



W 1/2 What are the research  
for planning in 21st century?

# Supporting marine management from the bottom up

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# Supporting marine management from the bottom up

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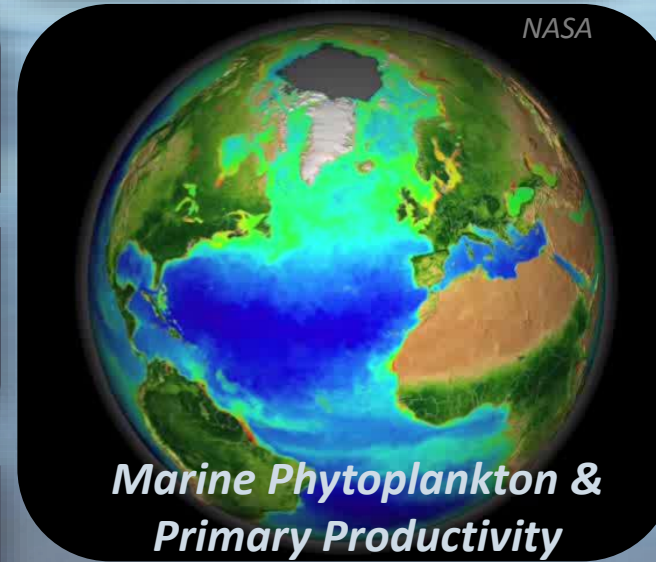
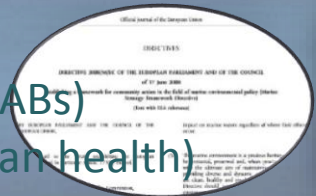
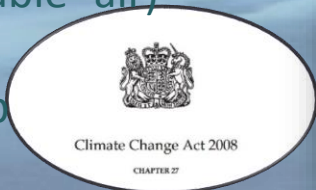
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# Are managers missing a trick?

PP is an Intermediate or Supporting Ecosystem Service (ES) supporting further ecosystem functions and...

- global carbon cycle- sequestering CO<sub>2</sub> from atmosphere (ES climate regulation)
- atmospheric O<sub>2</sub> (ES clean -breathable- air)
- base of marine food web (ES fish and food) (cultural ES, e.g. bird and whale-watching)
- Harmful Algal Blooms (HABs) (Oceans and human health)
- indicators of climate change (policy driver)
- indicators of eutrophication (e.g. for GES)

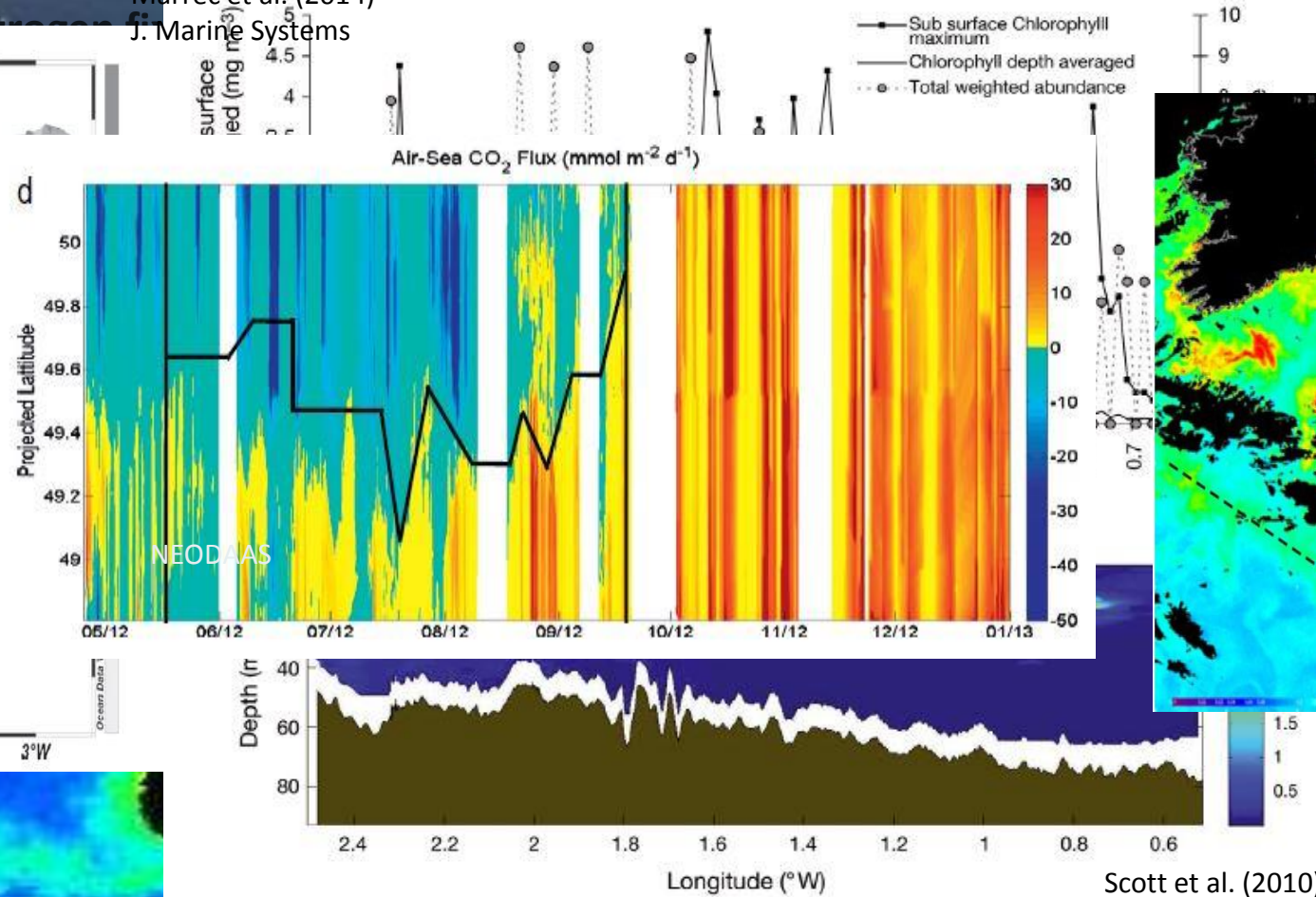
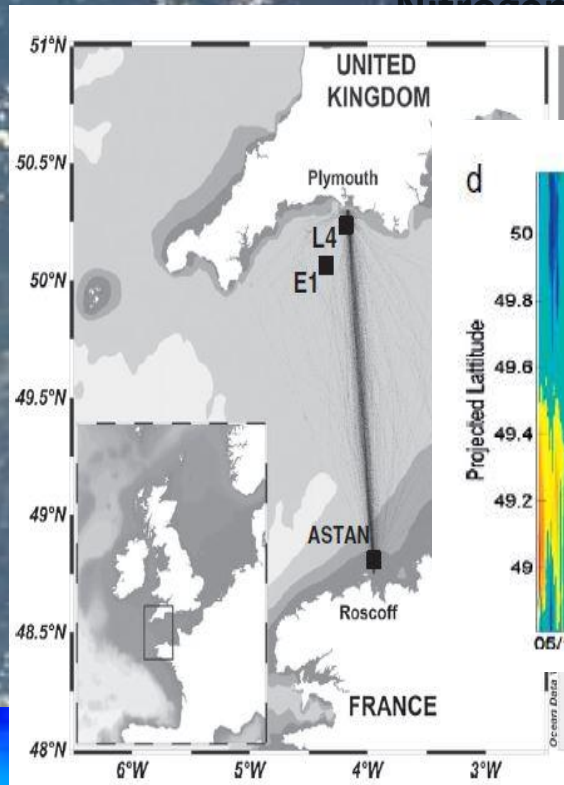


**Ecosystem Services:**  
Services provided by ecosystems that contribute to making human life both possible and worth living (UK NEA)



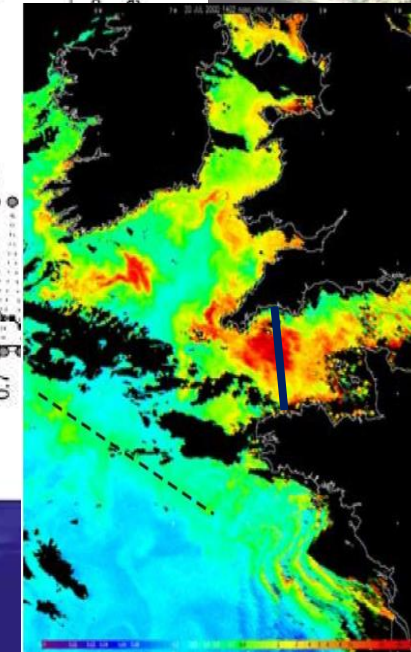
# The importance of scale and variability in space

Trichodesmium  
Nitrogen fixer  
Marrec et al. (2014)  
J. Marine Systems



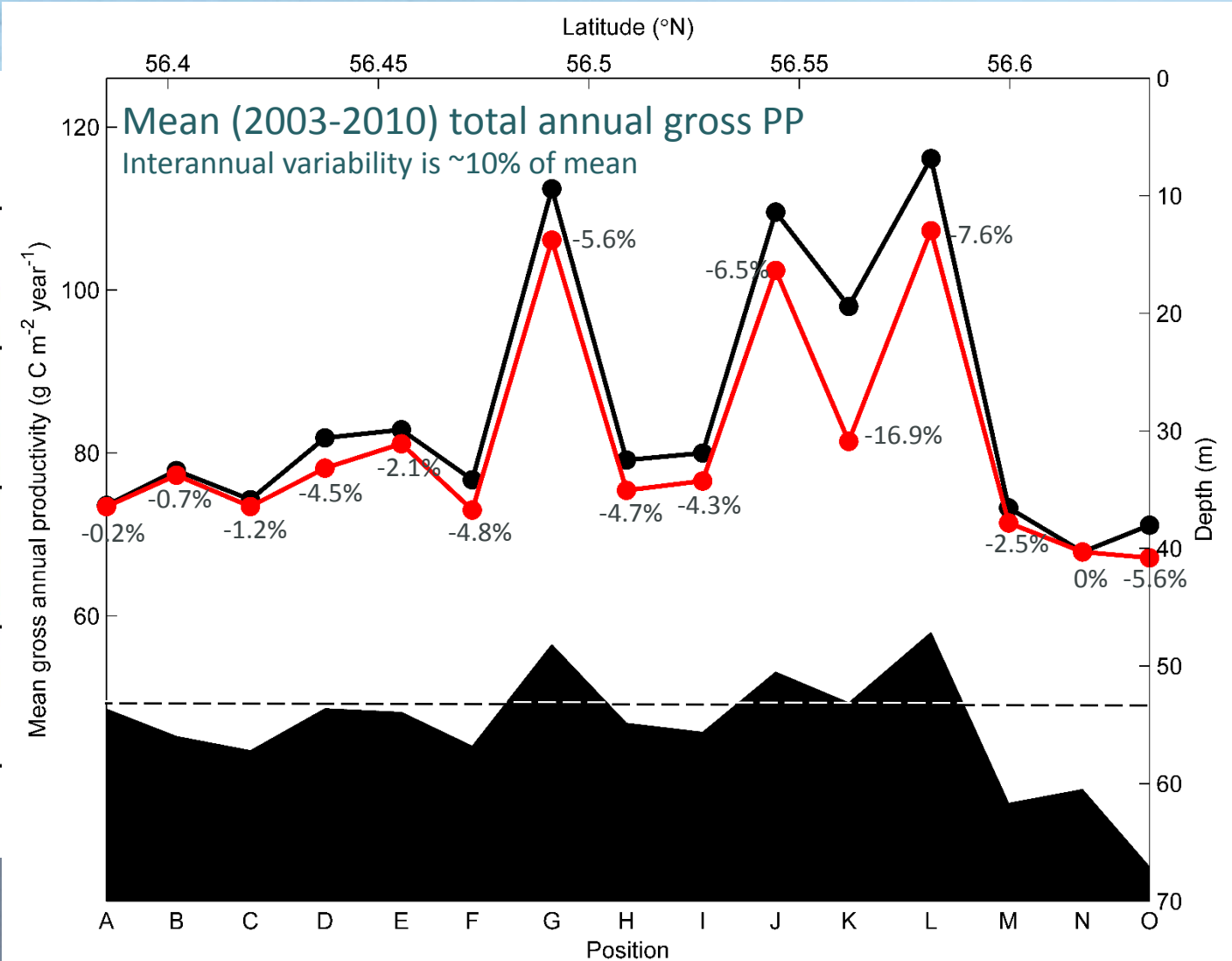
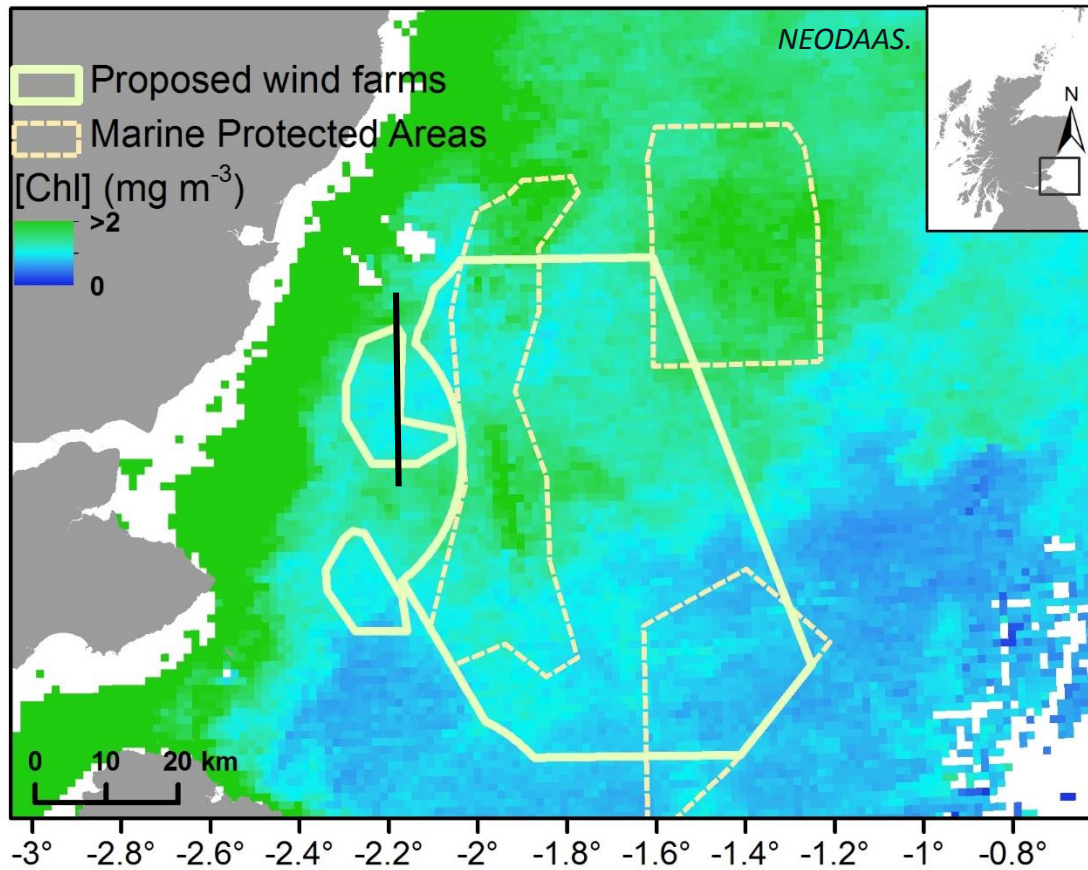
Scott et al. (2010)

Karenia:  
Harmful Algal Bloom



P. Alejandro Díaz

# Integrating consideration of phytoplankton into marine management





## Bottom up marine management

# Management / Policy



# Research

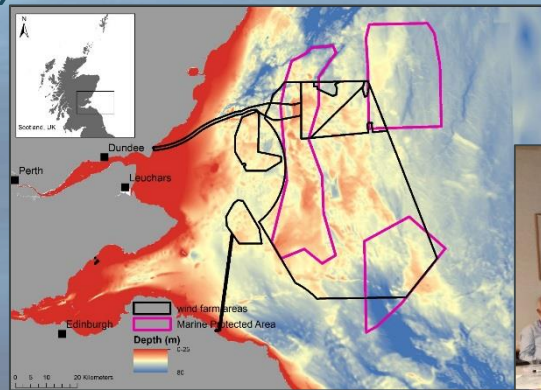


# *The “CORPORATES” Knowledge Exchange Project*

CORPORATES: Cooperative participatory assessment of the impact of renewable technology on ecosystem services

Introduce Ecosystem Services and design with Stakeholders a **decision-support framework** which addresses potential **ecological trade-offs** such as climate change, renewable developments, and MPAs

- Involved
  - Natural scientists
  - Social scientists
  - Law & policy experts
  - Regulatory/Advisory partners
  - Stakeholders (Renewables, Fishing, Conservation, Recreation/ Tourism)





# CORPORATES: Process

Participatory Mapping

Identifying benefits, and commonalities and differences

Ecosystem 'interlude'

Linking benefits and ecosystem services

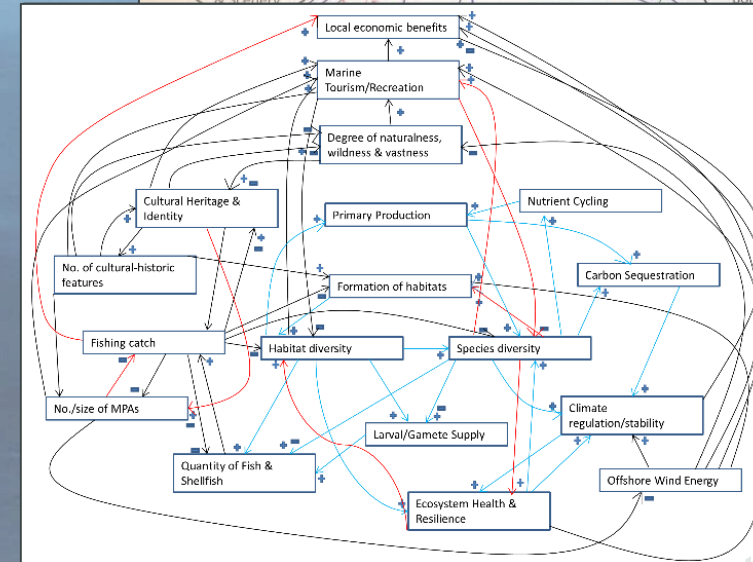
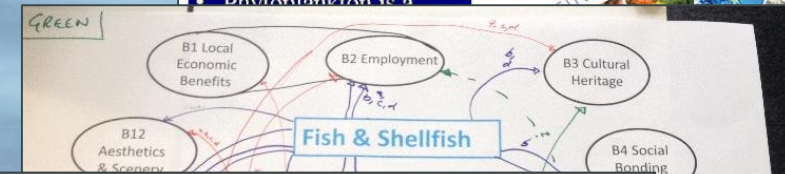
Conceptual systems model building

Policy 'interlude'

Exploring trade-offs and policy options



Why important?

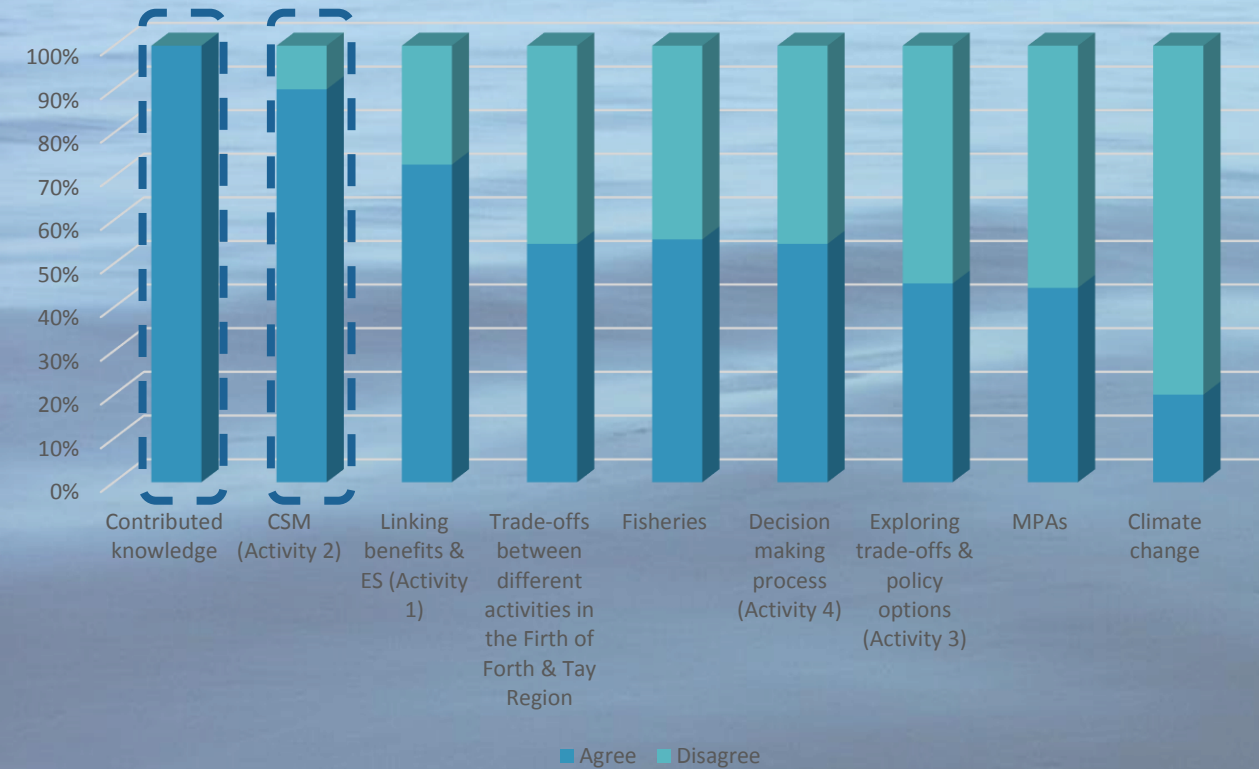


[www.corporatesproject.co.uk](http://www.corporatesproject.co.uk)

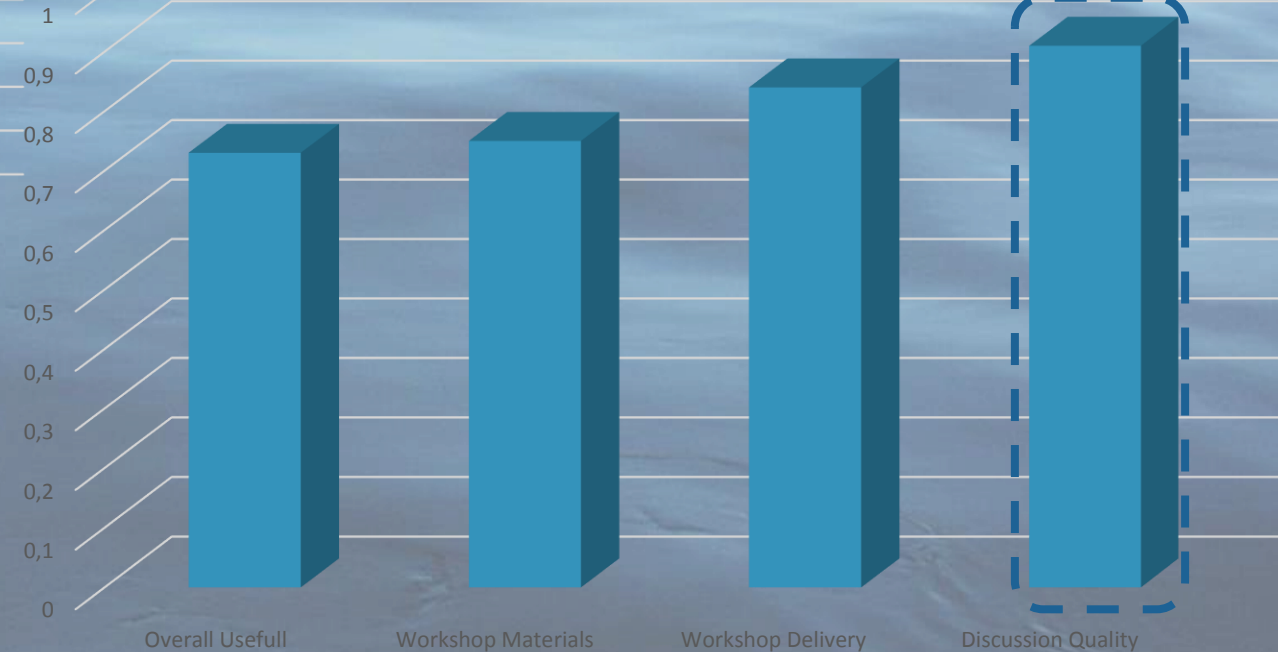


# *CORPORATES: Feedback from stakeholders*

Feedback on whether there was knowledge gained

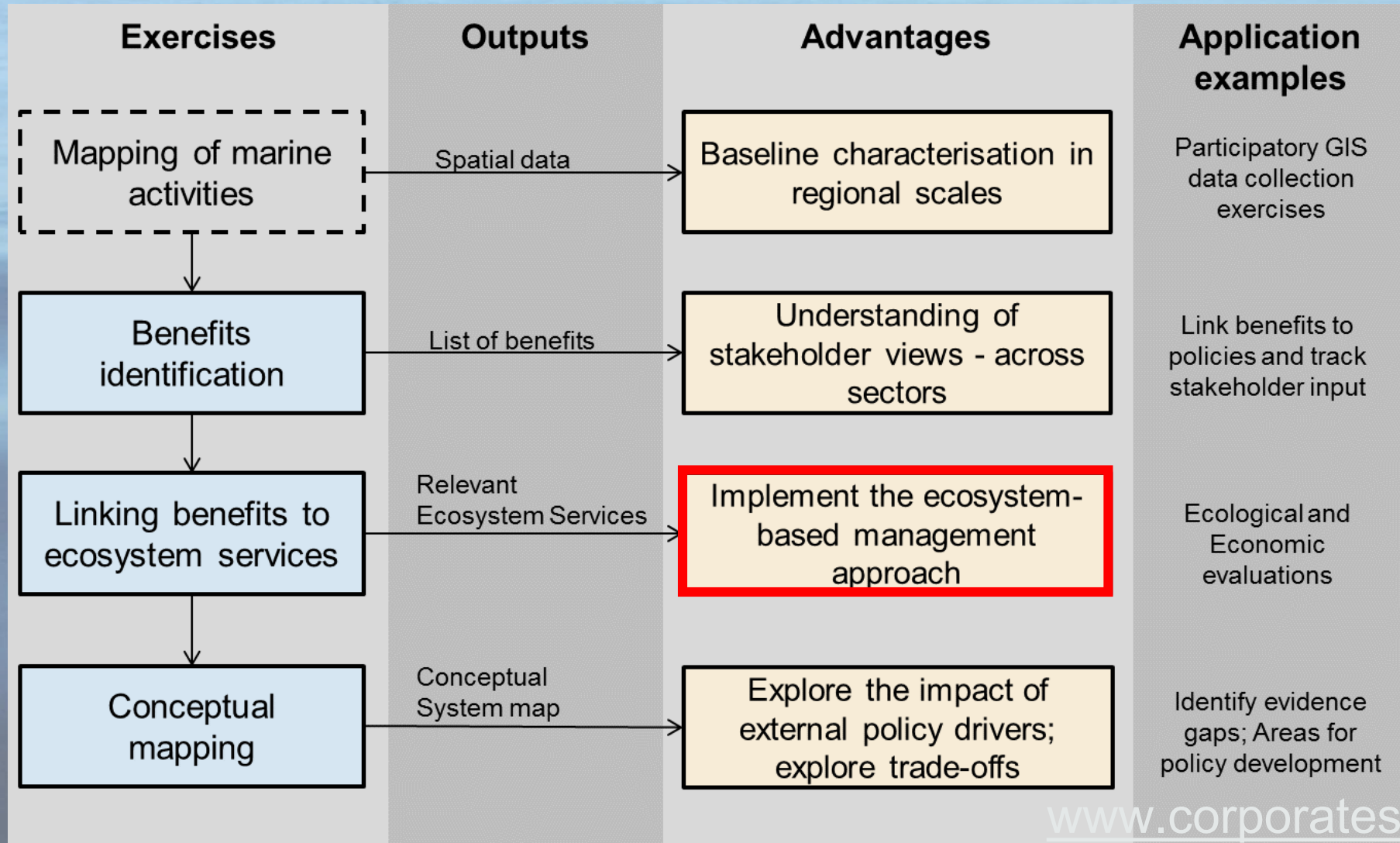


Feedback for Workshop 2



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# How do marine planning practitioners see it?



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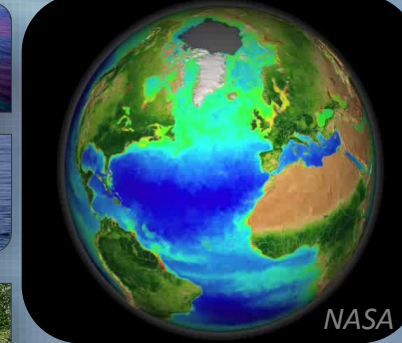
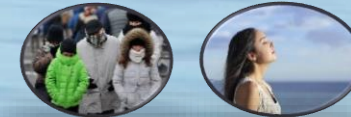


# Bottom up marine management

## Management / Policy



## Research



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