

REPRESENTING KEY INTERACTIONS DRIVING THE DYNAMICS OF MARINE MAMMAL - FISHERIES CONFLICTS: A QUALITATIVE MODELLING APPROACH

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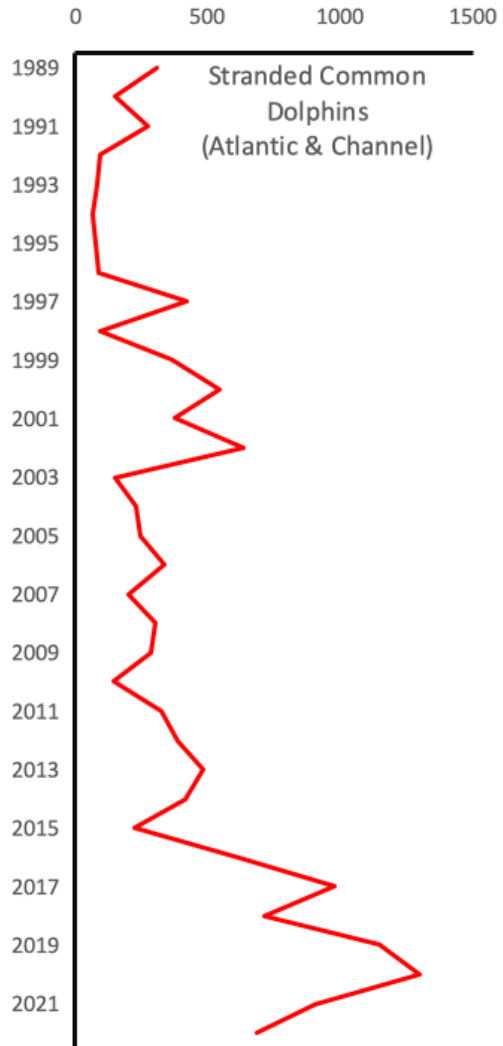
The global expansion of fisheries over the past decades has intensified the conflicts between fisheries and marine biodiversity

Increasing interactions between fisheries and marine mammals represent a major ecological and economic viability issue

=> **Marine mammal bycatch**



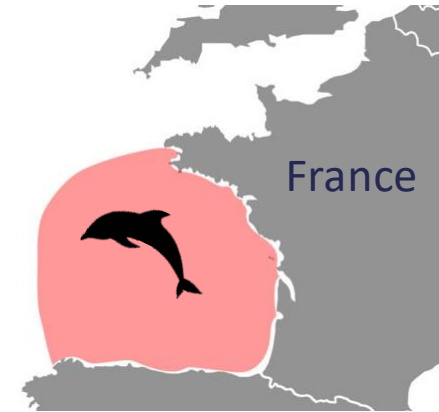
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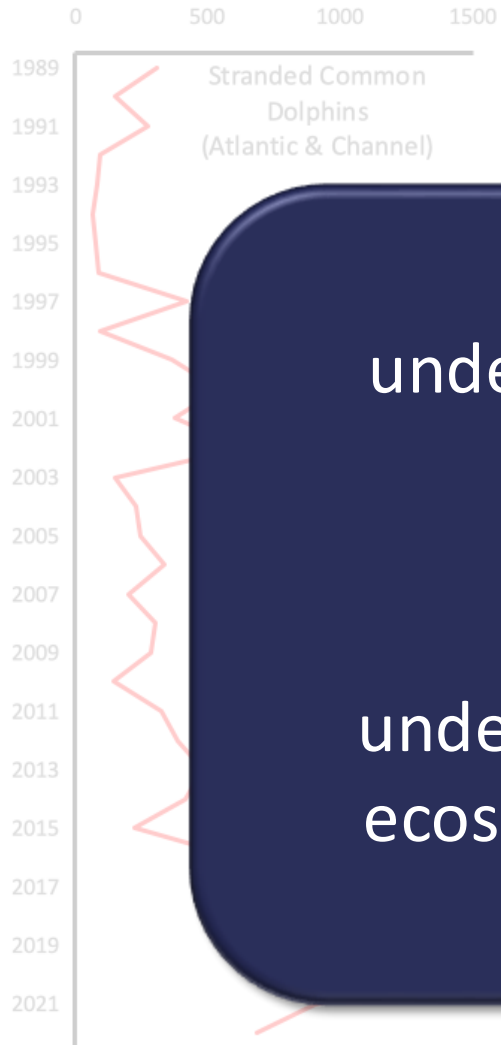


Bay of Biscay, France

In winter, major dolphin (*Delphinus delphis*) mortality

Strandings reached unprecedented levels since 2016, mainly due to bycatch in fishing gears



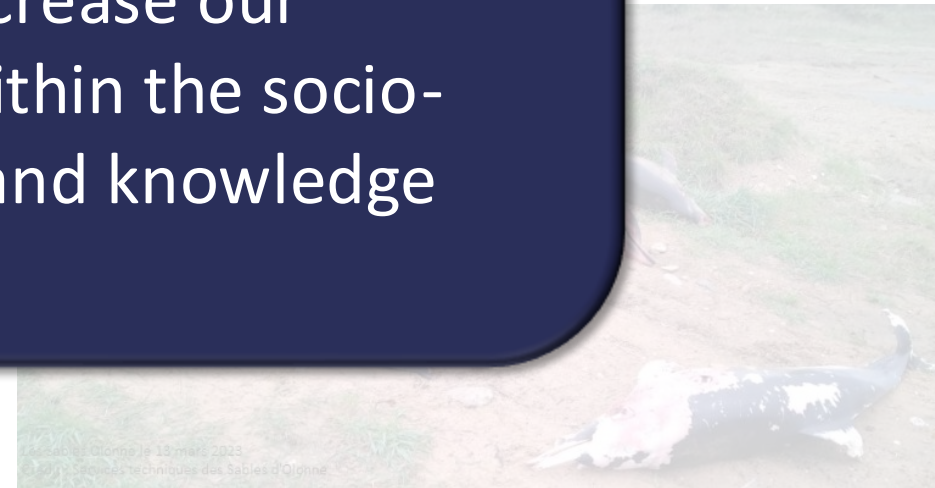
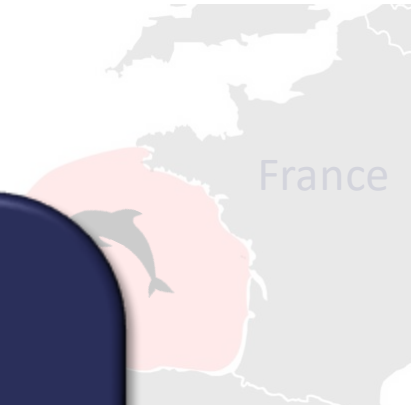


Bay of Biscay, France

Several actions are undertaken to better understand the environmental and human factors driving this bycatch and its increase

One of these actions aims to increase our understanding of the interactions within the socio-ecosystem through the perception and knowledge of stakeholders

fishing gears





develop a **representation of the interactions** within the Bay of Biscay socio-ecosystem, integrating ecological, technical, socio-economic and institutional dimensions



Workshops using a **participative qualitative modelling method**

to identify the most important elements, according to the participants, to take into account in order to understand the determinants and the possible evolutions of the problems of dolphin bycatch in the Bay of Biscay

Based on **PESTEL** analysis framework

PESTEL

Political

Economic

Social

Technological

Environmental

Legal

Representation of the interactions in the socio-ecosystem



to identify the most important elements
the determinants and the possible
Based on PESTEL analysis framework

=> with various groups of stakeholders

~~Initially: with scientists, fisher representatives, different groups of fishers, environmental NGOs, managers and decision makers, seafood sector, etc.~~



March 2023 - *Journées filière morte* ('dead sector' days)

+ European and national justice actions, French national action plan, etc.



=> impossibility of organizing all the workshops that were due to be held

Results based on the 2 (online) workshops that could be organized

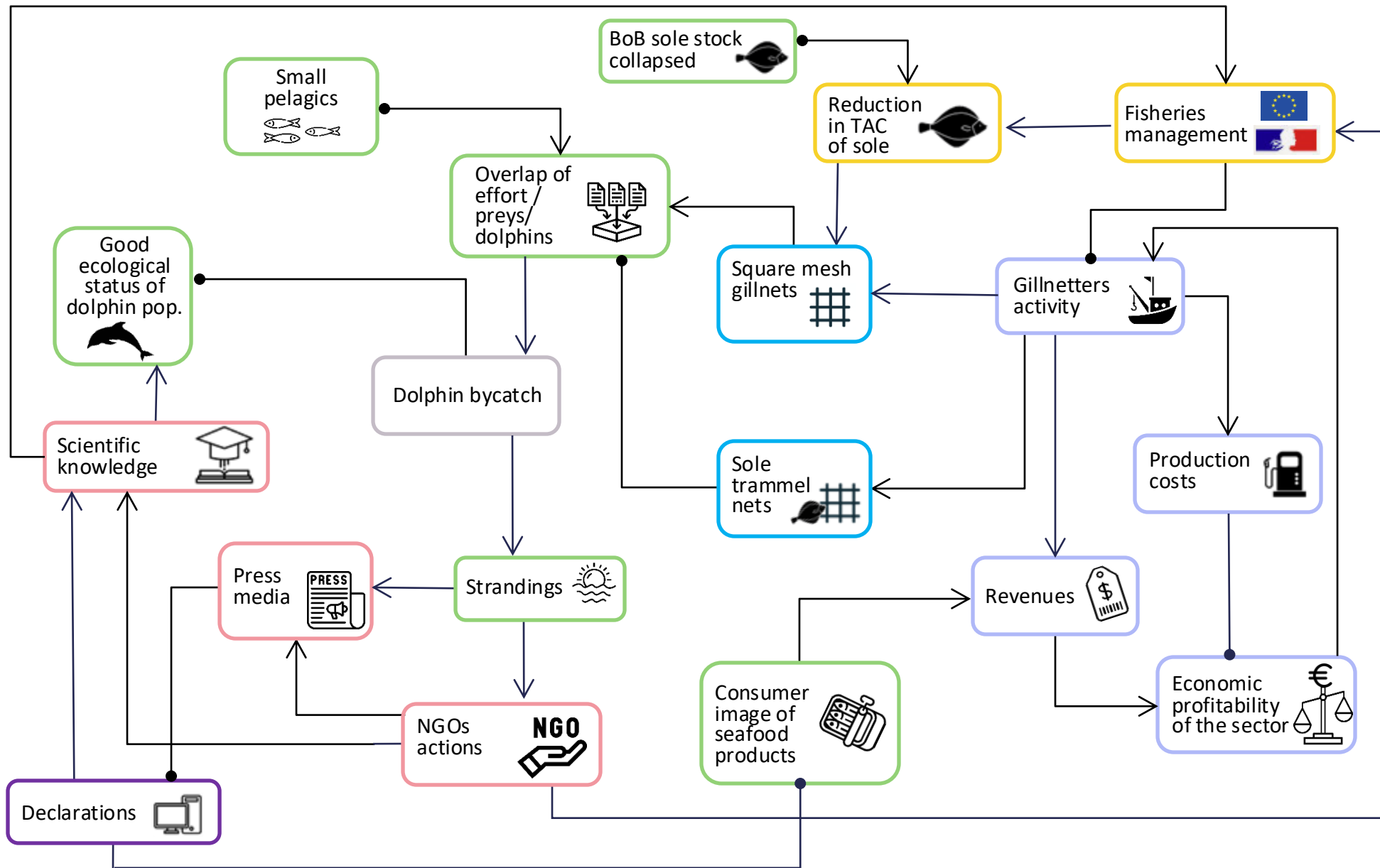
Workshop 1 - Delmoges scientists (9 participants) - 16 February 2023

Workshop 2 - Decision-makers and managers (9 participants) - 15 May 2023

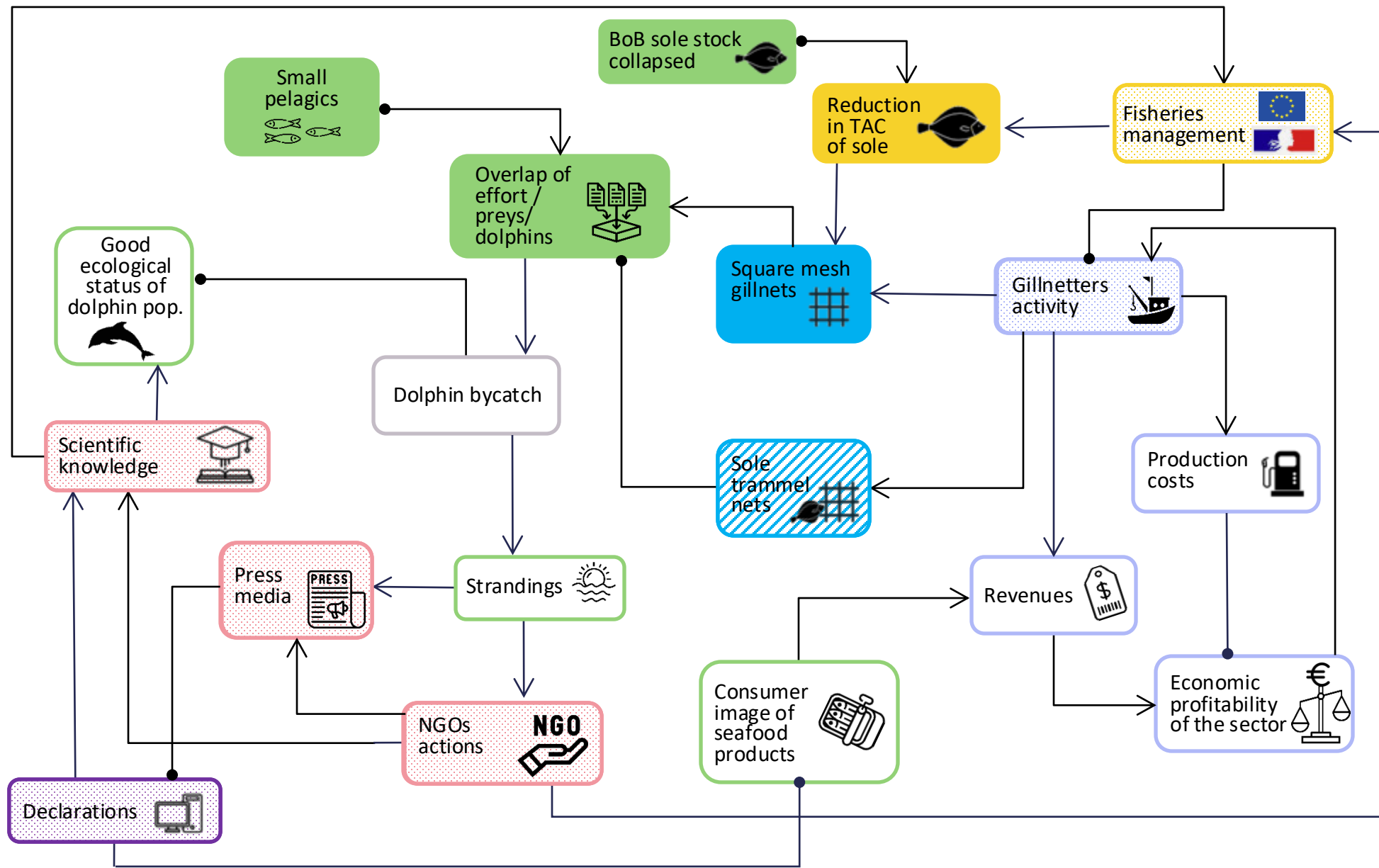
+ European and national justice actions, French national action plan, etc.

Simplified representation – focus group 1 (scientists)

- Political
- Economic
- Social
- Technological
- Environmental
- Legal



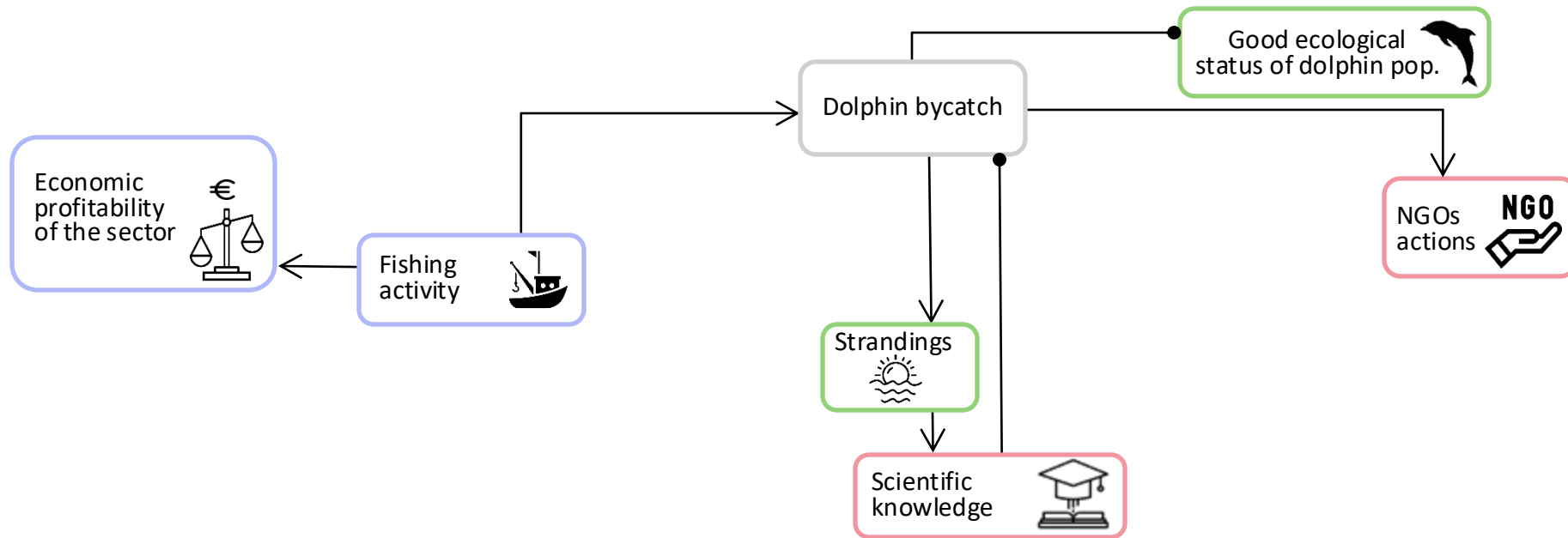
Simplified representation – focus group 1 (scientists)



- Political
- Economic
- Social
- Technological
- Environmental
- Legal

- Causes
- Solutions
- Uncertain

Simplified representation – focus group 2 (managers)



Political

Economic

Social

Technological

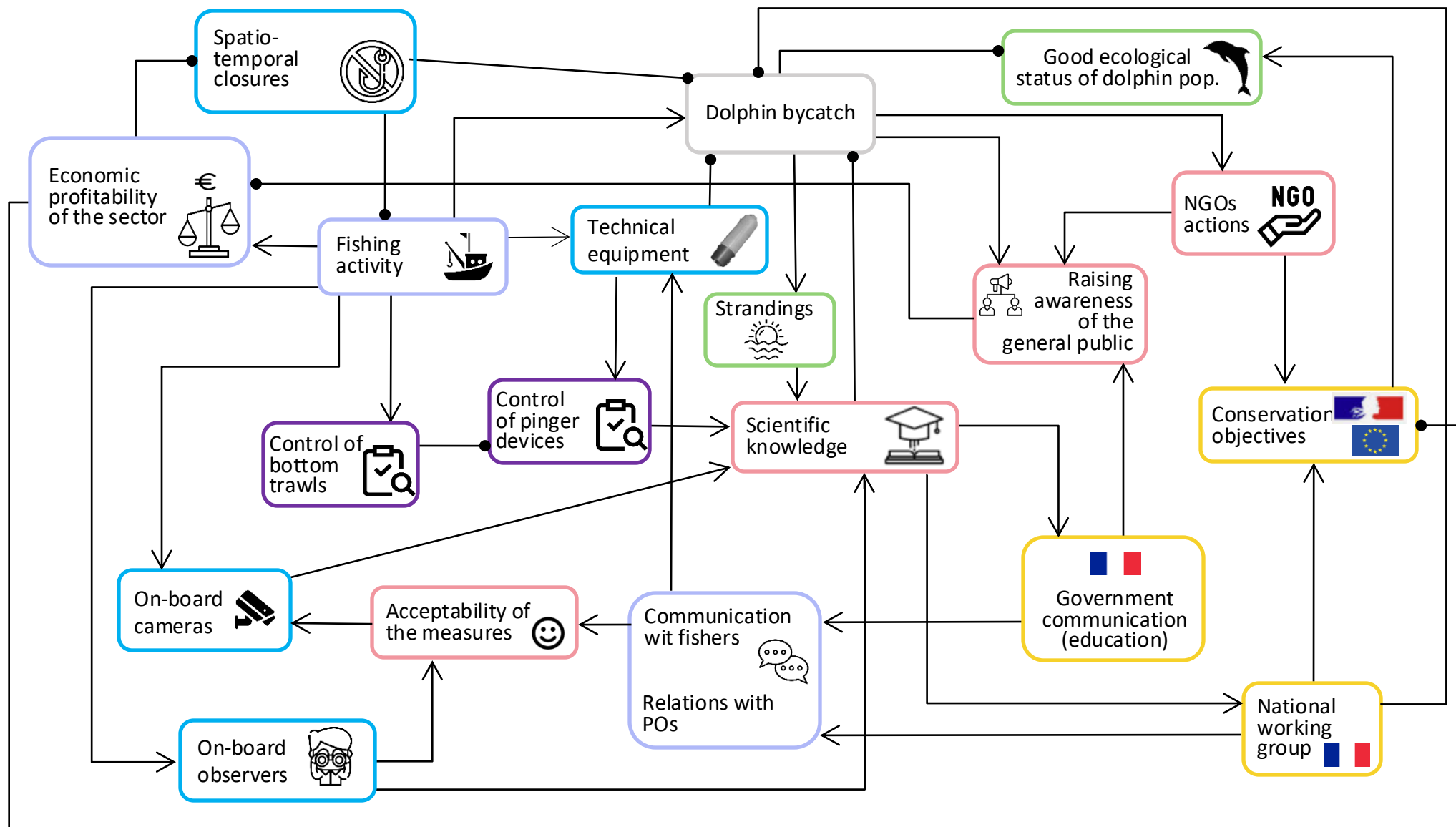
Environmental

Legal

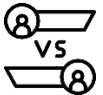
Common elements with representation 1

Simplified representation – focus group 2 (managers)

- Political
- Economic
- Social
- Technological
- Environmental
- Legal



As only 2 representations => not relevant to provide a synthetic representation of the socio-ecosystem as initially planned, so only comparison of the 2 representations



Group 1 with scientists

Group 2 with managers and decision makers

focused mainly on

causes of dolphin bycatch

solutions to reduce dolphin bycatch

Example of elements and themes specific to each focus group

How small pelagic populations in the Bay of Biscay affect the dolphins' distribution

The study of various technical solutions and their impact on fishing effort and effect on dolphin bycatch

How changes in quotas affect fishing strategies and dolphin bycatch

The important role of communication, education and representation of the profession

Fear of declaration for professionals

Difficulty of control and impact on bycatch



While different representations of the system, the 2 focus groups share **6 common elements** (+ dolphin bycatch = 7); but the interactions between these elements are not all perceived in the same way by different groups

Good ecological status of dolphin population 

Strandings 

Economic profitability of the sector 

Fishing activity 

Scientific knowledge 

NGOs actions 

Common outputs from the 2 workshop discussions:

- The **diversity of stakeholders** involved in the issue
- A **constrained environment** making it more difficult to introduce additional rules
- The **central role of knowledge**

There is a consensus among both groups that the acquisition of knowledge is a crucial element. It is perceived as a fundamental prerequisite for implementing solutions

THANK YOU FOR YOUR ATTENTION!



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<https://delmoges.recherche.univ-lr.fr/>

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