

# Past, present and future of European inland fisheries

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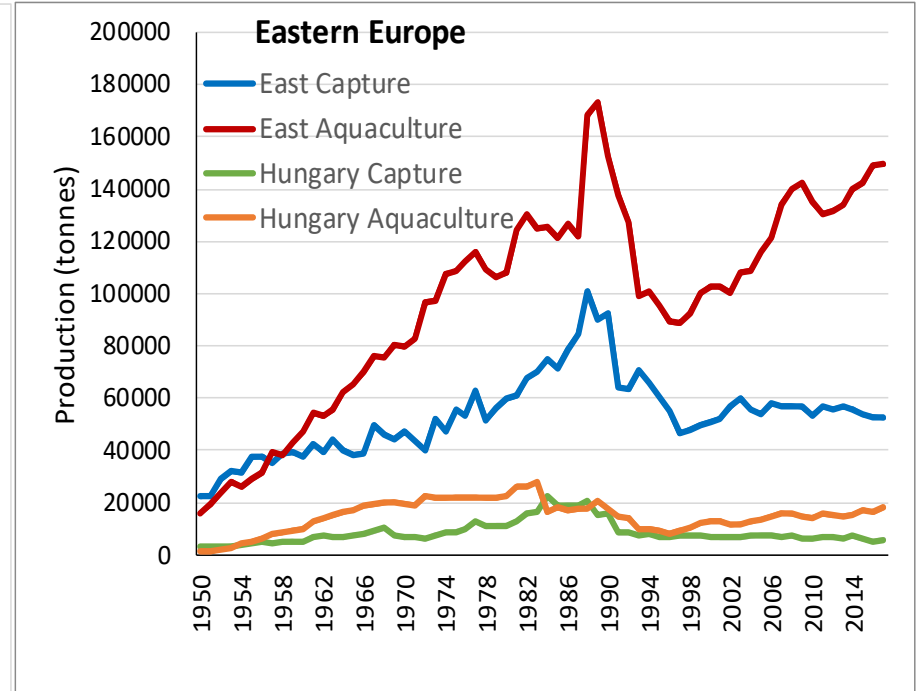
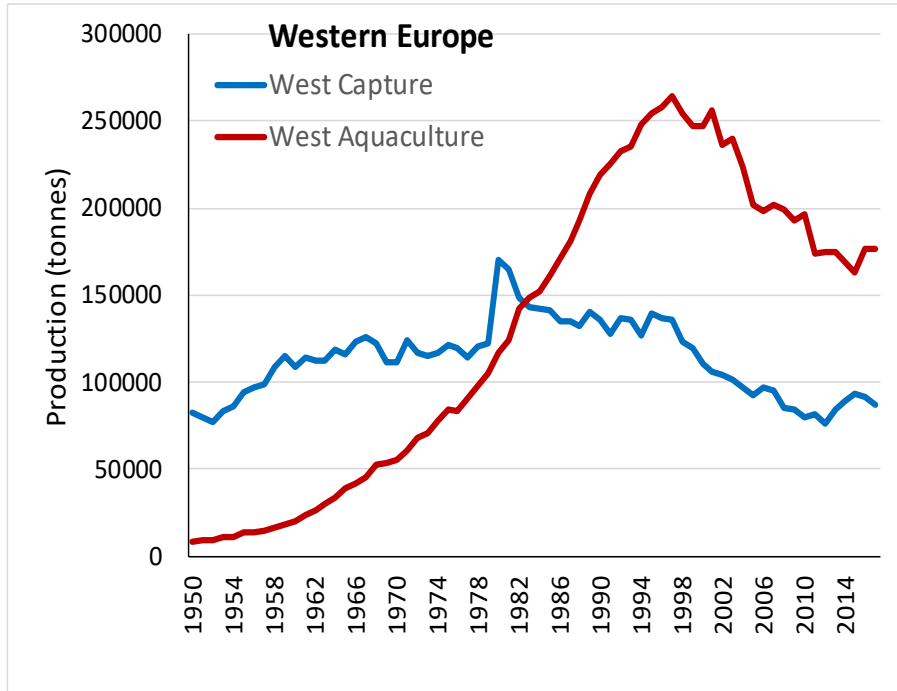
UNIVERSITY OF  
**Hull International**  
**Fisheries Institute**  
HIFI

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- What is the importance of inland fisheries in Europe
  - Pressures on fisheries
  - What are the current policies for inland fisheries management in Europe?
  - Challenges for policy, research and management

River Guadiana, Portugal

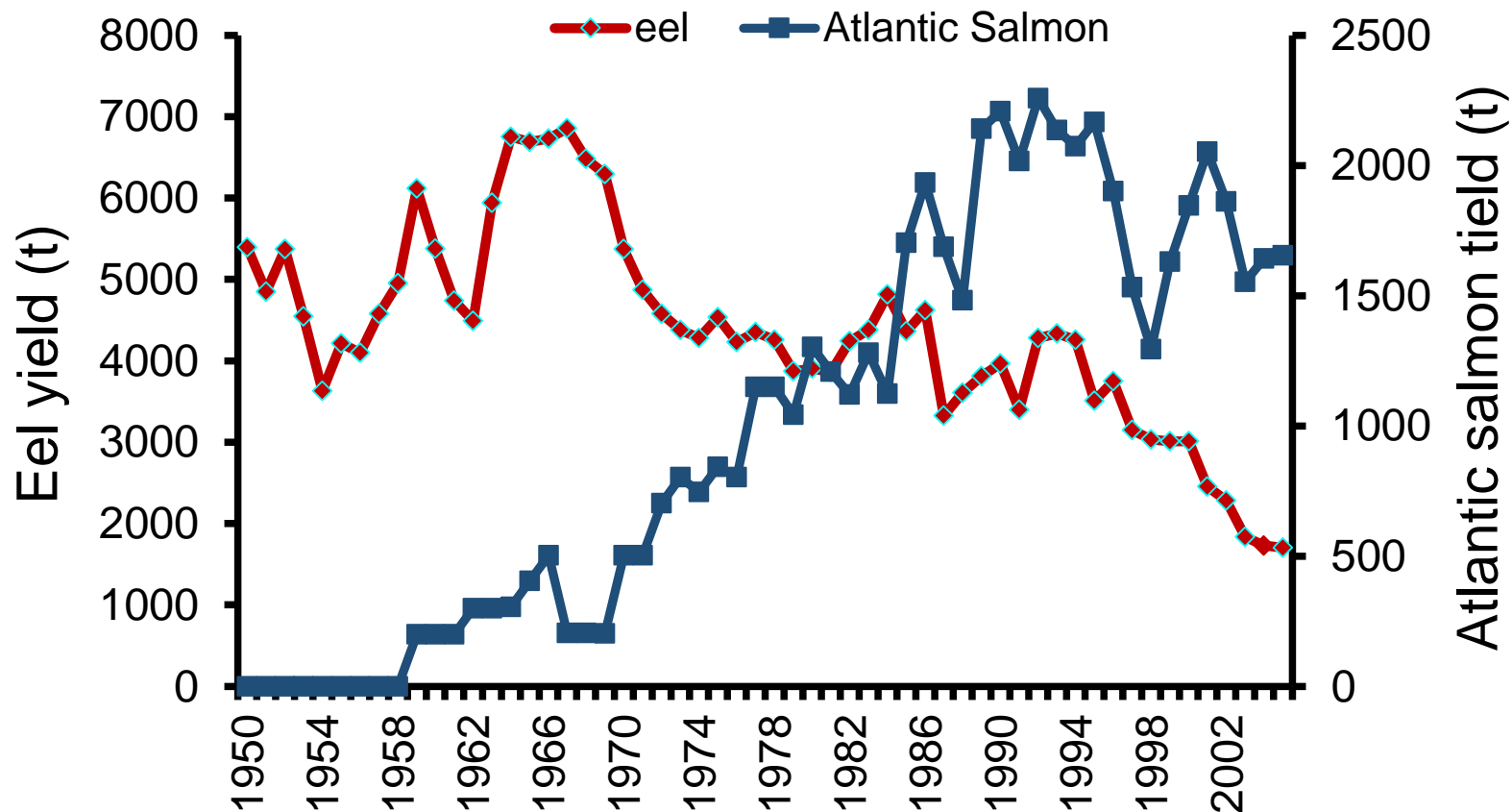
# Trends in commercial inland fisheries

Source: FAO FISHSTAT



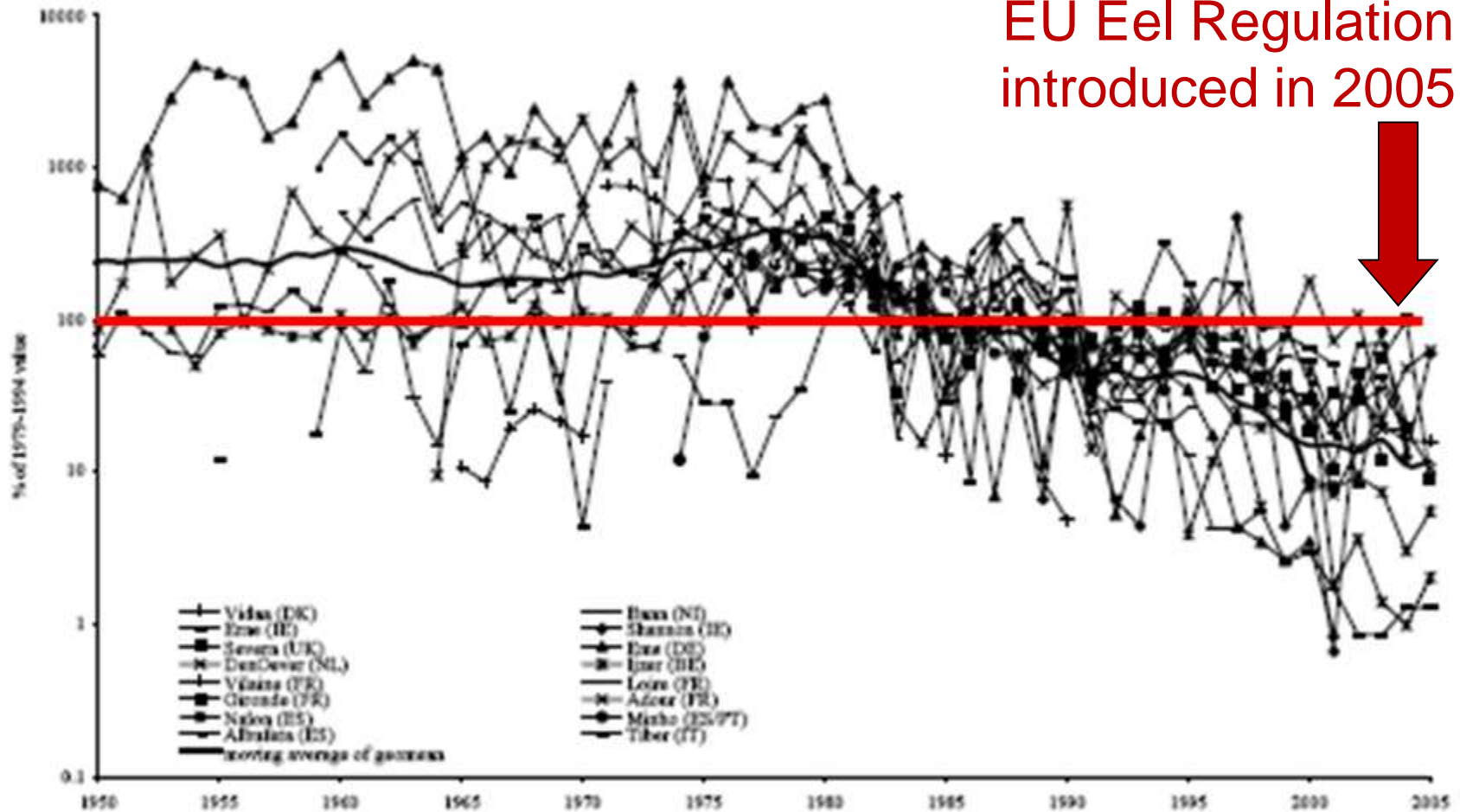
Ignores contribution of recreational fisheries

# European commercial capture fisheries - species trends (source FAO FISHSTAT)



# Species trends - elvers

EU Eel Regulation  
introduced in 2005



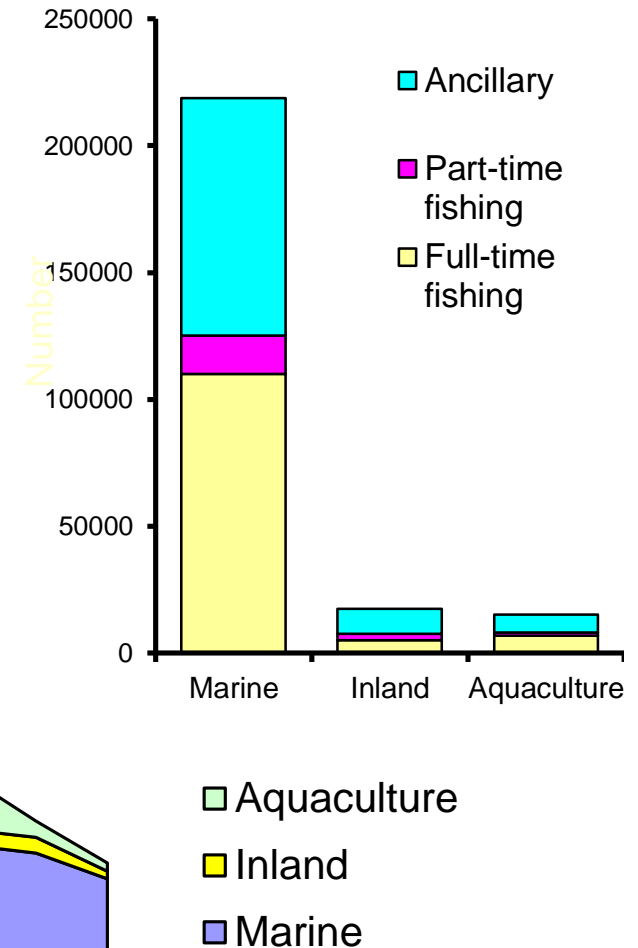
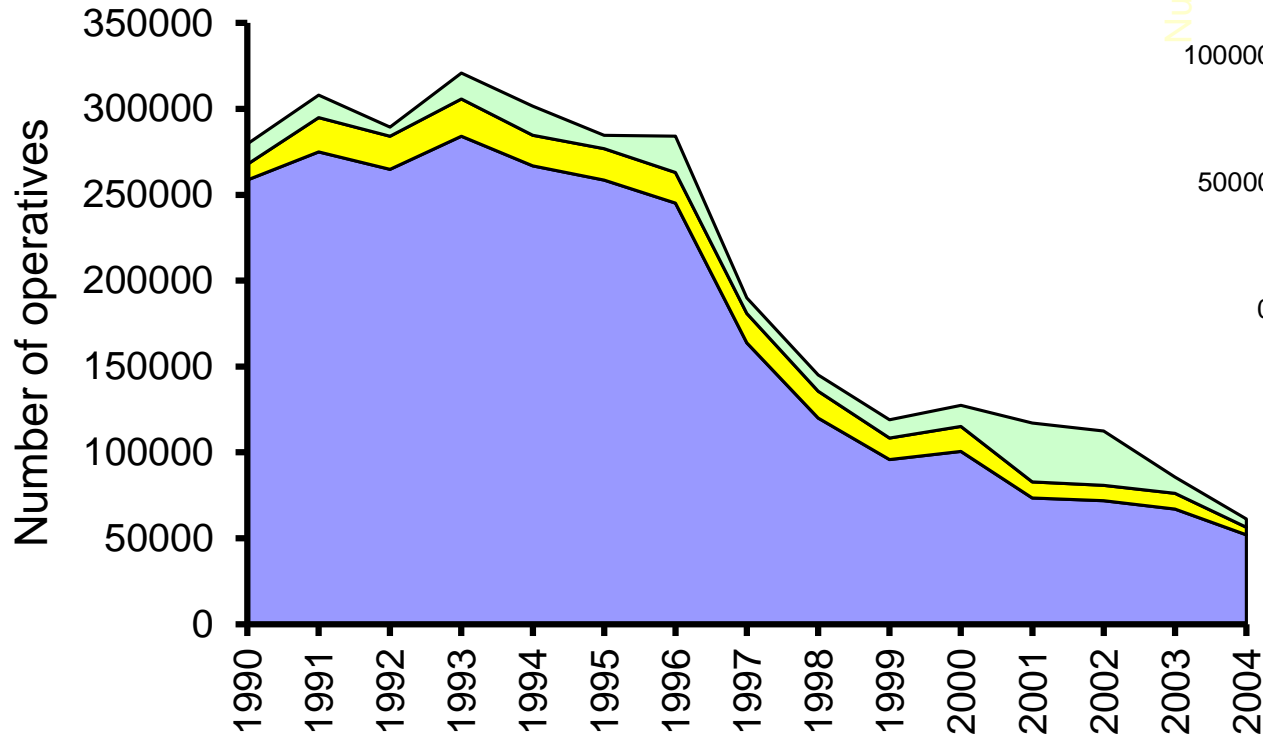
Glass eel recruitment in European rivers – each series scaled to 1979-1994 average

Source: EIFAC Occasional Paper 38, 2006

# Employment in commercial fisheries

Source: Eurostat

## Contribution to employment in commercial fisheries declining



# Inland fisheries – recreational

(after Arlinghaus 2015)

Catch harvested **1.3 million t per year** (based on average catch of 30 kg/angler/yr)

Value: **35.1 billion € per year**

19.5 billion € per year with multiplier of 1.8 for indirect expenditure (Arlinghaus 2004)

**2900 companies** –  
**60,000 jobs** in fishing tackle trade with annual turnover of **5 billion Euros**.



# External Pressures

Threats to inland fisheries,  
biodiversity and conservation





# Pressures

Overfishing

Pike slips the net as California gets tough

Alien species

Cormorants

Land drainage

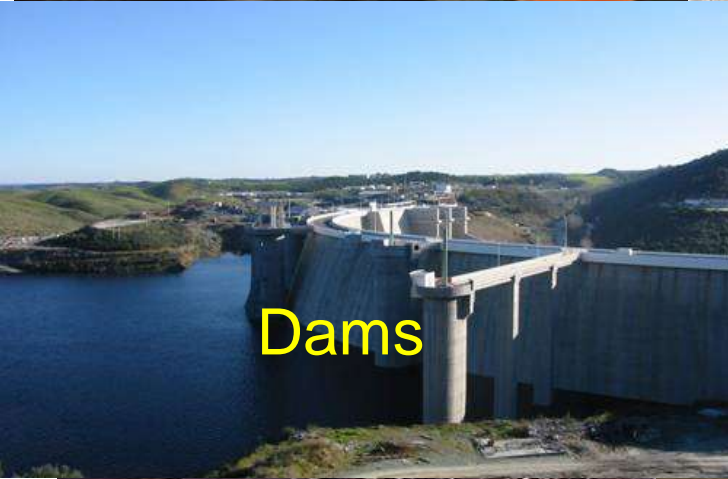
Dams

Deforestation/  
Habitat loss

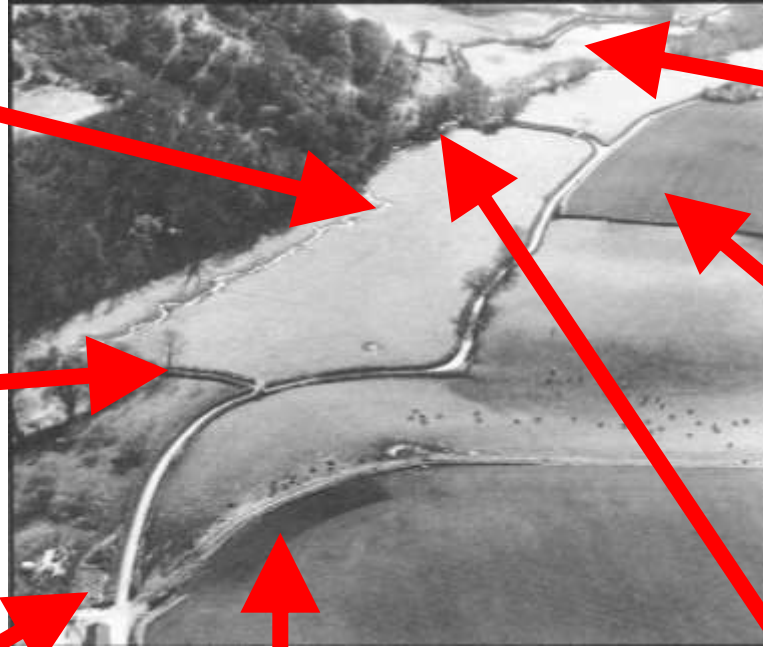
Pollution

'SEX CHANGE SENSATION'

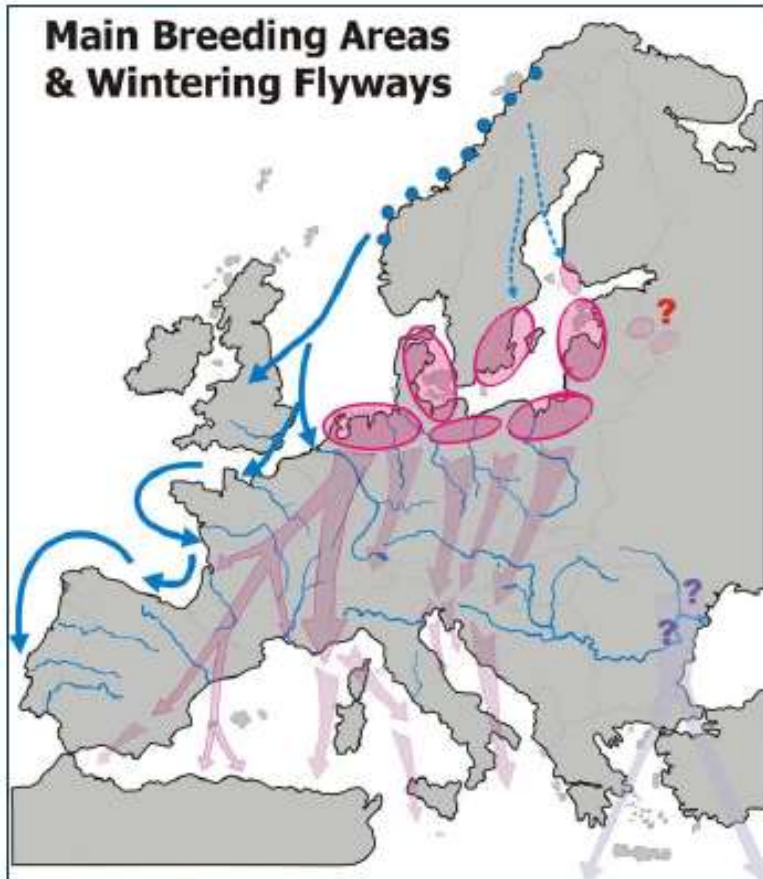
Endocrine disruptors



# Pressures – diffuse pollution



## Migratory patterns

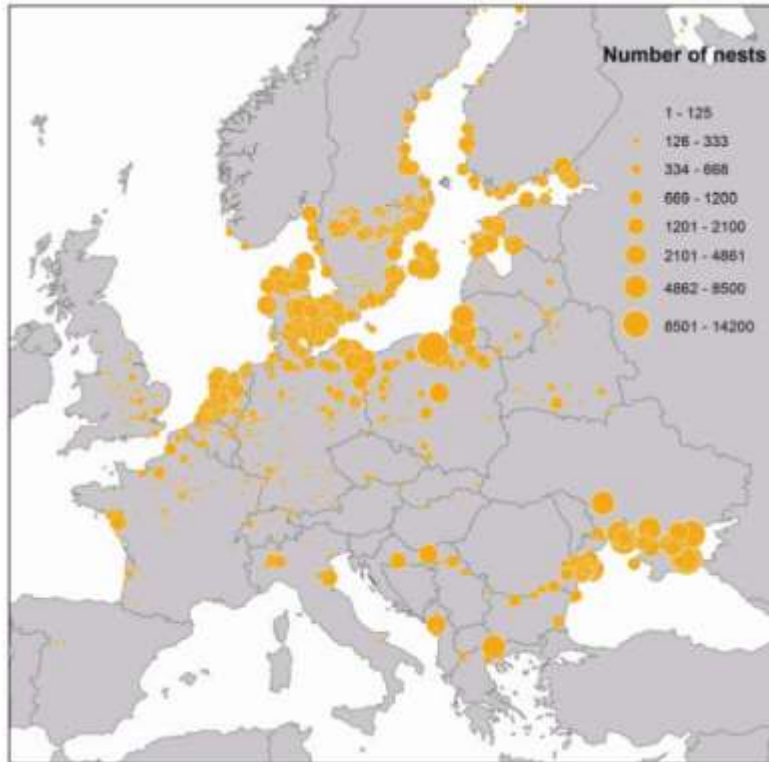


**Source:** Kohl (2004)

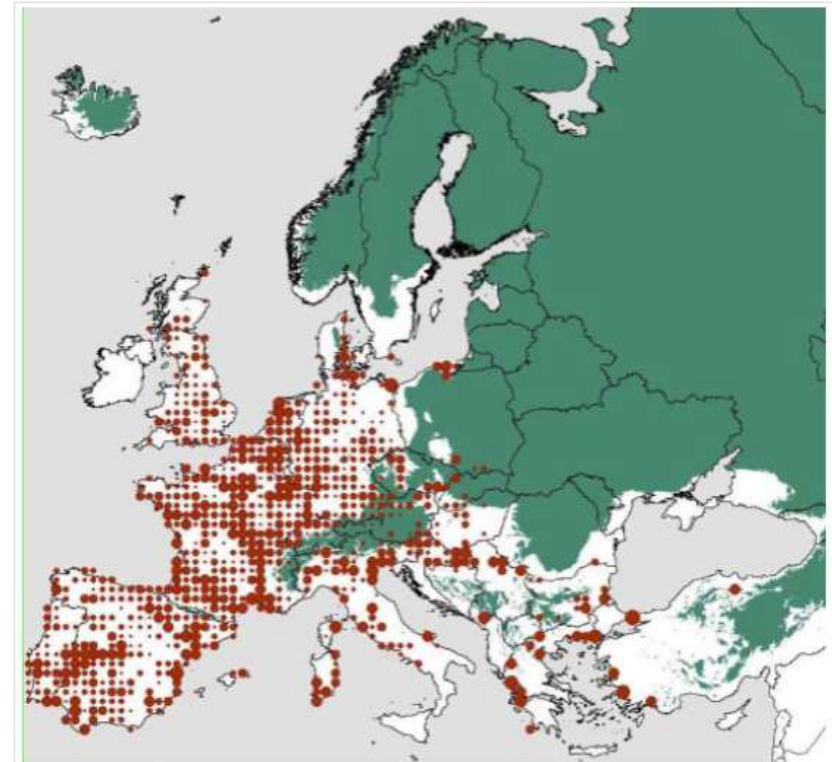
- Great cormorant highly mobile species
- Can move 100s of kilometres between breeding and wintering colonies



## Distribution and abundance of birds



Distribution and relative size of great cormorant colonies in Western Palearctic around 2006. (Bregnballe *et al.* 2011a)

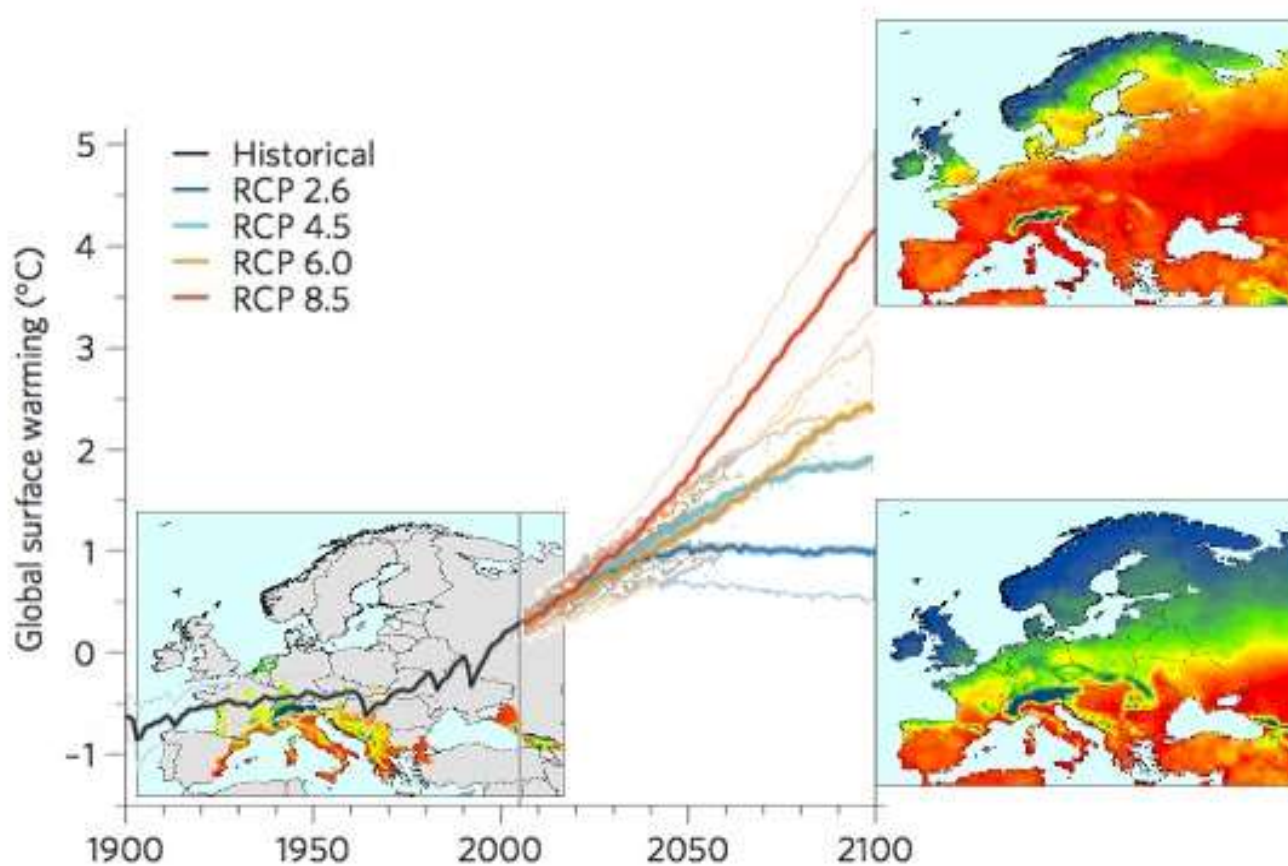


Winter distribution of cormorants in Europe (Van Eerden *et al.* 2011b)

- Expansion of cormorant populations across Europe in past 30 years resulted in conflict with fisheries and aquaculture
  - Pressure and lobbying from fisheries stakeholder (Kindermann 2008)
  - European Parliament adopted Resolution (SP(2009)401) of a European Cormorant Management Plan
  - European Commission **do not consider EU-wide management plan appropriate:**
    - conflicts complex, dynamic, and played out within diverse ecological, social, cultural and economic contexts at multiple geographic scales
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# Pressures – climate change

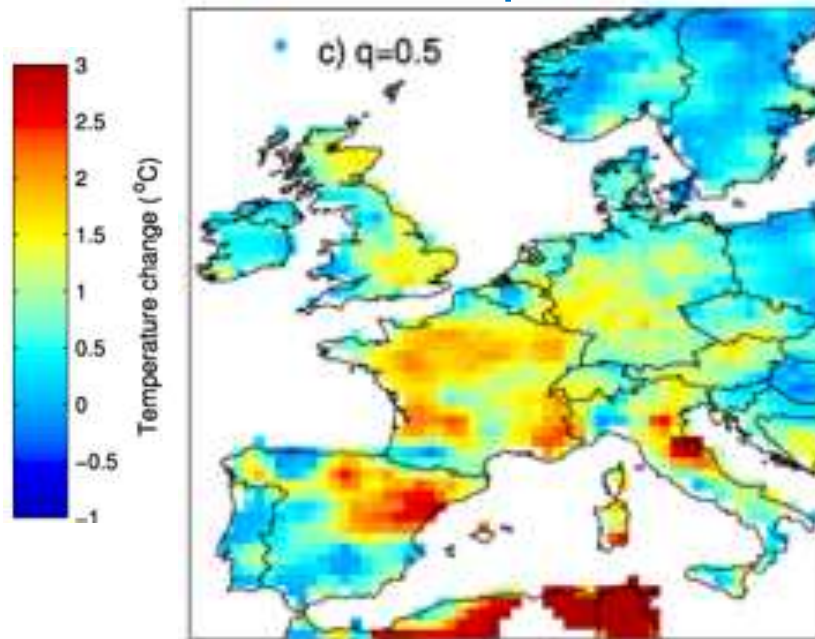
Relative change in temperature for various emissions scenarios.



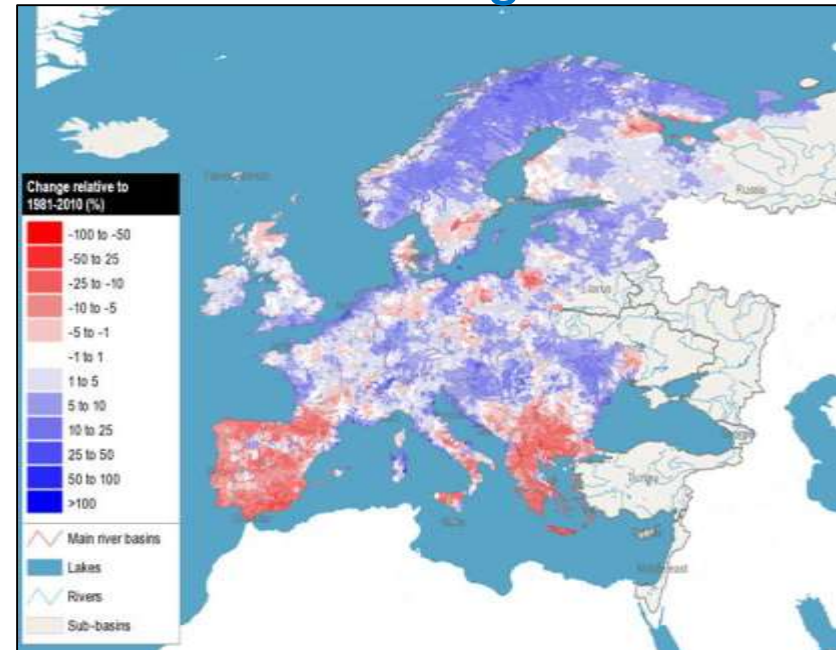
# Pressures – climate change

Relative change in temperature and river discharge in the 2030s, relative to the 1981-2010 average, for RCP4.5 emissions scenarios (<http://hypeweb.smhi.se/europehype/climate-change/>).

## Temperature



## River discharge



# Climate change impact on fish populations: predicted vulnerability

## Salmonids

*Brown trout*



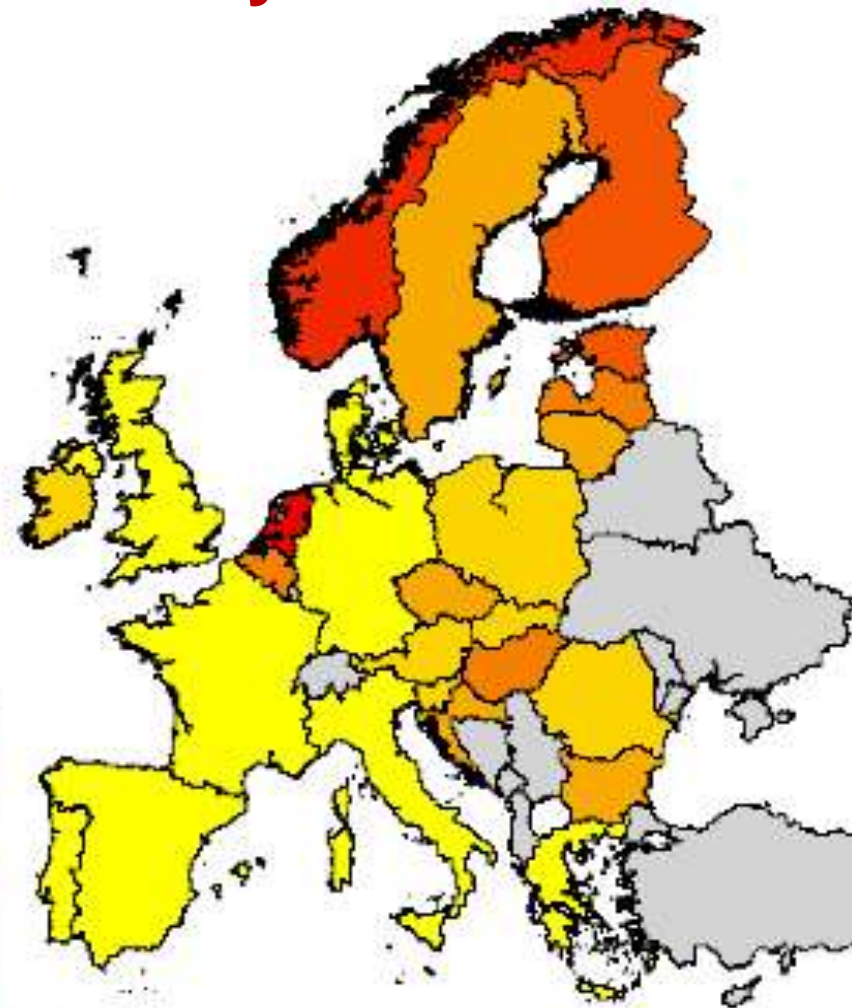
*Arctic charr*



*Whitefish*



*Vendace*



ClimeFish





**Current  
drivers/management of  
inland fisheries and  
conservation**

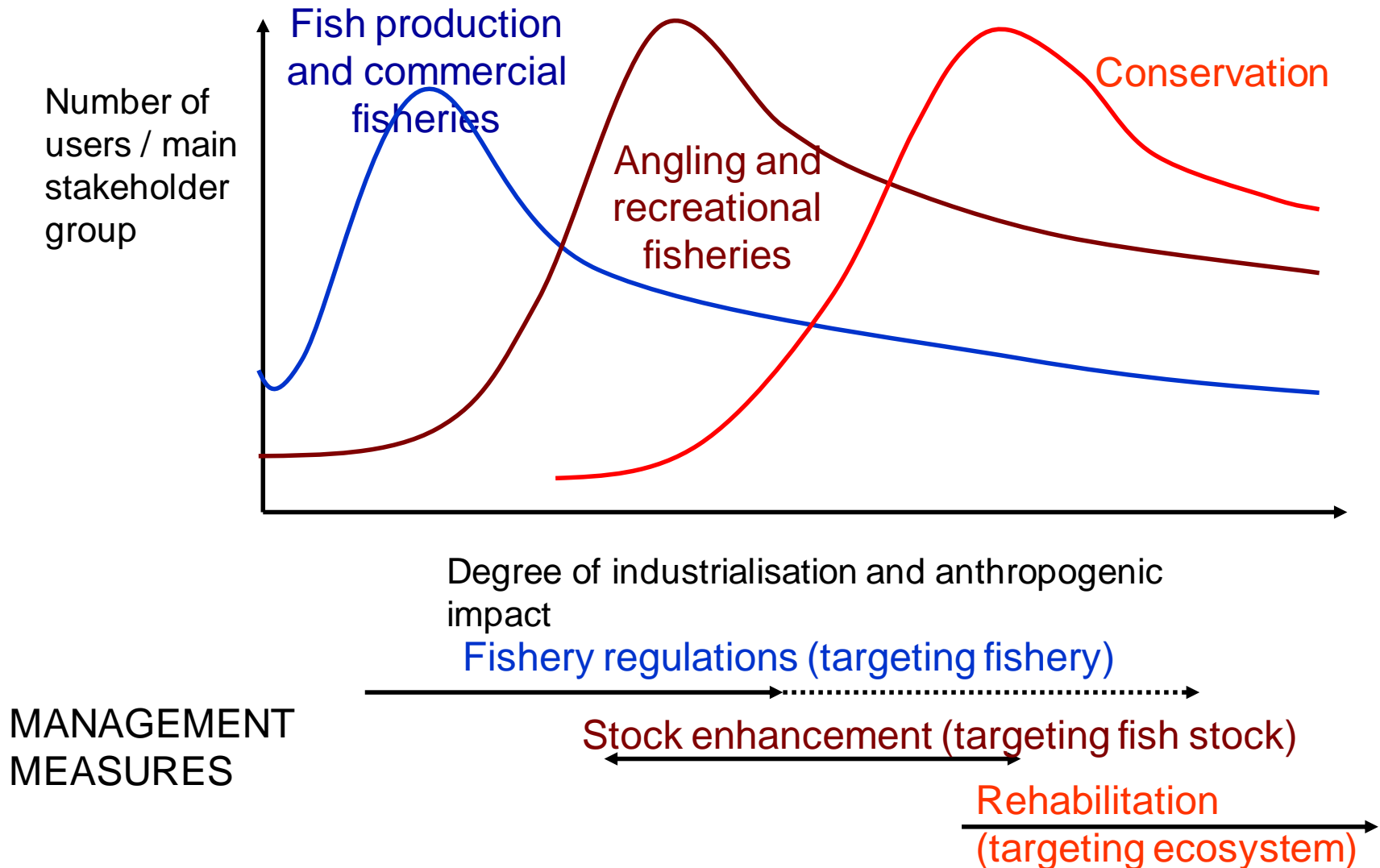
# Traditional fisheries management approaches

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Local regulation of exploitation and protection of fisheries based on input-output regulations

Regulatory technique	Population size	Broodstock protection	Undisturbed spawning	Free passage	Fish welfare
Closed areas	*	*		*	
Close season		*	*	*	*
Catch limit	*				
Fishing pressure	*	*			
Type of gear					*
Size of fish	*	*			*

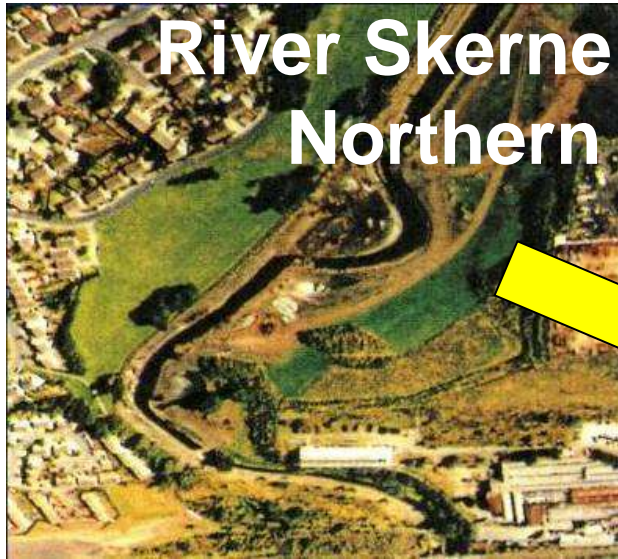
# Challenge – recognise shifting uses



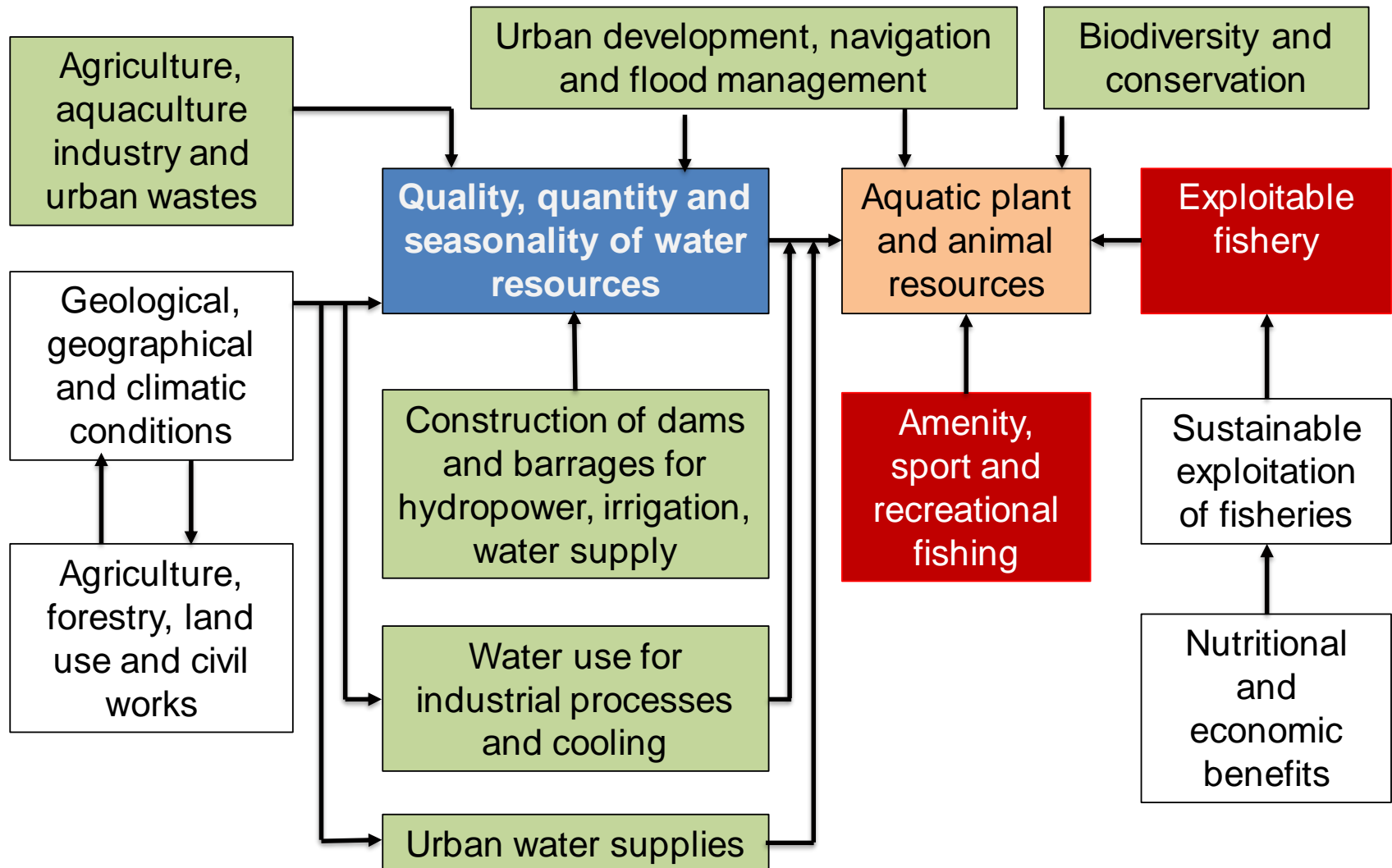
EU drivers based on need to ‘maintain, improve and develop’ aquatic ecosystems because of:

- growing pressures to improve the ecological status of rivers and lakes under international conventions such as the European Union **Water Framework Directive 2000/60/EC**
  - needs to contribute towards protection of biodiversity under the EU Conservation of Natural Habitats and of Wild Fauna and Flora (**Habitats Directive**) 92/43/EEC, Agenda 21 of the Rio Convention and the Convention of Biological Diversity.
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# EU fisheries management outcomes

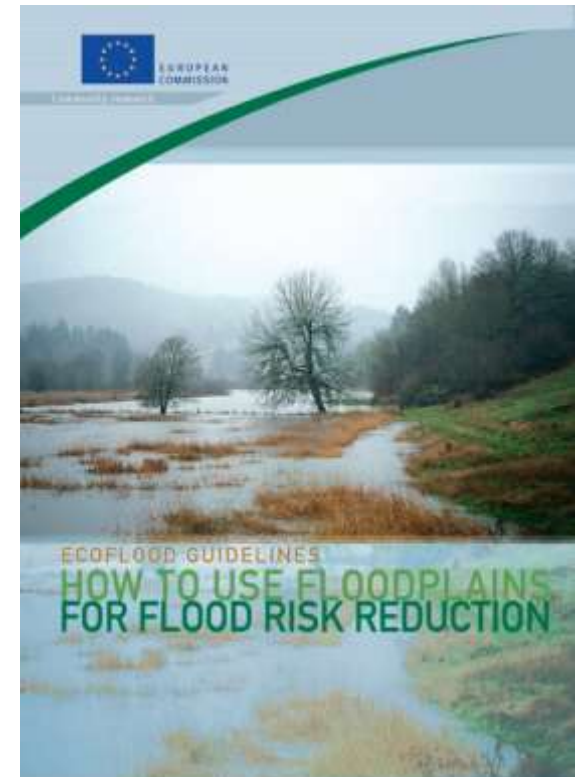


# Challenges - CONFLICTS



## Synergies between inland fisheries, ecological restoration and ....

- Flood risk management (EU Floods Directive)
- Renewable energy initiatives (EU Renewable Directive)
- Agri-development and forestry
- Water resources development



## European perspective – Bucharest consultation

- Inland fisheries falls under national legislation and management
- Management of inland fisheries should consider not only fishing parameters, but all surrounding human activities impacting on abundance of fish.
- Fisheries conservation measures should take global approach along with habitat protection, enhancement of the quality of waters, ecosystem approach, obstacles to migrations.

**EU REGULATION No 508/2014 on the European  
Maritime and Fisheries Fund**

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- EMFF is EU's maritime and fisheries policies for 2014-2020.
- One of the five European Structural and Investment (ESI) Funds to promote a growth and job based recovery in Europe.

## **EMFF**

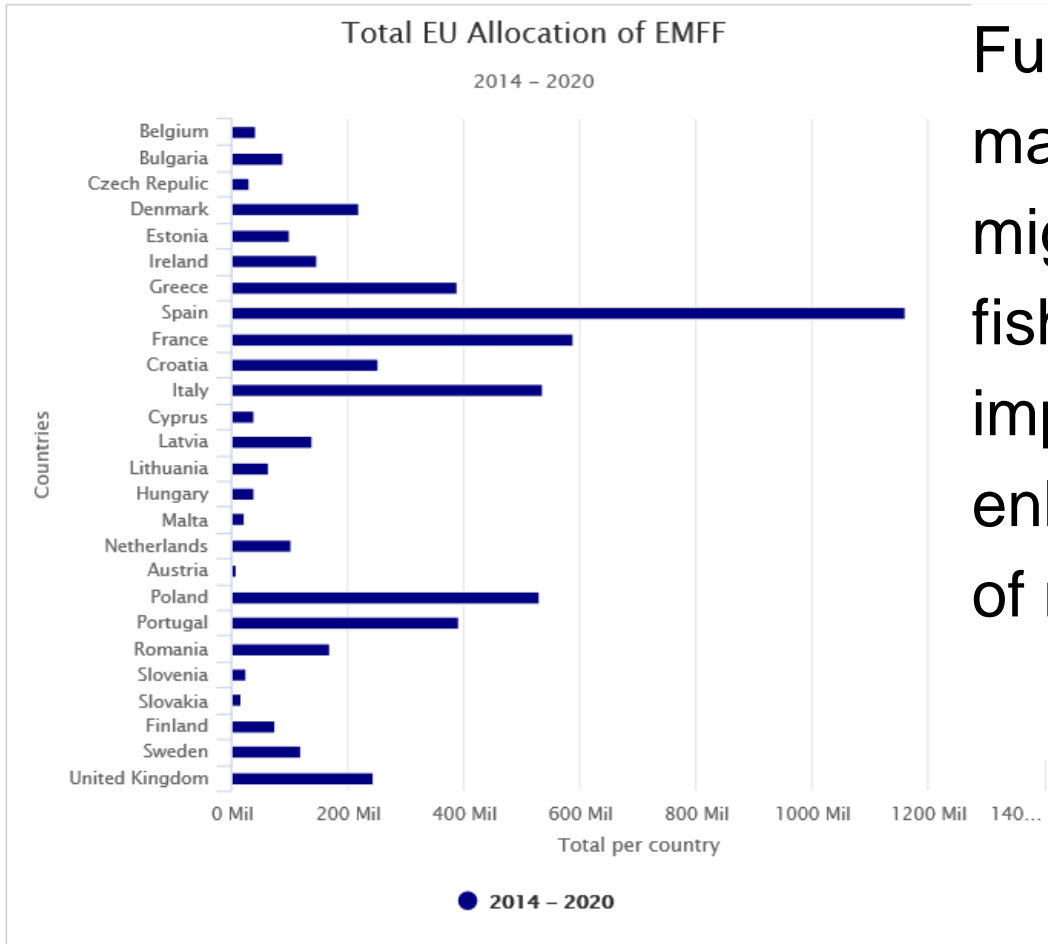
- helps fishermen in the transition to sustainable fishing
  - supports coastal communities in diversifying their economies
  - finances projects that create new jobs and improve quality of life along European coasts
  - supports sustainable aquaculture developments
  - makes it easier for applicants to access financing.
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## Article 44.6: Inland fishing and inland aquatic fauna and flora– protect and develop aquatic fauna and flora

This includes

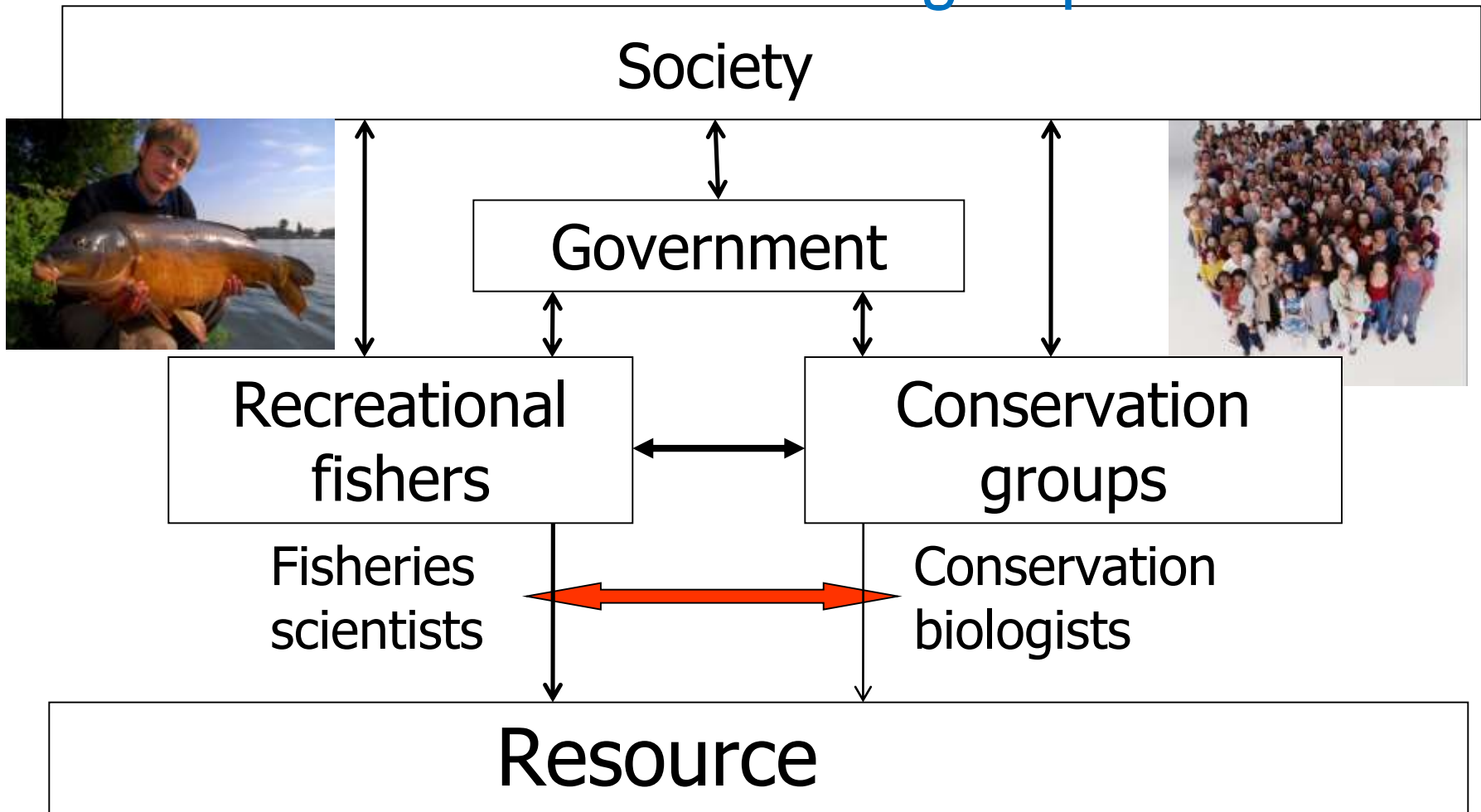
- management, restoration and monitoring of NATURA 2000 sites which are affected by fishing activities, and the rehabilitation of inland waters in accordance with Directive 2000/60/EC of the European Parliament and of the Council (30), including spawning grounds and migration routes for migratory species
- where relevant, with the participation of inland fishermen the construction, modernisation or installation of static or movable facilities intended to protect and enhance aquatic fauna and flora, including their scientific preparation, monitoring and evaluation

## EMFF financial allocation per member state



Funds can be used to manage inland waters for migratory species, including fish passage, habitat improvement, fishery enhancement and monitoring of recovery of fish populations

## Coupled socio-ecological research and inclusion of diverse groups



# The future

Build bridges between water resource management and fisheries on conflicting issues, by improving the linkages between sectoral approaches, especially between stakeholders at the national and regional levels