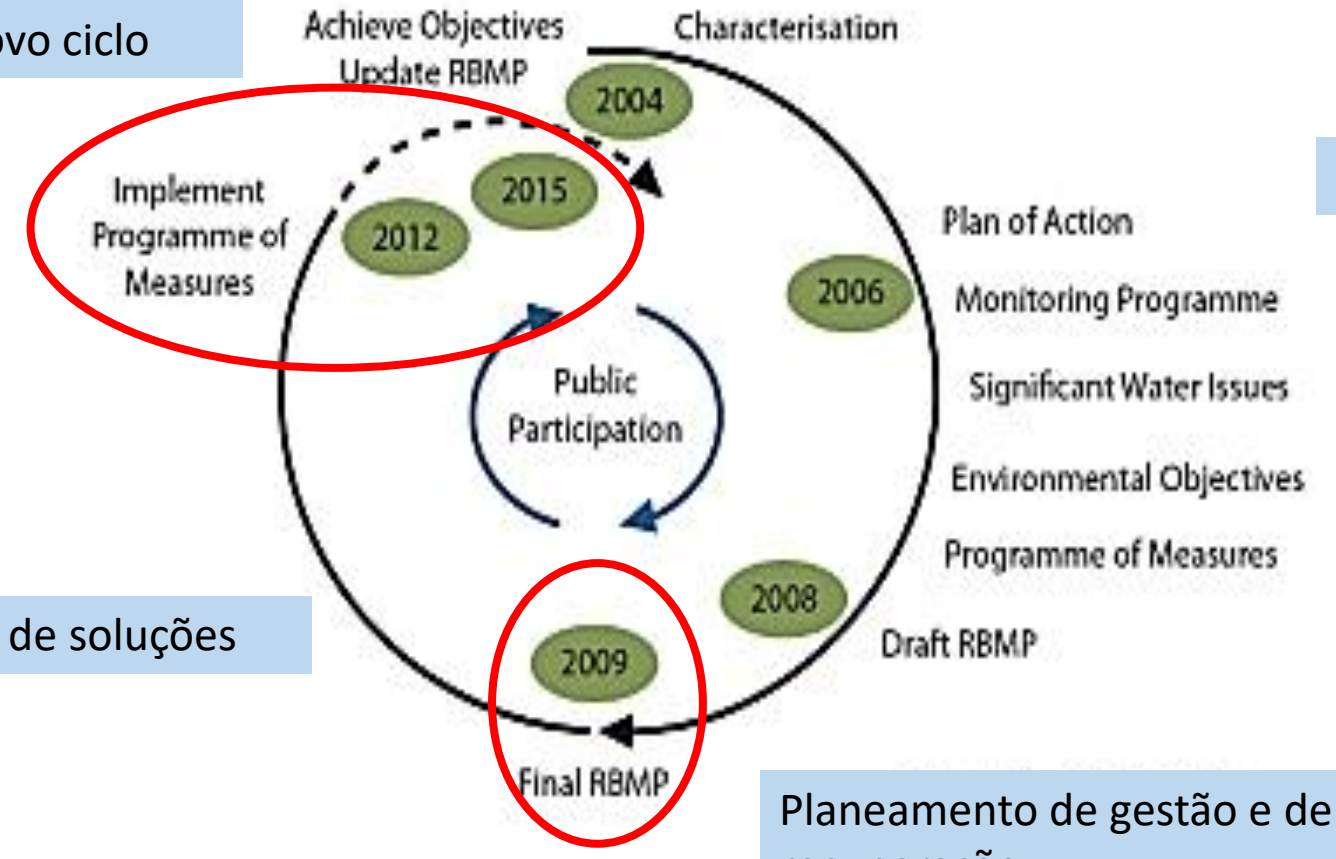
Monitorização em águas interiores

1. **o objectivo primário da directiva é atingir o bom estado ecológico**
2. **as linhas de água estruturam-se em massas de água**
3. **todas as massas de água tem a classificação do seu estado ecológico**

PLANOS DE GESTÃO DE BACIA HIDROGRÁFICA – UM CICLO DE DOIS TRIÉNIOS CADA 2009-2012-2015-2018

Novo ciclo



Source: Adapted by CIS WFD (2003)

Identificação dos problemas

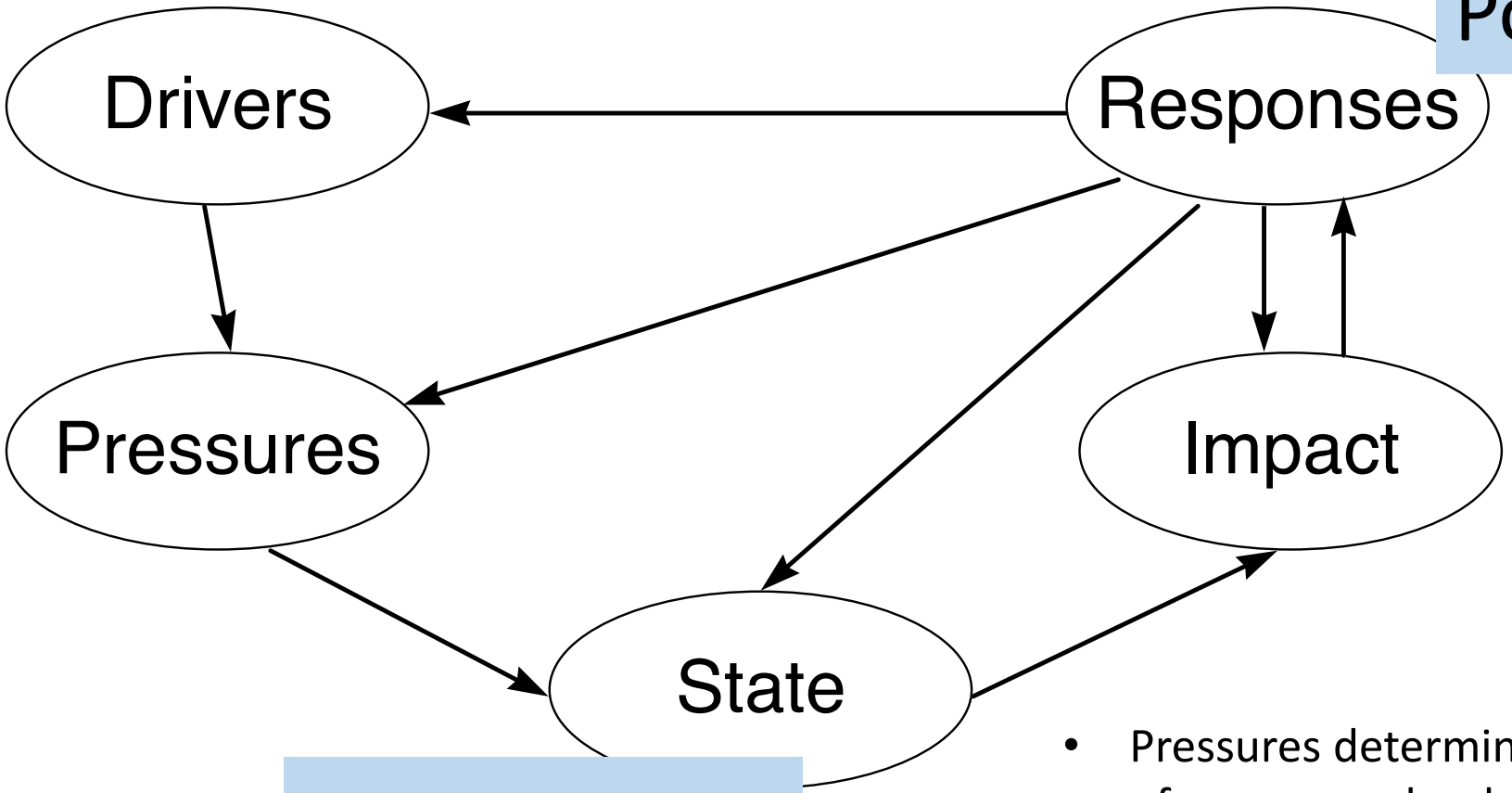
Implementação de soluções

Planeamento de gestão e de recuperação

Term	Definition of concepts	Comments
Driver	An anthropogenic activity (e.g. agriculture, forestry, industry) or global change (climate warming, changes in precipitation) that may have an environmental effect	**No quantification**
Pressure	The direct or indirect effect of the driver (for example, an effect that causes a change in flow or a change in the water chemistry) over the ecosystem	**Quantified, causative, exhaustive**
State	The condition of the system under study (e.g. water body, catchment) resulting from both natural and anthropogenic factors (these are physical, chemical and biological measurable characteristics, including ecological processes, e.g. decomposition rates)	**Abiotic or biotic**
Impact	Effects on human beings, ecosystems and man-made capital resulting from changes in environmental *State* with relevance for valued ecosystem phenomena (e.g. processes and/or components) actively or passively required, demanded, or used by man (e.g. ecosystem services, triggering social *Response.*	**Related to man's activities and well being. Ecosystem services**
Response	The measures taken to improve the state of the water body (e.g. restricting abstraction, limiting point source discharges, developing best practice Guidance for agriculture)	**Programs of Measures in RBMPs**

The DPSIR framework for reporting on environmental issues (EEA 1999)

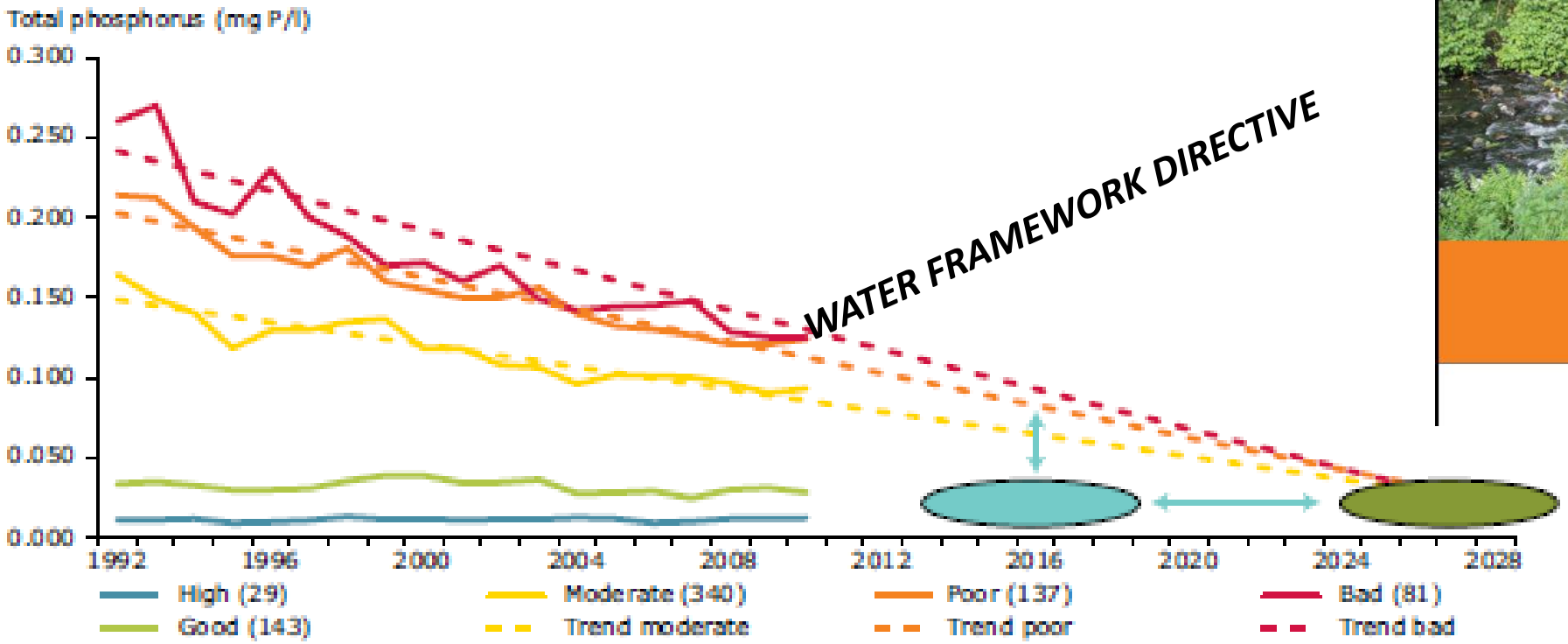
PoM in RBMP

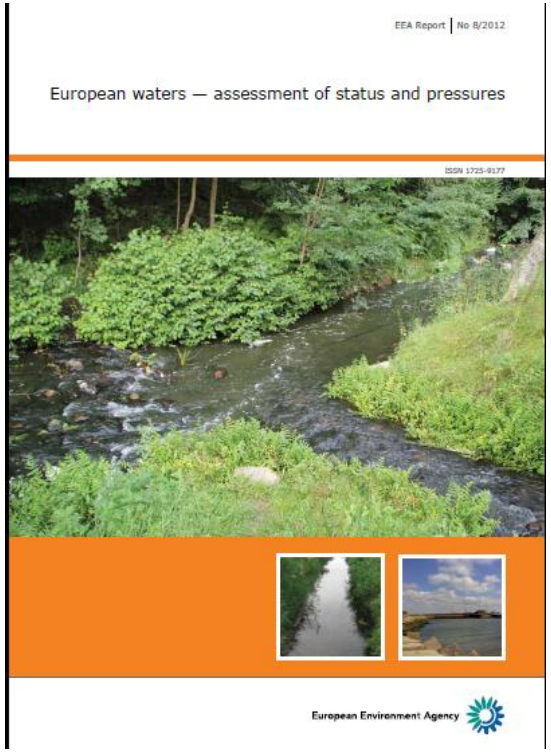


WFD GOAL

- Pressures determine the state, therefore the reduction of pressures should determine state improvement
- **There is the need for a predictive relationship between pressures and state and between responses and state**
- **ALL SHOULD BE LINKED AND PREDICTIVE**

FIXAÇÃO DE OBJECTIVOS AMBIENTAIS PARA AS MA: tendência de concentração media de fósforo prevista para as massas de água europeias

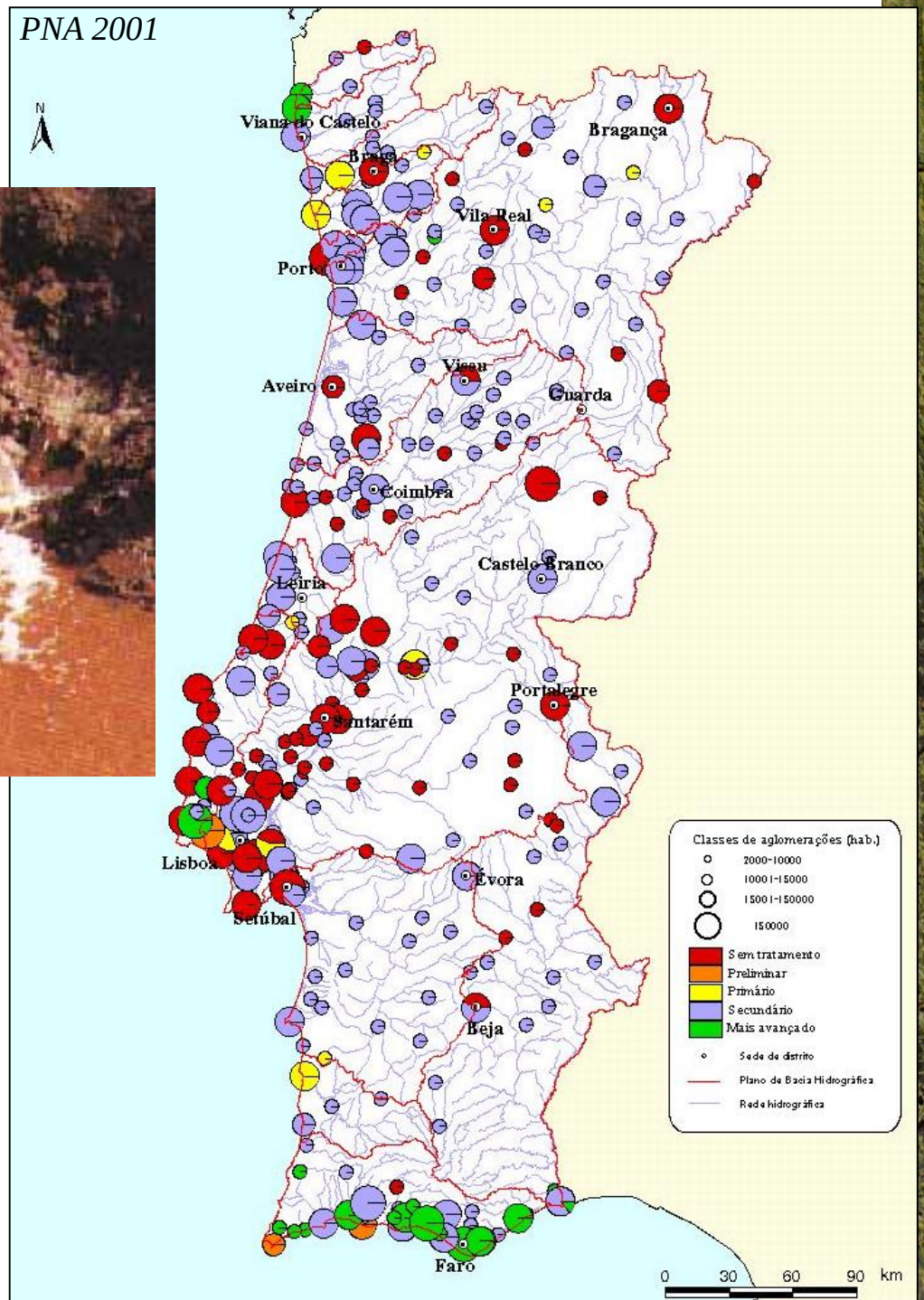




Categories of pressures found in rivers. [GW] *Pressures* also relevant for groundwater bodies [#] Directive on Industrial Emissions, committing European Union member states to control and reduce the impact of industrial emissions on the environment. [$] European Pollutant Release and Transfer Register

Pressure	Main Driver(s)	Pressures included
Point pressures		
Urban waste water [GW] Storm Overflows [GW]	Urban development	Included or not in the UWWT Directive. Includes discharges from non-manufacturing commercial areas which can largely be assimilated to urban waste water. Includes discharges of raw or partially treated urban waste water which are identified as point sources. Overflows from separated or combined sewers identified as point sources (for diffuse see 'Diffuse – Urban run-off' below). Point sources due to urban or industrial waste disposal sites.
IED plants [#]	Industry	Industrial point sources from plants included in the E-PRTR[$]. Any industrial point sources not included in the E-PRTR[$].
Contaminated Sites/Abandoned industrial sites [GW] Waste disposal sites [GW] Mine waters [GW]	Industry	Pollution resulting from an abandoned industrial site or a site contaminated due to past industrial activities, illegal dumping of industrial waste or a pollution accident and which is identified as point source Point sources due to the collection of water in an open pit or underground mine which has to be brought to the surface in order to enable the mine to continue working. It does not include waste water from the industrial processes
Point - Aquaculture	Aquaculture	

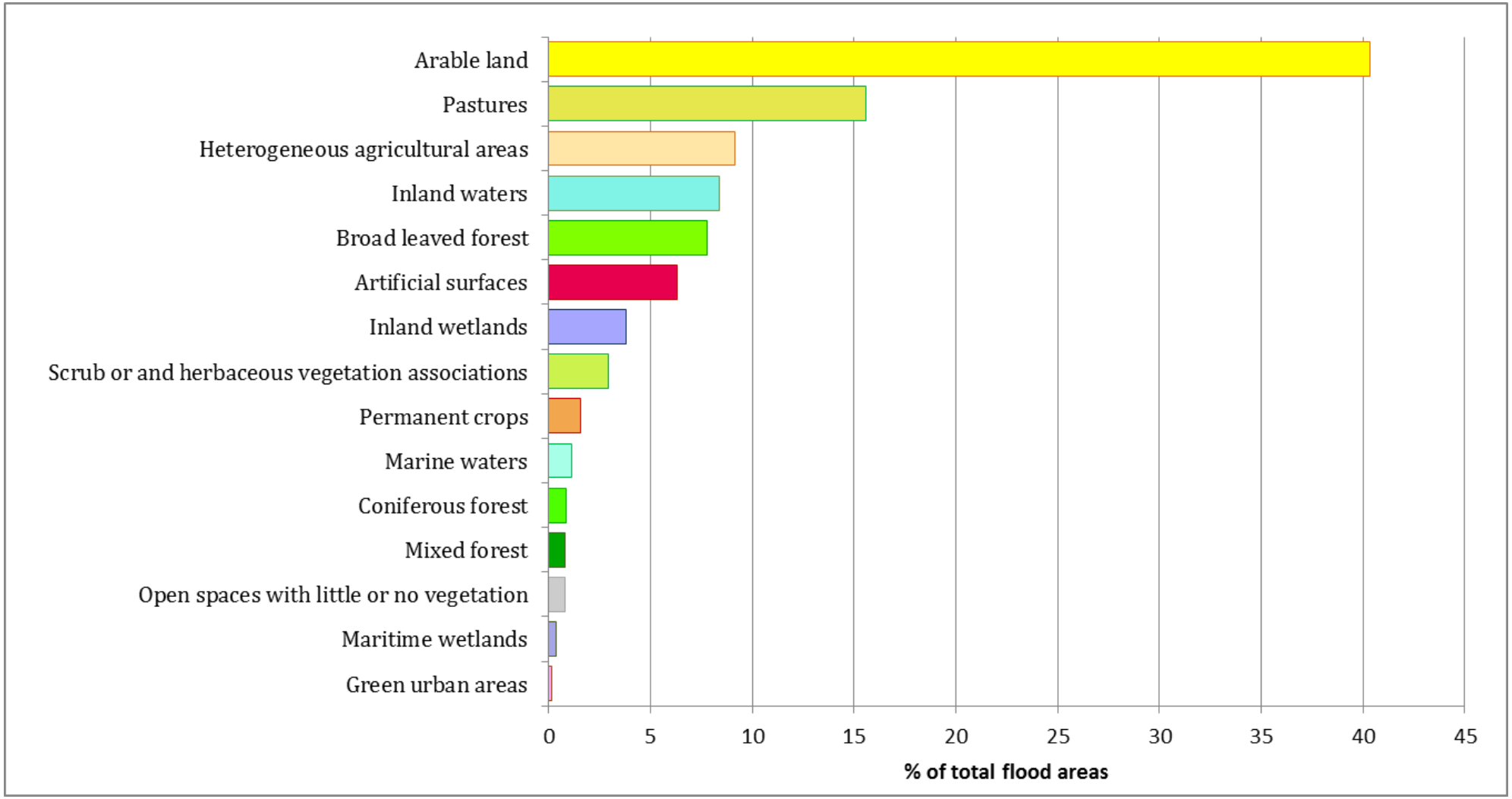
PNA 2001



POINT SOURCES OF POLLUTION

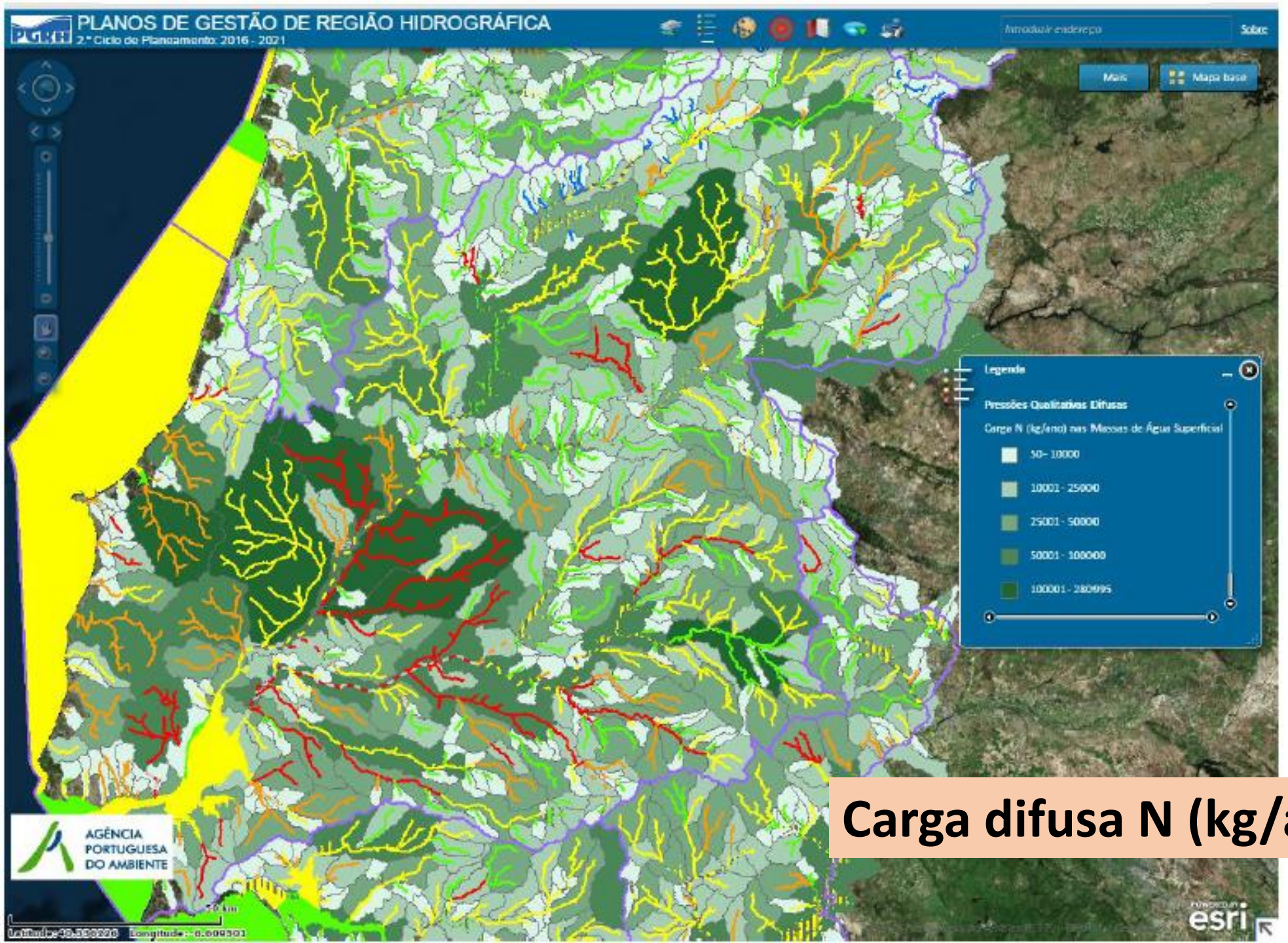
Diffuse pressures		
Urban run off [GW] Discharges not connected to sewerage network	Urban development, Industry	Storm overflows and discharges in urbanized areas not identified as point sources Pollution resulting from urban waste water not connected to sewers and identified as a diffuse source
Agricultural [GW]	Agriculture Forestry Transport	Pesticides and nutrients from manure Diffuse pollution from road and train traffic, aviation and infrastructure
Contaminated sites/Abandoned industrial sites [GW]	Industry	Pollution resulting from an abandoned industrial site or a site contaminated due to past industrial activities, illegal dumping of industrial waste or a pollution accident and which is identified as diffuse source (for point see above 'Point – Contaminated sites/abandoned industrial sites). This category does not cover existing industrial activities.
Atmospheric deposition	Agriculture, Energy non-hydro, Industry, Transport, Urban development	Diffuse pollution from atmospheric deposition from any origin
Mining	Industry	Pollution from mining activities which are identified as diffuse (for point sources see categories above)
Aquaculture	Aquaculture	

Pressure – land use in Europe



IRRIGATION AREA IN PORTUGAL

DIFFUSE POLLUTION
EUTROPHICATION



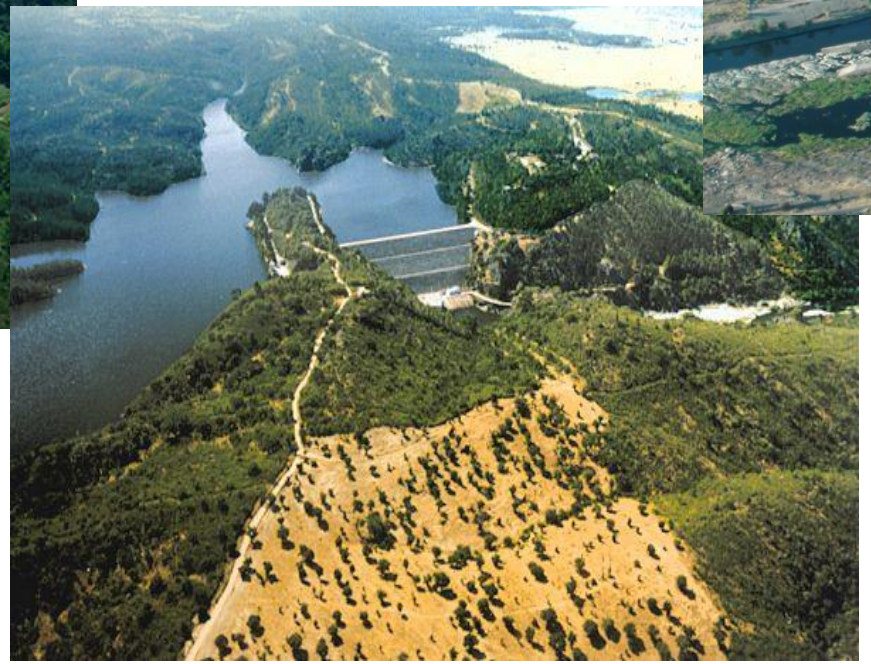
Carga difusa N (kg/ano)

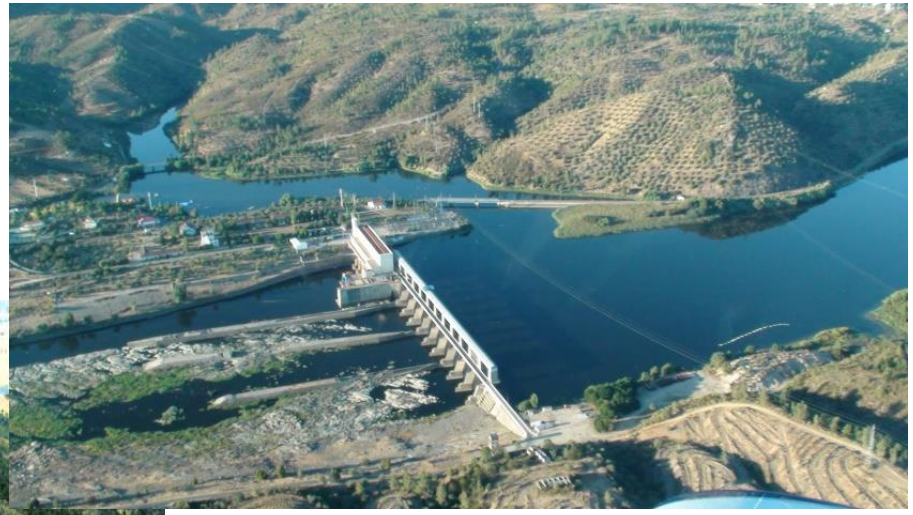

Albufeira de Cedilho, rio Tejo 2015

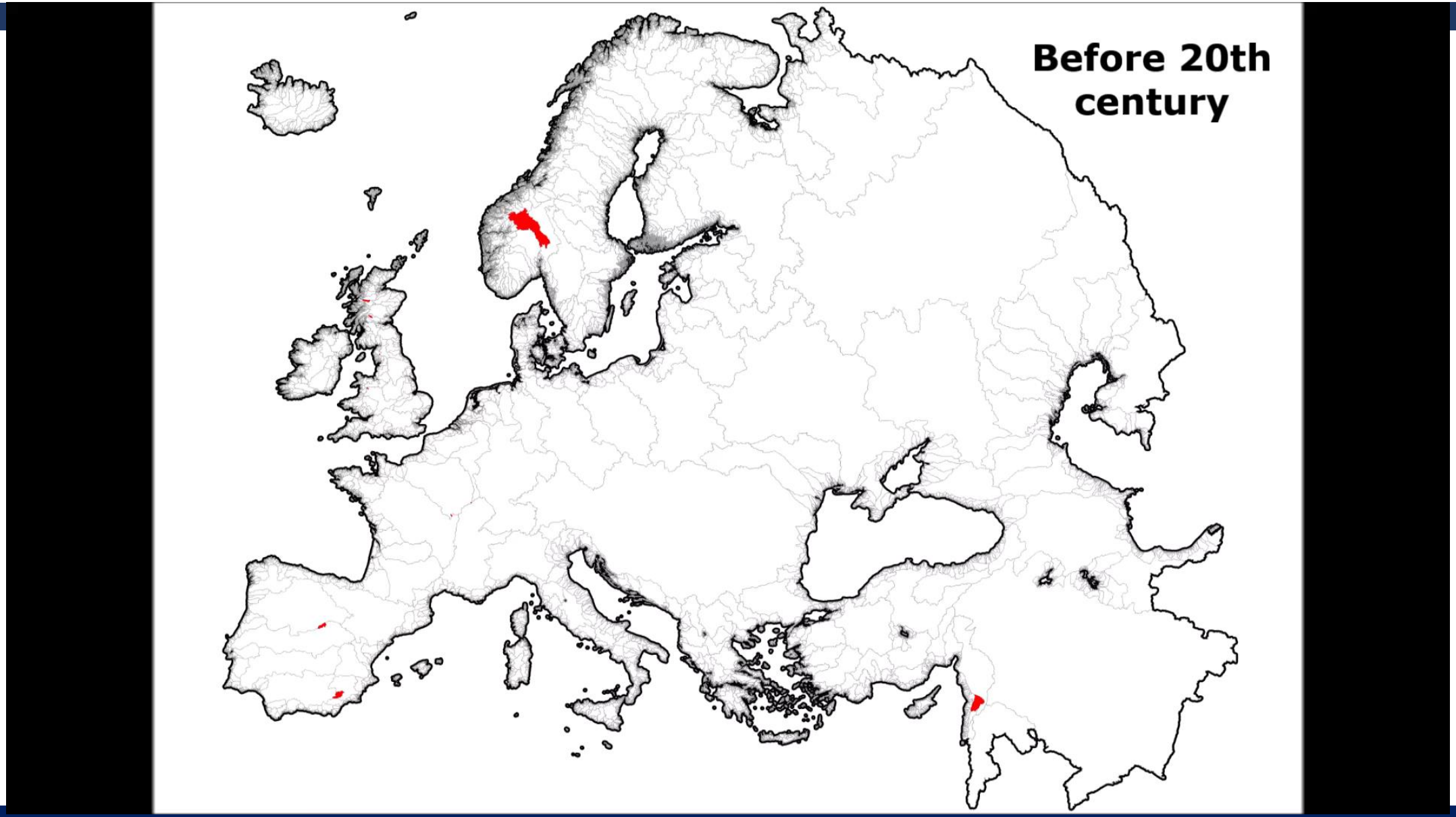

Rib. SÔR 2017

Physical and hydrological alteration		
Abstraction/Flow Diversion of surface waters	Agriculture [GW] – Public Water Supply [GW]– Industry Energy non-hydro Aquaculture	Includes water transfers and abstractions for irrigation and livestock breeding. Includes water transfers. Affection to transitional and/or coastal waters possible only in case of desalination plants. Abstraction for industrial processes (cooling water is covered under the category 'Abstraction – cooling water') Typically off-line fish farms
Physical alteration of channel/bed/riparian area/shore of water body	Flood protection, Agriculture navigation Transport	Refers largely to longitudinal alterations to water bodies. Refers largely to longitudinal alterations to water bodies. Includes land drainage to enable agriculture activities. Refers largely to longitudinal alterations to water bodies
Dams, barriers and locks for hydropower	Energy – hydropower Flood Protection Urban development Agriculture Recreation Industry, Energy non-hydro	Small dams are used in rivers to create recreational areas (bathing waters) and also angling areas Dams are sometimes created to provide freshwater for large industry e.g. typically for cooling purposes
Hydrological alteration	Agriculture Transport Energy – hydropower public water supply Fisheries and aquaculture Climate change	A change in the flow and water level regime (e.g. due to land drainage) including dry river beds or lakes falling dry A change in the flow and water level regime - typically due to inland navigation including dry river beds or lakes falling dry A change in the flow and water level regime (e.g. hydropeaking) including dry river beds or lakes falling dry Change of mean or extreme values beyond long-term natural variability range

LARGE BARRIERS AND FLOW REGIME ALTERATIONS

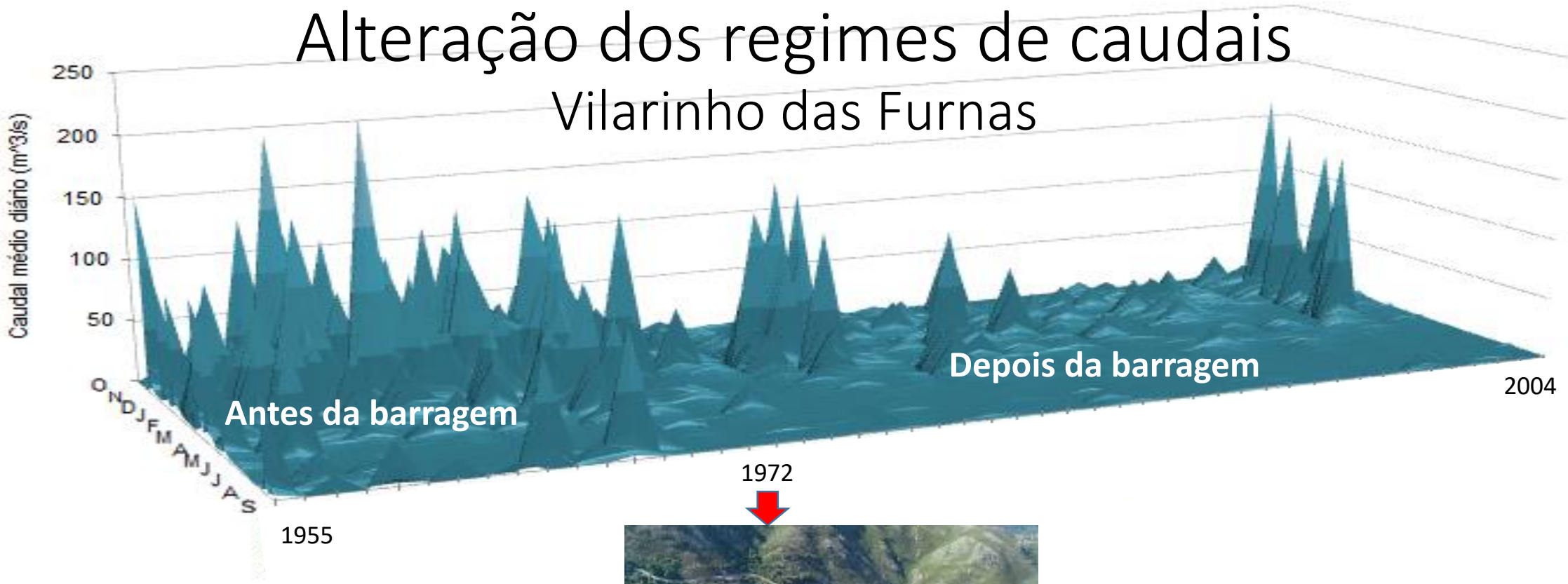





Before 20th century

Alteração dos regimes de caudais

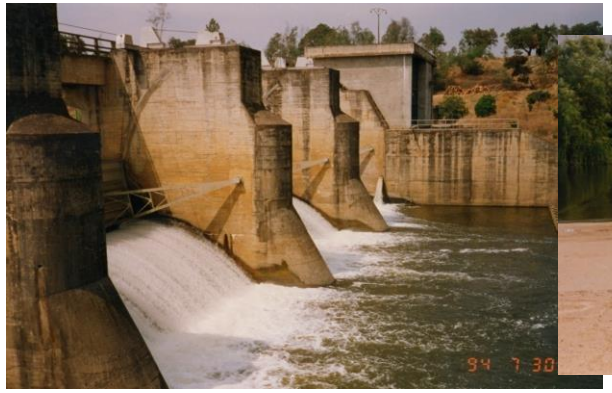
Vilarinho das Furnas



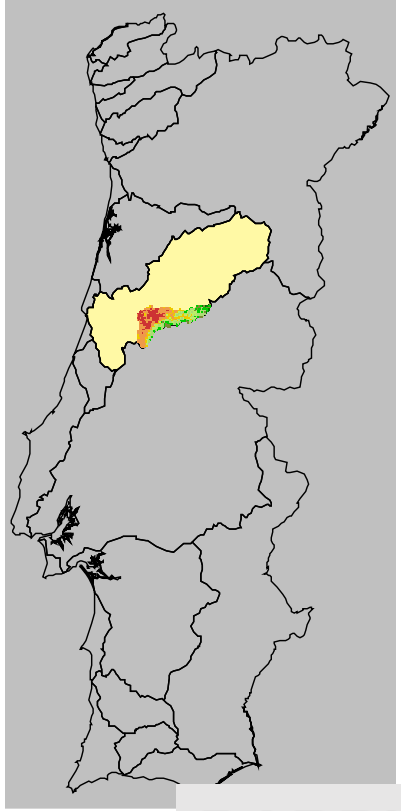
1972

HYDROPEAKING AND SHORT TERM ALTERATIONS OF THE FLOW REGIME

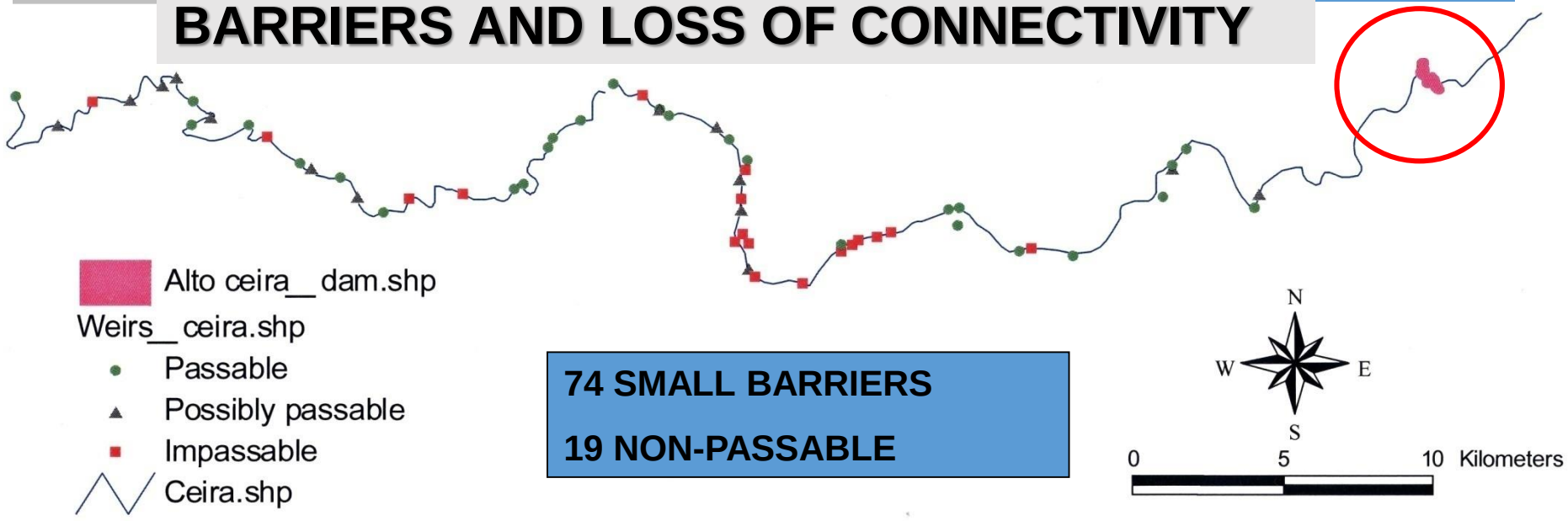
SMALL BARRIERS AND BED ALTERATIONS



SMALL BARRIERS, WEIRS AND OBSTACLES



BARRIERS AND LOSS OF CONNECTIVITY



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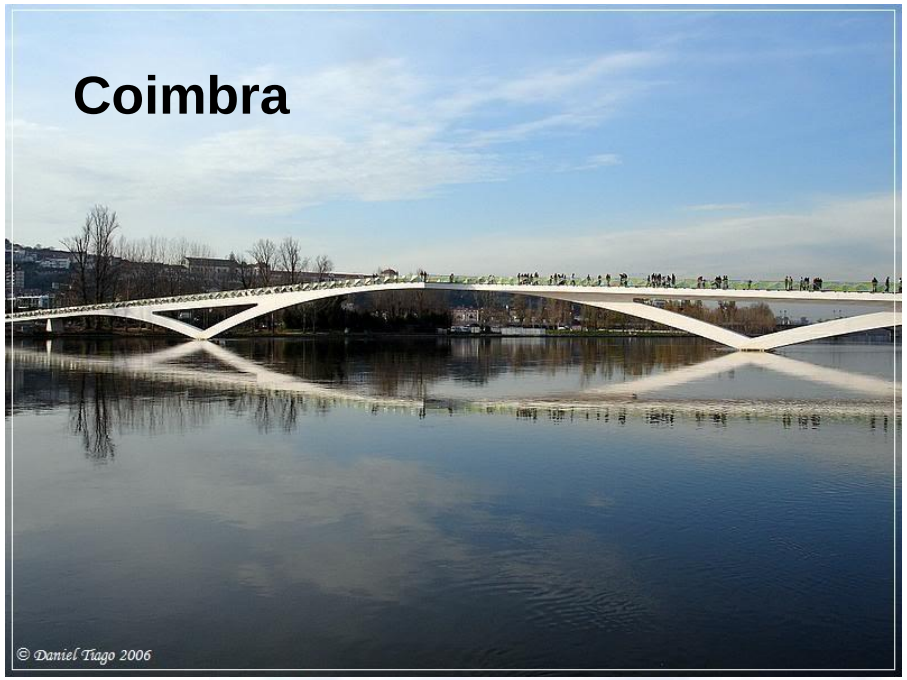
INSTITUTO SUPERIOR DE AGRONOMIA

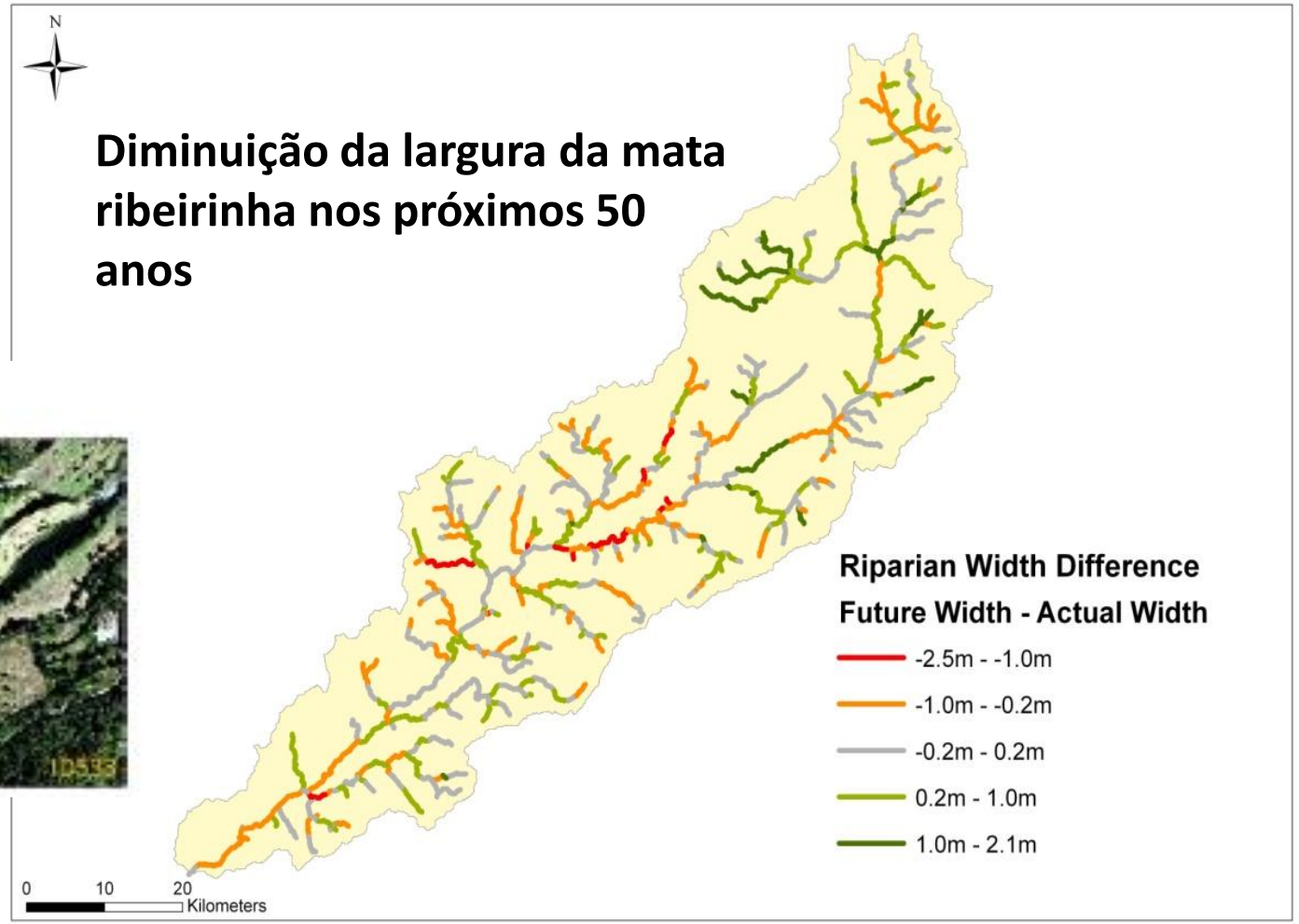
PRESSÕES MORFOLÓGICAS

URBAN DEVELOPMENT, BED IMPERVIOUSNESS AND ARTIFICIALIZATION



Groundwater pressure (only relevant for groundwater bodies)		
Groundwater recharges alterations	Agriculture, Energy – non-hydro Industry Urban development Climate change	Change in long-term average (trend), seasonal or extreme event return periods leading to change in groundwater resource availability (groundwater level and yield decline and groundwater drought), reduced base-flow to surface waters and groundwater-dependent wetlands and potentially changes in groundwater qualitative status due to reduction in dilution. Increased recharge may be associated with anomalously high groundwater levels and may be associated with groundwater flooding, sewer discharges and linked surface water quality issues.
Groundwater – alteration of water level or volume	Industry, Urban development	Activities to alter the level of groundwater in order to carry out an underground activity (typically mining or large civil works). This does not include the alteration of the water level due to current or past overexploitation of the groundwater resources (this case is captured under the categories 'Abstraction' below).
Groundwater abstractions	Agriculture Urban development industry	
Biological pressures		
Introduced species and diseases	Transport, Fisheries and aquaculture, Tourism and recreation	Includes invasive alien species.
Exploitation of/removal of animals/plants	Recreation, Fisheries and aquaculture	Commercial fishing or recreational/sports angling, commercial harvesting of plants or algae from water bodies.

Previsão da evolução da mata ripária com o rebaixamento do nível freático estival

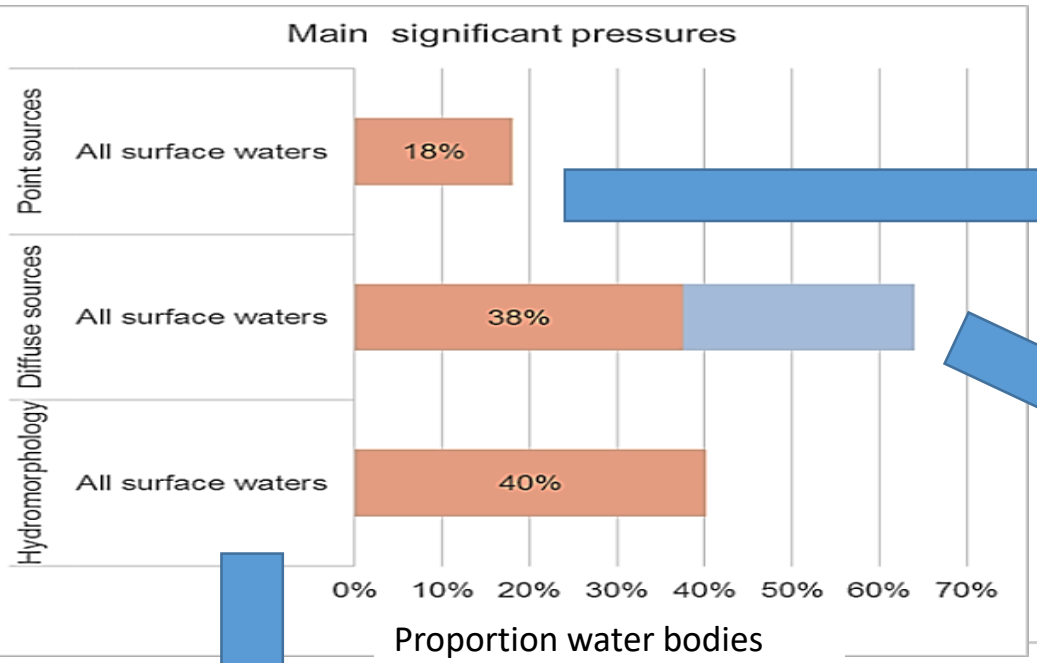


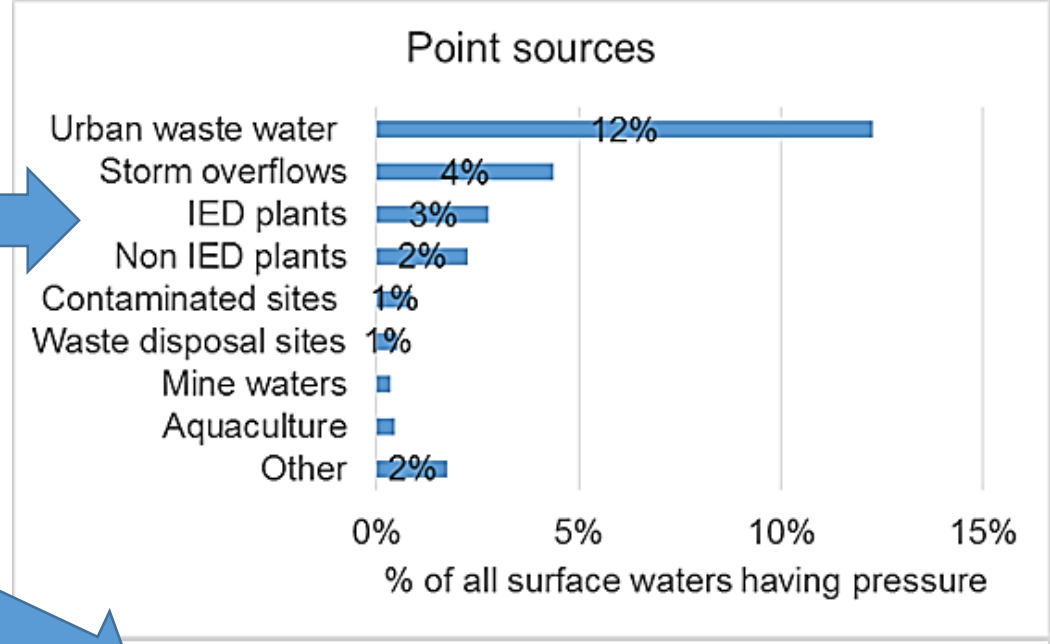
Bacia do Tâmega, Douro

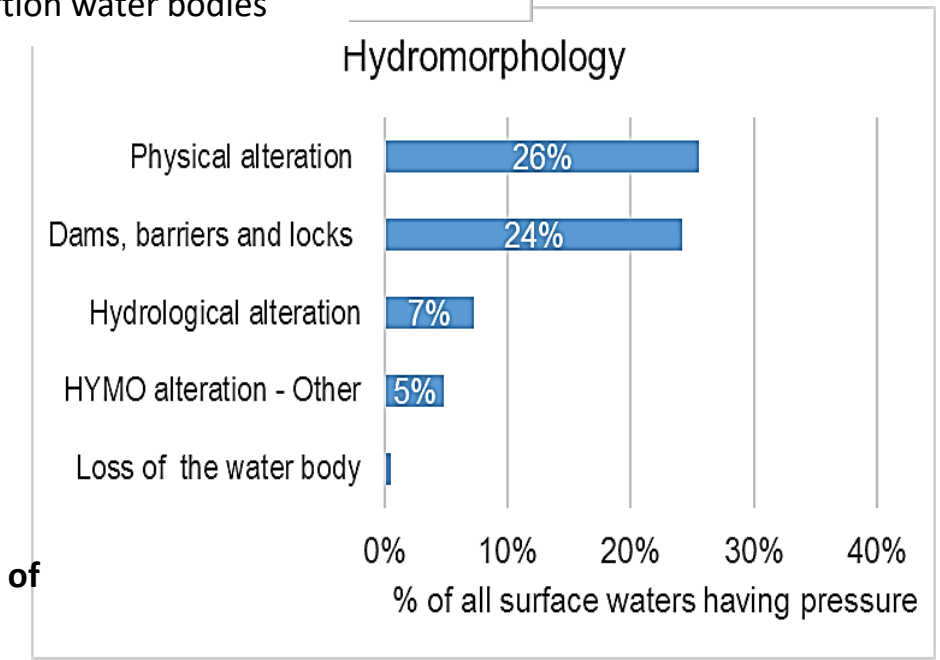
Espécies exóticas: gestão e controle necessários

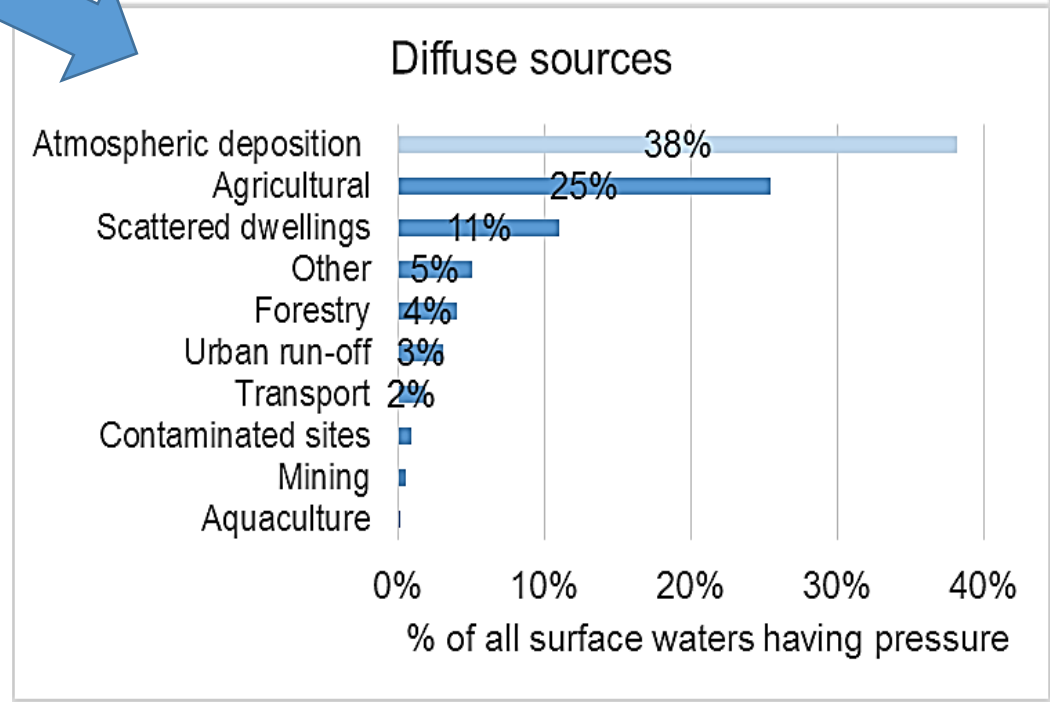
RIBEIRA DE S. PEDRO PINHAL DE LEIRIA

LOSS OF BIOLOGICAL NATURALNESS





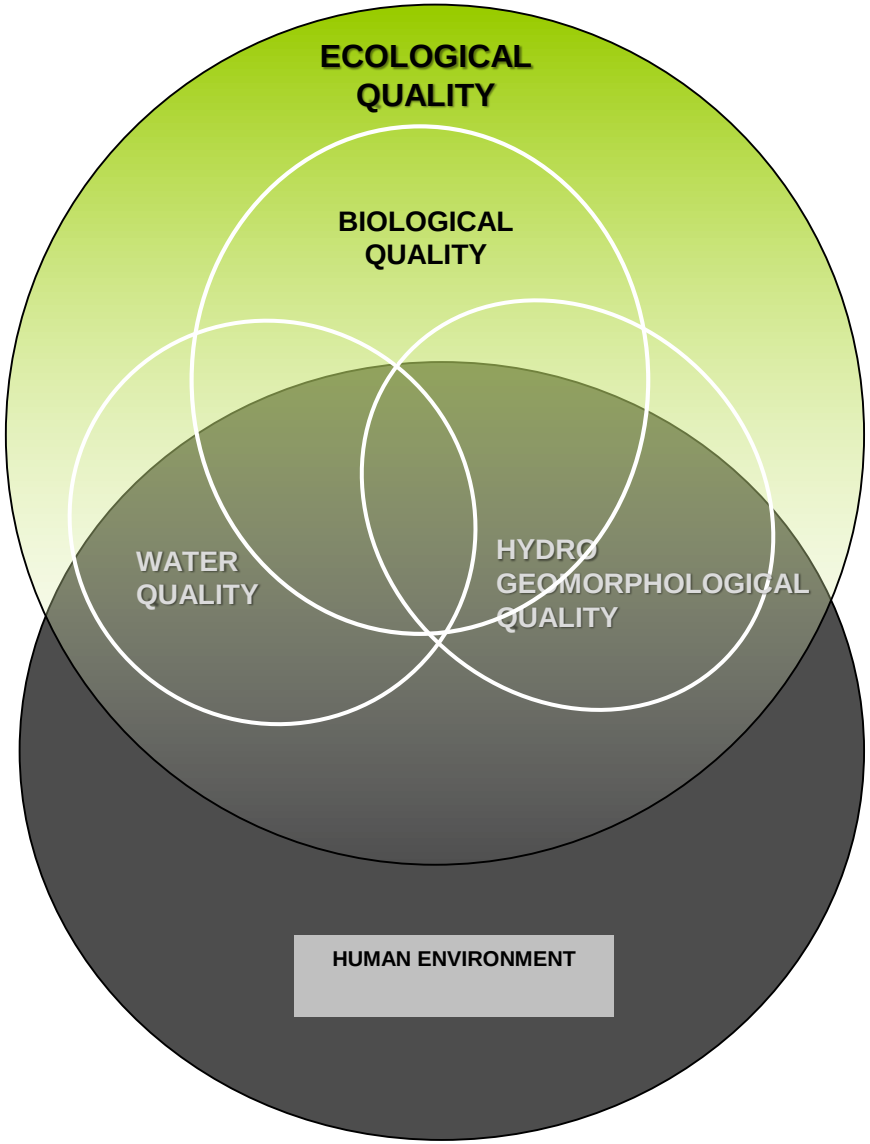




European waters – assessment of status and pressures 2018

WFD Monitoring systems and its indicators

- To evaluate present state and its evolution
- To identify the perturbation causes
- To establish restoration goals
- To establish licensing and rules of human use
- To evaluate the progress in restoration efforts



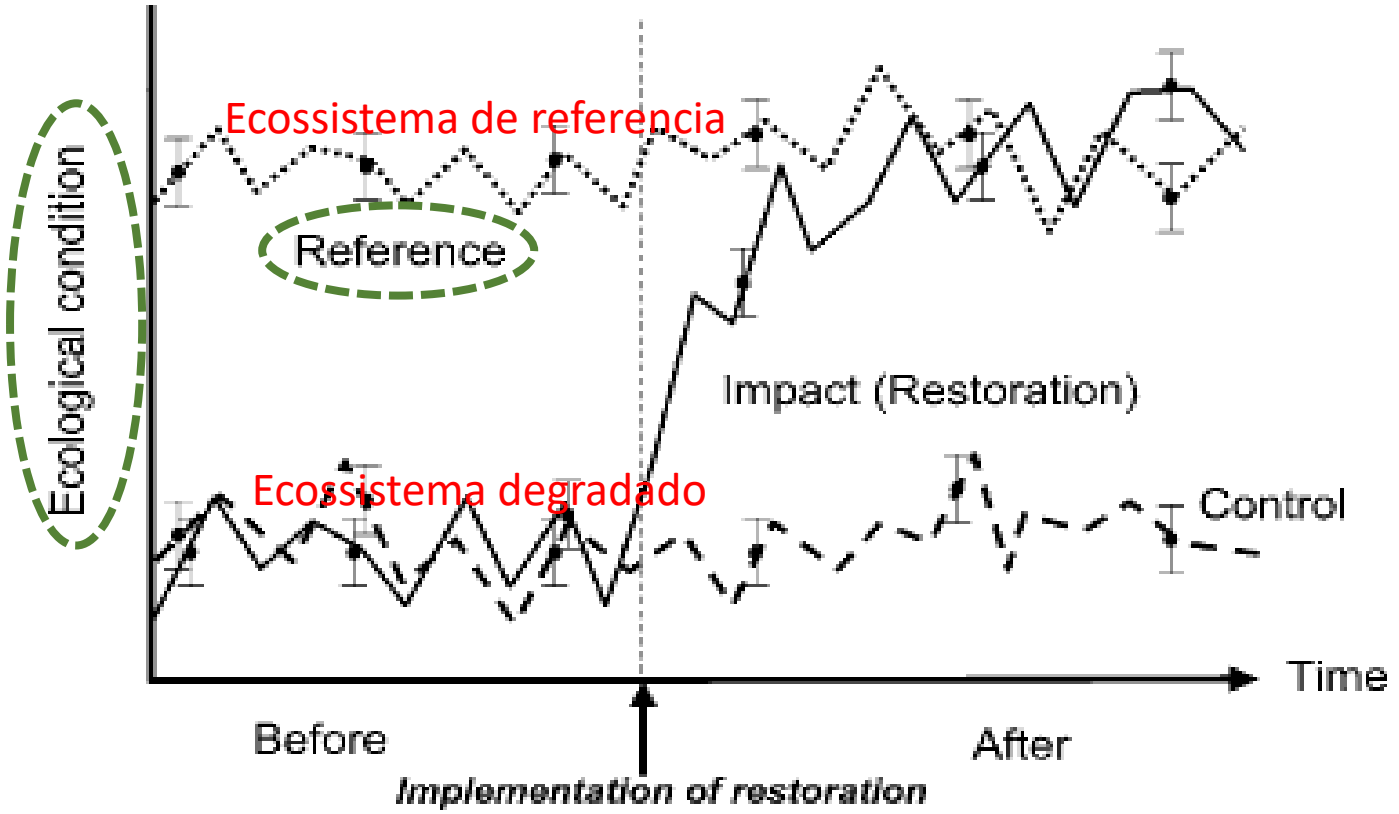
Estado ecológico – estado de funcionamento do ecossistema, incluindo componentes, estrutura e processos

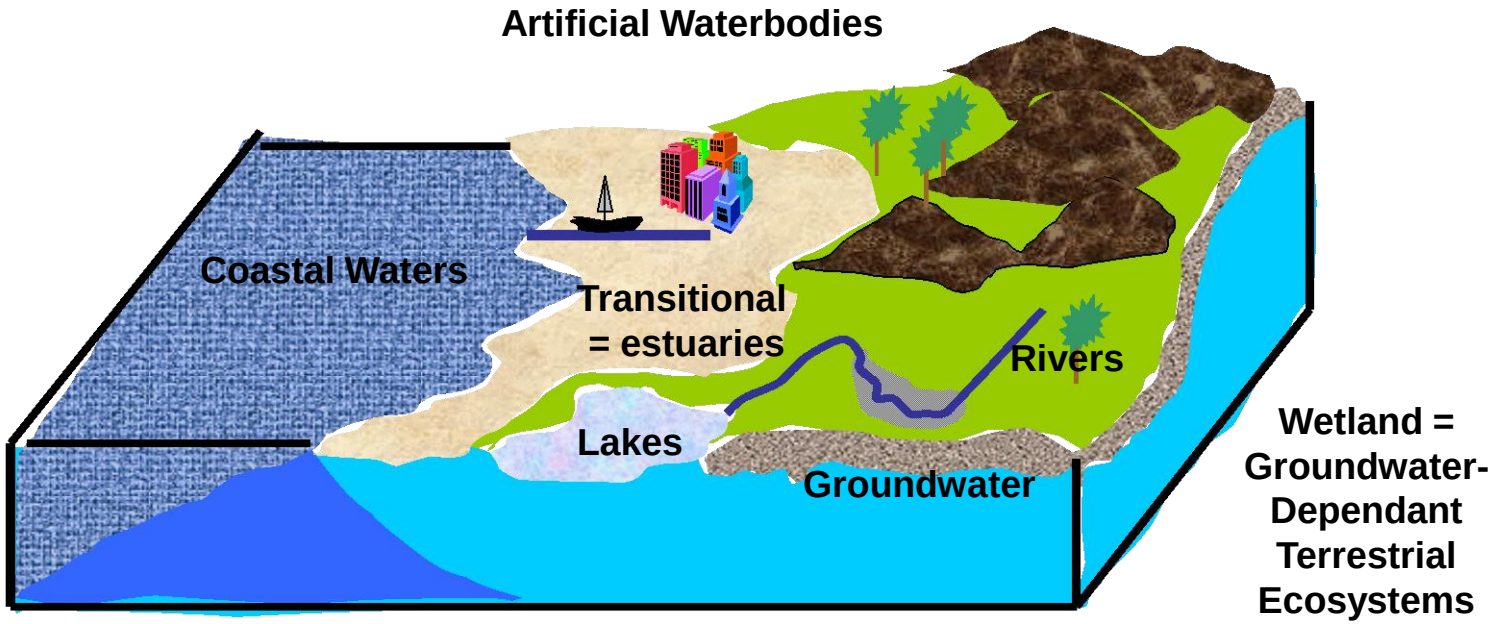
Um bom estado ecológico corresponde a um estado com pouca intervenção humana

METRIC

ANY MEASURE RESPONSIVE TO DEGRADATION REPRESENTING THE ECOSYSTEM, ITS COMPONENTS OR ITS FUNCTIONING

ECOLOGICAL RESTORATION





Categories of water bodies

Typology

- Each category of water body is divided into various types of water body

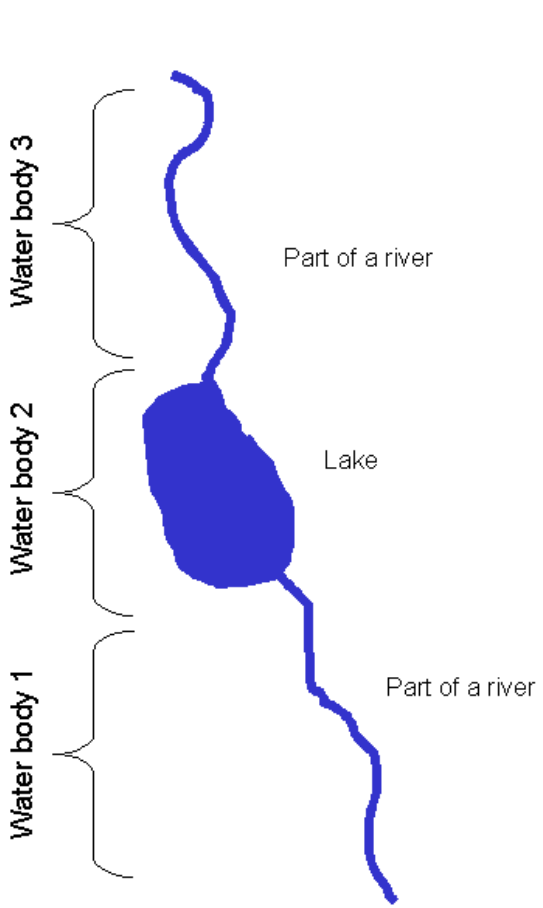
- The typology ensures that similar types of water bodies are compared and that biological and chemical standards are able to protect ecological quality

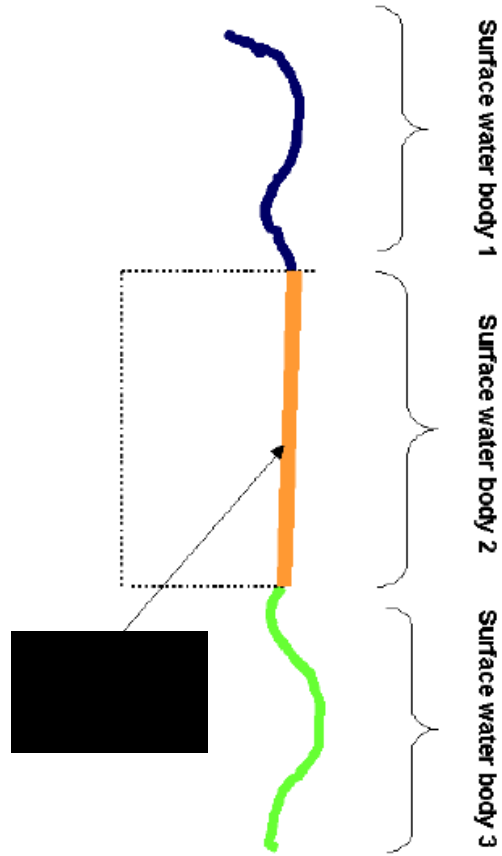
Typology - why

- Different types of river support different natural biology

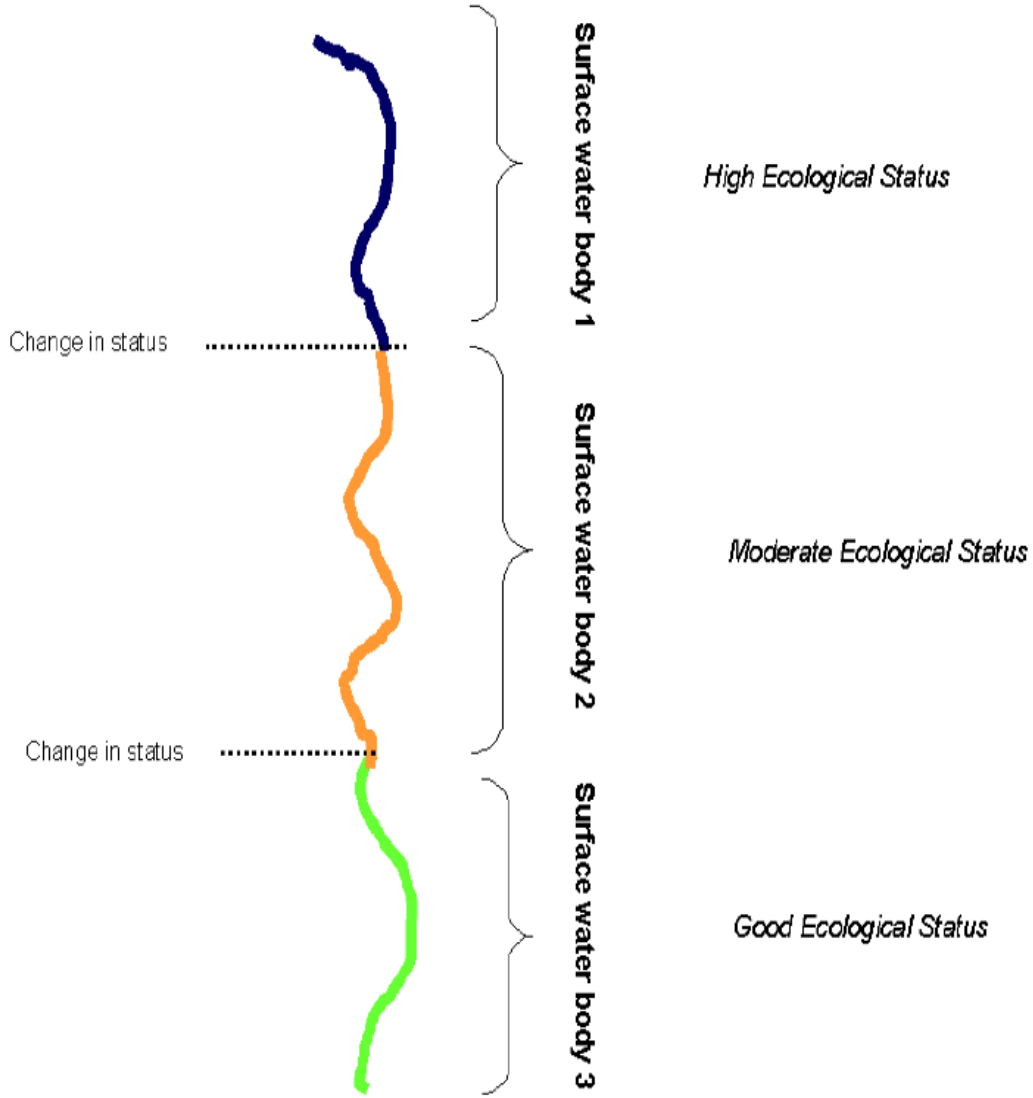
Identification of water bodies: general principles

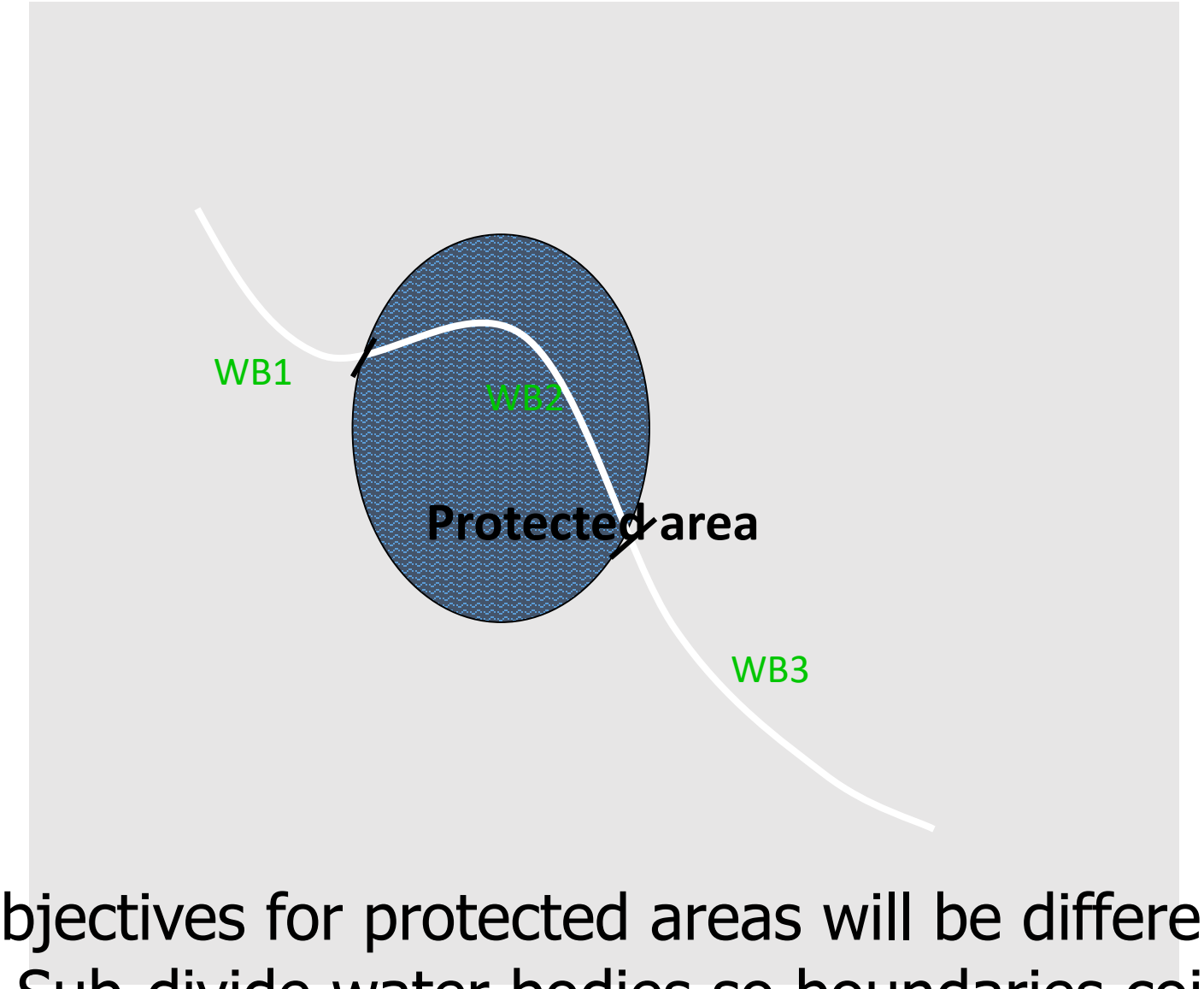
- Water body is a coherent sub-unit of river basin to enable **status** to be described objectively and compared to the **objectives**
- Avoid sub-division into smaller water bodies that do not help this purpose





A surface water body must not cross the boundaries between surface water body types. It must be of one type or another since one purpose of characterising surface water bodies is to differentiate them into types[17].


Change in status
Change in status
Surface water body 1
Surface water body 2
Surface water body 3
High Ecological Status
Moderate Ecological Status
Good Ecological Status

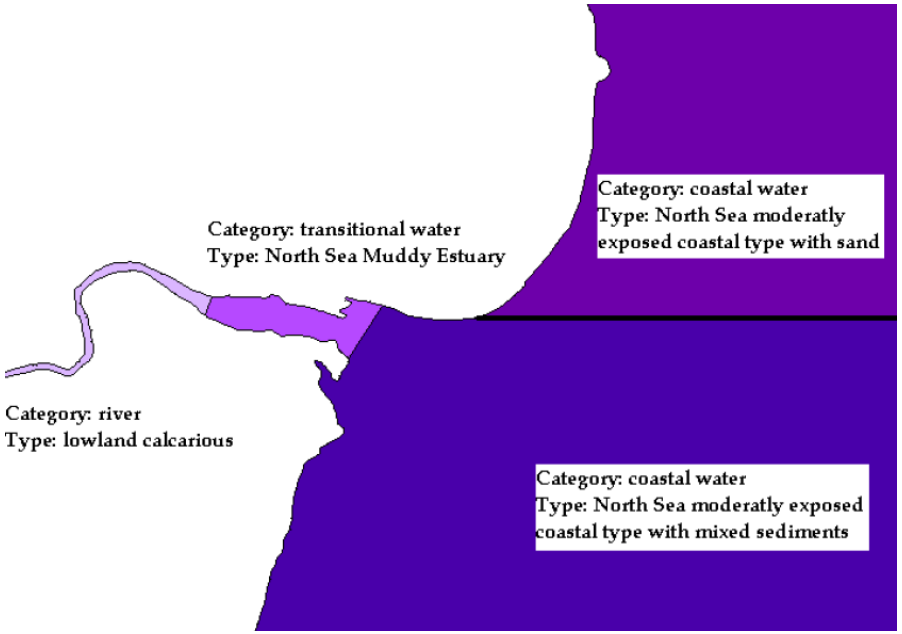


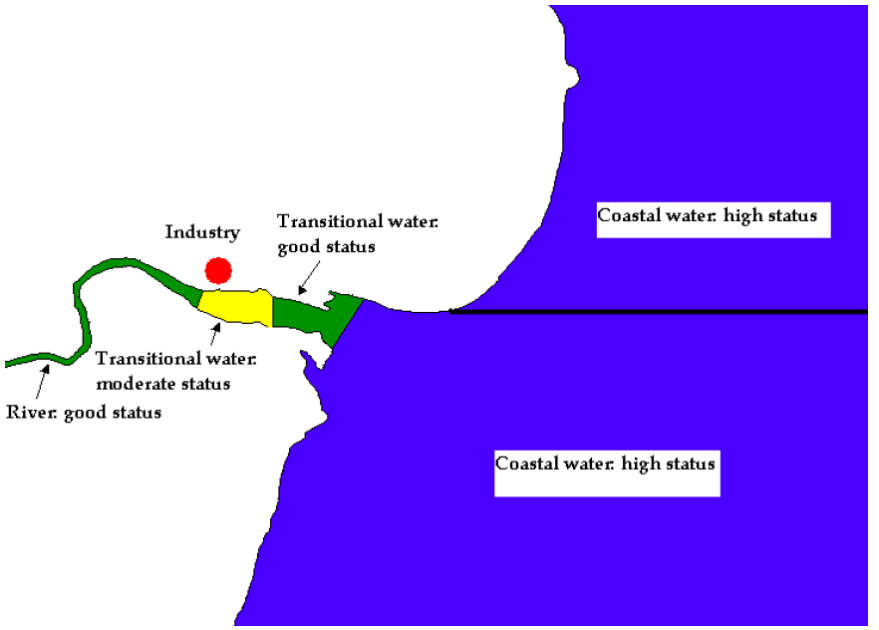
Objectives for protected areas will be different.

Sub-divide water bodies so boundaries coincide with protected area boundaries

Transitional & coastal water bodies

- Same basic principles





Boundaries at

category boundaries

status boundaries

WFD STATE = ECOLOGICAL STATE (BIOLOGICAL+CHEMICAL+HYDROMORPHOLOGICAL) AND CHEMICAL STATE

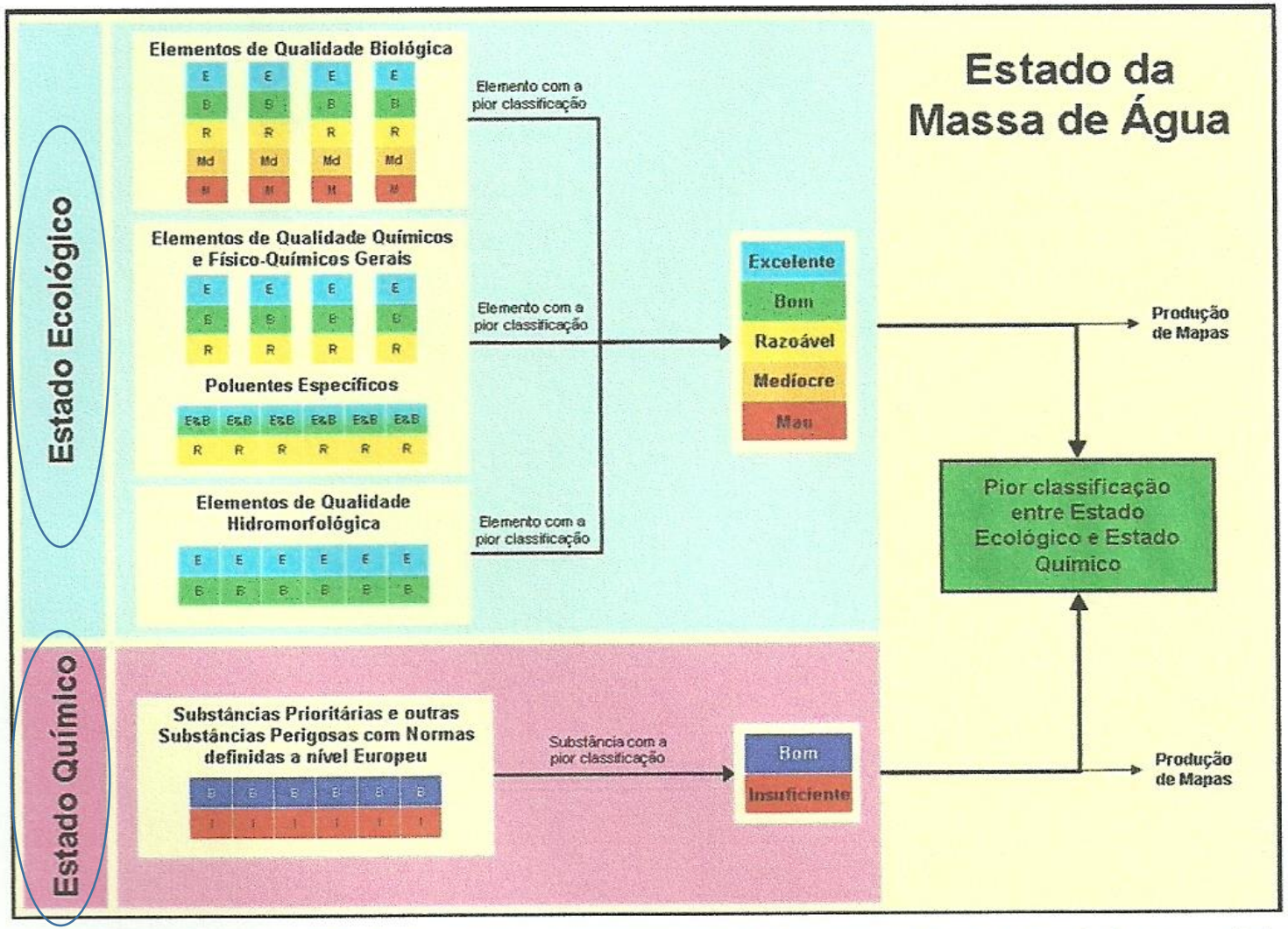


Figura – Modelo conceptual da combinação dos diferentes elementos de qualidade para a classificação do estado das massas de água de superfície (adaptado pelo INAG, I.P. de *Recommendations on Surface Water Classification Schemes for the purposes of Water Framework Directive* UKTAG, 2007)

CLASSIFICATION OF THE ELEMENTS OF ECOLOGICAL STATE

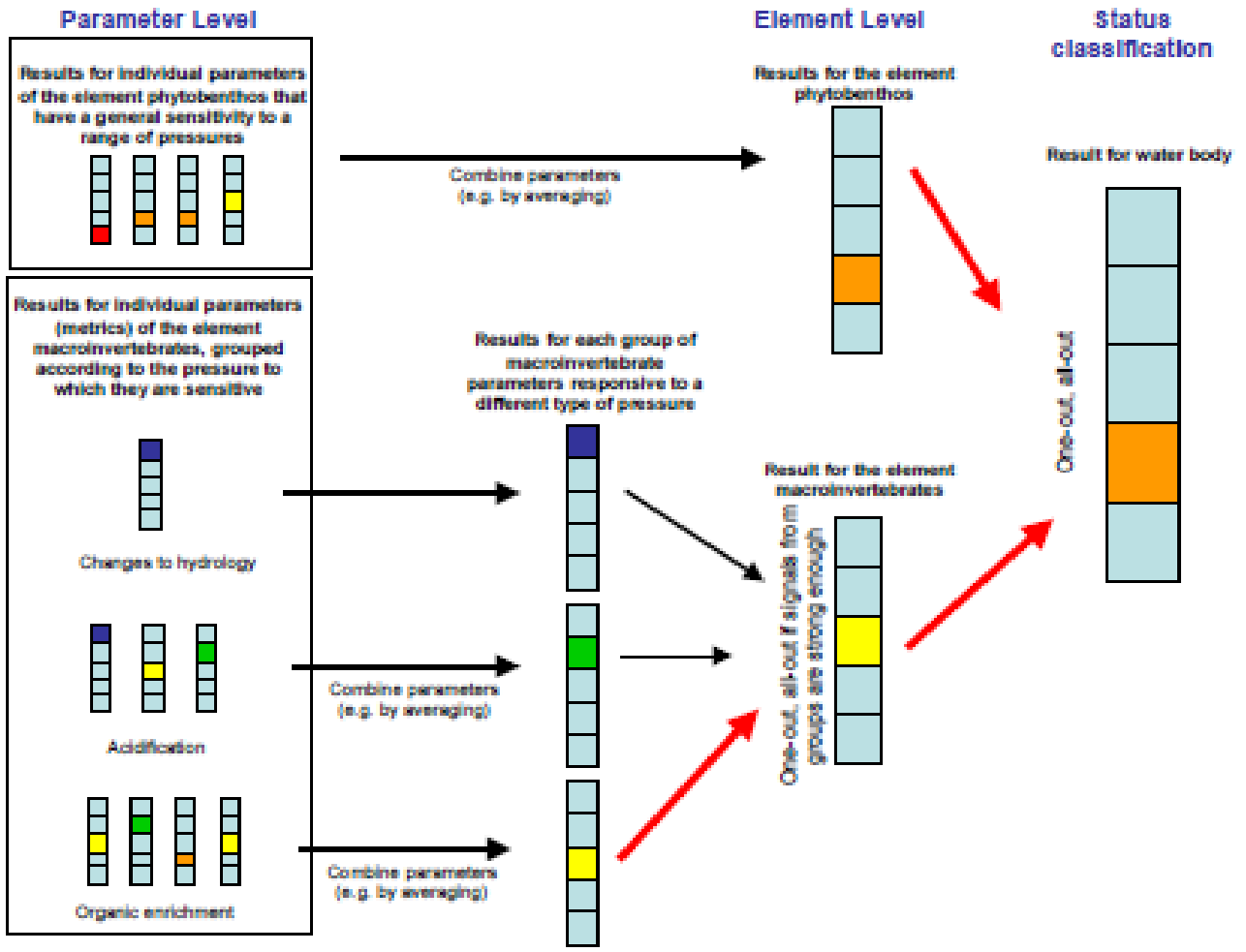
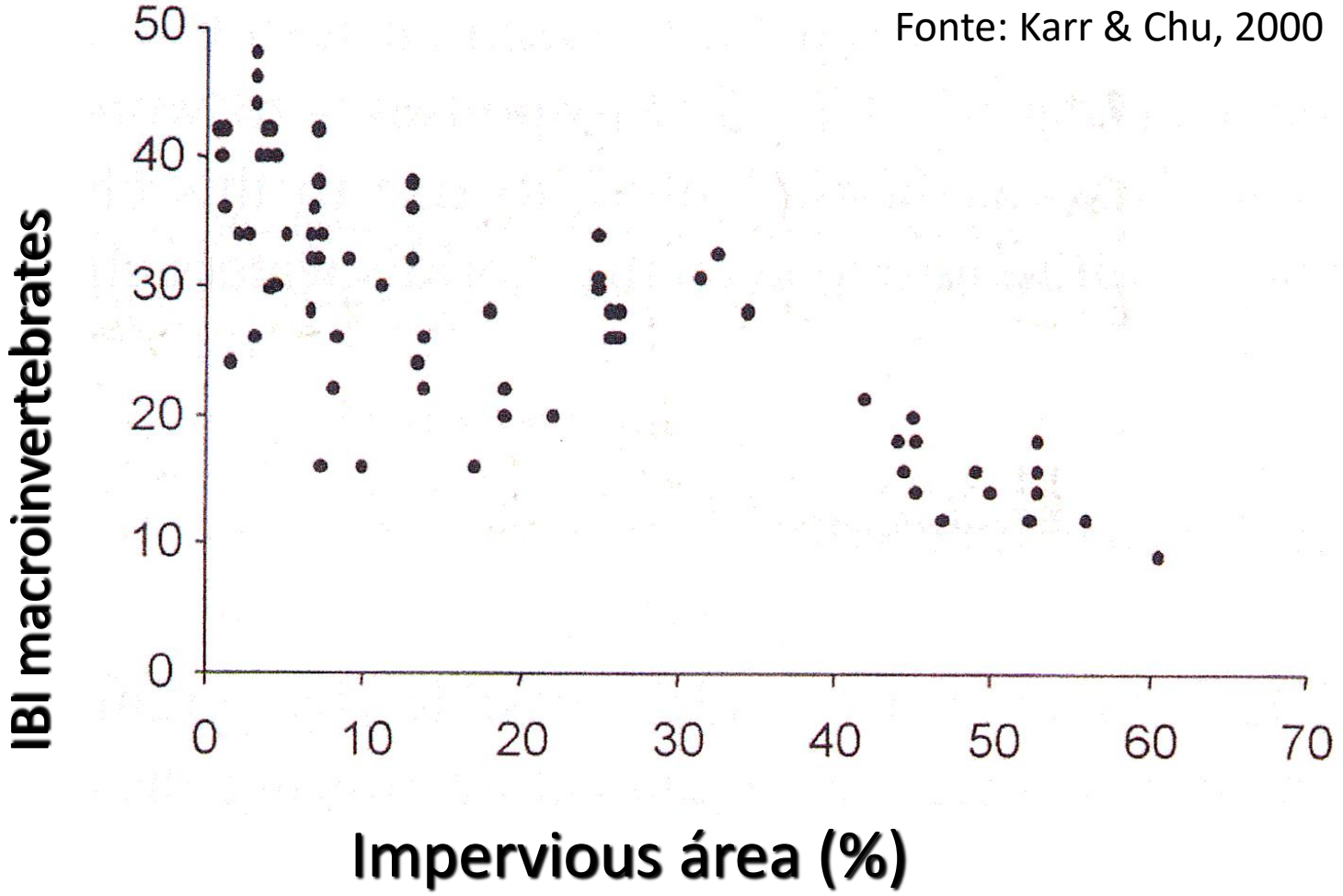


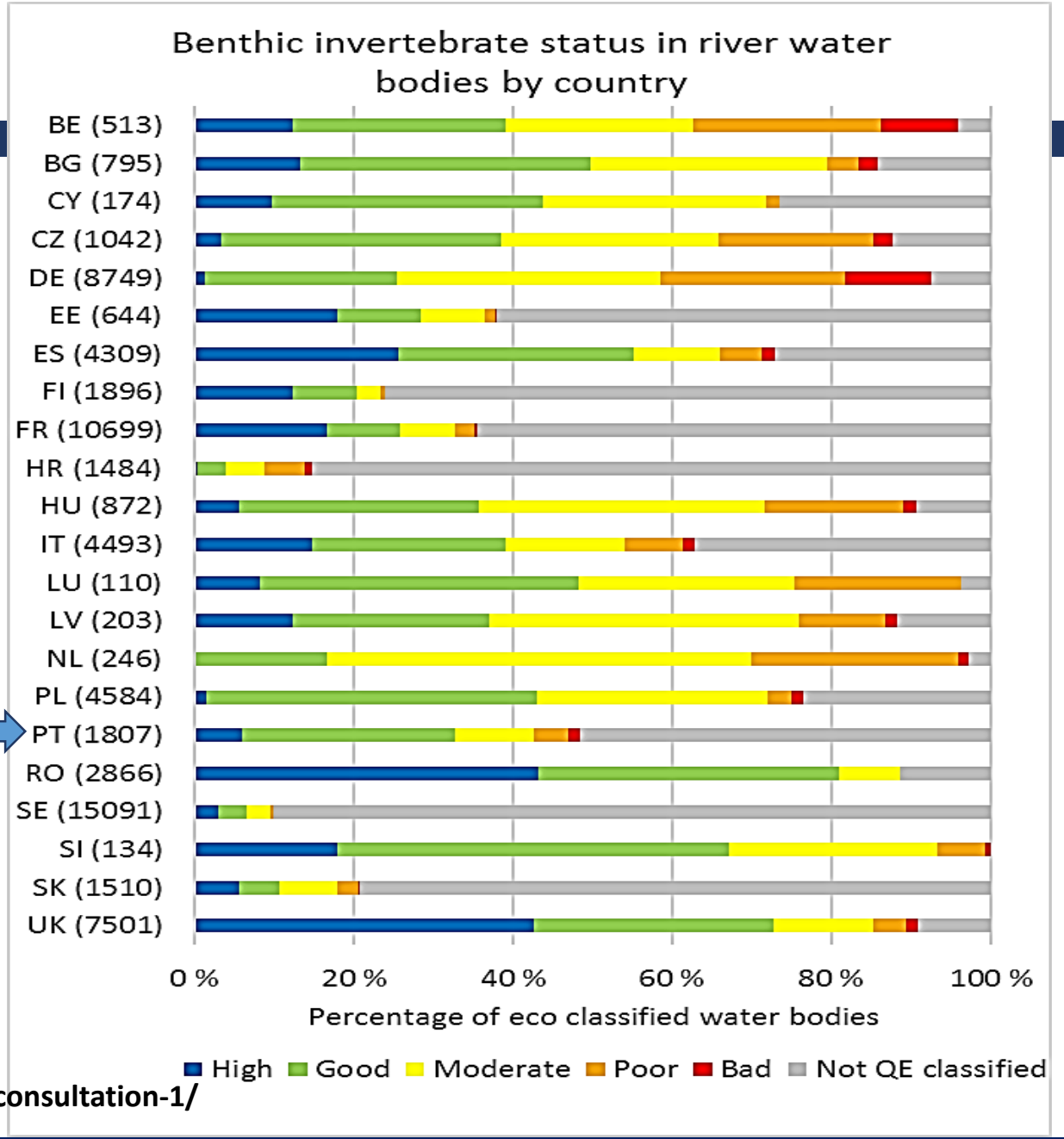
Figure 3. Examples of how indicative parameters may be combined to estimate the condition of the biological quality elements. The one-out all-out principle has to be used on the quality element level as indicated with the phytobenthos example.

INDICATORS SHOULD INDICATE THE CAUSES OF DISTURBANCE

Fonte: Karr & Chu, 2000



Classes de qualidade ecológica no final do primeiro ciclo 2015 para o elemento macroinvertebrados



European waters – assessment of status and pressures 2018
EEA 2018 State of Water report. European Topic Centre.
Version: Third complete draft, 15. January 2018
https://forum.eionet.europa.eu/nrc-eionet-freshwater/library/2018-state-water-consultation-1/

THE SEVERAL BIOLOGICAL ELEMENTS OVERRIDE THE FINAL CLASSIFICATION OF STATE

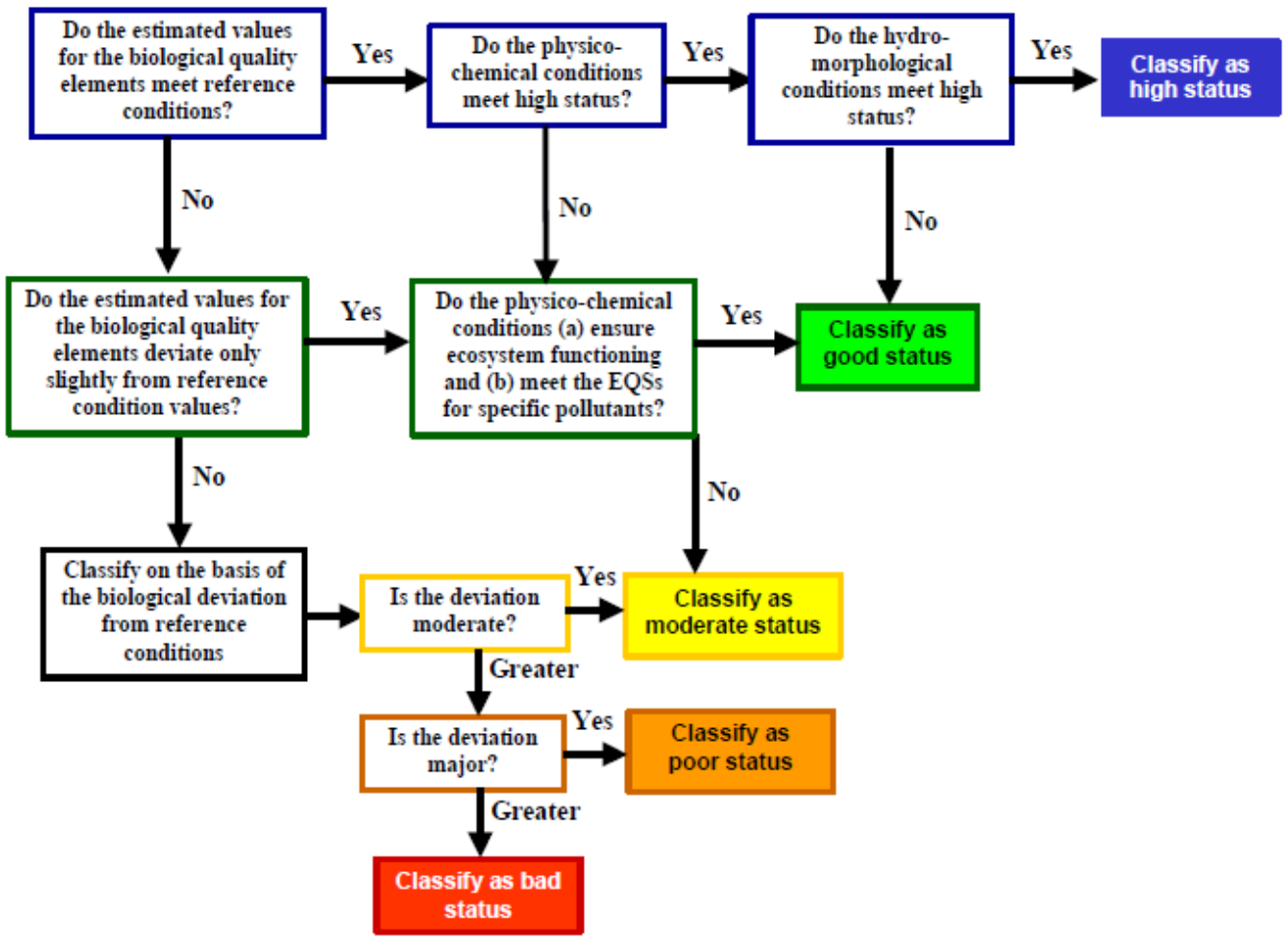


Figure 1. Indication of the relative roles of biological, hydromorphological and physico-chemical quality elements in ecological **status** classification according the normative definitions in Annex V:1.2. [Note: Figure reproduced from REFCOND and COAST guidance

Typology – biological reasons

- Biological quality is based on the fraction (percentage) of value of biological measures at minimally impacted reference state

$$EQR = \frac{\text{value of metric in samples}}{\text{value of metric at reference condition}}$$

- UK invertebrate classification: number of taxa as EQR

  High Status >0.85

  Good Status 0.71-0.85

  Moderate Status 0.57 -0.85

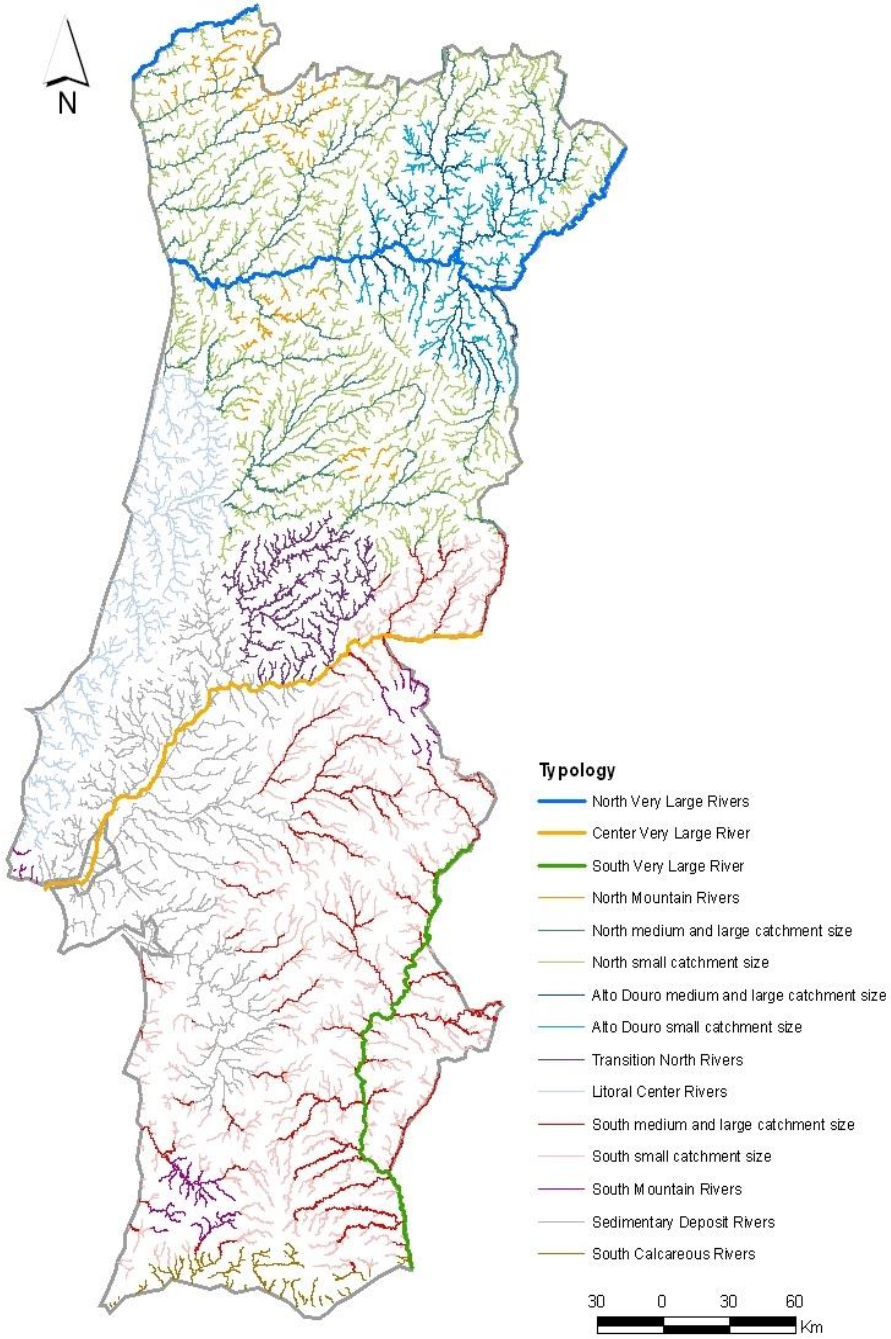
  Poor Status 0.47-0.57

  Bad status <0.47

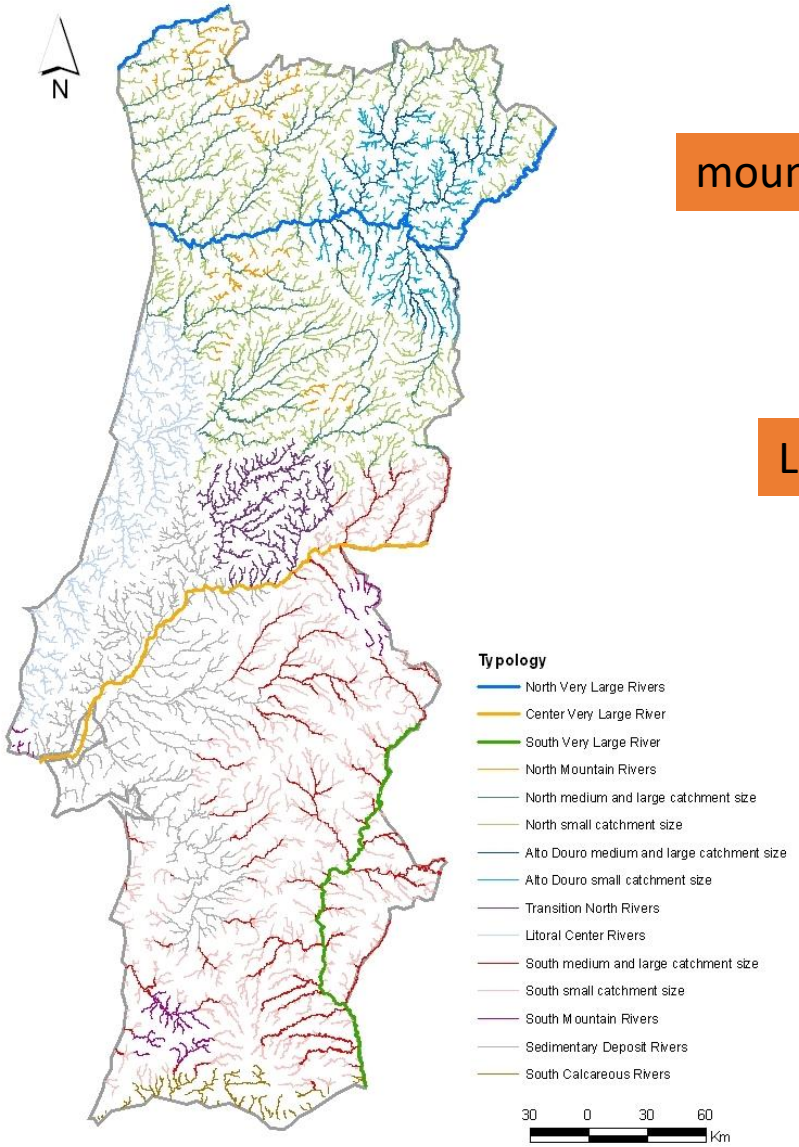
ECOLOGICAL QUALITY

1. **The biota is the basic element. Measured by parameters. METRICS**
2. **Each site belongs to a water category and a RIVER TYPE**
3. **Least disturbed conditions set the scoring of the elements REFERENCE CONDITIONS**
4. **A numerical system measures the deviation EQR**
5. **The classification has 5 CLASSES with different colours and is used for planning and evaluation of success**

- Climate
- Geology and size (> ou 100 km2)
- Adjustment with biota



15 TYPES

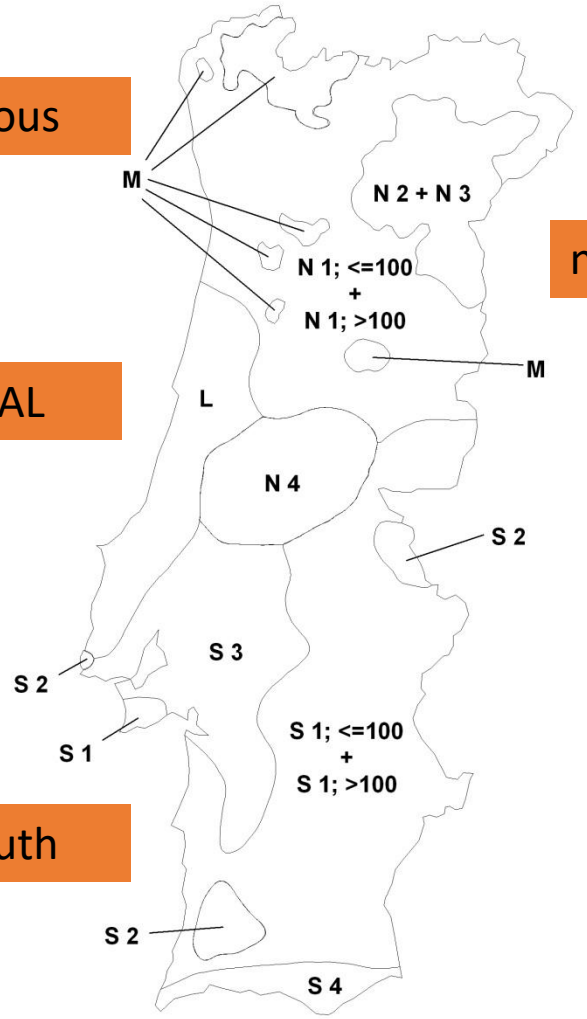


mountainous

north

LITORAL

south



- **4 ecorregions and the hierarchy**

RIOS MONTANHOSOS DO NORTE - profundidade e largura reduzida, vales encaixados as margens e canal dominados por rocha e grandes blocos. Galeria ripária quase ausente.

RIOS DO NORTE DE PEQUENA DIMENSÃO - Largura e profundidade reduzidas, vales côncavos ou em forma de V. Substrato diversificado. Vegetação ribeirinha contínua mas pouco estruturada. Salgueiros.

RIOS DO NORTE DE MÉDIA-GRANDE DIMENSÃO - Média a elevada largura e profundidade, vales côncavos com deposições aluvionares laterais. Substrato diversificado, com sedimentos finos. Galeria ribeirinha contínua e bem estruturada, com amieiros e salgueiros.

RIOS DO ALTO DOURO DE PEQUENA DIMENSÃO - Pequena largura e profundidade, vales encaixados . Mata ripária contínua e bem estruturada. Freixos, amieiros e salgueiros.

RIOS DO ALTO DOURO DE MÉDIA-GRANDE DIMENSÃO - Média a elevada largura e profundidade, vales côncavos e encaixados. O substrato é dominado por blocos e ocasionalmente rocha. A galeria ripária contínua e bem estruturada, com grande diversidade de espécies.

RIOS DE TRANSIÇÃO NORTE-SUL - perfil transversal suave . Moderadamente energéticos. Mata ripária contínua e complexa, com ensombramento elevado, elementos lenhosos na água.

RIOS DO LITORAL Rios de planície e depósitos aluvionares, em vales abertos e de perfil suave. Substrato de elementos finos ou arenosos. A galeria densa, estreita e alta, com amieiros, freixos e choupos.

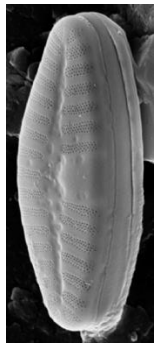
RIOS DO SUL DE PEQUENA DIMENSÃO Pequena largura e profundidade, vales assimétricos,. Substrato do canal grosseiro com areia. Regime hidrológico temporário. Mata ripária variável. Freixos, salgueiros e choupos, loendros, tamujos e tamargueiras.

RIOS DO SUL DE MÉDIA-GRANDE DIMENSÃO Média a elevada largura e profundidade, vales assimétricos. Perfil longitudinal meandrizado. Substrato grosseiro, preenchido, por elementos finos. Mata ripária densa.

DEPÓSITOS SEDIMENTARES DO TEJO E SADO – Vales abertos de perfil suave. Perfil transversal suave e longitudinal sinuoso a meandrizado. Leito dominado por areia e gravilha, com elementos finos. Regime temporário. A galeria ripária densa e contínua, dominada por salgueiros.

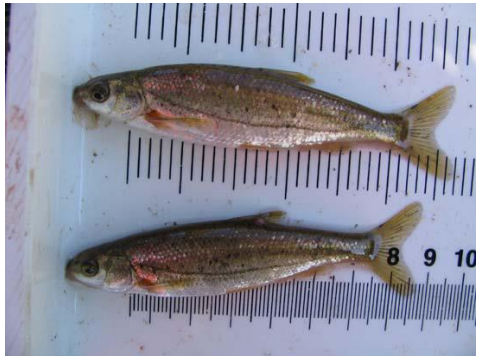
RIOS MONTANHOSOS DO SUL Largura e profundidade reduzidas, vales estreitos. Regime permanente. Leito dominado por materiais grosseiros. A galeria ribeirinha é densa, alta e bem estruturada, dominada por amieiros, freixos e salgueiros, e com abundância significativa de sanguinho-de-água e urze-branca.

CALCÁRIOS DO ALGARVE - largura e profundidade reduzidas, vales côncavos ou assimétricos. Substrato grosseiro, blocos, calhaus e cascalho de origem calcária. Regime hidrológico temporário. A galeria ripícola dominada por salgueiros, freixos e loendros.



Lista de taxa indicadores do elemento biológico fitobentos para os Rios de Transição Norte-Sul

Achnanthes biasolettiana Grunow var.biasolettiana Grunow in Cleve & Grun.
Achnanthes oblongella Oestrup
Cocconeis placentula Ehrenberg var.lineata (Ehr.) Van Heurck
Cymbella minuta Hilse ex Rabenhorst (Encyonema)
Cymbella silesiaca Bleisch in Rabenhorst (Encyonema)
Fragilaria capucina Desmazieres var.vaucheriae (Kutzing) Lange-Bertalot
Gomphonema pumilum (Grunow) Reichardt & Lange-Bertalot
Reimeria sinuata (Gregory) Kociolek & Stoermer



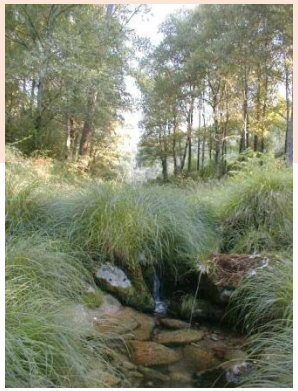
FAUNA PISCÍCOLA REPRESENTATIVA DOS RIOS MONTANHOSOS DO SUL

Ocorrem com maior frequência o Bordalo (*Squalius alburnoides*) nos rios situados na zona da Serra de São Mamede e o Escalo do Arade (*Squalius aradensis*) nos rios situados na zona da Serra de Monchique. Salienta-se ainda, a presença do Escalo do Sul (*Squalius pyrenaicus*) e da Boga do Guadiana (*Chondrostoma willkommii*) neste
tipo de rios.

Lista de taxa representativos do elemento biológico macroinvertebrados bentónicos para os Rios do Sul de Pequena Dimensão

Taxa generalistas
Baetis sp.
Simuliidae
Ancylus sp.
Leuctridae
Ceratopogonidae
Ecdyonurus sp.
Habrophlebia sp.
Caenis sp.

Taxa específicos
Isoperla sp.
Oulimnius sp. Lv.
Oulimnius sp. Ad.
Limoniidae



MACRÓFITOS DOS RIOS DO ALTO DOURO DE PEQUENA DIMENSÃO

Baixa riqueza total, acompanhada por um número reduzido de helófitos e hidrófitos. Cobertura significativa por *Carex elata ssp. reuterana*. Espécies com maior contribuição para a diferenciação tipológica: *Fraxinus angustifolia, Oenanthe crocata,Salix atrocinerea, Alnus glutinosa, Mentha suaveolens, Brachypodium sylvaticum, Pteridium aquilinum, Athyrium filix-femina, Scirpoides holoschoenus, Juncus effusus, Holcus lanatus, Urtica dioica, Crataegus monogyna, Hypericum undulatum, Scrophularia scorodonia.*

274 PORTUGUESE TAGUS WATERBODIES (REPRESENTED 7 RIVER TYPES)

Fonte: PGBH Tejo

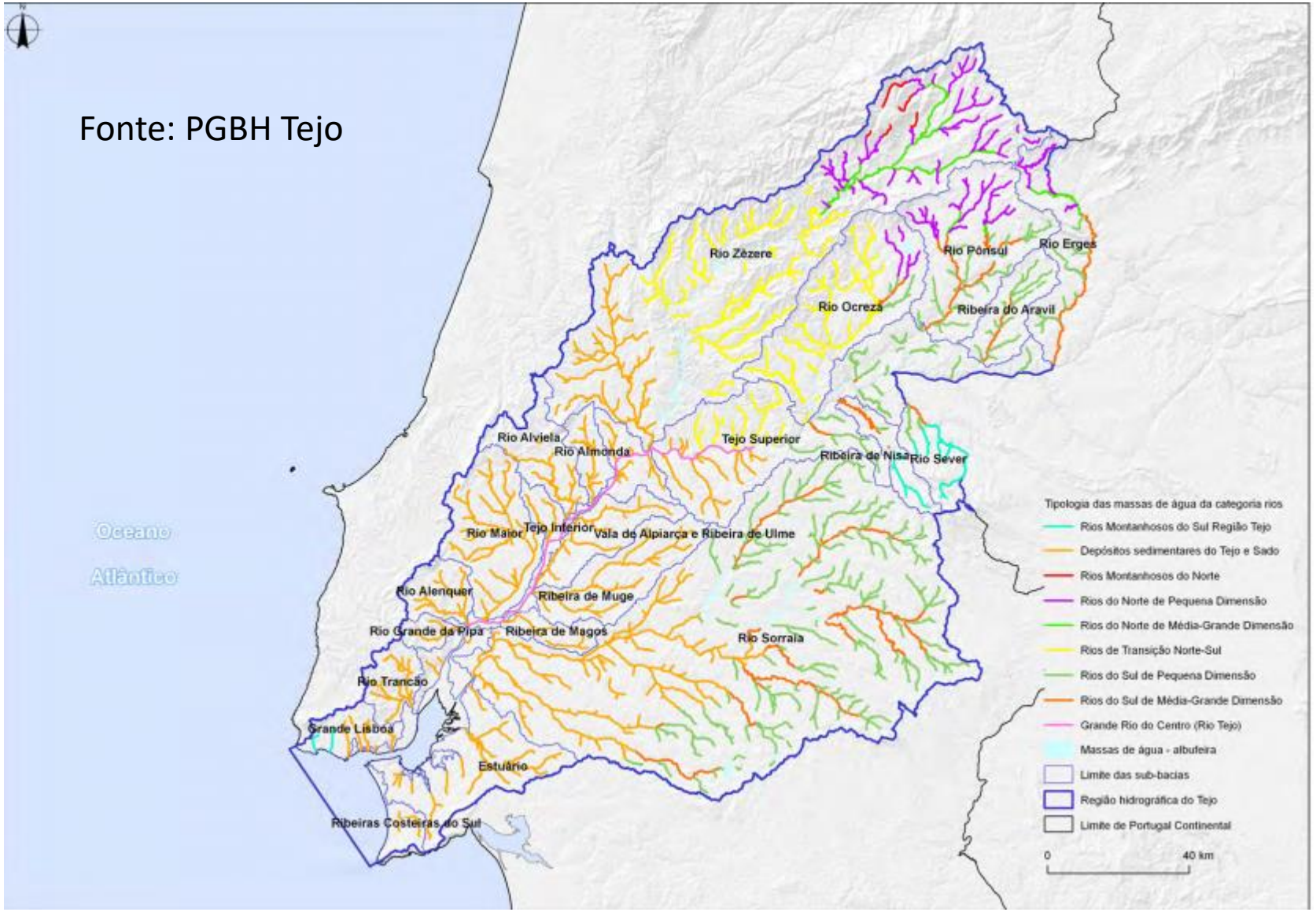


Table 1. Quality elements to be used for the assessment of ecological status/potential based on the list in Annex V, 1.1, of the Directive (for further details see text in 2.2).

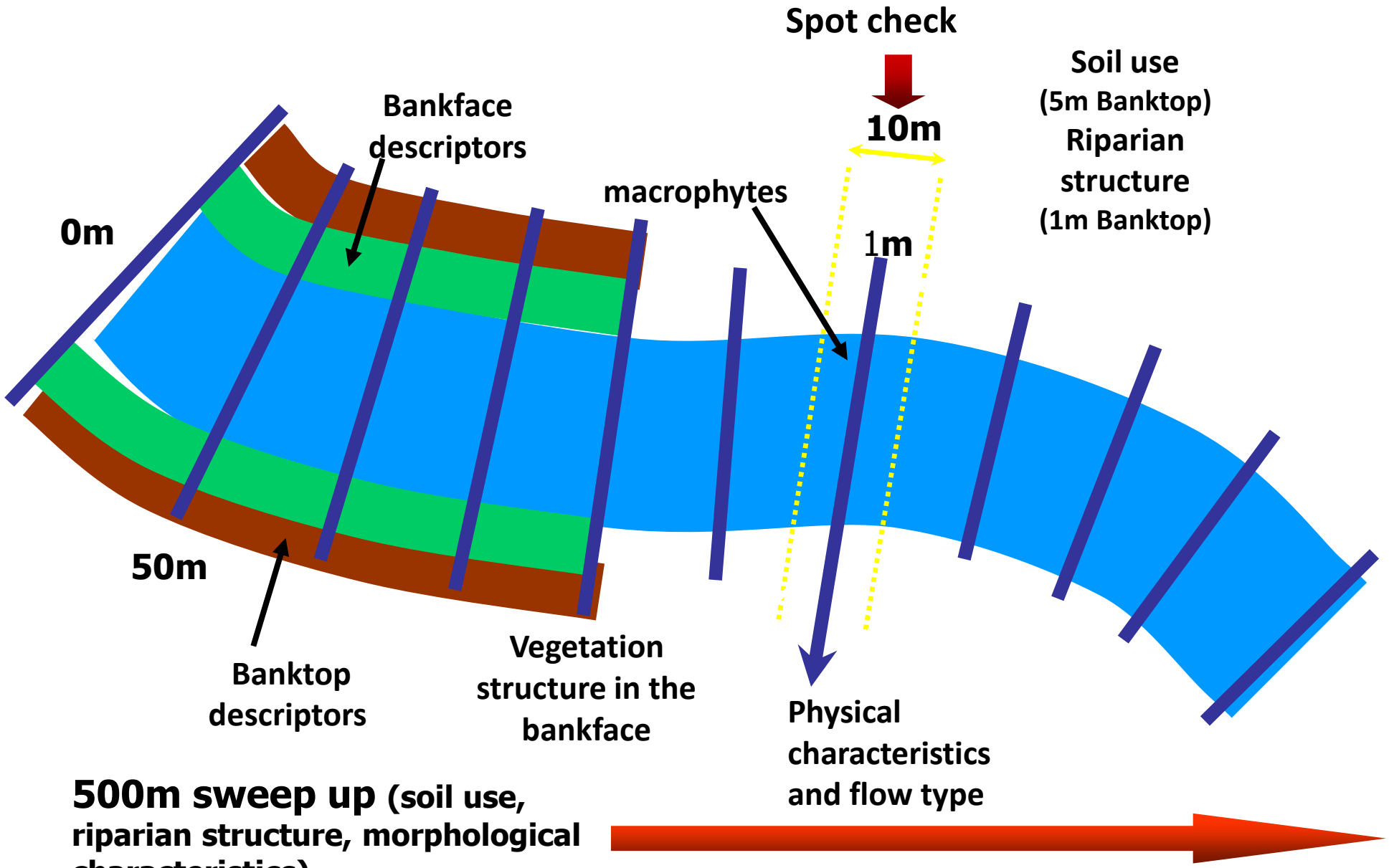
Annex V 1.1.1. RIVERS	**Annex V 1.1.2. LAKES**	**Annex V 1.1.3. TRANSITIONAL WATERS**	**Annex V 1.1.4. COASTAL WATERS**
BIOLOGICAL ELEMENTS			
• *Composition and abundance of aquatic flora*[3] • *Composition and abundance of benthic invertebrate fauna* • *Composition, abundance and age structure of fish fauna*	• *Composition, abundance and biomass of phytoplankton* • *Composition and abundance of other aquatic flora*[4] • *Composition and abundance of benthic invertebrate fauna* • *Composition, abundance and age structure of fish fauna*	• *Composition, abundance and biomass of phytoplankton* • *Composition and abundance of other aquatic flora*[3] • *Composition and abundance of benthic invertebrate fauna* • *Composition and abundance of fish fauna*	• *Composition, abundance and biomass of phytoplankton* • *Composition and abundance of other aquatic flora*[3] • *Composition and abundance of benthic invertebrate fauna*

HYDROMORPHOLOGICAL ELEMENTS SUPPORTING THE BIOLOGICAL ELEMENTS			
• Hydrological regime ➔ quantity and dynamics of water flow ➔ connection to ground water bodies • River continuity • Morphological conditions ➔ river depth and width variation ➔ structure and substrate of the river bed ➔ structure of the riparian zone	• Hydrological regime ➔ quantity and dynamics of water flow ➔ residence time ➔ connection to the ground water body • Morphological conditions ➔ lake depth variation ➔ quantity, structure and substrate of the lake bed ➔ structure of the lake shore	• Tidal regime ➔ freshwater flow ➔ wave exposure • Morphological conditions ➔ depth variation ➔ quantity, structure and substrate of the bed ➔ structure of the intertidal zone	• Tidal regime ➔ direction and dominant currents ➔ wave exposure • Morphological conditions ➔ depth variation ➔ structure and substrate of the coastal bed ➔ structure of the intertidal zone

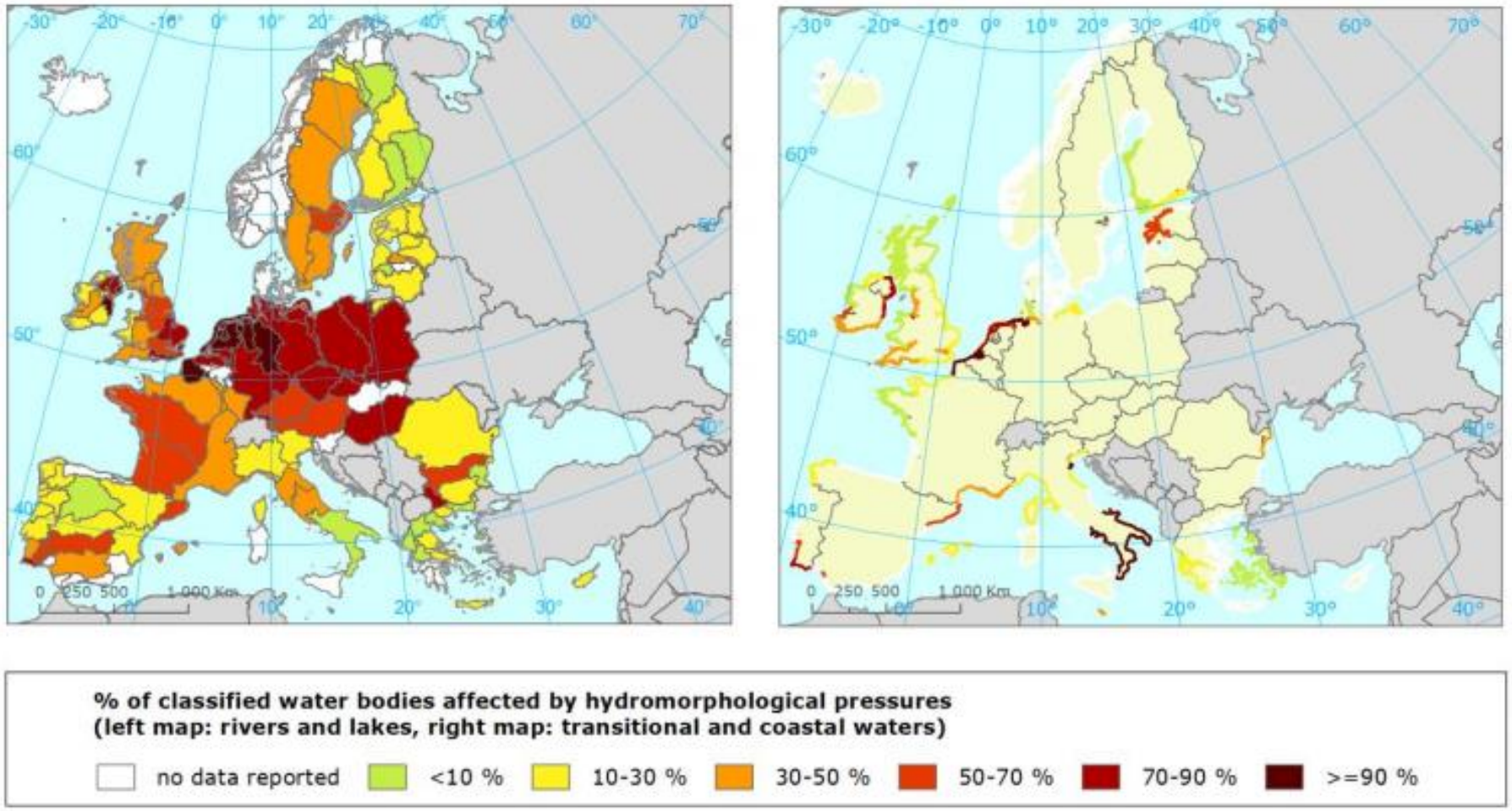
CHEMICAL AND PHYSICOCHEMICAL ELEMENTS SUPPORTING THE BIOLOGICAL ELEMENTS

• General ➔ Thermal conditions ➔ Oxygenation conditions ➔ Salinity ➔ Acidification status ➔ Nutrient conditions • Specific pollutants ➔ Pollution by priority substances identified as being discharged into the body of water ➔ Pollution by other substances identified as being discharged in significant quantities into the body of water	• General ➔ Transparency ➔ Thermal conditions ➔ Oxygenation conditions ➔ Salinity ➔ Acidification status ➔ Nutrient conditions • Specific pollutants ➔ Pollution by priority substances identified as being discharged into the body of water ➔ Pollution by other substances identified as being discharged in significant quantities into the body of water	• General ➔ Transparency ➔ Thermal conditions ➔ Oxygenation conditions ➔ Salinity ➔ Nutrient conditions • Specific pollutants ➔ Pollution by priority substances identified as being discharged into the body of water ➔ Pollution by other substances identified as being discharged in significant quantities into the body of water	• General ➔ Transparency ➔ Thermal conditions ➔ Oxygenation conditions ➔ Salinity ➔ Nutrient conditions • Specific pollutants ➔ Pollution by priority substances identified as being discharged into the body of water ➔ Pollution by other substances identified as being discharged in significant quantities into the body of water

RIVER HABITAT SURVEY METHOD - TO EVALUATE THE STRUCTURAL QUALITY OF BANK AND INTREAM HABITATS



HYDROMORPHOLOGICAL ALTERATION IN EUROPEAN WATERS



CHEMICAL ELEMENTS AND POLLUTANTS

Tabela 9 - Limiares máximos para os parâmetros físico-químicos gerais para o estabelecimento do Bom Estado Ecológico em Rios

Parâmetros	Limite para o Bom Estado	
	Agrupamento Norte **Tipos:** M, N1 ≤ 100 km^2, N1 ≥ 100 km^2, N2, N3, N4	**Agrupamento Sul** **Tipos:** L, S1 ≤ 100 km^2, S1 ≥ 100 km^2, S2, S3, S4
Oxigénio Dissolvido (1)	≥5 mg O_2/L	≥5 mg O_2/L
Taxa de Saturação em Oxigénio (1)	entre 60% e 120%	entre 60% e 120%
Carência Bioquímica de Oxigénio (CBO_5) (1)	≤6 mg O_2/L	≤6 mg O_2/L
pH (1)	Entre 6 e 9*	Entre 6 e 9*
Azoto Amoniacal (1)	≤1 mg NH_4/L	≤1 mg NH_4/L
Nitratos (2)	≤25 mg NO_3/L	≤25 mg NO_3/L
Fósforo Total (2)	≤0,10 mg P/L	≤0,13 mg P/L

(1) – 80% das amostras se a frequência for mensal ou superior
(2) - Média Anual
* - Os limites indicados poderão ser ultrapassados caso ocorram naturalmente

N.º	Substância/composto	Substância prioritária	Substância prioritária em estudo (a)	Substância prioritária perigosa	76/464/CEE	793/93/CEE (1)	76/769/CEE	91/414/CEE (2)	98/8/CE	NSC (3)	HELCOM (4)	OSPAR (5)
1	Alacloro	+						1				
2	Antraceno		+		Lista II	3				1D		+
3	Atrazina			+	Lista II			1		1A	+	
4	Benzeno	+			Lista II		+			1D		
5	Eteres difenílico bromado *			+		1,2						+
6	Cádmio e seus compostos			+	Lista I	3	+			1A	+	+
7	C_{10-13}-cloroalcanos **			+								+
8	Clorfenvinfos	+						2,3				
9	Clorpirifos		+					1				
10	1,2-Dicloroetano	+			Lista I					1A	+	
11	Diclorometano	+			Lista II					1D		
12	Di(2-etilhexil)ftalato (DEHP)		+			2						+
13	Diurão		+					2,3				
14	Endossulfão		+		Lista II			1		1A	+	
15	Fluoranteno	+										
16	Hexaclorobenzeno			+	Lista I					1A	+	
17	Hexaclorobutadieno			+	Lista I					1A	+	
18	Hexaclorociclohexano			+	Lista I			1		1A	+	+
19	Isoproturão		+					1				
20	Chumbo e seus compostos		+		Lista II		+			1A	+	+
21	Mercúrio e seus compostos			+	Lista I					1A	+	+
22	Naftaleno		+		Lista II	1				1D		+
23	Níquel e seus compostos	+			Lista II	3				1A	+	
24	Nonilfenóis			+		2						+
25	Octilfenóis		+									+
26	Pentaclorobenzeno			+						1D		
27	Pentaclorofenol		+				+	2,3	+	1A	+	+
28	Hidrocarbonetos Policíclicos Aromáticos (PAHs)			+	Lista II						+	+
29	Simazina		+		Lista II			1		1A	+	
30	Compostos de tributilestanho			+			+		+		+	+
31	Triclorobenzenos		+		Lista I	2				1A		
32	Triclorometano	+			Lista I	2				1A		
33	Trifluralina		+		Lista II			2,3		1A	+	

Lista de substâncias prioritárias adoptada a nível comunitário e respectivas classificações em diferentes normas e acordos internacionais

1) Listas de substâncias prioritárias no contexto do Regulamento 793/93/CEE: 1ª lista - 1179/94/CE; 2ª lista - 2268/95/CE; 3ª lista – 143/97/CE

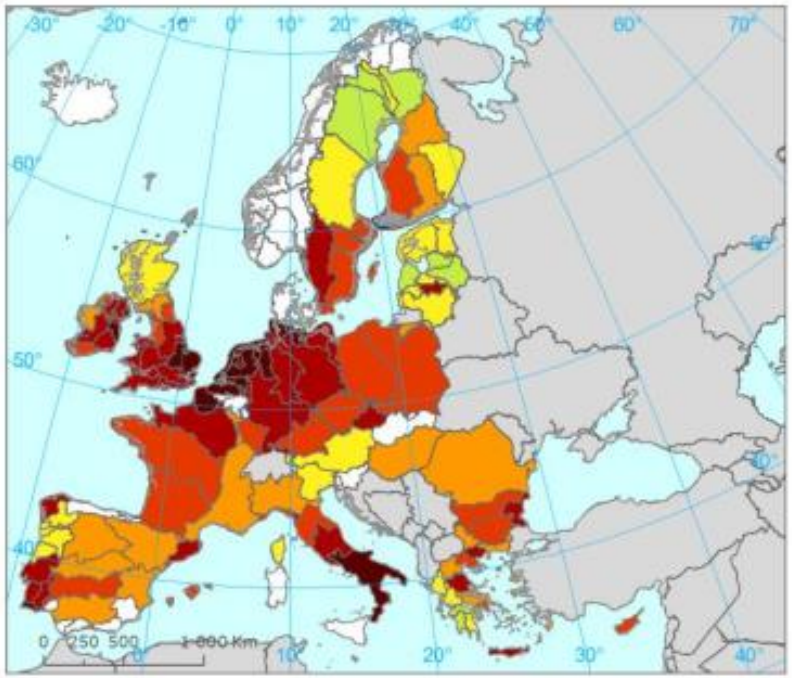
(2) Lista de pesticidas prioritários ao abrigo do Artigo 8ª da Directiva 91/414/CEE: 1ª fase - 3600/92/CEE; 2ª e 3ª fases – proposta de Regulamento

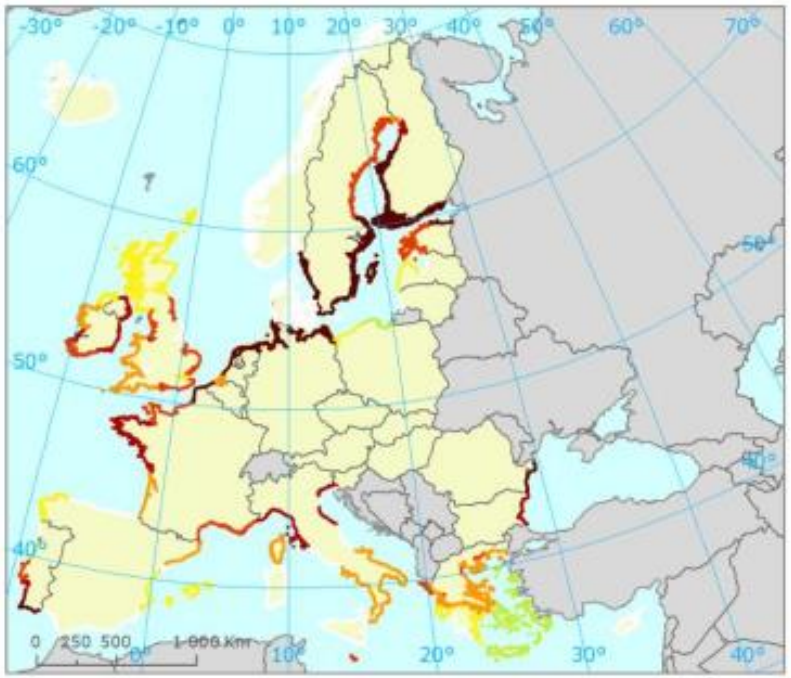
(3) Listas de substâncias constantes dos Anexos 1A e 1D da Declaração final da Conferência do Mar do Norte

(4) Lista de substâncias prioritárias no contexto da Convenção de Helsínquia

(5) Lista de substâncias para acção prioritária constante do Anexo 2 da Estratégia da Convenção OSPAR para as substâncias perigosas (“hazardous”)

CHEMICAL DEGRADATION IN EUROPEAN WATERS

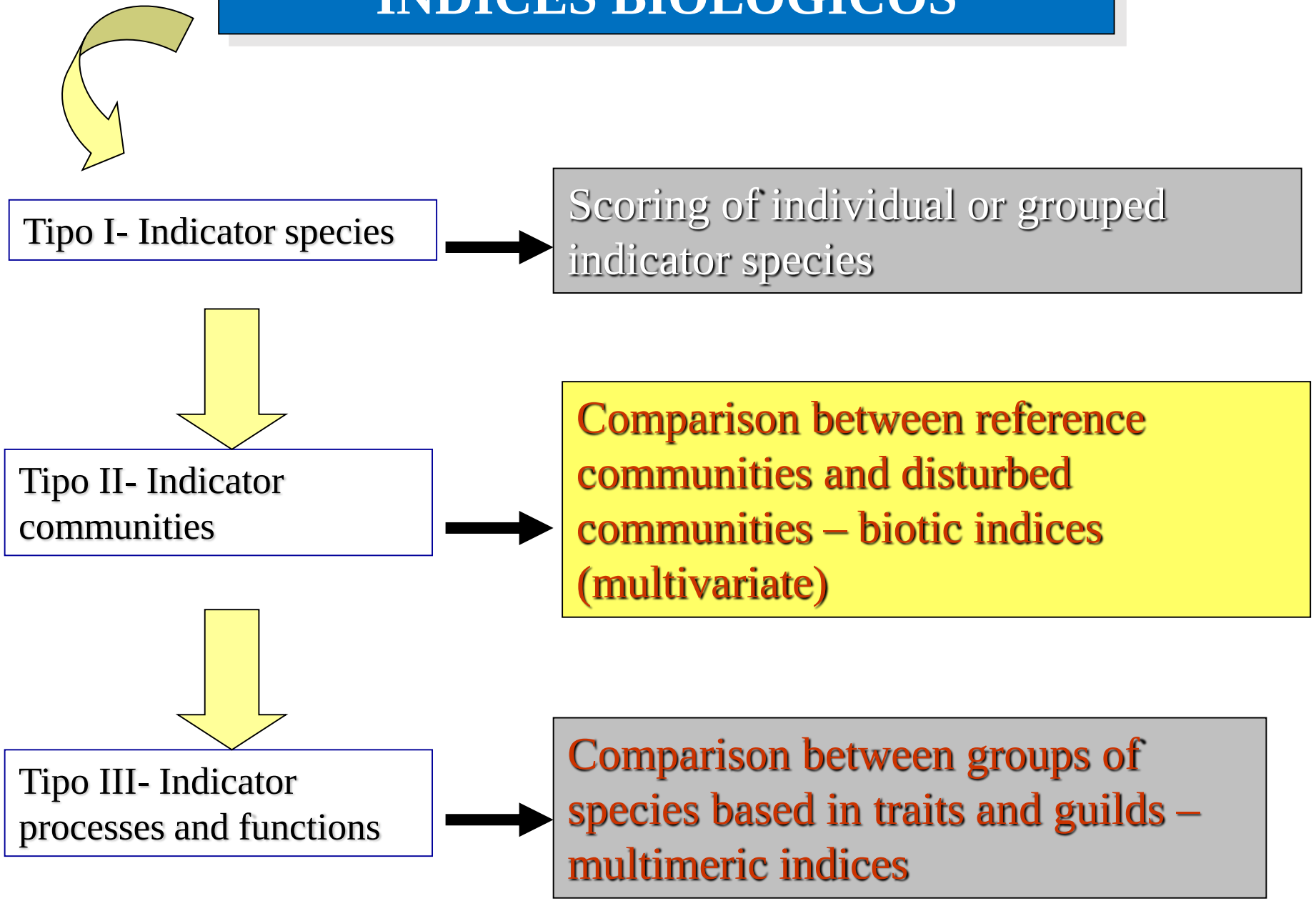




% of classified water bodies affected by point and/or diffuse pressures
(left map: rivers and lakes, right map: transitional and coastal waters)

no data reported | <10 % | 10-30 % | 30-50 % | 50-70 % | 70-90 % | >=90 %

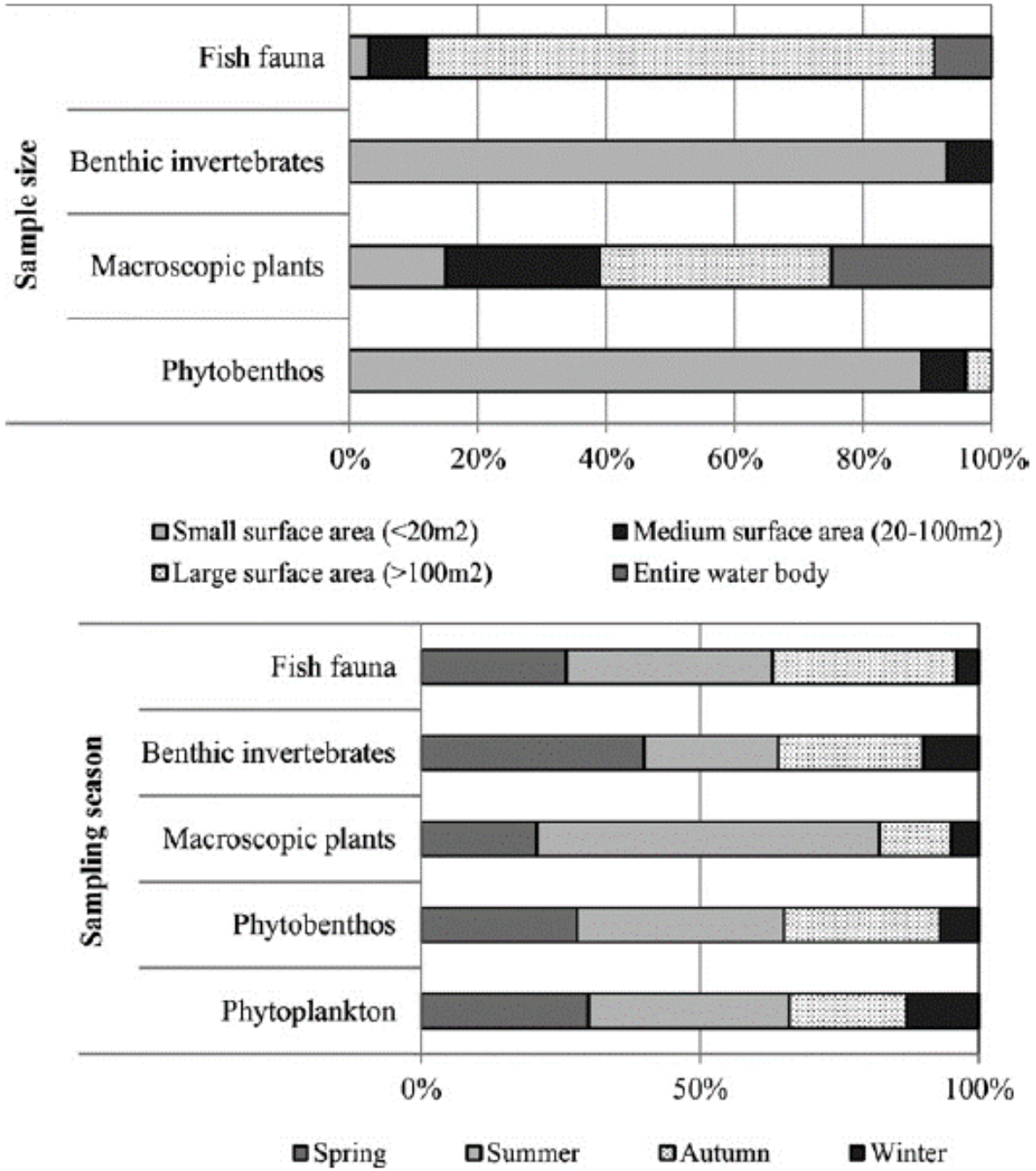
INDICES BIÓLÓGICOS

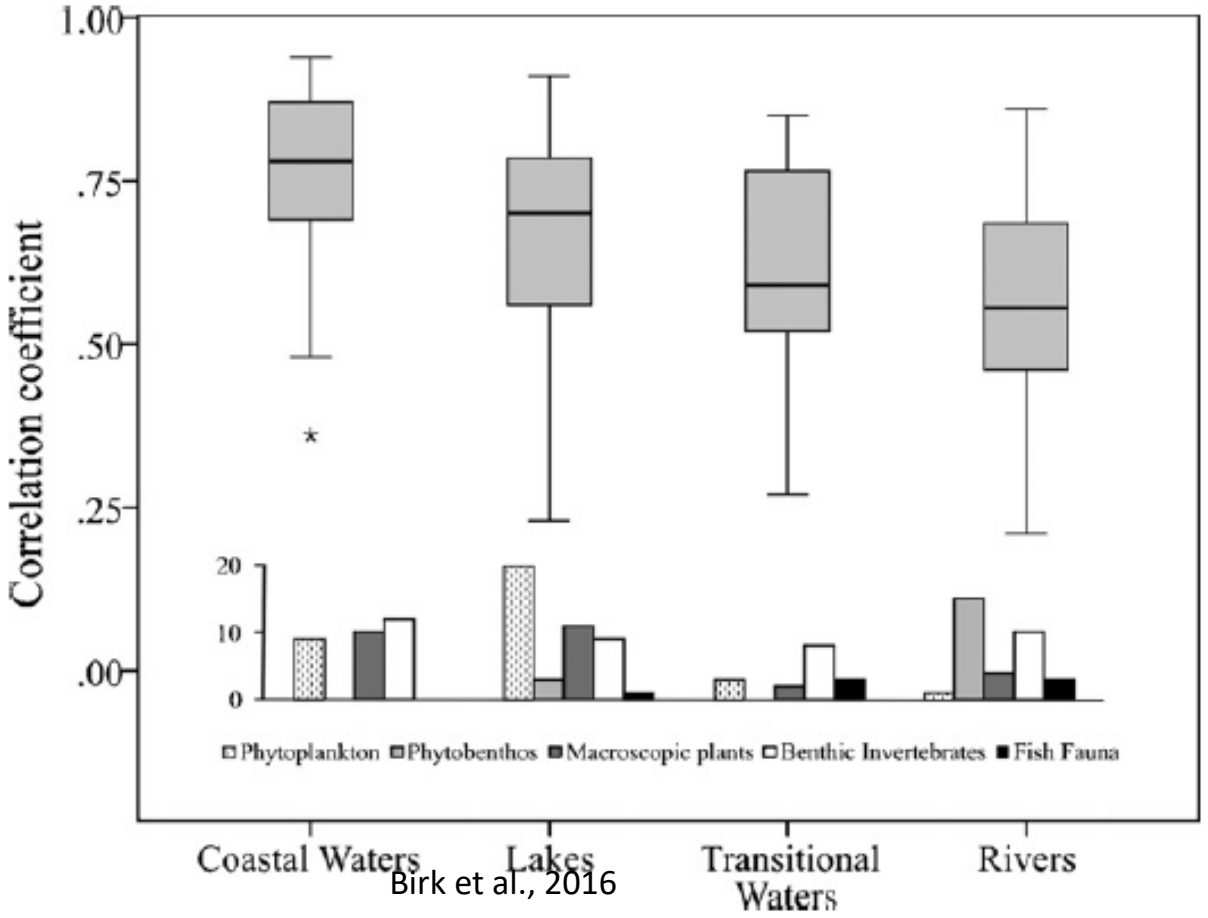


TO GUIDE SUCH ADAPTIVE SCHEME, WE HAVE DEVELOPED AN EUROPEAN WIDE MONITORING PROGRAM

- 80.000 monitoring stations of surface waters and 60.000 in subterranean waters
- 78% in rivers, 10% in coastal waters, 9% in lakes and 4% in transitional waters

Birk et al, 2012
28 countries
279 evaluation methods

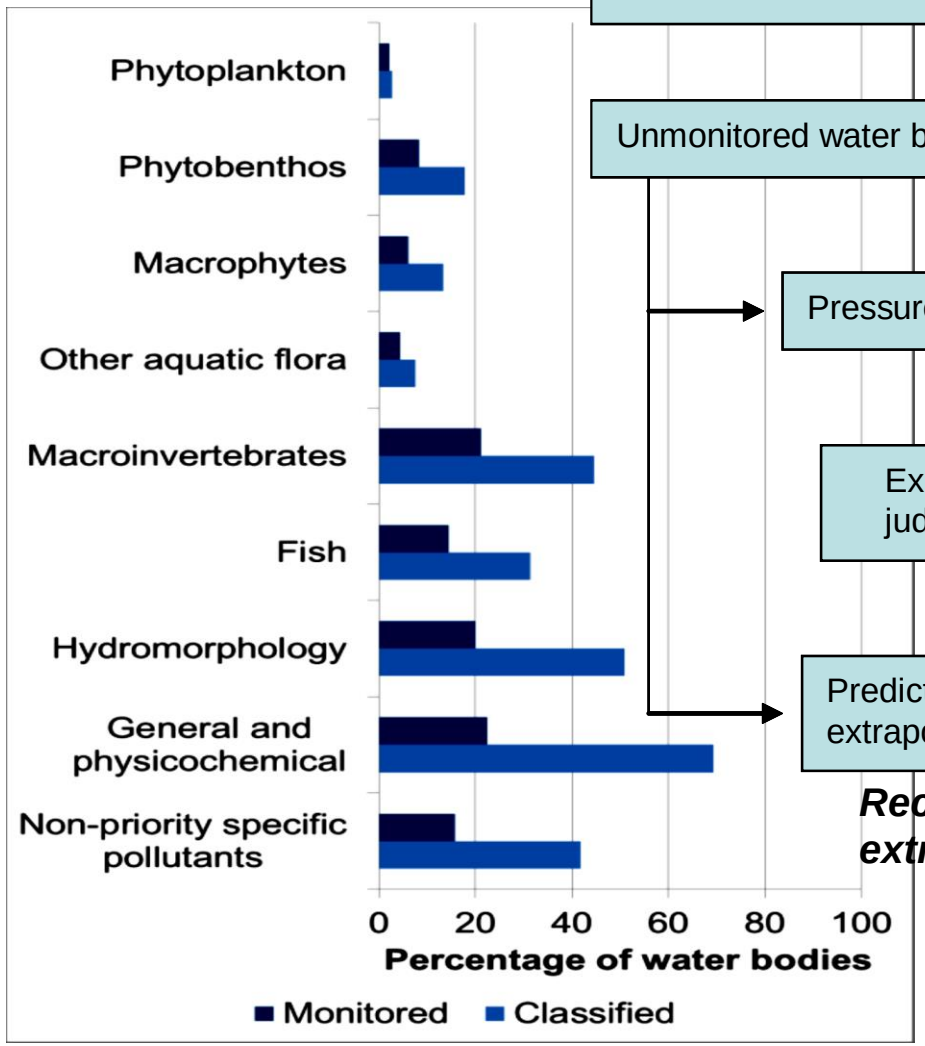




Birk et al., 2016

Fig. 4. Range of correlation coefficients gained from pressure-impact analysis in different water categories. The number of case-studies per water category is specified below (total number = 110).

NOT ALL WATERBODIES ARE MONITORED



Monitored water bodies → Direct classification

Unmonitored water bodies

Grouping of water bodies

Pressure estimate

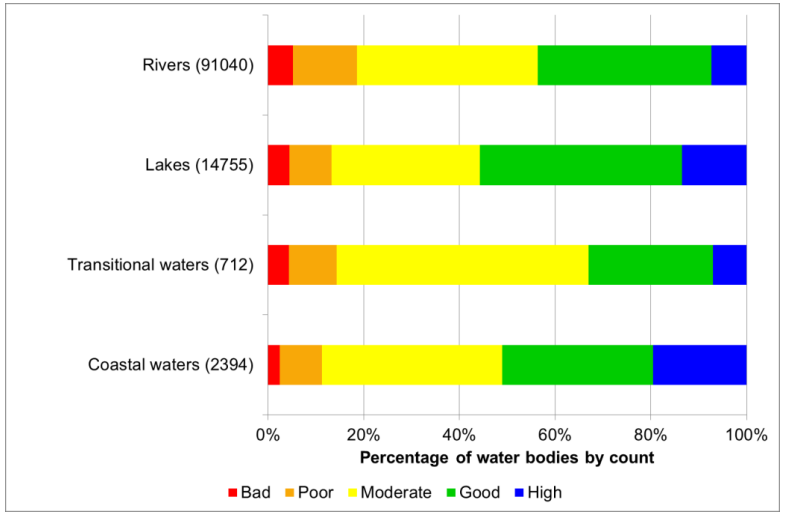
Expert judgment → Indirect classification

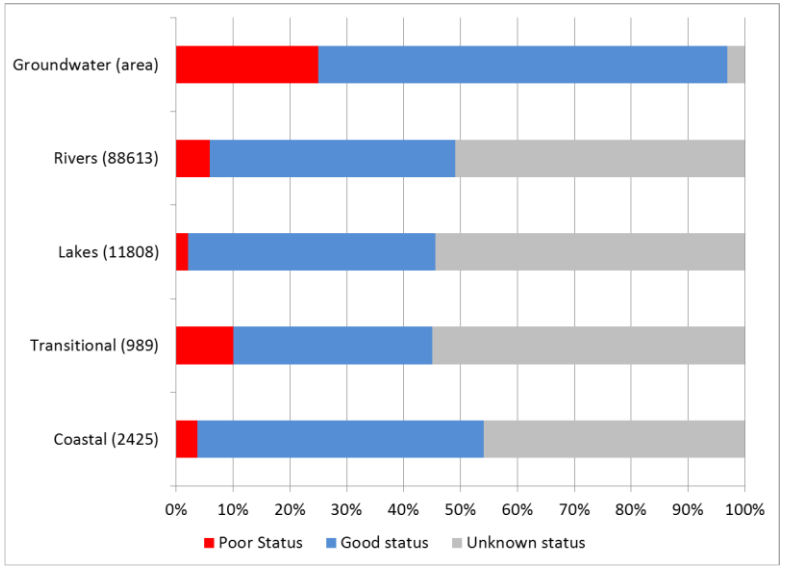
Predictive extrapolation models

Recommendation for the use of predictive extrapolation models in evaluation process

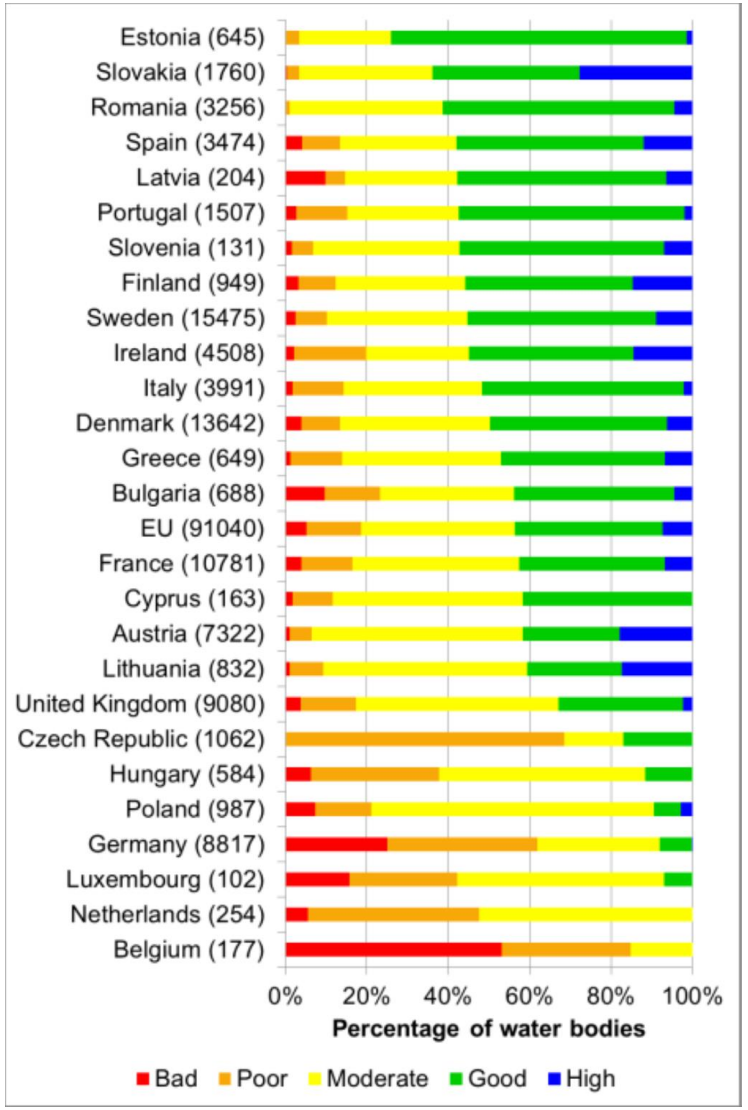
Ecological status in Europe 2012-2015 RBMP

European overview

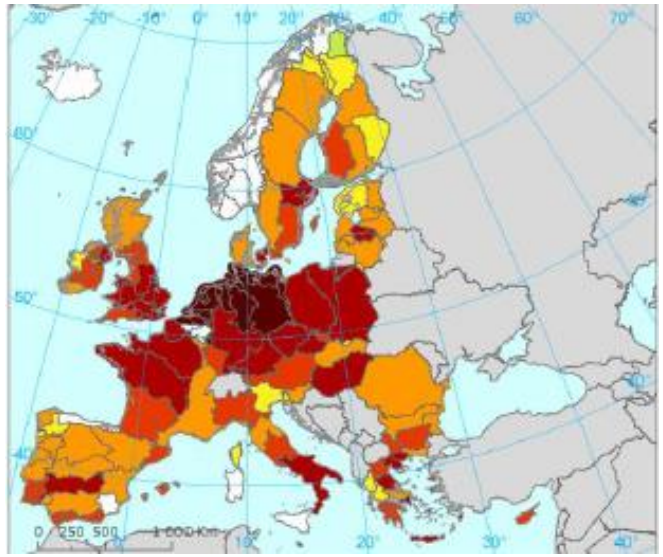




Member State overview



RBDs overview



Source: European Environmental Agency

PROGRAMAS DE MEDIDAS
EXEMPLO DA RIBEIRA DE ALMANSOR, PGBH TEJO 2016-2018

PROGRAMAS DE MEDIDAS ESTÃO MUITO ASSOCIADOS AOS PROBLEMAS DE CARGAS POLUENTES SOBRETUDO PONTUAIS

Massas de água			Zona protegida	Estado ou Potencial				Pressões significativas	Medidas	
Sub-bacia	Código	Designação	Tipo	Estado Ecológico	Elementos responsáveis	Estado Químico	Classificação da zona protegida	Tipo	Código	Designação
										invasoras lenhosas em áreas florestais e agroflorestais
										3) Plano para a reconstituição da continuidade fluvial, restauração da vegetação ripária e revisão do regime de caudais ecológicos
Almansôr	PT05TEJ1109	Ribeira de Lavre		Razoável		Desconhecido	n.a.	Agrícola Pecuária	PTE1P06M01_RH5 PTE3P02M02_SUP_RH5	1) Adotar um novo Código de Boas Práticas Agrícolas, contemplando disposições para o azoto e para o fósforo.
										2) Instalar, manter e recuperar galerias ripícolas e erradicar espécies invasoras lenhosas em áreas florestais e agroflorestais
Almansôr	PT05TEJ1115	afluente da Ribeira de Canha		Medíocre		Desconhecido	n.a.	Agrícola Pecuária Hidromorfológica	PTE1P06M01_RH5 PTE3P02M02_SUP_RH5	1) Adotar um novo Código de Boas Práticas Agrícolas, contemplando disposições para o azoto e para o fósforo.
										2) Instalar, manter e recuperar galerias ripícolas e erradicar espécies invasoras lenhosas em áreas florestais e agroflorestais
Almansôr	PT05TEJ1125	Ribeira de Canha		Razoável		Desconhecido	n.a.	Agrícola Urbana Pecuária Hidromorfológica	PTE1P01M18_SUP_RH5	Construçao da nova ETAR de Montemor-o-Novo, em substituição da ETAR de S. Pedro, no concelho de Montemor-o-Novo
Almansôr	PT05TEJ1130	Rio Almansor (montante & jusante a Montemor)		Medíocre		Desconhecido	n.a.	Agrícola Pecuária Hidromorfológica	PTE1P06M01_RH5 PTE3P02M02_SUP_RH5 PTE3P02M34_SUP_RH5	1) Adotar um novo Código de Boas Práticas Agrícolas, contemplando disposições para o azoto e para o fósforo.
										2) Instalar, manter e recuperar galerias ripícolas e erradicar espécies invasoras lenhosas em áreas florestais e agroflorestais
										3) Plano para a reconstituição da continuidade fluvial, restauração da vegetação ripária e revisão do regime de caudais ecológicos
Costeiras entre o Oeste2 e o Tejo	PT05TEJ1139A	Tejo-WB1	BA SH	Razoável	Biológicos	Bom	BA=São cumpridos os objetivos específicos	Urbana Industrial Hidromorfológica	PTE1P01M02_SUP_RH5 PTE1P01M14_SUP_RH5 PTE1P01M31_SUP_RH5_ 1Ciclo	1) Ampliação e beneficiação da ETAR do Valdeão, na freguesia do Pragal do concelho de Almada. 2) Intervenções no sistema de

legislação

estruturais

estudos

"…an ecologist that evaluates the quality of the water and the ecosystem, is like a physician: it measures numerical attributes as auxiliaries of diagnoses (fever, blood pressure, colesterol…).

No one would ask a physician to indicate the percentage of health of a patient. And yet, this is asked to the ecologist…"

H.B. Hynes, 1997