



W 1/3 Past two years
all over the Europe:
case studies 2

MSP approaches in the Basque Country (Bay of Biscay, NE Atlantic)

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PhD Scholar in AZTI, Spain

Marine Spatial Planning approaches in the Basque Country (Bay of Biscay, NE Atlantic)

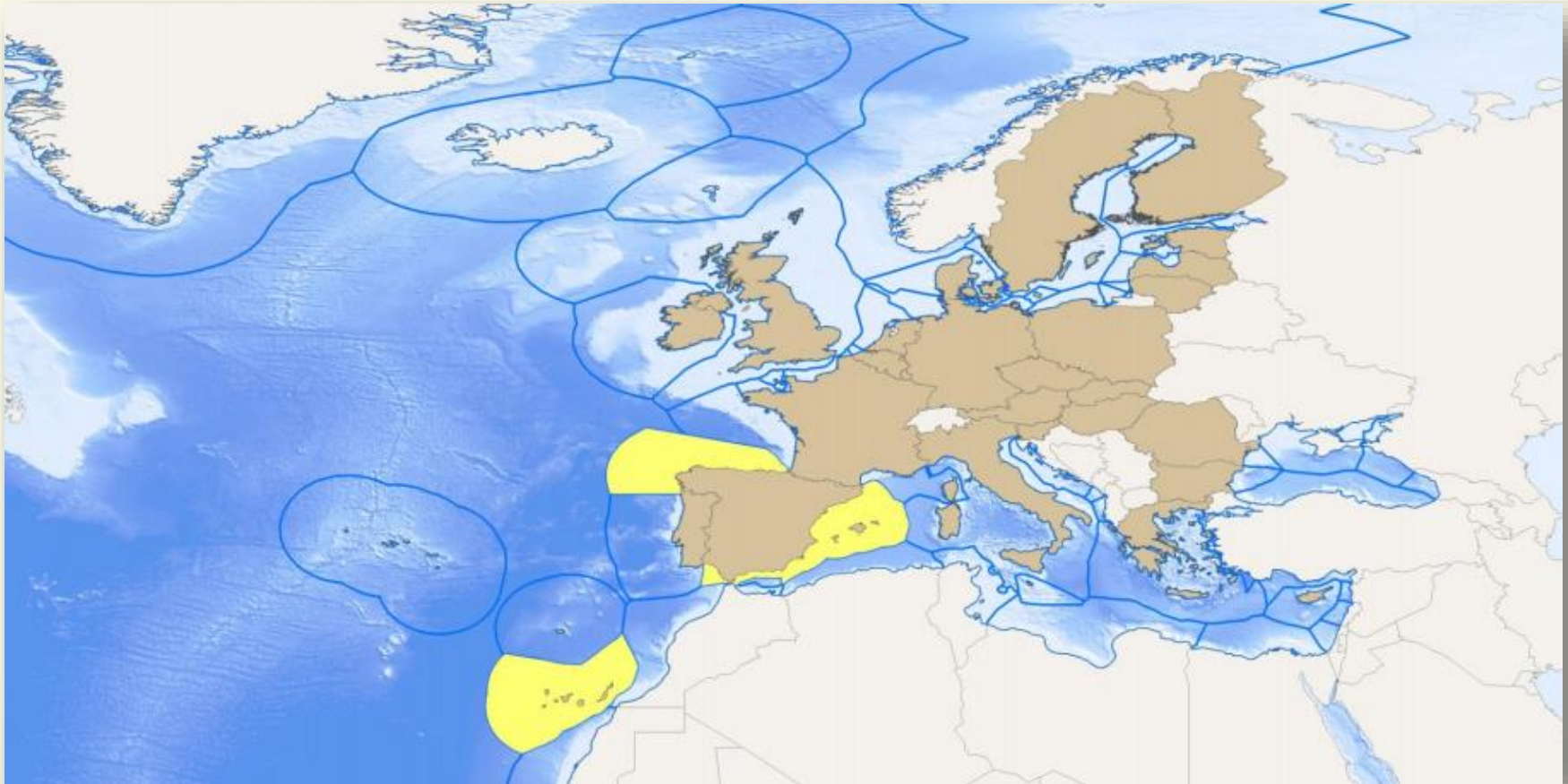
MSc. Kemal Pinarbasi, Dr. Ibon Galparsoro and Dr. Ángel Borja

Outline

- I. Exclusive Economic Zone of Spain
- II. Basque Country
- III. Background Studies for MSP
 - Environmental Component
 - Human Activities
 - Trans-boundary Issues
- IV. Decision Support Tools in MSP
- V. Future Work

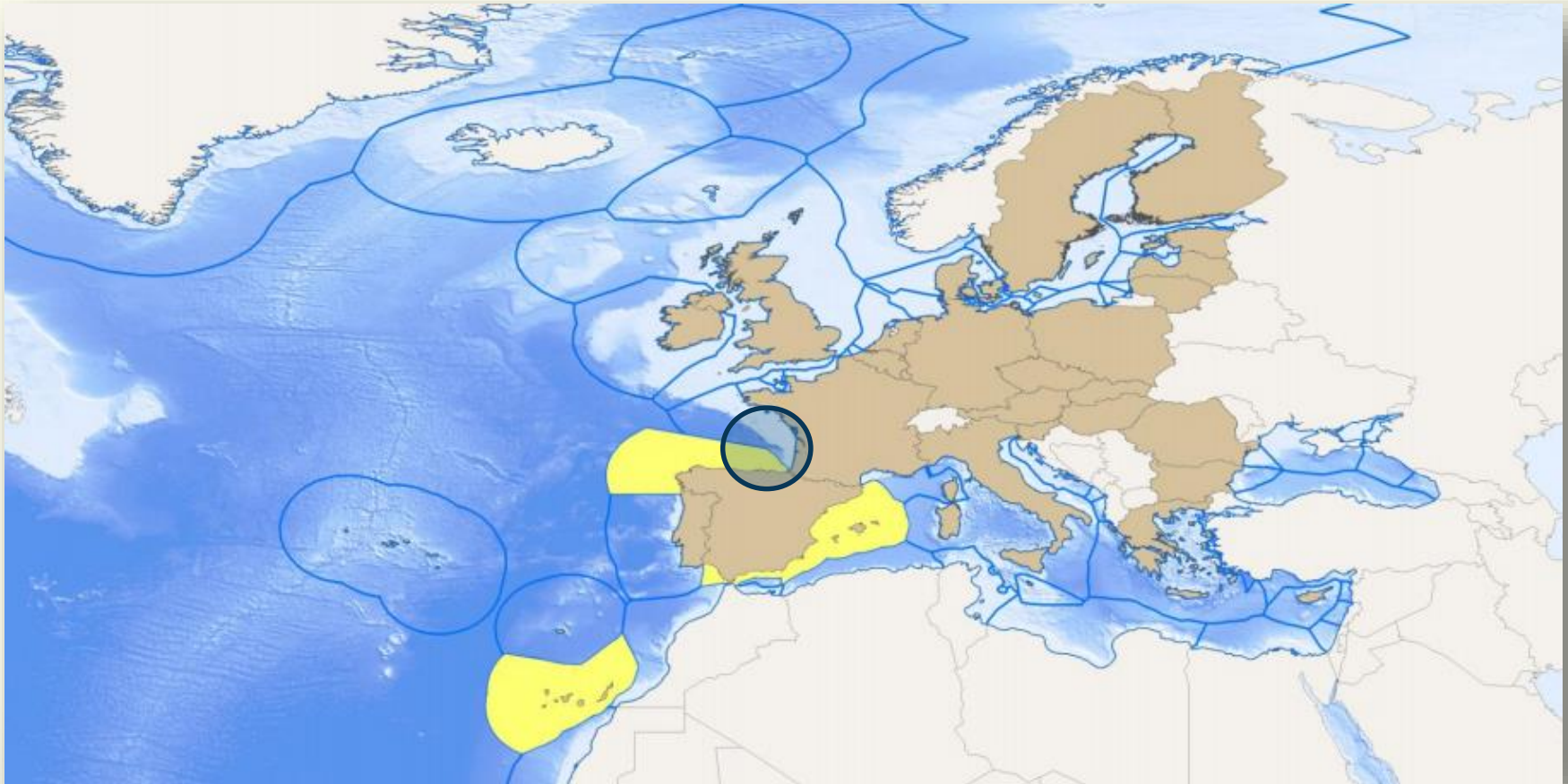


Exclusive Economic Zone of Spain



Source: Marine Plan Atlas www.marineplan.es

Basque Country



Source: Marine Plan Atlas www.marineplan.es



European Union

European Regional
Development Fund



Basque Country

Diversity of activities

Commercial fishing: trawlers, purse seiners and artisanal fishing

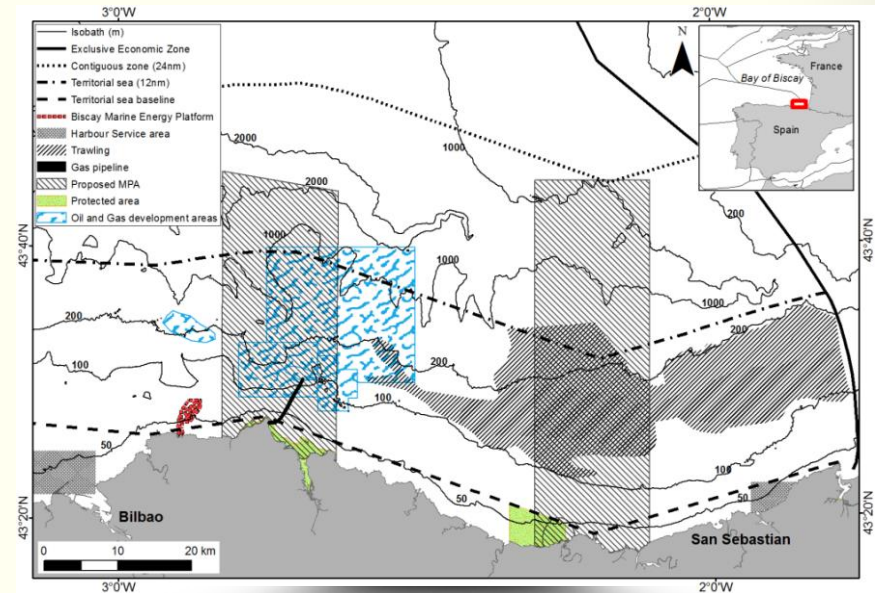
Recreational fishing with over 5000 boats
Tourism and sand mining (beach nourishment only)

New industrial activities: marine renewable energy (wave) and offshore aquaculture

Government is seeking diversification of activities

No marine spatial plan is in place
(Directive transposition in progress)

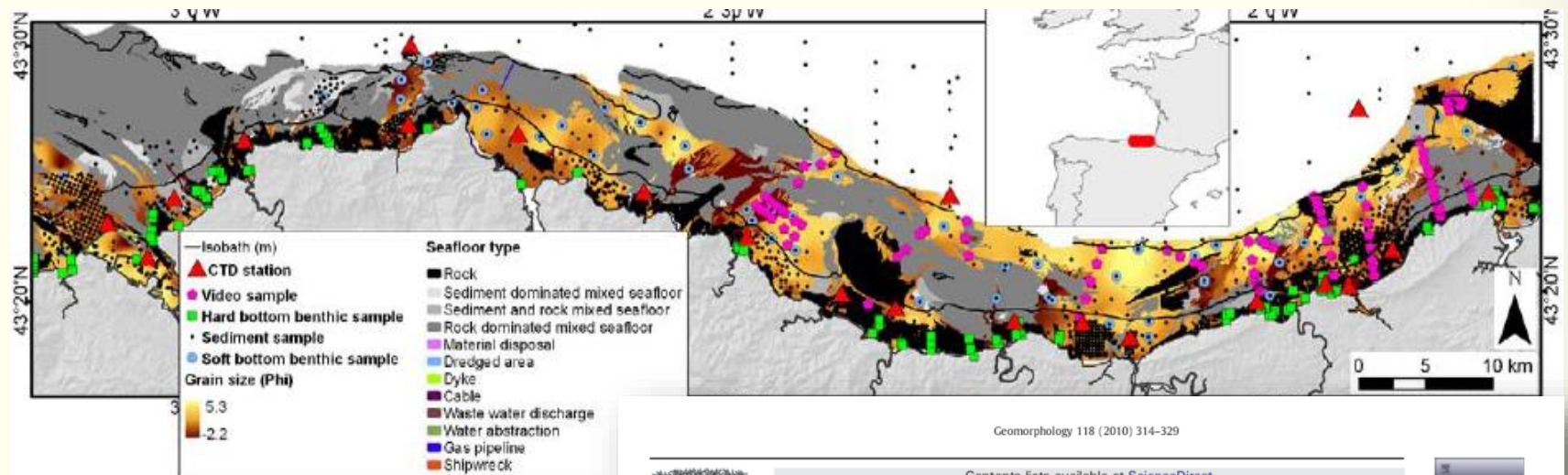
Marine Activities in Basque Country



Galparsoro, I., N. Aldanondo, L. Alonso, P. Alvarez, G. Boyra, L. Ferrer, A. Fontán, M. Louzao, U. Martinez, Y. Sagarminaga, V. Valencia, U. Cotano, 2016. Ampliación del conocimiento y apoyo al desarrollo de herramientas para la gestión del ecosistema en aguas vascas-BABES. Elaborado por AZTI-Tecnalia para Eusko Jaurlaritza - Gobierno Vasco. 215 pp.

Background Studies for MSP

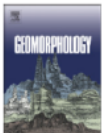
Seafloor mapping and characterisation



Contents lists available at [ScienceDirect](#)

Geomorphology

Journal homepage: www.elsevier.com/locate/geomorph



Morphological characteristics of the Basque continental shelf (Bay of Biscay, northern Spain); their implications for Integrated Coastal Zone Management

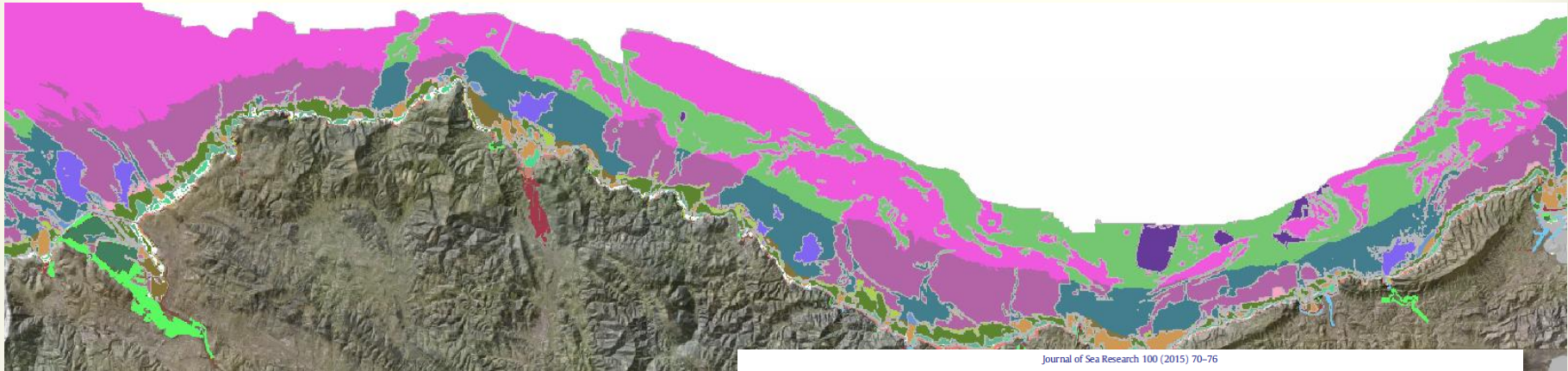
Ibon Galparsoro *, Ángel Borja, Irati Legorburu, Carlos Hernández, Guillem Chust, Pedro Liria, Adolfo Uriarte

Background Studies for MSP

Seafloor mapping and characterisation



Habitat Mapping



Journal of Sea Research 100 (2015) 70–76



ELSEVIER

Contents lists available at ScienceDirect

Journal of Sea Research

journal homepage: www.elsevier.com/locate/seares



Benthic habitat mapping on the Basque continental shelf (SE Bay of Biscay) and its application to the European Marine Strategy Framework Directive



Ibon Galparsoro ^{a,*}, José Germán Rodríguez ^a, Iratxe Menchaca ^a, Iñaki Quincoces ^b,
Joxe Mikel Garmendia ^a, Ángel Borja ^a

Background Studies for MSP

Seafloor mapping and characterisation

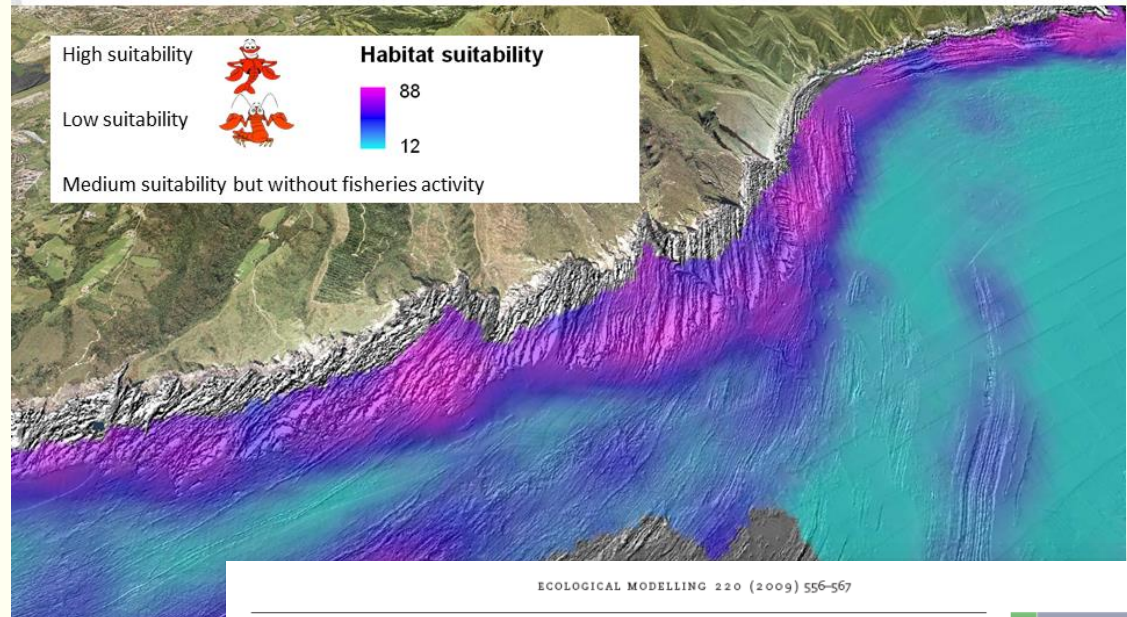


Habitat Mapping



Habitat Modelling

Geographical distribution of the suitable habitat of lobster



ECOLOGICAL MODELLING 220 (2009) 556–567

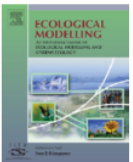


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available at www.sciencedirect.com



journal homepage: www.elsevier.com/locate/ecolmodel



Predicting suitable habitat for the European lobster (*Homarus gammarus*), on the Basque continental shelf (Bay of Biscay), using Ecological-Niche Factor Analysis

Ibon Galparsoro*, Ángel Borja, Juan Bald, Pedro Liria, Guillem Chust

Background Studies for MSP

Seafloor mapping and characterisation



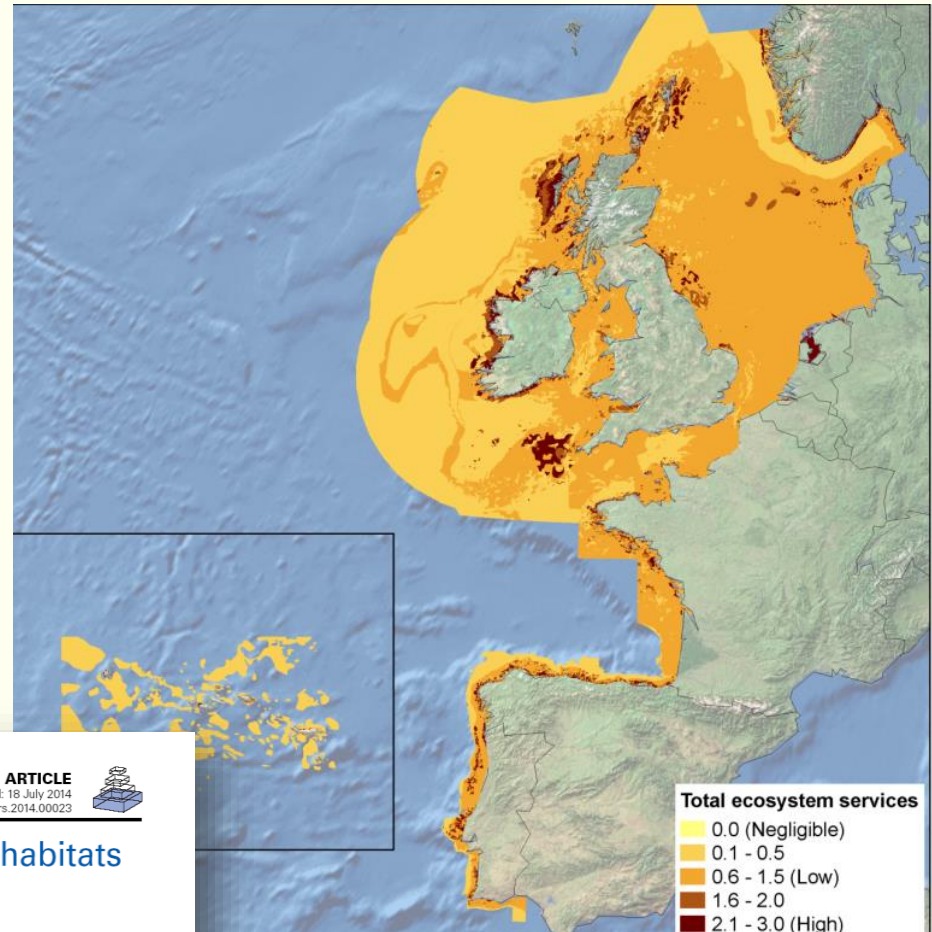
Habitat Mapping



Habitat Modelling



Ecosystem services provided by benthic habitats



frontiers in
MARINE SCIENCE

ORIGINAL RESEARCH ARTICLE

published: 18 July 2014

doi: 10.3389/fmars.2014.00023



Mapping ecosystem services provided by benthic habitats in the European North Atlantic Ocean

Ibon Galparsoro *, Angel Borja and Maria C. Uyarra

Marine Research Division, AZTI-Tecnalia, Pasaia, Spain

Background Studies for MSP

Seafloor mapping and characterisation



Habitat Mapping



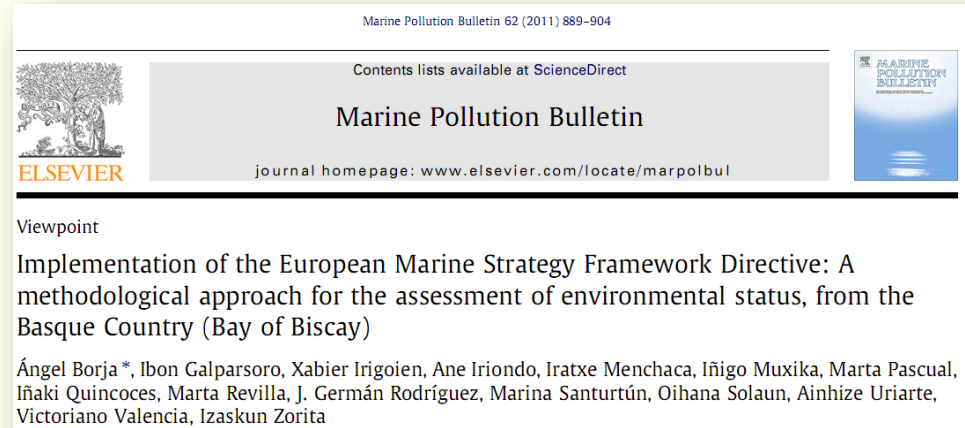
Habitat Modelling



Ecosystem services provided by benthic habitats



**Environmental status assessment:
WFD and MSFD**



Background Studies for MSP

Final Biological Valuation Map

Seafloor mapping and characterisation



Habitat Mapping



Habitat Modelling



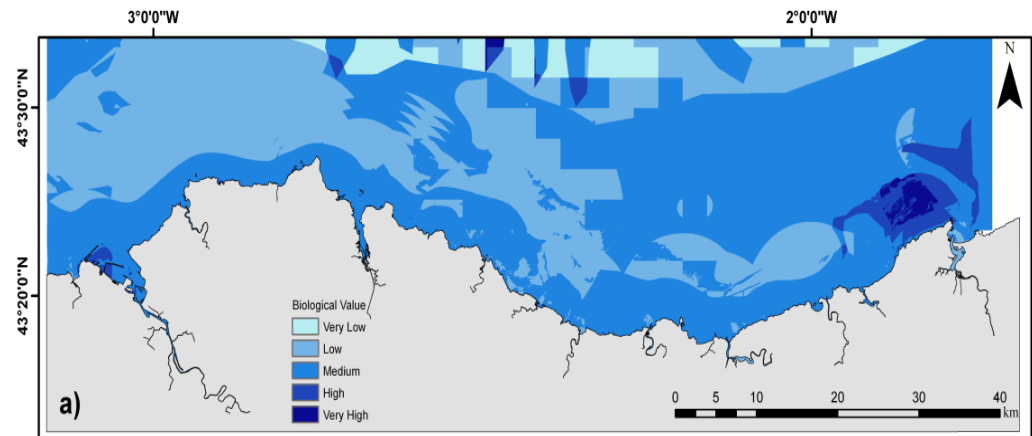
Ecosystem services provided by benthic habitats



Environmental status assessment:
WFD and MSFD



Biological Valuation



Estuarine, Coastal and Shelf Science

journal homepage: www.elsevier.com/locate/ecss



Marine biological valuation mapping of the Basque continental shelf (Bay of Biscay), within the context of marine spatial planning

Marta Pascual^{a,*}, Angel Borja^{a,*}, Sarah Vanden Eede^b, Klaas Deneudt^c, Magda Vincx^b, Ibon Galparsoro^a, Irati Legorburu^a

Background Studies for MSP

- Development and implementation of a generic framework for implementation of ecosystem based marine management
- Assessing uncertainty associated with the monitoring and evaluation of spatially managed areas
- Lessons learned from the application of a generic spatial planning framework in Europe



Monitoring and evaluation of spatially managed areas: A generic framework for implementation of ecosystem based marine management and its application

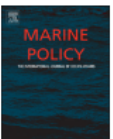
Vane
Ánge
Steve
Mich
Zach
Jan v
Anke



Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol



Assessing uncertainty associated with the monitoring and evaluation of spatially managed areas



Va
Ch
Kr
Ib
Rc



Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol



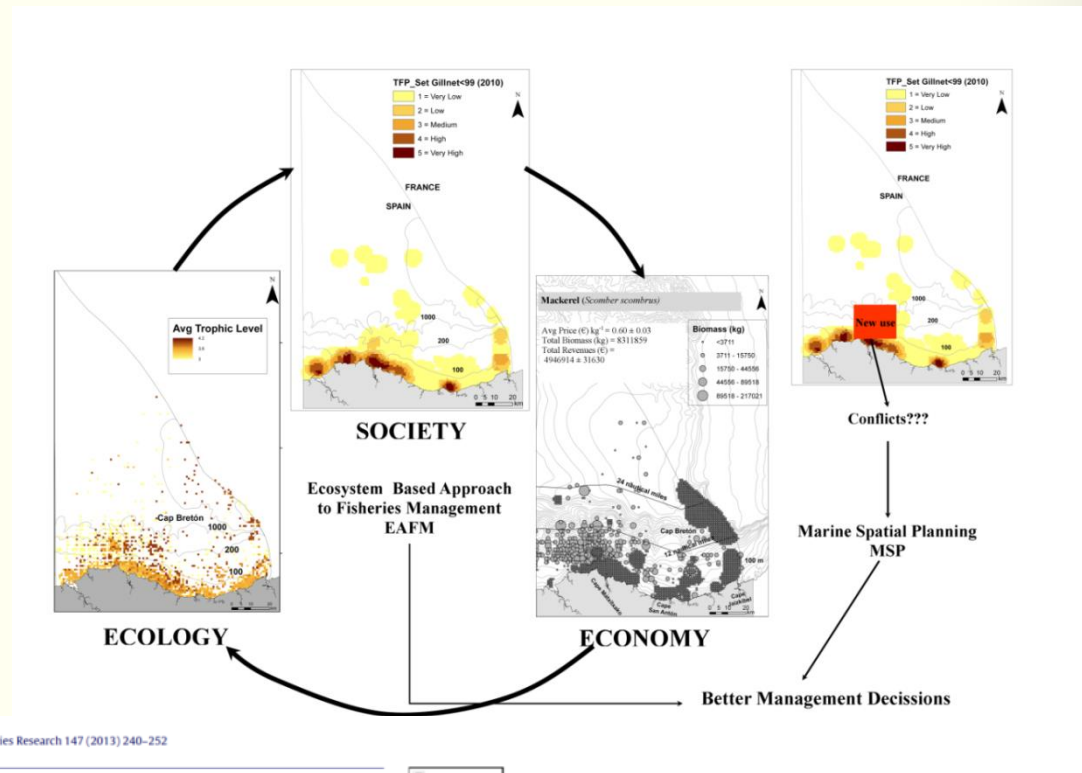
Maritime ecosystem-based management in practice: Lessons learned from the application of a generic spatial planning framework in Europe

Lene Buhl-Mortensen^{a,*}, Ibon Galparsoro^b, Tomás Vega Fernández^{c,d}, Kate Johnson^e, Giovanni D'Anna^c, Fabio Badalamenti^c, Germana Garofalo^d, Julia Carlström^f, Joanna Piwowarczyk^g, Marijn Rabaut^h, Jan Vanaverbeke^{h,i}, Cor Schipper^j, Jan van Dalfsen^j, Vassiliki Vassilopoulou^k, Yiannis Issaris^k, Luc van Hoof^l, Ellen Pecceu^m, Kris Hostens^m, Marie Louise Paceⁿ, Leyla Knittweis^o, Vanessa Stelzenmüller^p, Valentina Todorova^q, Valentina Doncheva^q

Background Studies for MSP

Human Activities

- Total Fishing Pressure by Artisanal Fisheries
- Wave Energy Suitability
- Aquaculture



Fisheries Research 147 (2013) 240–252



Contents lists available at SciVerse ScienceDirect

Fisheries Research

journal homepage: www.elsevier.com/locate/fishres



Total fishing pressure produced by artisanal fisheries, from a Marine Spatial Planning perspective: A case study from the Basque Country (Bay of Biscay)

M. Pascual^{a,b,*}, A. Borja^b, I. Galparsoro^b, J. Ruiz^c, E. Mugerza^c, I. Quincozes^c, A. Murillas^c, L. Arregi^c



Background Studies for MSP

Human Activities

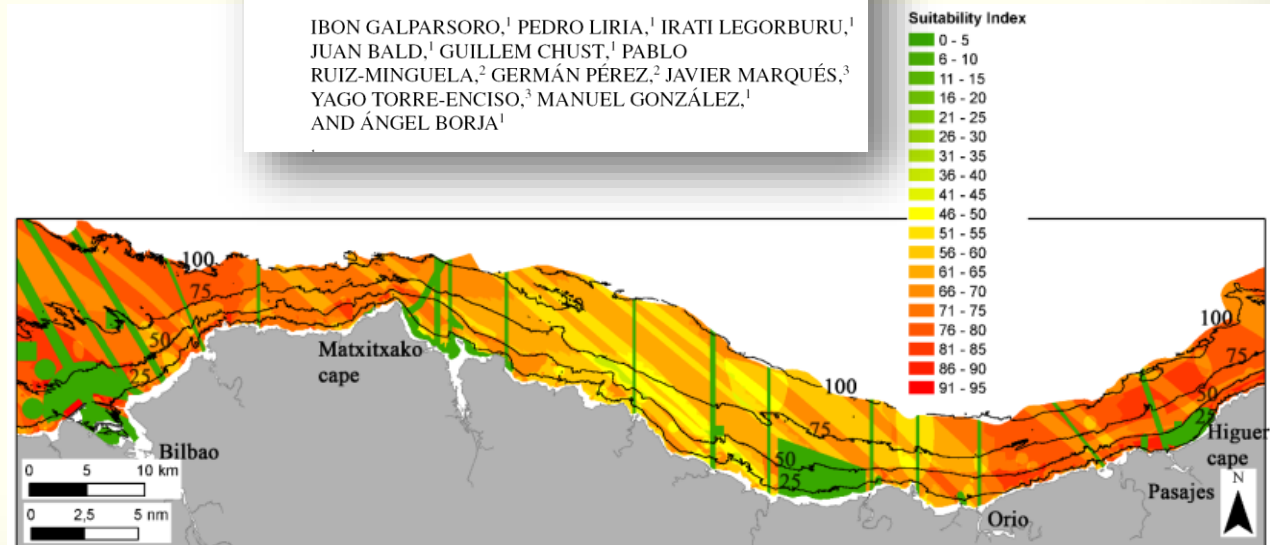
- Total Fishing Pressure by Artisanal Fisheries
- Wave Energy Suitability
- Aquaculture

Coastal Management, 40:1–19, 2012
Copyright © Taylor & Francis Group, LLC
ISSN: 0892-0753 print / 1521-0421 online
DOI: 10.1080/08920753.2011.637483



A Marine Spatial Planning Approach to Select Suitable Areas for Installing Wave Energy Converters (WECs), on the Basque Continental Shelf (Bay of Biscay)

IBON GALPARSORO,¹ PEDRO LIRIA,¹ IRATI LEGORBURU,¹
JUAN BALD,¹ GUILLEM CHUST,¹ PABLO
RUIZ-MINGUELA,² GERMÁN PÉREZ,² JAVIER MARQUÉS,³
YAGO TORRE-ENCISO,³ MANUEL GONZÁLEZ,¹
AND ÁNGEL BORJA¹



Aquaculture



EU Horizon 2020 project grant no. 633476



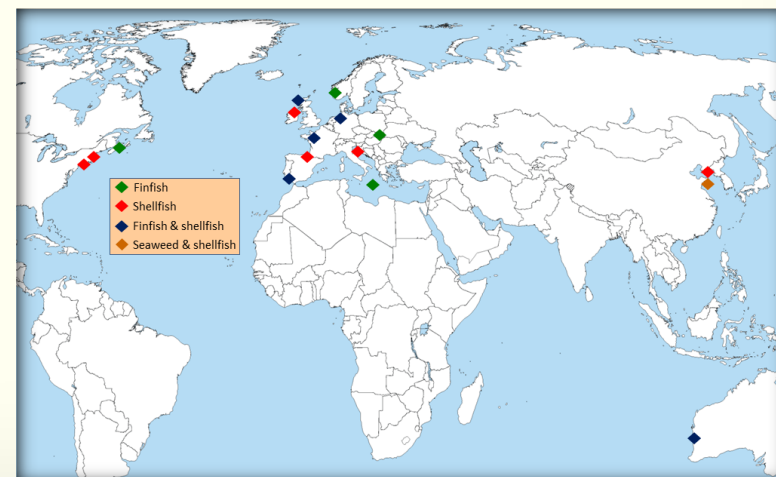
Ecosystem Approach to making
Space for Aquaculture

Provide increased space of high water quality for aquaculture by **adopting the Ecosystem Approach to Aquaculture (EAA) and Marine Spatial Planning (MSP)** and so to deliver food security and increased employment opportunities through economic growth.

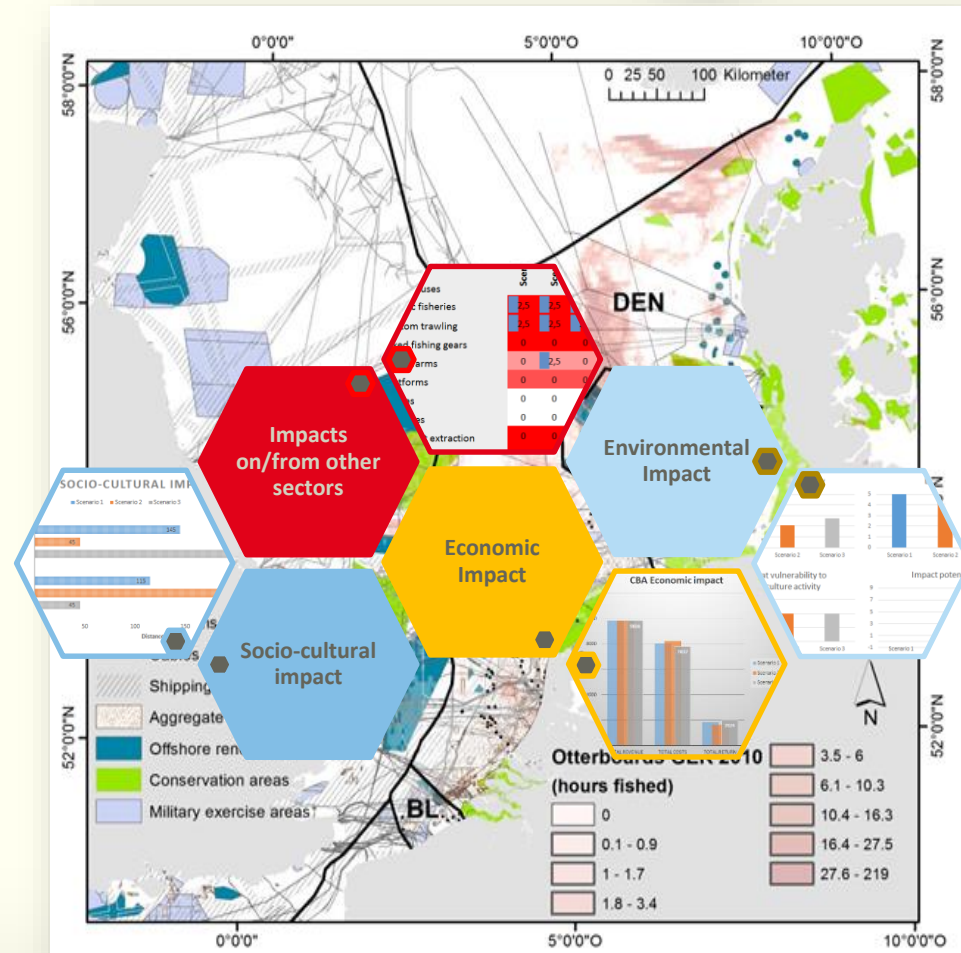
At our 16 case study sites across the globe, we are working with stakeholders to identify key **planning issues for aquaculture** development and map these constraints against a wide variety of **tools and spatial planning methods**.

<http://www.aquaspace-h2020.eu/>
<https://www.researchgate.net/project/AquaSpace-Ecosystem-Approach-to-making-Space-for-Aquaculture>

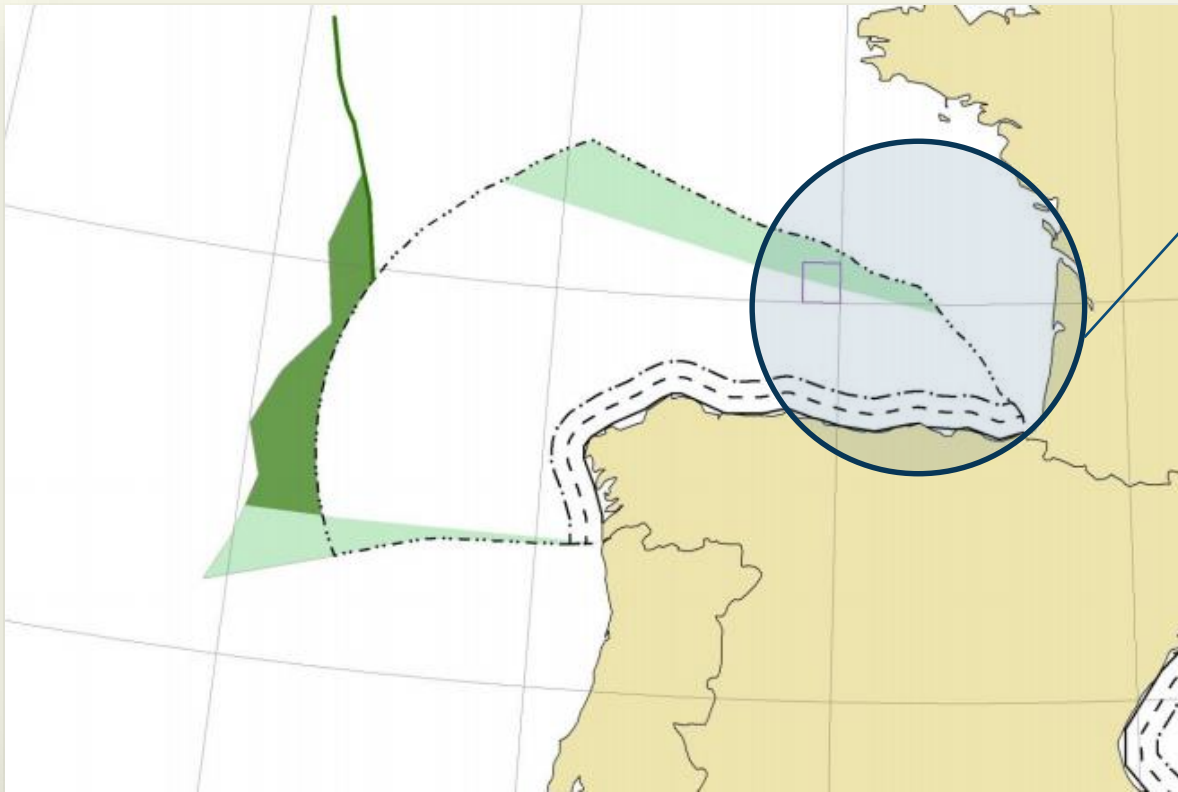
Twitter: @AquaSpaceH2020



Cost and Benefit Analysis Tool



Spain and France



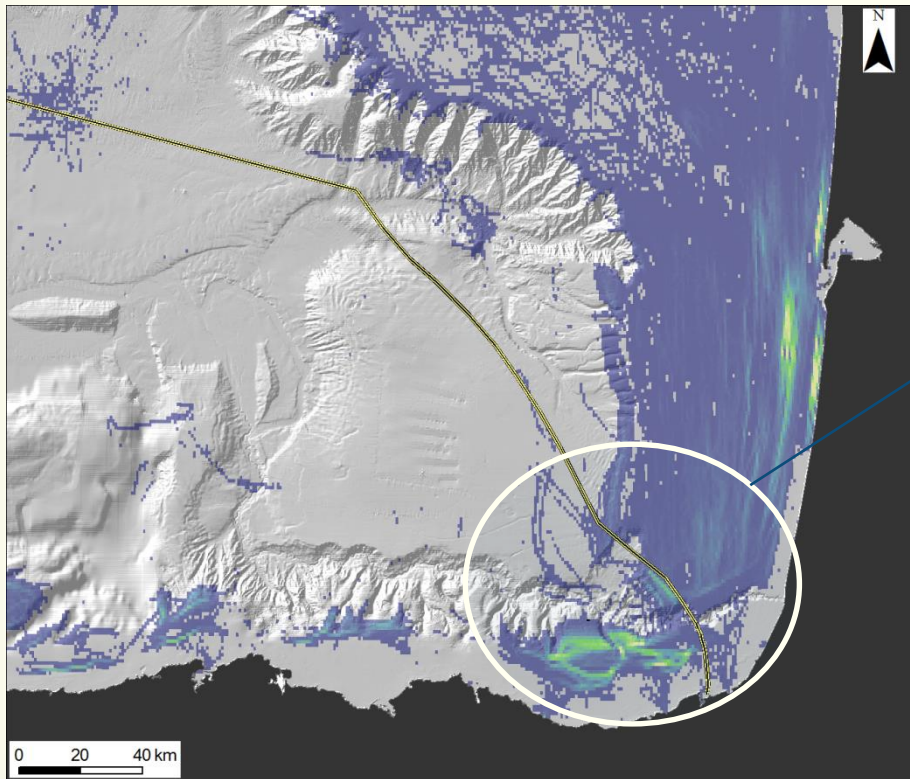
Source: Marine Plan Atlas www.marineplan.es

How to create synergies and opportunities?

Drivers that require transboundary cooperation:

- Environmental targets achievement (MSFD), and conservation (MPAs)
- Uses management and growth (MSP)

Trans-boundary Issue

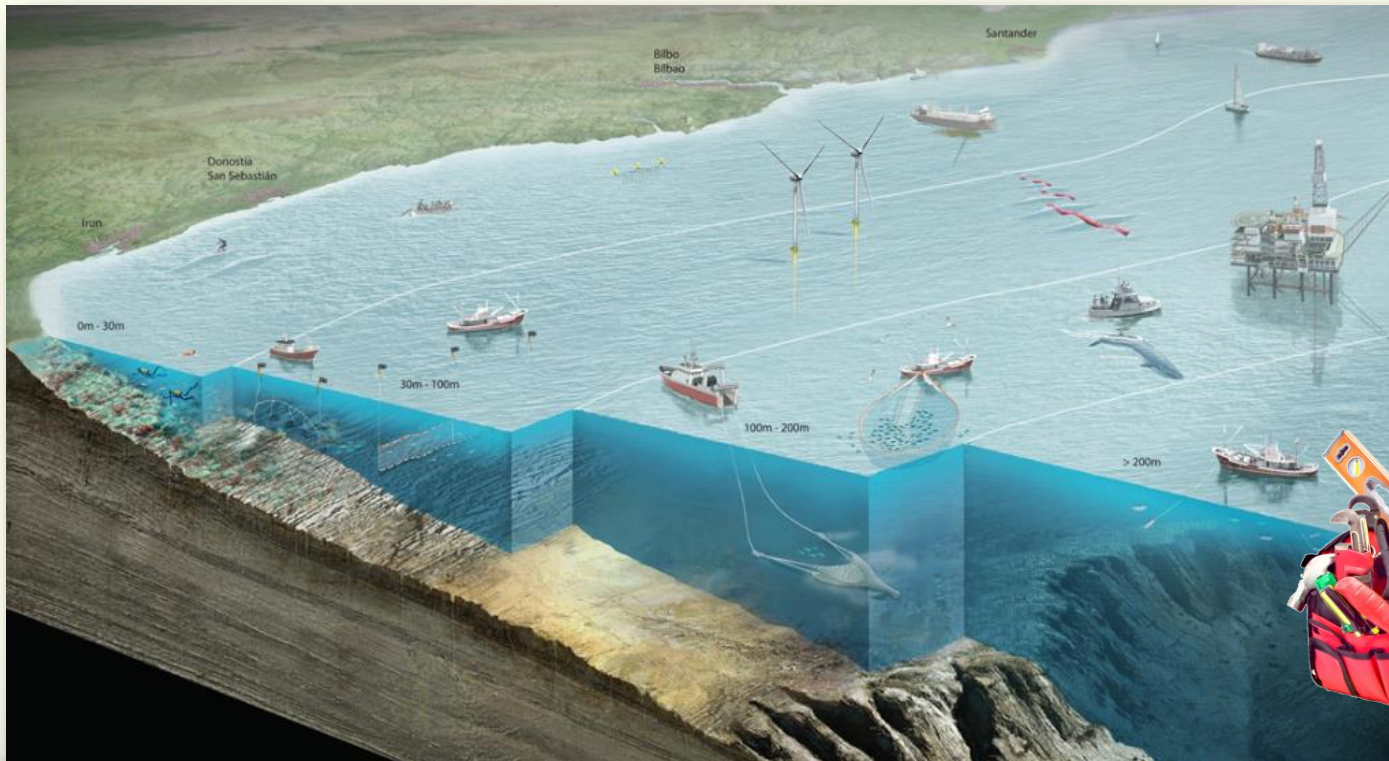


Narrow continental shelf
Density is higher in north

Galparsoro, I., N. Aldanondo, L. Alonso, P. Alvarez, G. Boyra, L. Ferrer, A. Fontán, M. Louzao, U. Martinez, Y. Sagarminaga, V. Valencia, U. Cotano, 2016. Ampliación del conocimiento y apoyo al desarrollo de herramientas para la gestión del ecosistema en aguas vascas-BABES. Elaborado por AZTI-Tecnalia para Eusko Jaurlaritza - Gobierno Vasco. 215 pp.

Work in Progress

“Development of Marine Spatial Planning tools and application in the Basque Country”



Decision Support Tools in Marine Spatial Planning: Present Applications, Gaps and Future Perspectives

Characterization

Fields related with the main characteristics and categorization of DSTs

Technical

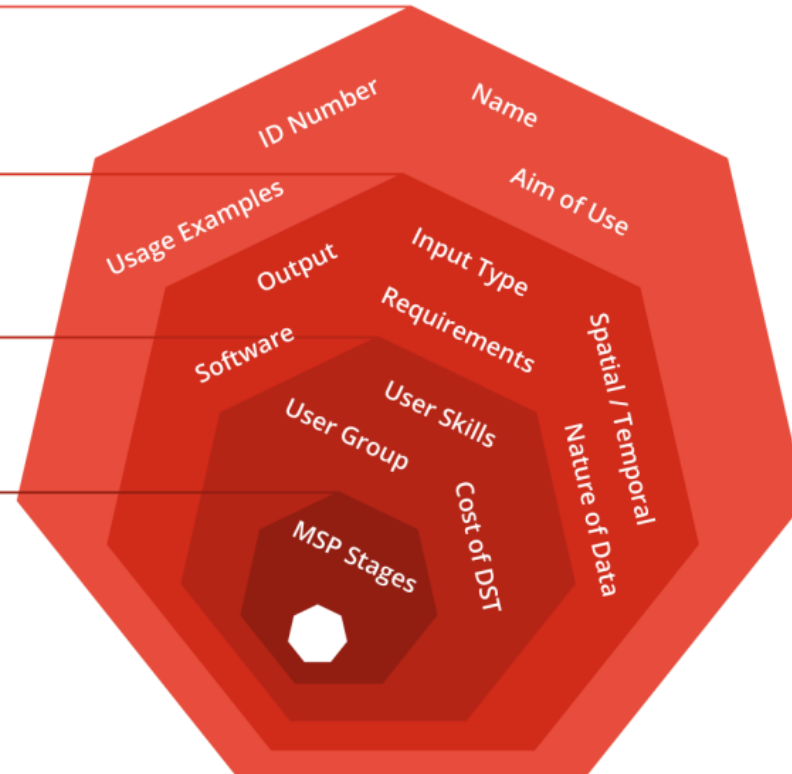
Fields which clarify technical properties of DSTs

User Related

Fields that can show the relationship between users and DSTs

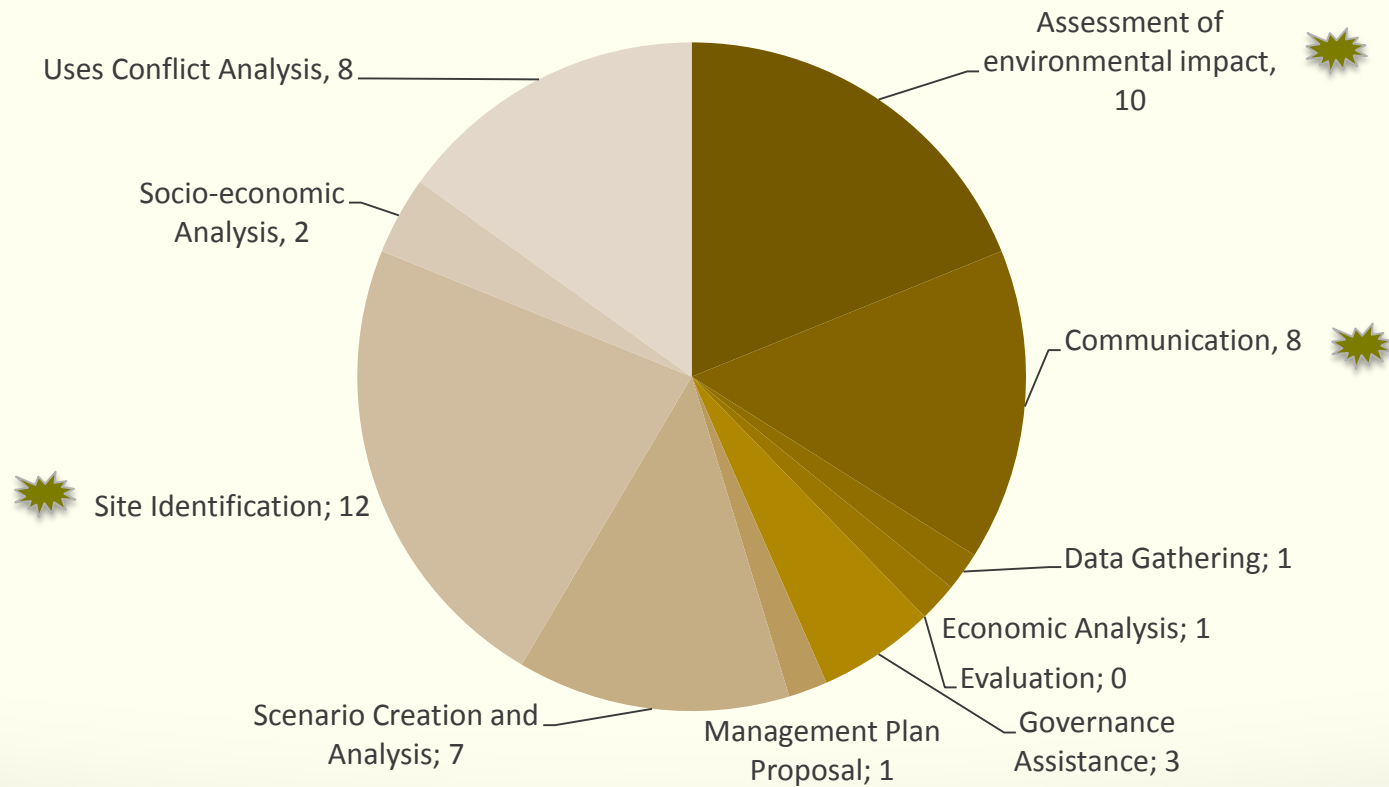
Stages

Orientation of DSTs in different MSP Stages



Aim of Use

It is hard to find tools that provide future projection, socio-economic analysis, and stakeholder involvement.



Future Work



- **Conservation and MPAs**

Using a systematic conservation planning approach to enhance the marine spatial planning process in Europe: Basque Country case study

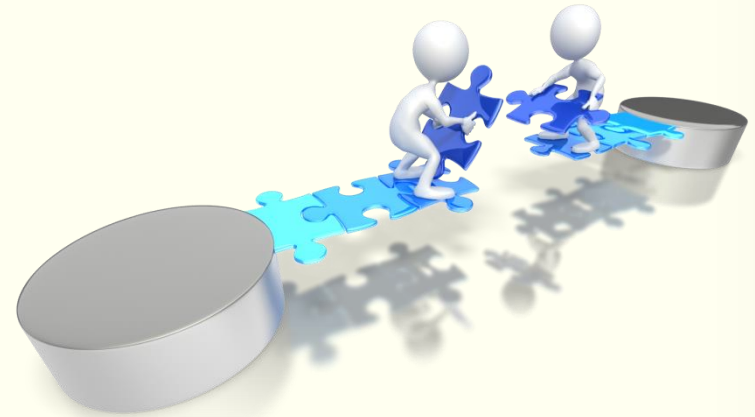
- **Assessment of conflicts of activities**

Assessment of spatial conflict between aquaculture and artisanal fishing activities: a case study in the Basque continental shelf

- **Allocation of activities**

- **Aquaculture**
- **Renewables**

A spatially explicit risk approach to support wind energy under marine spatial planning



Thanks for listening

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