key Pressure Modelation – Representative *Impact*



Model Diagram GIS

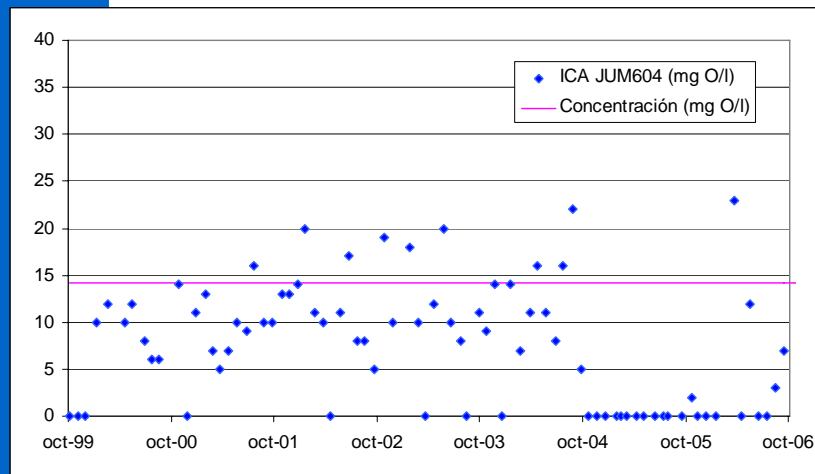




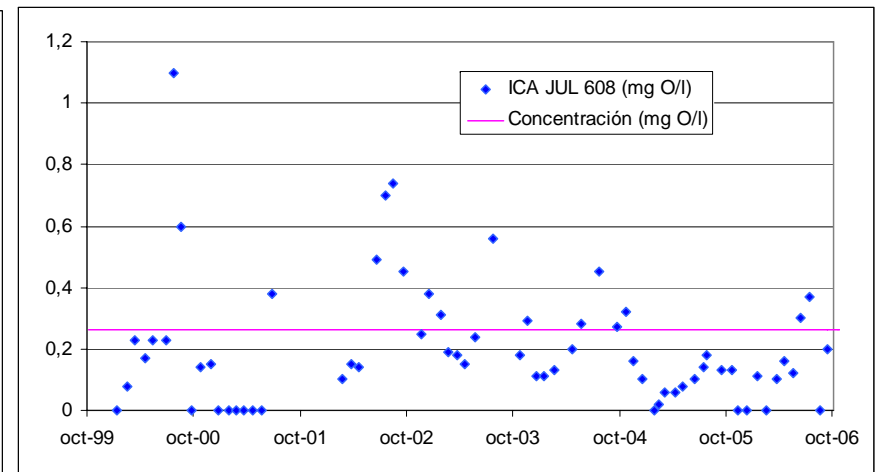
Key Modelation Pressure – Representative *Impact*

➤ Calibration GIS model

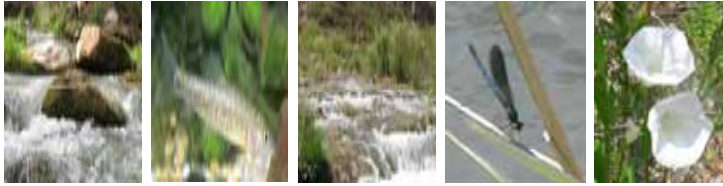
BOD5



Total Phosphorous

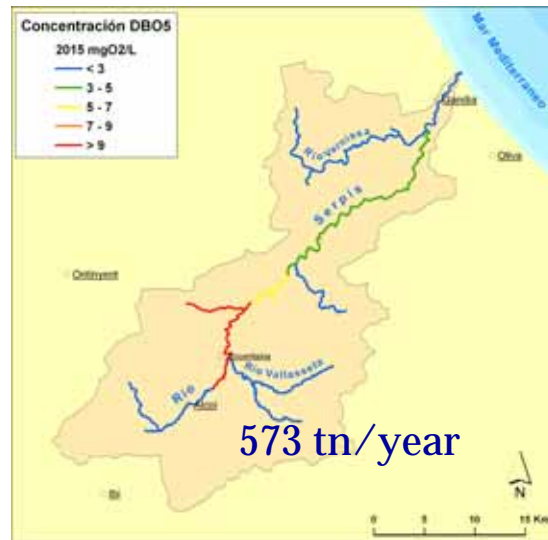


Average comparison value per body simulated with historical series observed by the control network



Gap Estimation Scenario 2015

BOD5

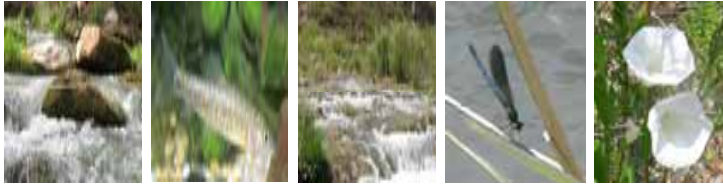


Status	Number of bodies
Very good	7
Good	3
Moderate	1
Bad	0
Very bad	1

Phosphorous



Status	Number of bodies
Very good	3
Good	1
Moderate	6
Bad	1
Very bad	1



5.- POM effectiveness analysis:

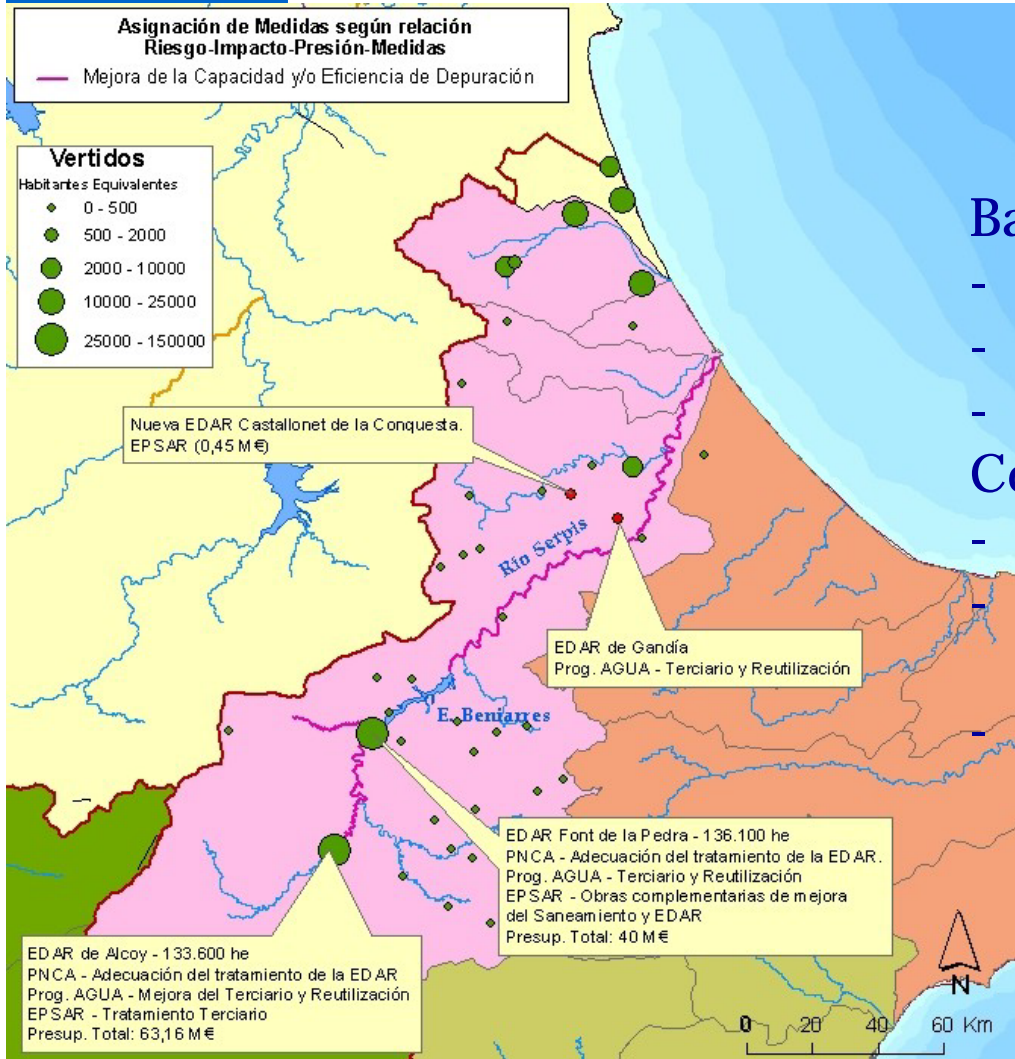
- Basic Measures: National Quality and Sanitation Plan
- Effectiveness Analysis
- Need for Complementary Measures



Basic Measures QUALITY NATIONAL PLAN National Budget

ACTUACIONES DEL PLAN NACIONAL DE CALIDAD DE LAS AGUAS: SANEAMIENTO Y DEPURACIÓN (2006-2015)

		Presupuesto (en Mill. Euros)	%
1	Actuaciones ya declaradas de Interés General que aún no se han licitado	1.114,31	5,7%
2	Actuaciones en Aglomeraciones Urbanas sin EDAR o con EDAR no conforme	2.903,52	14,8%
3	Actuaciones en Aglomeraciones Urbanas por la nueva declaración de zonas sensibles INTERcomunitarias (no figuraban en la Declaración AGE 1998) y la nueva Declaración Portuguesa del año 2004.	4.781,77	24,3%
4	Actuaciones para cubrir necesidades futuras (Remodelaciones de EDAR conformes, tanques de tormenta, etc.)	5.619,05	28,6%
5	Actuaciones para contribuir a alcanzar el cumplimiento de los objetivos ambientales de la DMA (incluyendo Aglomeraciones Urbanas menores de 2.000 h-e)	1.937,36	9,9%
6	Actuaciones de saneamiento (No incluyendo depuración)	2.740,80	14,0%
7	Actuaciones encaminadas a fomentar la I+D+i en el campo del saneamiento y depuración	547,45	2,8%
TOTAL ACTUACIONES (Mill. de Euros)		19.644,27	100,0%



Serpis River Basin

Basic Measures EDARs (D 91/271):

- Adequation BOD5 (25 mg/l) Alcoy
- Reduction P(1mg/l) Alcoy
- Reduction P(1mg/l) Font Pedra

Complementary Measures EDARs:

- Improvement BOD5 (15 mg/l) Alcoy
- Improvement BOD5 (15 mg/l) Font Pedra
- Reutilisation 40% Alcoy- F. Pedra

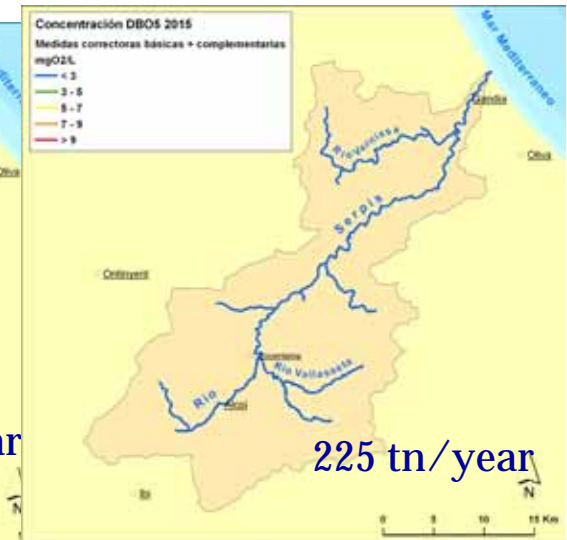
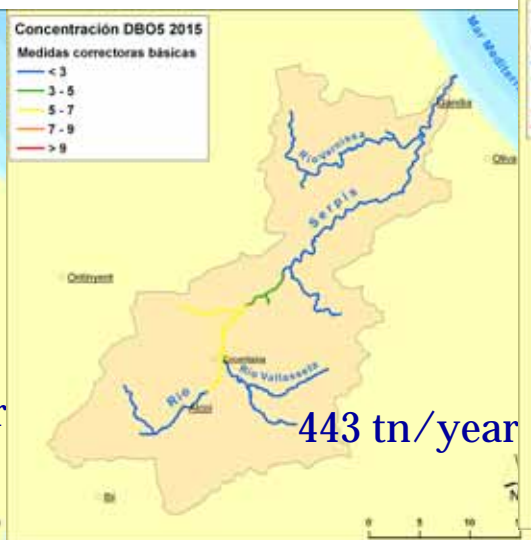


BOD5

Scenario 2015

Basic Measures

Basic +
Complementary M.



Status	Number of bodies
Very good	7
Good	3
Moderate	1
Bad	0
Very bad	1

Status	Number of bodies
Very good	10
Good	1
Moderate	1
Bad	0
Very bad	0

Status	Number of bodies
Very good	12
Good	0
Moderate	0
Bad	0
Very bad	0

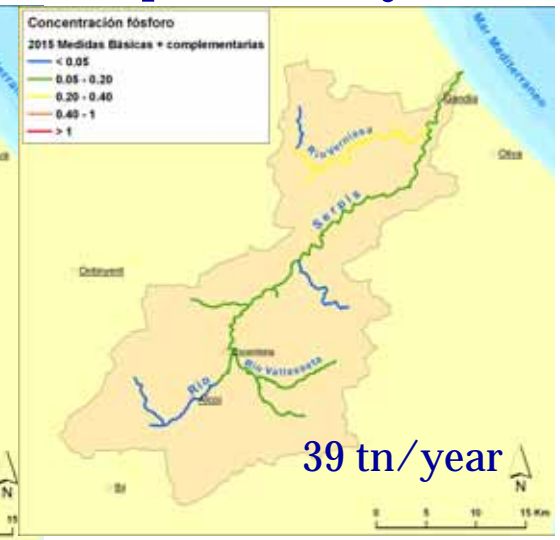
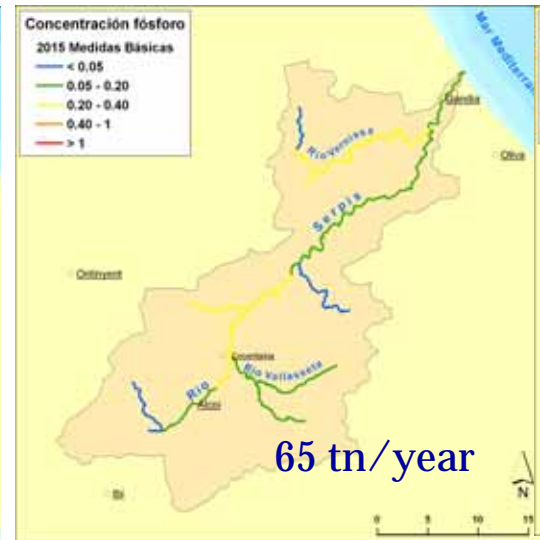
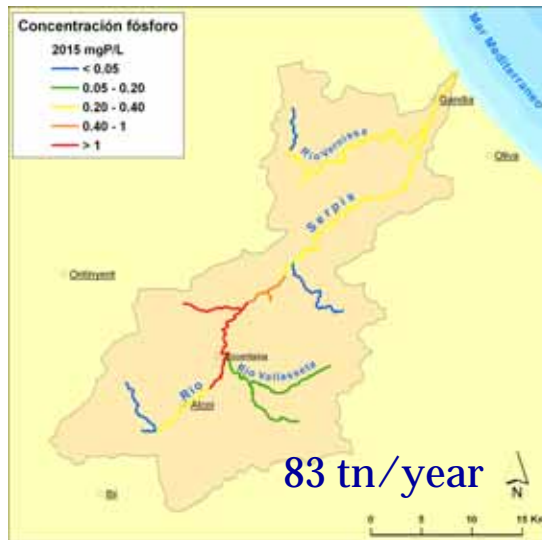


Phosphorous

Scenario 2015

Basic Measures

Basic + Complementary M.



Status	Number of bodies
Very good	3
Good	1
Moderate	6
Bad	1
Very bad	1

Status	Number of bodies
Very good	3
Good	6
Moderate	3
Bad	0
Very bad	0

Status	Number of bodies
Very good	4
Good	7
Moderate	1
Bad	0
Very bad	0



6.- Conclusions



Conclusions

- Need to carry out *key* pressures analysis - representative *impact* to analyse POM
- Complexity in good status threshold definition and need of intercalibration
- Usefulness of modelation in GIS for POM effectiveness analysis: Serpis pilot case
- Quality National Plan: Basic Measures
- Need for analysis methodologies:
 - Complementary measures - less rigorous objectives.
 - Exception Possibilities: costs out of proportion



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Thanks for your attention!
Merci pour votre attention!
Gracias por su atención!