



# A practical framework to evaluate the potential of incentive-based approaches to reduce marine mammal bycatch

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# Definitions

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An incentive **encourages someone to do something, without forbidding any options**

- Market-based incentives: affect the monetary costs and benefits associated with different options
- Social-based incentives: encourage people to behave in a socially valued & approved manner (without significantly changing economic incentives) and support collective action

# Purpose

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The **intended purpose** of incentive-based measures can be twofold:

- encourage the adoption of practices that limit bycatch
- encourage information sharing and the participation of volunteers in knowledge acquisition programs

# Examples

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“Incentive-based bycatch reduction policy instruments create **incentives to change the behavior and decision-making of producers** to optimally reduce bycatch” (Squires et al., 2021)

- choice of fishing areas, times and/or fishing practices
- choice of target species, choice of fishing gear
- choice of investments in different types of vessels
- observation strategies for interactions with marine mammals
- methods of sharing information on observed interactions
- etc.

# Advantages

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- Rationale: avoid “command-and-control” regulations (strict fishery closures, prohibition of certain gears, etc.) & promote self-decided changes in fishing practices
- Greater flexibility in designing solutions to reduce bycatch in cost-effective ways, e.g. by using decentralized and private information that is not available to the management authority
- Greater flexibility in adapting to changing market, environmental, technological and resource conditions

*Lent & Squires, 2017; Squires et al. 2021*

# Approach

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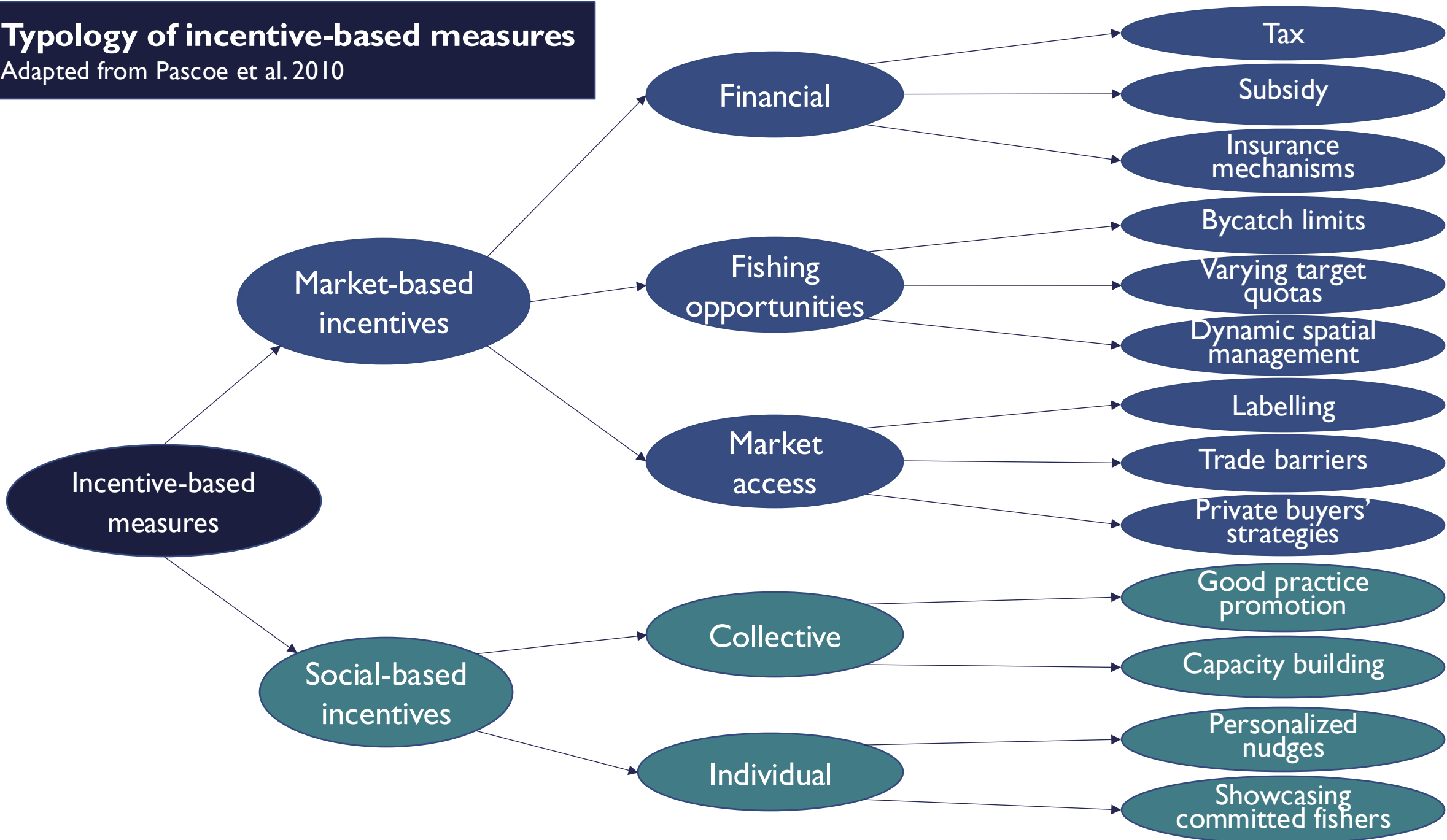
- Convene an international group of experts
- Validate a typology of incentive-based measures
- Review & discuss lessons learned from case studies (using the PESTEL framework)
- Develop & test a systematic framework to evaluate opportunities for & barriers to application



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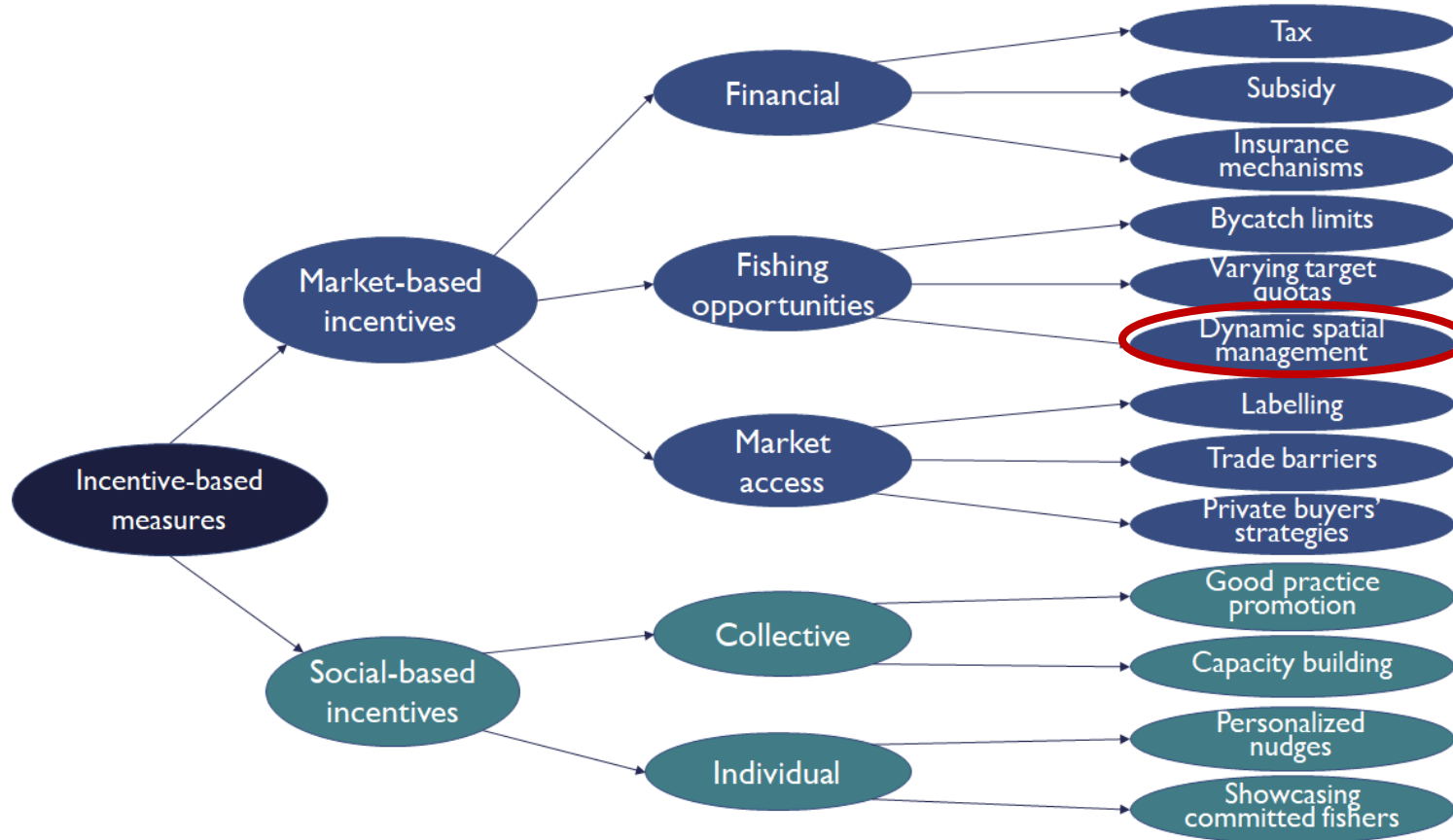
# Typology of incentive-based measures

Adapted from Pascoe et al. 2010



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## Case study – Real time bycatch reporting (BATmap)

West of Scotland demersal fisheries

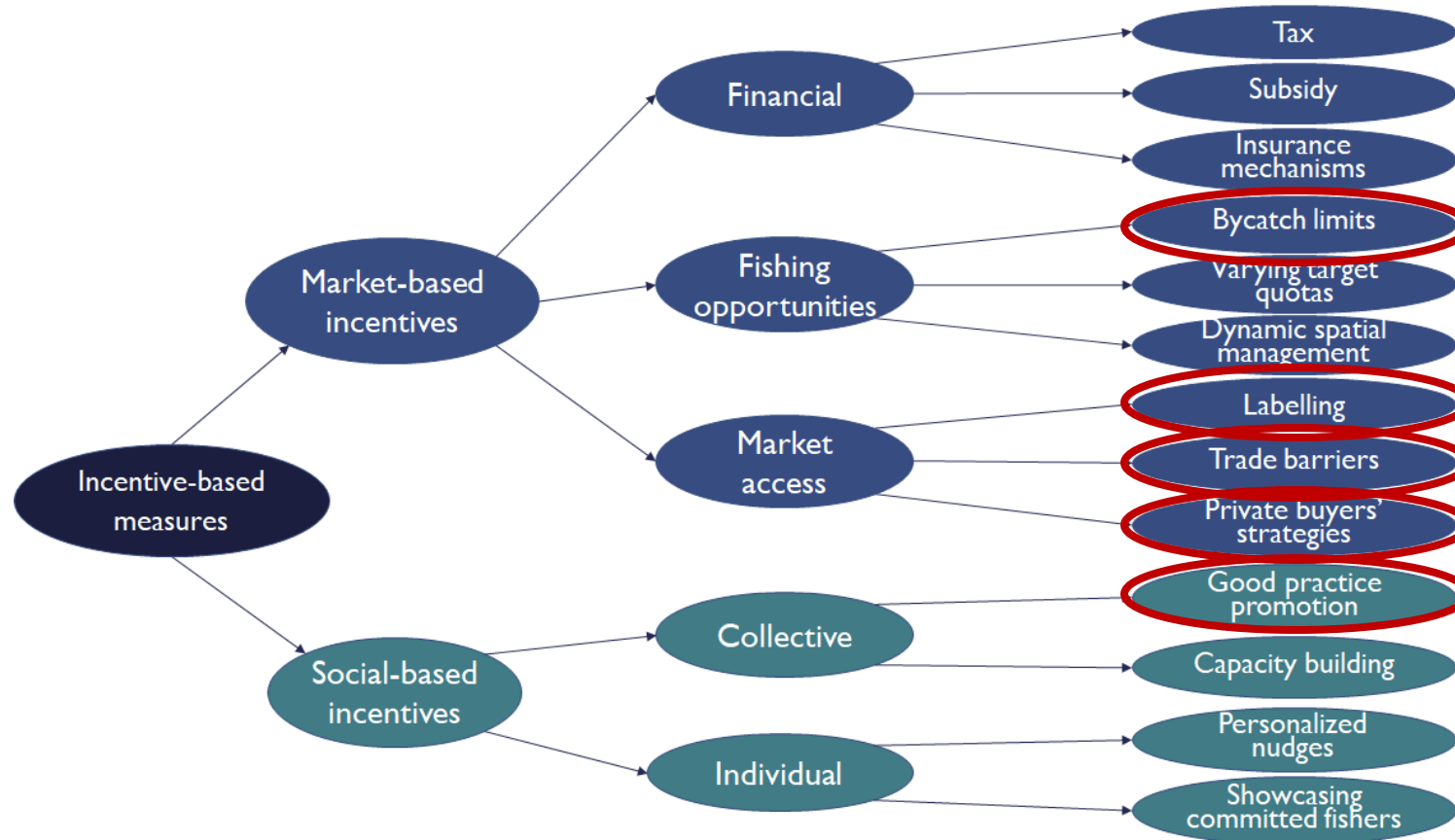


<https://info.batmap.co.uk>



# Typology of incentive-based measures

Adapted from Pascoe et al. 2010



## Case study – « The tuna-dolphin problem »

Ballance et al. 2021

Eastern Tropical Pacific yellowfin tuna purse seine fishery

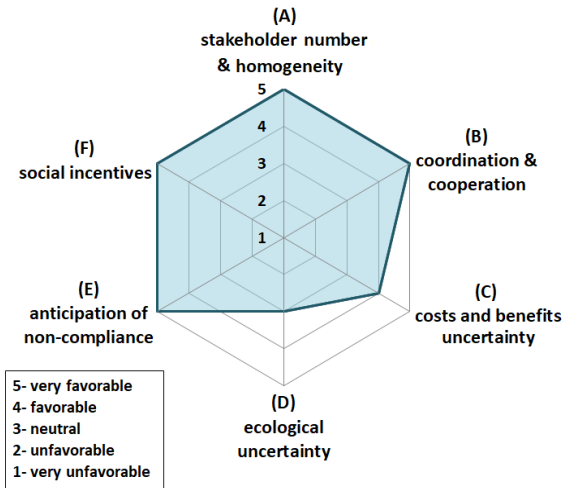
# Evaluation framework

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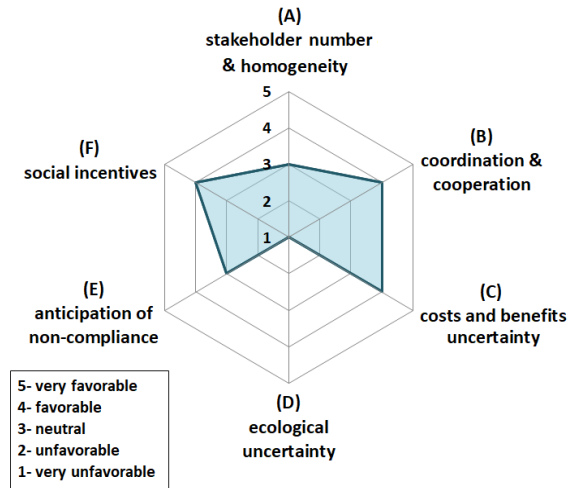
1. Number and homogeneity of stakeholders (Cox et al., 2010)
2. Existing coordination mechanisms and level of stakeholder cooperation in the definition of solutions (Stephenson et al., 2019)
3. Level of uncertainty about the distribution of costs and benefits associated with implementing the solution (Libecap, 1994)
4. Level of scientific uncertainty about bycatch mitigation potential of a proposed solution and possible side effects (Jensen et al., 2017)
5. Anticipation of non-compliance (Libecap, 2014)
6. Social incentives and alignment with stakeholders' values (Young et al., 2016)

# Workshop case studies

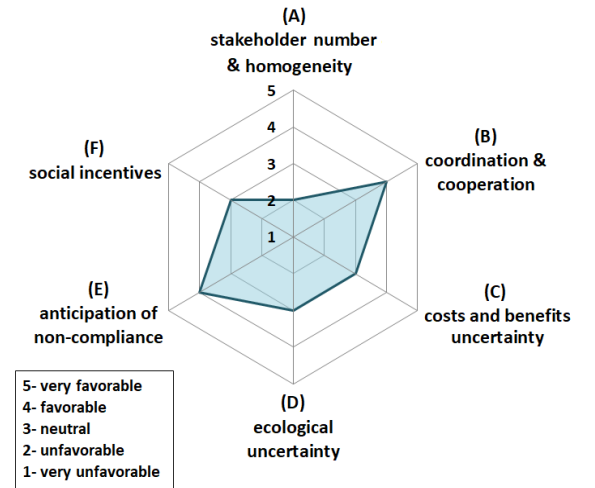
(1) BATmap: bycatch avoidance mapping tool



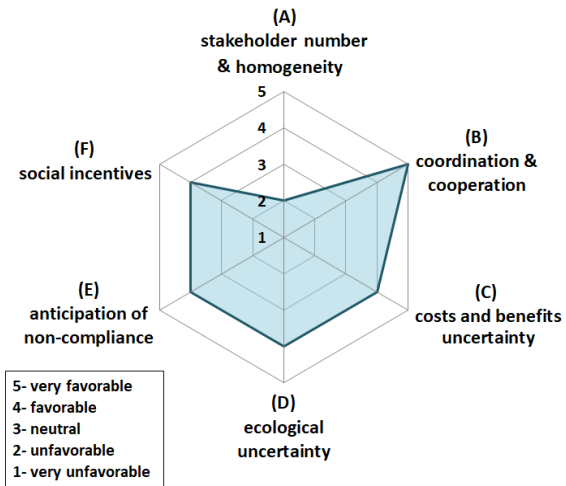
(2) The 'endangered' north Atlantic right whale



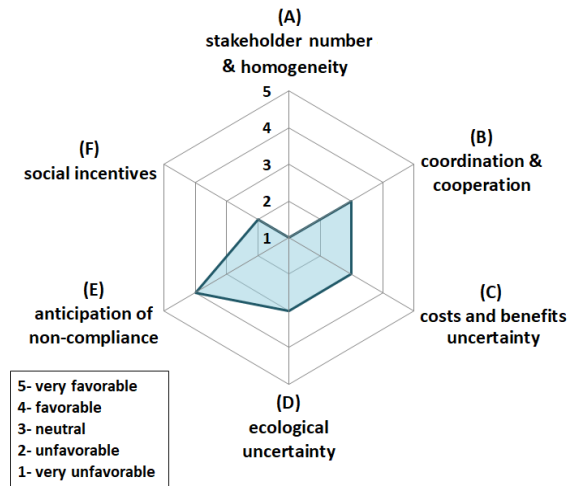
(3) US Import Regulations under MMPA



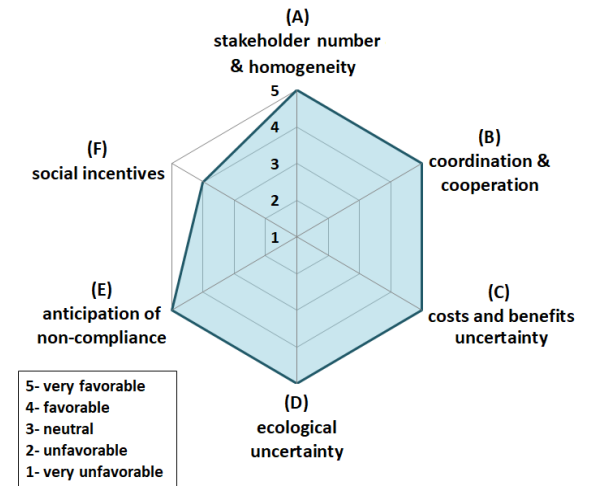
(4) Marine Stewardship Council Eco-Label – new standards



(5) The Tuna-Dolphin problem



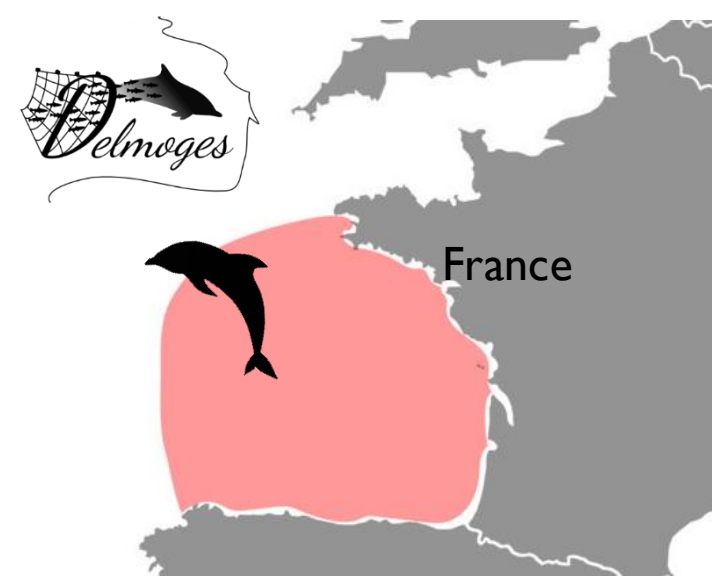
(6) Cooperative-based Salmon savings incentive plan agreements



# Lessons for the Bay of Biscay

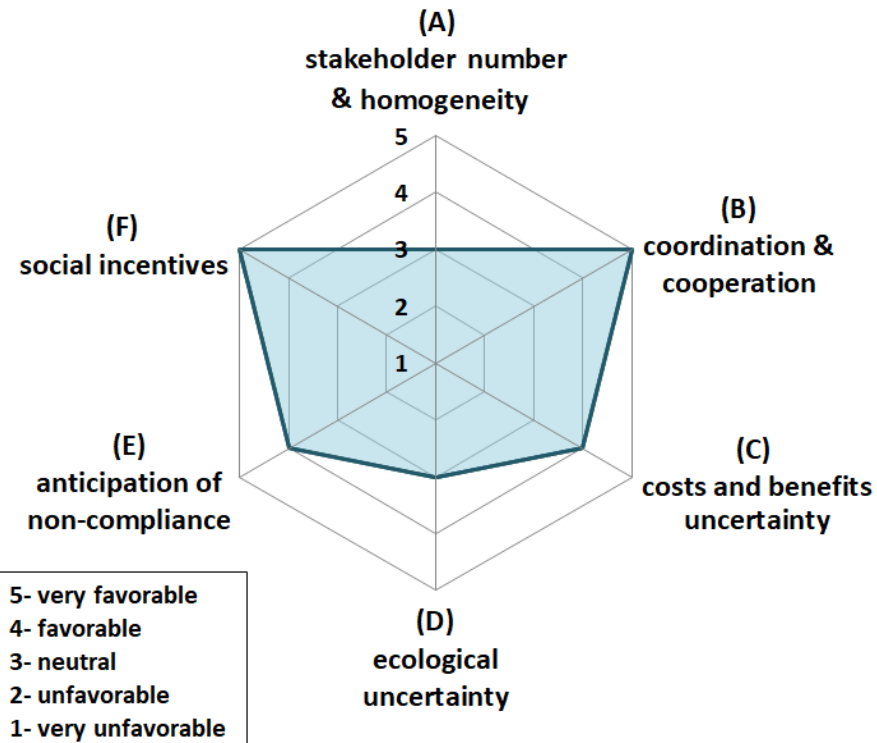
## 2 pre-requisites

- **A “credible threat”**: e.g. fishery closure, market access restriction
- **Adequate levels of information**: on conditions in which bycatch occurs
  - Data acquisition at relevant spatial & temporal scale
  - Increase information sharing: encourage industry-led solutions, decouple individual information from penalties, create incentives for information sharing (key role of POs)

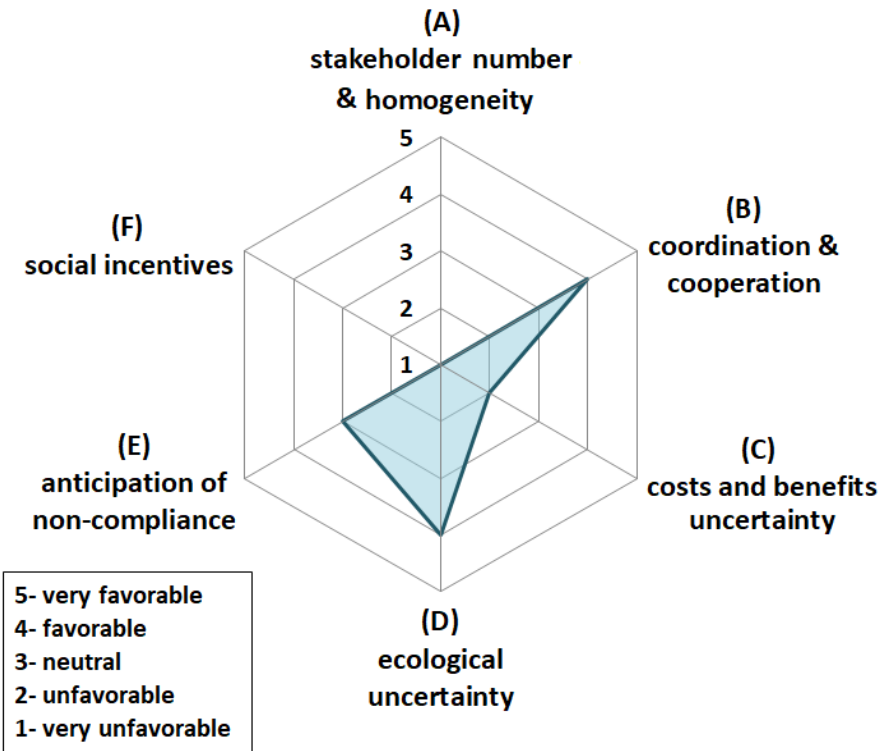


# Application of the framework to two hypothetical options

(1) "BATmap"-like app



(2) Annual PBR limits (transferable through POs)  
with full observation (on-board cameras)



## Other lessons learned

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1. Importance of participatory approaches involving key stakeholders, and key role of social incentives
2. Making the most of windows of opportunities as they arise
3. Usefulness of small-scale pilots
4. Value of system-wide perspective when addressing a particular bycatch problem (allows consolidation as new issues emerge)

THANK YOU FOR YOUR ATTENTION!



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<https://www.observatoire-pelagis.cnrs.fr/pelagis/programmes/delmoges/?lang=en>

