

CONAMA2014

DEL 24 AL 27 DE NOVIEMBRE DE 2014 | MADRID



CAUDALES ECOLÓGICOS

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Madrid, 27 de noviembre de 2014



DIRECCIÓN GENERAL DEL AGUA
SG de Planificación y Uso
Sostenible del Agua

ANÁLISIS ECONÓMICO (Art. 9)

PRESIONES (Art. 5) – MEDIDAS (Art. 11) – ESTADO (Art. 4)

E1-Art.8

E2

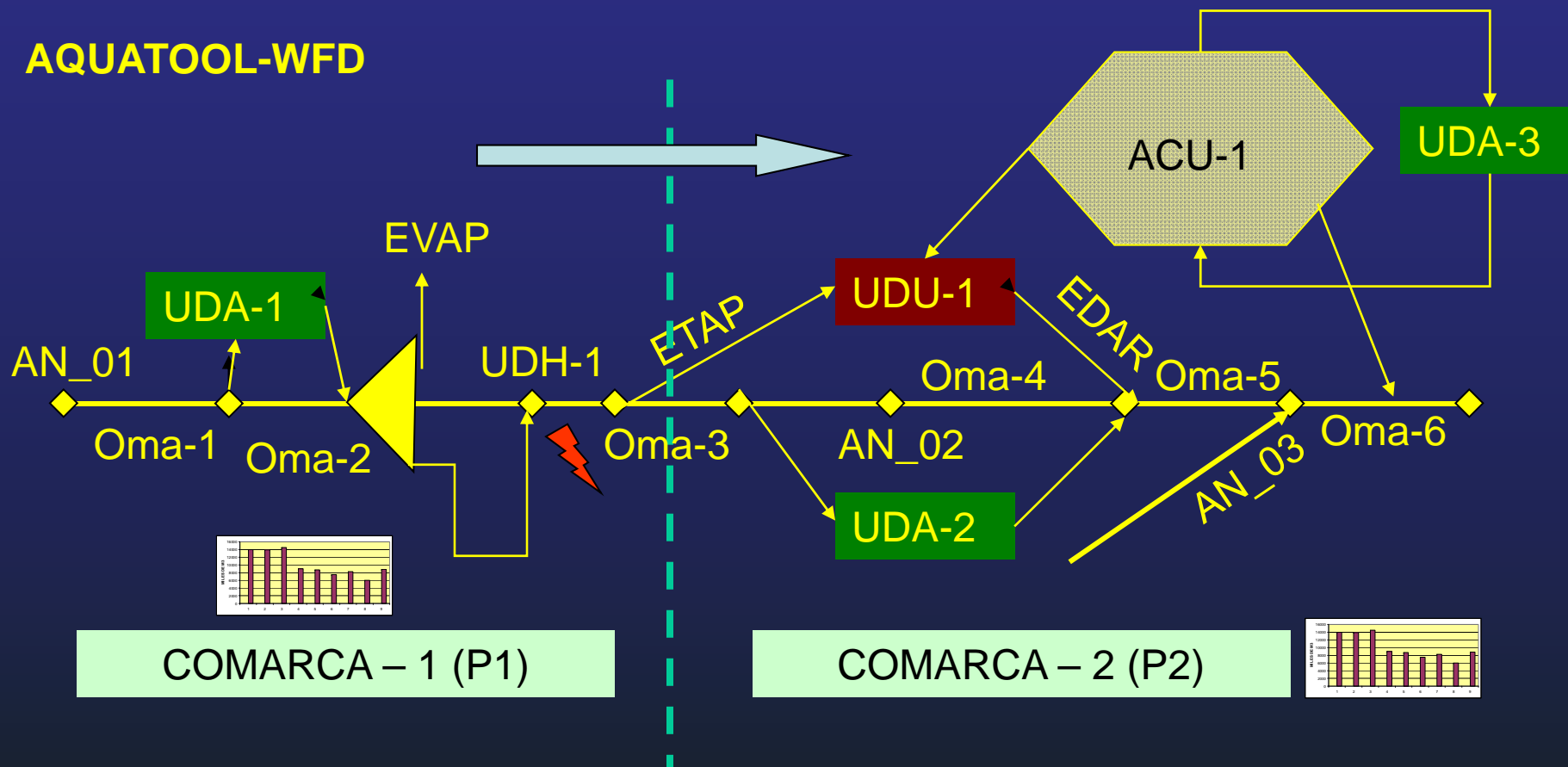
E3



Art. 13

SISTEMA DE INFORMACIÓN
SISTEMA DE APOYO A LA DECISIÓN

AQUATOOL-WFD



<http://www.upv.es/aquatool/software.html>

	VERDE	AZUL	TOTAL
AGRICULTURA	10.600	2.600	13.200
ENERGÍA		300	300
OTROS IND.		100	100
BOSQUE	10.700		10.700
RESTO NAT.	12.500		12.500
TOTALES:	33.800	3.000	36.800



Valores de caudal en hm³/año. Promedio 1980/81-2005/06

Ejemplo: Borrador PH Duero, marzo 2012.

Advanced Water Footprint in Douro River Basin

	A	B	C	D	E	F	Suma	B-C+E-F	A+B+D+E
FINAL	Consume	Exporta	Importa	Consume	Exporta	Importa	Total HH	Balance	Interna
Abast. urb.	0	0	0	66	0	0	66	0	66
Industria	0	0	0	28	9	8	45	1	37
Energía	0	0	0	30	270	0	300	270	300
Ganadería	0	0	0	15	0	0	15	0	15
Agricultura	6.724	3.876	2.520	1.679	965	735	16.499	1.586	13.244
Totales:	6.724	3.876	2.520	1.818	1.244	743	16.925	1.857	13.662
	10.600			3.062					

Valores de caudal en hm³/año

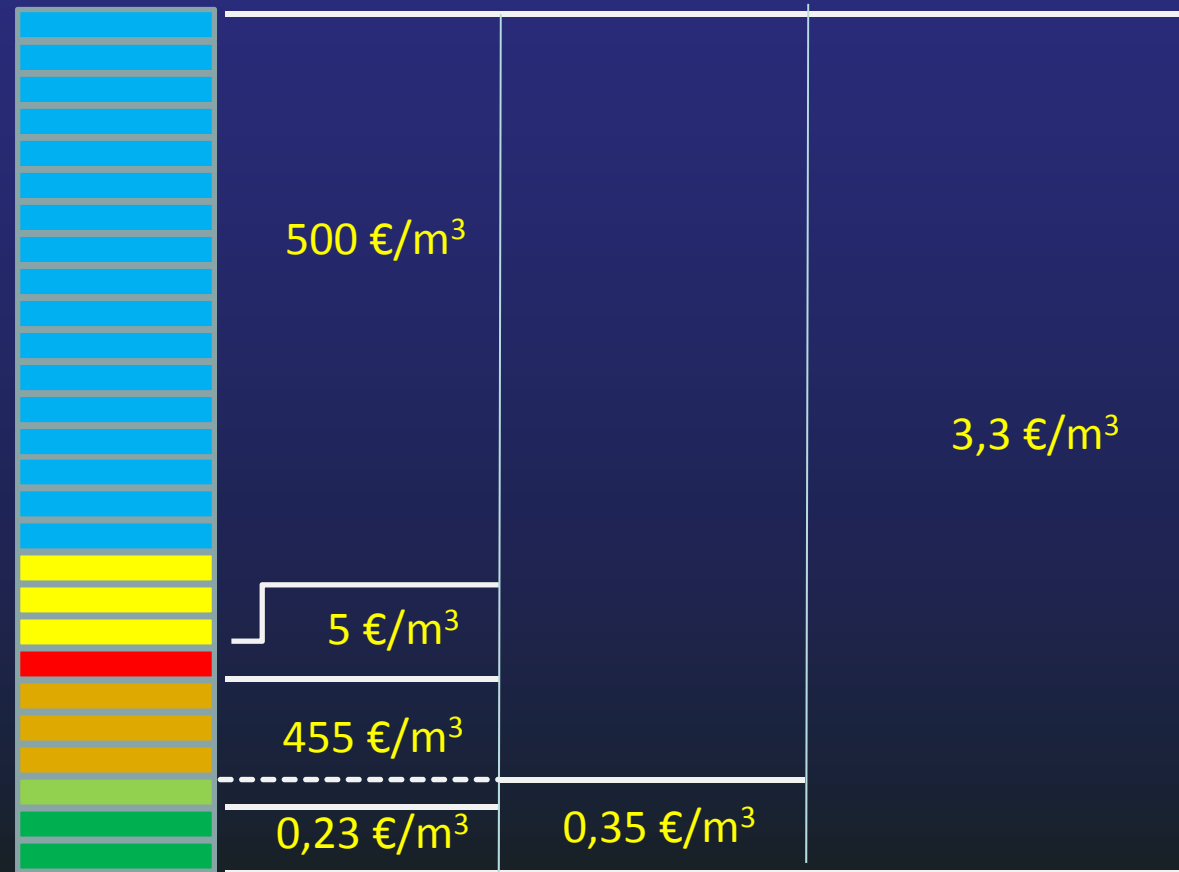
Ejemplo: Borrador PH Duero, marzo 2012.

PLANES HIDROLÓGICOS DE CUENCA

3. TÉCNICA DEL PROCESO DE PLANIFICACIÓN: Análisis económico



45.000 millones VAB



Ejemplo: Borrador PH Duero, marzo 2012.

In Spain, the Water Act establishes that:

- RBMPs will determine environmental flows, these being the flows that maintain at least the fish life that would naturally or might inhabit in the river, as well as the riverbank vegetation.
- Environmental flows won't have the status of use, they must be considered an environmental restriction.

E-FLOWS IN SPAIN: LEGAL FRAMEWORK

The Hydrological Planning Regulation (approved by Royal Decree) requires:

- The **environmental flows** must allow to maintain the functionality and structure of ecosystems, thus **contributing to achieve the good status or ecological potential**.
 - The **implementation process** must be developed according to a **harmonisation process bearing in mind water uses**.
 - In the case of **prolonged droughts**, a **less demanding regime** might be applied. This exception won't be applied to the Natura 2000 network or Ramsar wetlands.
-

The **Hydrological Planning Technical Instruction** (approved by Ministerial Order), develops **methods and procedures to follow** in order to determine and implement the **environmental flows** defined in the Water Act and the Hydrological Planning Regulation.

E-FLOWS IN SPAIN:

LEGAL FRAMEWORK – THE HYDROLOGICAL PLANNING INSTRUCTION

- Objectives, scope, components and characterisation
- Altered water bodies in a hydrological way
- Environmental flows during prolonged droughts
- Water requirements in lakes and wetlands
- Repercussion of the environmental flows on water uses
- Harmonisation process of the environmental flows
- Flow regime follow-up

E-FLOWS IN SPAIN:

LEGAL FRAMEWORK – COMPONENTS OF ECOLOGICAL FLOWS

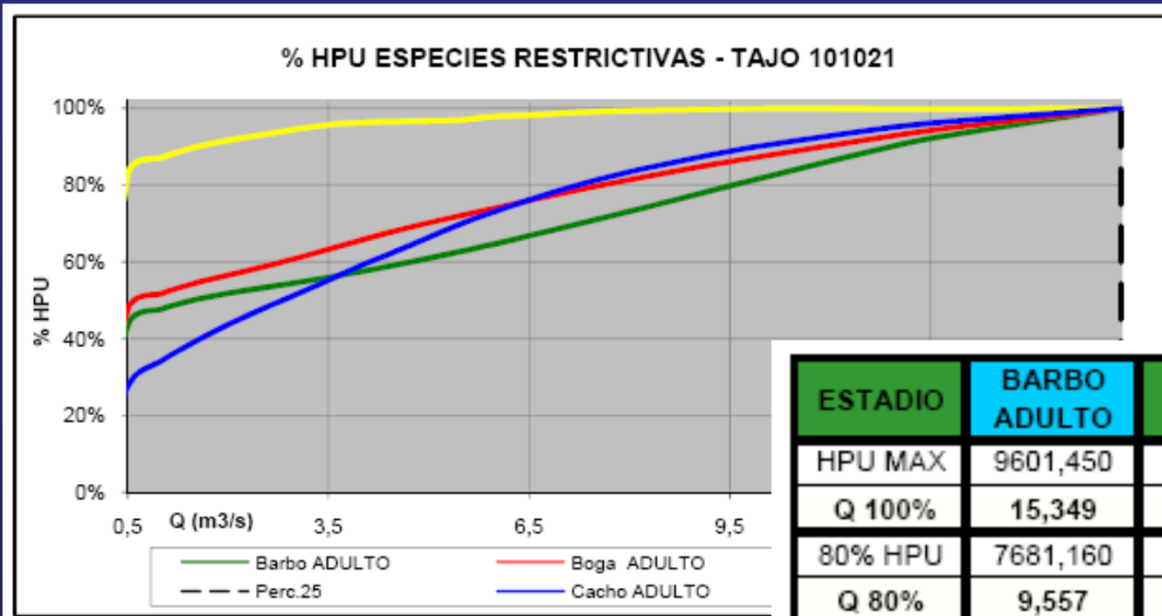
- Minimum seasonal flows to be exceeded in order to maintain habitat
- Maximum seasonal flows not to be exceeded in order to avoid high maximum speeds
- Flow change rate, limiting the flow variation per time unit, in order to avoid large flow fluctuations in a short time
- Flood flows, assimilated to the flow occupying the river bed for regenerating the substratum and the riverbank.

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E-FLOWS IN SPAIN: HYDROBIOLOGICAL METHODS



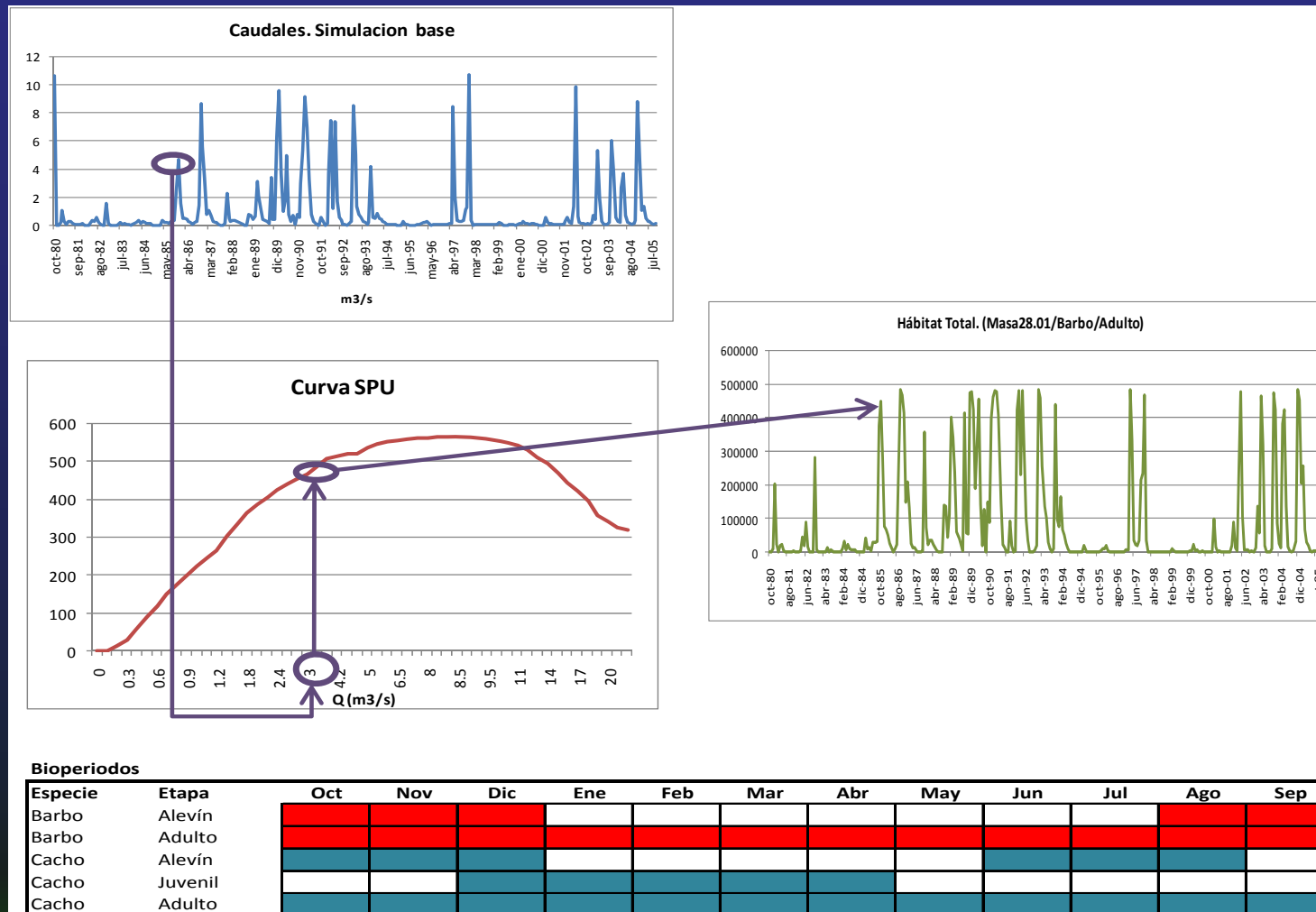
ESTADIO	BARBO ADULTO	CACHO ADULTO	BOGA ADULTA	BERMEJUELA
HPU MAX	9601,450	5602,770	9507,610	8840,920
Q 100%	15,349	15,349	15,349	15,349
80% HPU	7681,160	4482,216	7606,088	7072,736
Q 80%	9,557	7,237	7,599	0,482
50% HPU	4800,725	2801,385	4753,805	4420,460
Q 50%	1,478	2,813	0,789	0,301
30% HPU	2880,435	1680,831	2852,283	2652,276
Q 30%	0,344	0,679	0,315	0,181
25% HPU	2400,363	1400,693	2376,903	2210,230
Q 25%	0,286	0,452	0,262	0,151

* En rojo aparecen los caudales inferiores a los simulados en el modelo hidráulico.

Alteración hidromorfológica
Sequía severa

METHODS & MODELS FOR ALLOCATING WATER MATCHING ENVIRONMENTAL OBJETIVES

6. PREVIOUS RESTRICTIONS: E-FLOWS



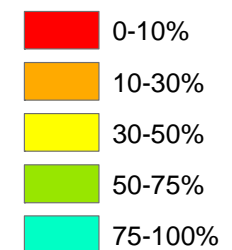
E-FLOWS IN SPAIN: HABITAT STUDIES IN SPANISH RBDs



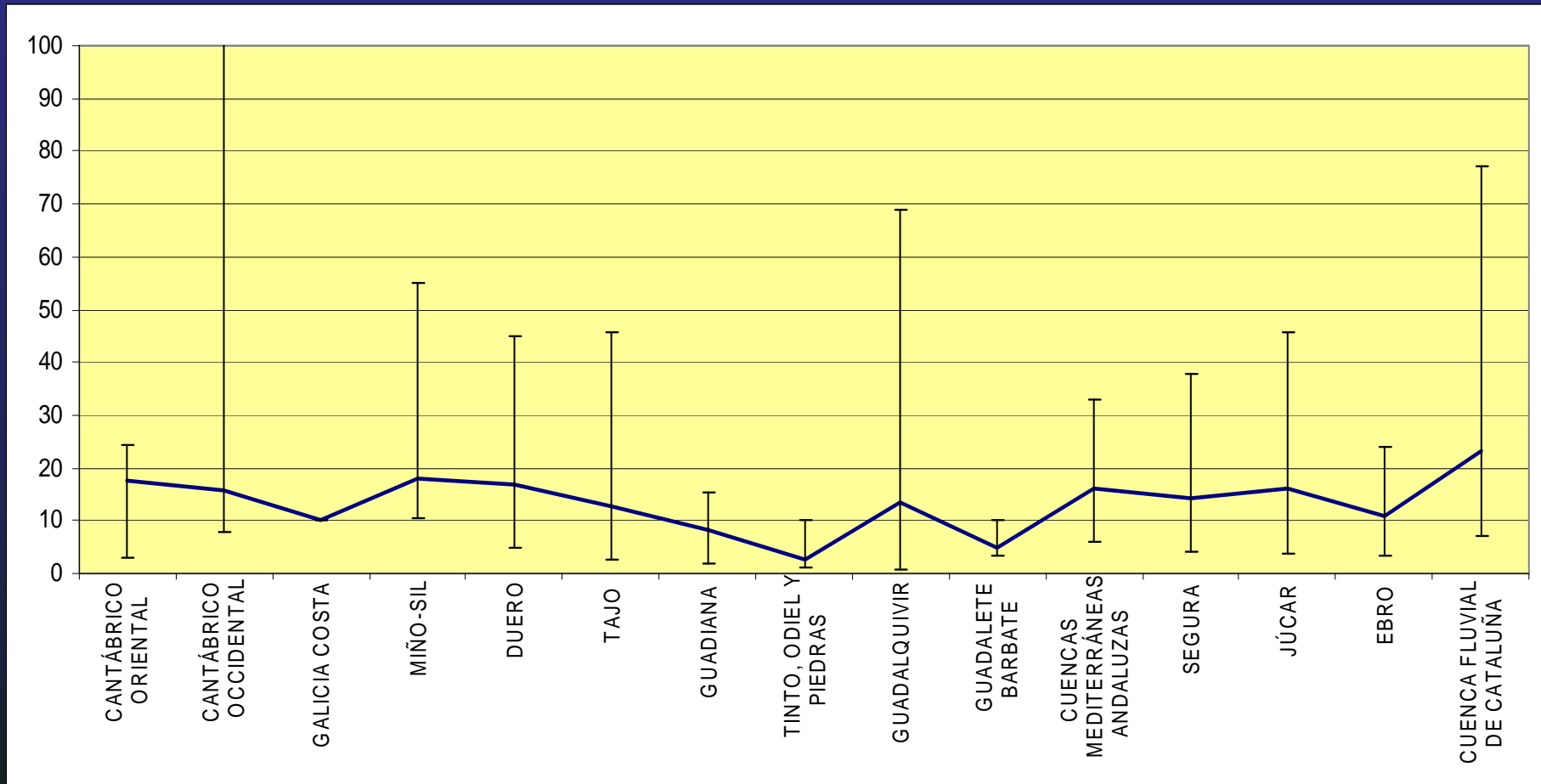
E-FLOWS IN SPAIN: MINIMUM SEASONAL FLOWS



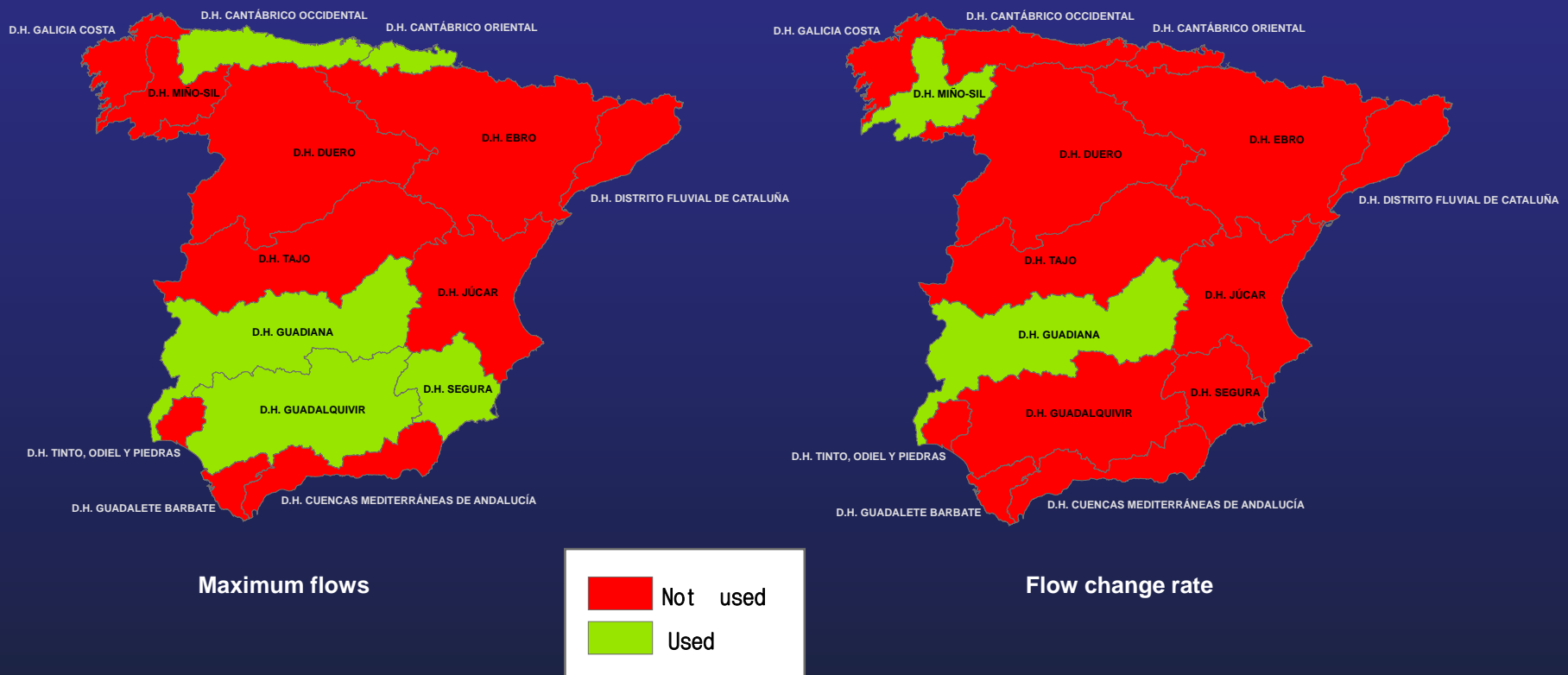
% Water bodies with minimum flows



E-FLOWS IN SPAIN: MINIMUM SEASONAL FLOWS



E-FLOWS IN SPAIN: MAXIMUM FLOWS AND FLOW CHANGE RATE

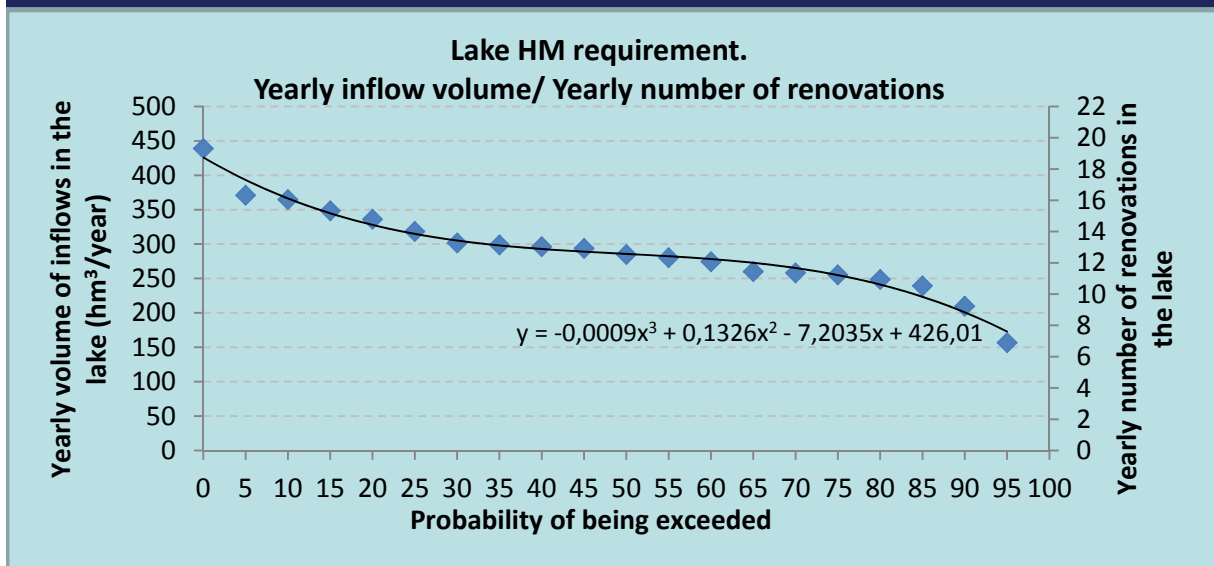
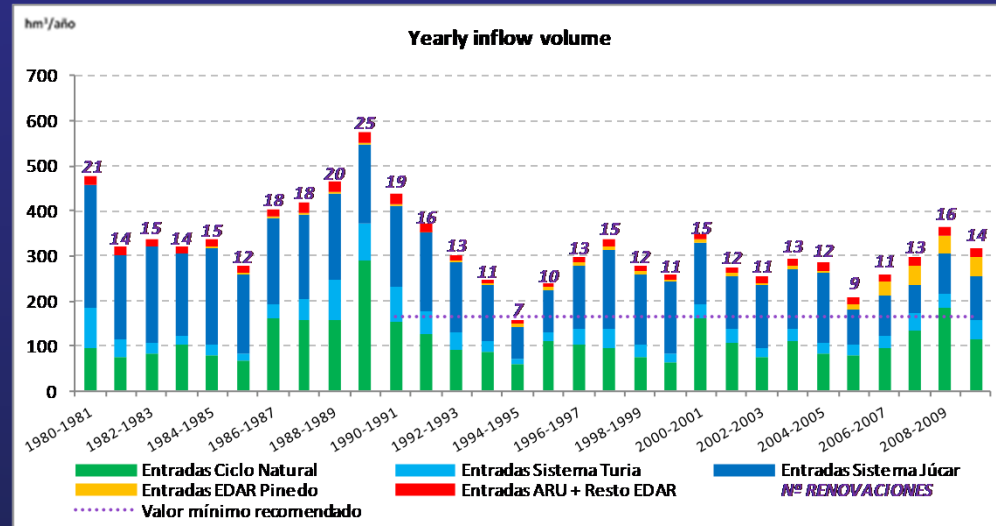
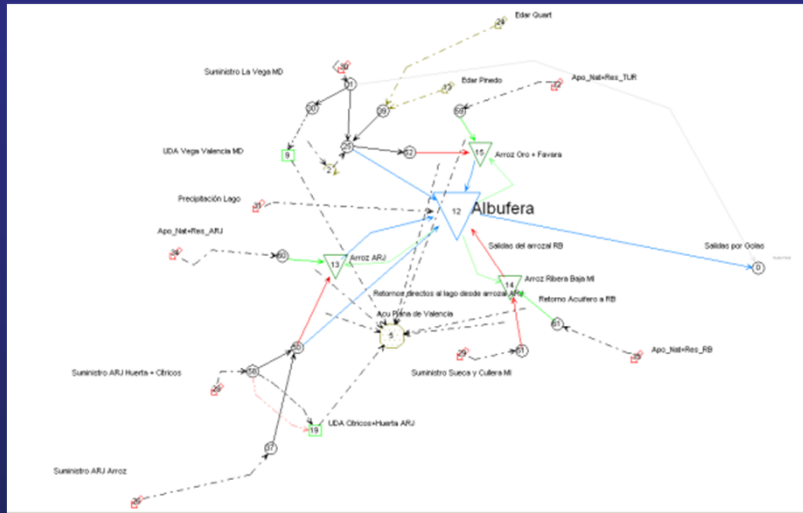


- Few plans have established concrete values (foreseen by 2015 revision).
- Uncertainty in the studies carried out

E-FLOWS IN SPAIN: PROLONGED DROUGHT SITUATION

- River basin management plans adopt minimum flows 50% lower than ordinary regime.
- Environmental flows for prolonged drought situations do not apply in Natura 2000 and RAMSAR wetlands.

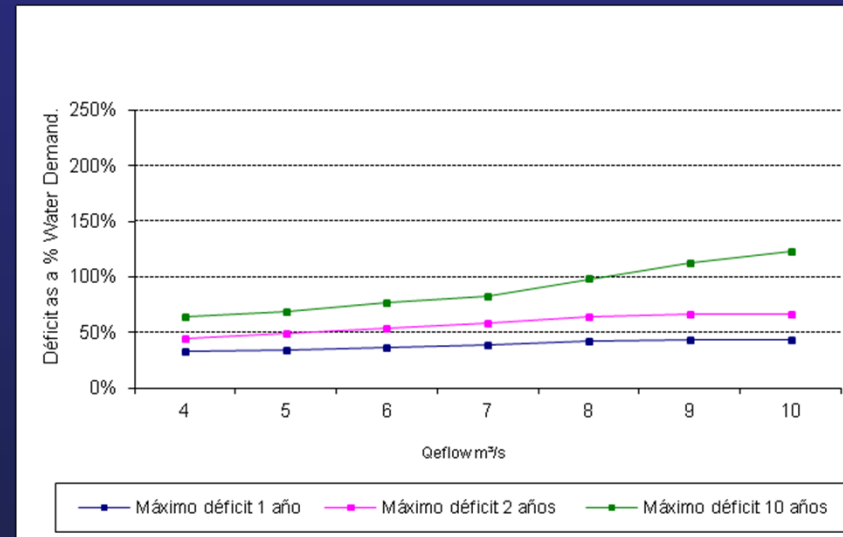
E-FLOWS IN SPAIN: WATER REQUIREMENTS FOR WETLAND



Hydrological method

E-FLOWS IN SPAIN: HARMONISING PROCESS FOR THE ENVIRONMENTAL FLOWS

- When environmental flows significantly condition water allocations, a harmonisation process will be carried out.
- This process will take into account the information on the repercussions from the flows on water uses.



Effect of e-flows on water use guarantees

E-FLOWS IN SPAIN: SUMMARY AND CONCLUSIONS

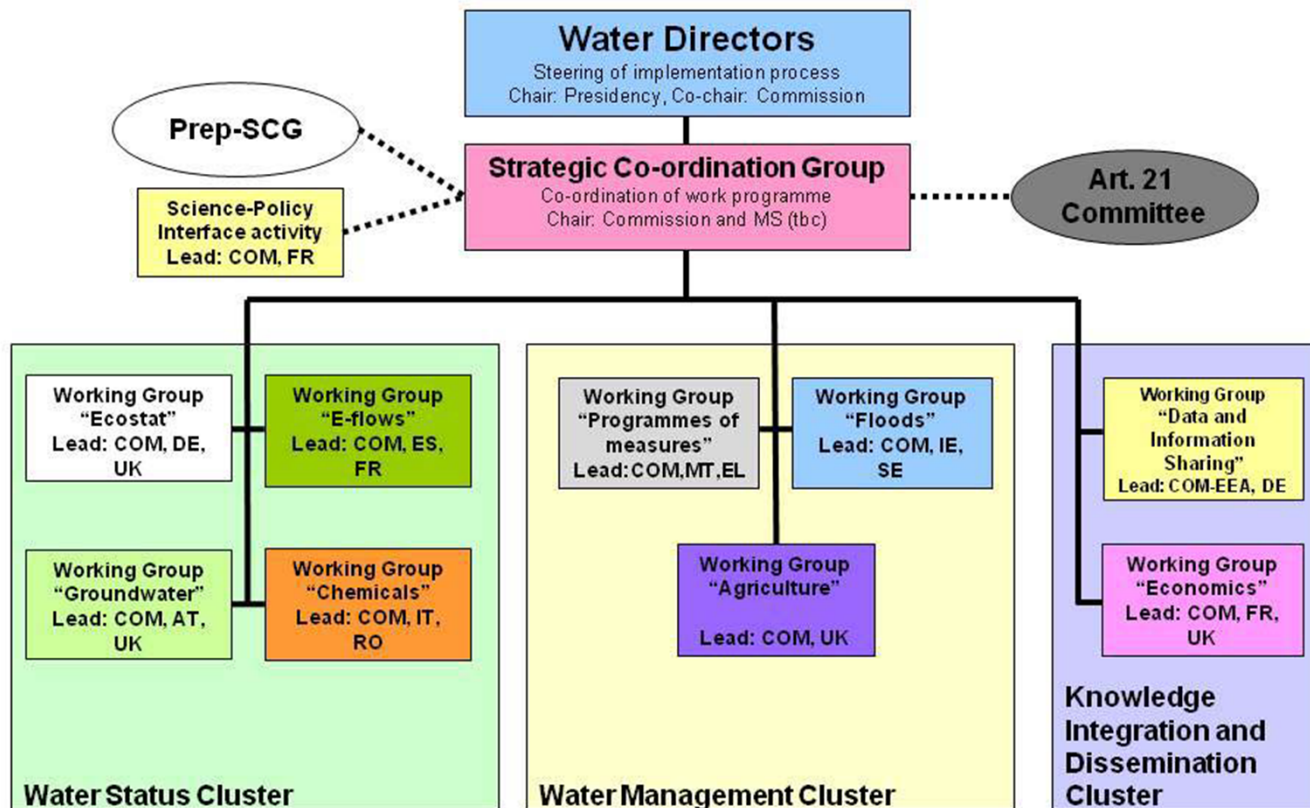
- The environmental flow implementation is necessary to limit pressure on rivers and contribute to achieving a good status or good potential.
- The Spanish legislation establishes environmental flow requirements as a restriction to water uses (highly advanced regulations).
- e-flows are determined in the RBMPs according to the regulations (Hydrological Planning Instruction).
- Importance of the harmonisation process: there are no serious tensions with the consumptive water uses.

E-FLOWS IN SPAIN: SUMMARY AND CONCLUSIONS

- The Spanish RBMPs set minimum flow regimes for 50% of the water bodies in the river category and compromise to complete the regime in all water bodies by the 2015 revision.
- RBMPs introduce a strong regulation on environmental flows which, for its harmonisation, will have to be taken into account in a general regulation in the future.

GUIDANCE ON E-FLOWS

CIS Organisation 2013-2015



GUIDANCE ON E-FLOWS



Eflows in the CIS work programme

- Deliverable: Guidance on Ecological Flows (Eflow) by 2014
- Description: A guidance on ecological parameters/ecological flows and hydrological parameters for assessing quantitative aspects (the volume and level or rate of flow) and the link to GES are defined, allowing for an assessment of pressures from all abstractions and climate change.
- Leads: COM, ES and FR
- Interlinkages with other WGs: Ecostat, Floods, Groundwater, Programme of Measures, Agriculture and Water Accounts work under KID cluster



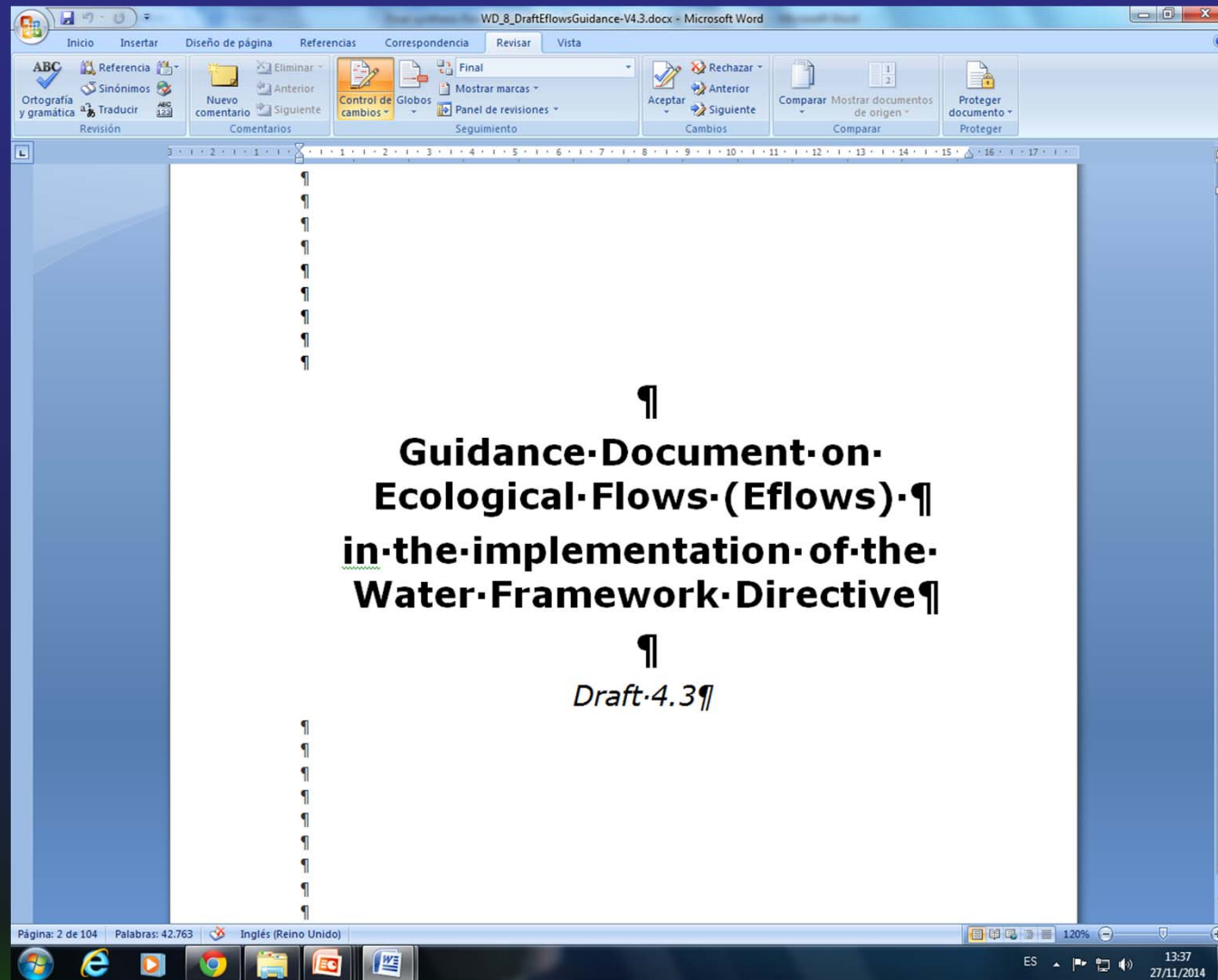
GUIDANCE ON E-FLOWS

Informal meeting of Water and Marine Directors of the European Union, Candidate and EFTA Countries

Rome, 24th and 25th of November 2014

https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:_idcl=FormPrincipal:_id3&FormPrincipal_SUBMIT=1&id=085aa8c4-e386-45a8-9cc2-65d042a4332d&javax.faces.ViewState=r00ABXVyABNbTGphdmEubGFuZy5PYmpIY3Q7kM5YnxBzKWwCAAB4cAAAAAN0AAE2cHQAKy9qc3AvZXh0ZW5zaW9uL3dhaS9uYXZpZ2F0aW9uL2Nvb3RhaW5lc3A=

GUIDANCE ON E-FLOWS



GUIDANCE ON E-FLOWS

TABLA DE CONTENIDOS

Parte 1. Introducción

Parte 2. Conceptos

Parte 3. Interpretación y recomendaciones para su consideración

Parte 4. Pasos futuros

Anexo A. Lista de case studies

Anexo B. Revisión de legislación y metodologías en MS

Anexo C. Métodos de valoración hidrológica

Anexo D. Referencias

GUIDANCE ON E-FLOWS

Part IV: Further steps:

1. Eflows in mitigation measures and GEP setting – Intercalibration of ecological potential by WG ECOSTAT.
2. Combination of hydrological and biological quality elements in ecological status classification - information exchange on approaches for combining quality elements into water-body level classification and approaches for dealing with uncertainty in classification by WG ECOSTAT.
3. Eflows in physical water balances – Guidance on water accounts by a dedicated working group.
4. Eflows and groundwater - Recommendations for Groundwater dependent aquatic ecosystems by WG on Groundwater.

GUIDANCE ON E-FLOWS

Other issues should be considered, possibly for inclusion in a future CIS work programme:

1. further development of biological metrics specifically sensitive to hydrological changes
2. exchange of good practices in developing and implementing methodological frameworks for Eflows definition in the 1st and 2nd cycle
3. exchange of good practices in inclusion and implementation of measures for achieving Eflows in the 2nd RBMPs
4. revision of CIS guidance n°4 on HMWB to better address flow issues
5. preservation and restoration of Eflows in Flood management (linking WFD and FD)
6. Eflows in a changing climate
7. Eflows for lakes and transitional and coastal waters
8. Eflows in other wetlands and BHD PAs

GUIDANCE ON E-FLOWS

In the context of this Guidance, the Working Group adopted the term of “ecological flows” with the following working definition:

Ecological flows are considered within the context of the WFD as “*an hydrological regime consistent with the achievement of the environmental objectives of the WFD in natural surface water bodies as mentioned in Article 4(1)*”.

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