MareFrame

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SOCIO-ECONOMIC IMPACT ASSESSMENT OF MANAGEMENT ALTERNATIVES IN THE CONTEXT OF EBFM

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The MCA Method

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- Provides systematics science-based information relative social, economic and environmental benefits and costs
- A structured approach to solve decisions based on performance
- Provides insights about potential trade-offs and impacts on the different parameters of evaluation
- Baseline (Status-quo) vs. different management alternatives

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The SEIA Process

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Stage 1: Setting the objectives (why is the SEIA being developed?)

Stage 2: Setting the scope of the SEIA (baseline and alternative scenarios?

Stage 3: Identify and assess the impacts (Criteria selection)

Stage 4: Scoring and weighting the impacts (According to significance)

Stage 5: Interpretations, sensitivity analysis and conclusions

Stage 6: Presenting the results

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The North Sea Case Study

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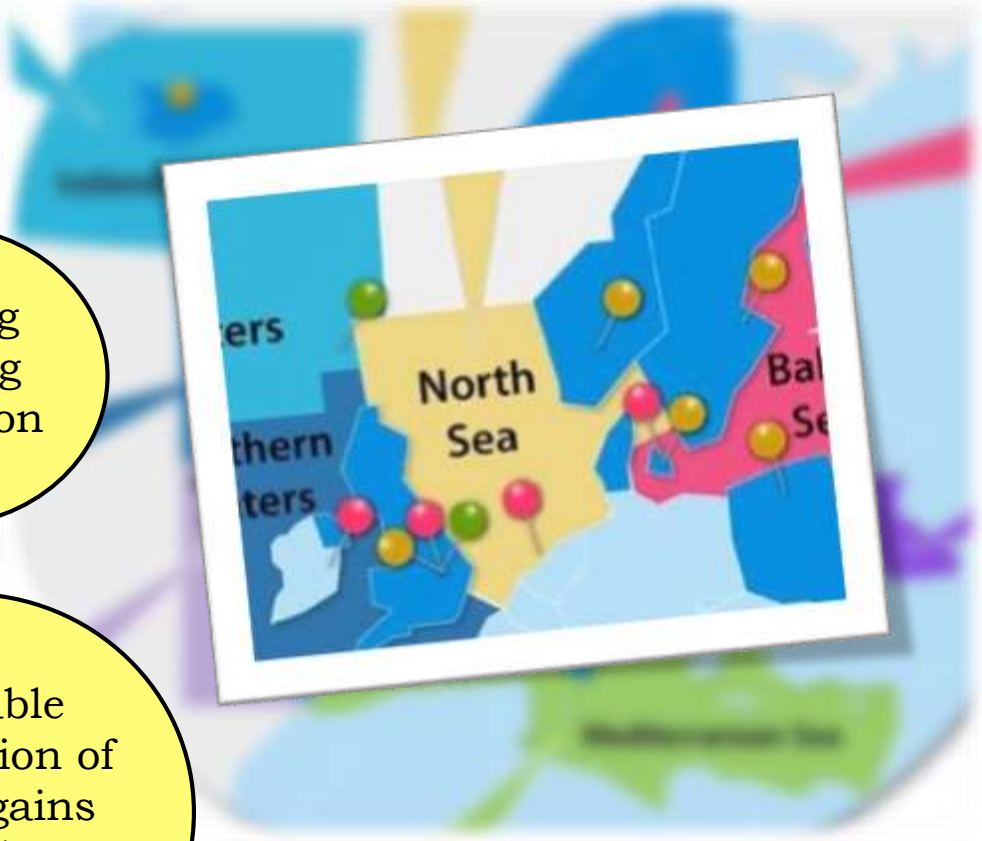
Achieving largest average catch over time, referred as MSY

Meeting Landing Obligation

Avoiding the risk of incompatible regulations

Equitable distribution of losses/gains across fleets and countries



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North Sea Socio-economic Results

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		BAU	max econ. Yield ie max profit	MAX GVA	Max Value	Conservation	all SSB above Blim Then Max Profit	max pelagic profit	max Dem profit
Environmental									
Weighted stock size	Tonnes	3689,49	3983,89	3466,03	3345,30	4104,73	3977,47	3610,33	4142,55
Bottom Disturbance	%	100%	85%	116%	122%	75%	86%	110%	82%
Charismatic By-catch	%	100%	91%	112%	124%	75%	90%	91%	84%
MSC Certification									
MSC Herring	4=good	3	4	3	2	3	4	4	4
MSC Mackerel	4=good	4	4	3	3	4	4	4	4
Business economics									
Catch value	Mil. Euro	1.458	1.339	1.610	1.651	1.196	1.339	1.479	1.288
Profits	Mil. Euro	454,784	508,232	446,284	419,645	441,489	505,374	469,519	483,095
National economics									
GVA in fisheries	Mil. Euro	795,800	789,639	840,932	838,296	697,906	788,047	809,405	757,387
Backward linkages	Mil. Euro	397	330	461	487	299	331	402	318
Forward linkages	Mil. Euro	583	536	644	660	478	536	592	515
Flow-on effects	Mil. Euro	1776	1655	1946	1986	1475	1654	1803	1591
Social									
Wages	Mil. Euro	341	281	395	419	256	283	340	274

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Sensitivity Analysis: Equal Weighting

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Parameters	BAU	max econ. Yield ie max profit	MAX GVA	Max Value	Conservation	all SSB above Blim Then Max	max pelagic profit	max Dem profit	Weights	BAU	max econ. Yield ie max profit	MAX GVA	Max Value	Conservation	all SSB above Blim Then Max	max pelagic profit	max Dem profit
Environmental									**25%**	**13,0**	**20,4**	**4,5**	**0,0**	**23,4**	**20,2**	**13,0**	**23,4**
Weighted stock size	43	80	15	0	95	79	33	100	10%	4,3	8,0	1,5	0,0	9,5	7,9	3,3	10,0
Bottom Disturbance	47	79	13	0	100	76	26	86	5%	2,4	3,9	0,6	0,0	5,0	3,8	1,3	4,3
Charismatic By-catch	49	68	23	0	100	69	66	81	5%	2,4	3,4	1,2	0,0	5,0	3,5	3,3	4,1
MSC Certification	77	100	23	0	77	100	100	100	5%	3,9	5,0	1,1	0,0	3,9	5,0	5,0	5,0
Business economics									**25%**	**12,6**	**14,7**	**16,7**	**15,0**	**2,5**	**14,4**	**15,0**	**10,2**
Catch value	58	31	91	100	0	31	62	20	15%	8,6	4,7	13,7	15,0	0,0	4,7	9,3	3,0
Profits	40	100	30	0	25	97	56	72	10%	4,0	10,0	3,0	0,0	2,5	9,7	5,6	7,2
National economics									**25%**	**15,3**	**10,6**	**23,5**	**24,8**	**0,0**	**10,5**	**16,9**	**6,8**
GVA in fisheries	68	64	100	98	0	63	78	42	10%	6,8	6,4	10,0	9,8	0,0	6,3	7,8	4,2
Backward linkages	52	16	86	100	0	17	55	10	5%	2,6	0,8	4,3	5,0	0,0	0,8	2,7	0,5
Forward linkages	58	31	91	100	0	31	62	20	5%	2,9	1,6	4,6	5,0	0,0	1,6	3,1	1,0
Flow-on effects	59	35	92	100	0	35	64	23	5%	2,9	1,8	4,6	5,0	0,0	1,8	3,2	1,1
Social									**25%**	**13,0**	**3,9**	**21,3**	**25,0**	**0,0**	**4,0**	**12,9**	**2,8**
Wages	52	15	85	100	0	16	51	11	25%	13,0	3,9	21,3	25,0	0,0	4,0	12,9	2,8
Total									**100%**	**53,9**	**49,5**	**65,9**	**64,8**	**25,9**	**49,1**	**57,6**	**43,2**

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Sensitivity Analysis: Environmental Priority

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Parameters	BAU	max econ. Yield ie max	MAX GVA	Max Value	Conservation	all SSB above Blim Then Max	max pelagic profit	max Dem profit	Weights	BAU	max econ. Yield ie max	MAX GVA	Max Value	Conservation	all SSB above Blim Then Max	max pelagic profit	max Dem profit
Environmental									**45%**	**23,8**	**36,7**	**8,1**	**0,0**	**42,0**	**36,4**	**24,3**	**41,8**
Weighted stock size	43	80	15	0	95	79	33	100	15%	6,5	12,0	2,3	0,0	14,3	11,9	5,0	15,0
Bottom Disturbance	47	79	13	0	100	76	26	86	10%	4,7	7,9	1,3	0,0	10,0	7,6	2,6	8,6
Charismatic By-catch	49	68	23	0	100	69	66	81	10%	4,9	6,8	2,3	0,0	10,0	6,9	6,6	8,1
MSC Certification	77	100	23	0	77	100	100	100	10%	7,7	10,0	2,3	0,0	7,7	10,0	10,0	10,0
Business economics									**20%**	**9,7**	**13,1**	**12,1**	**10,0**	**2,5**	**12,8**	**11,9**	**9,2**
Catch value	58	31	91	100	0	31	62	20	10%	5,8	3,1	9,1	10,0	0,0	3,1	6,2	2,0
Profits	40	100	30	0	25	97	56	72	10%	4,0	10,0	3,0	0,0	2,5	9,7	5,6	7,2
National economics									**20%**	**11,9**	**7,4**	**18,5**	**19,9**	**0,0**	**7,3**	**13,0**	**4,7**
GVA in fisheries	68	64	100	98	0	63	78	42	5%	3,4	3,2	5,0	4,9	0,0	3,2	3,9	2,1
Backward linkages	52	16	86	100	0	17	55	10	5%	2,6	0,8	4,3	5,0	0,0	0,8	2,7	0,5
Forward linkages	58	31	91	100	0	31	62	20	5%	2,9	1,6	4,6	5,0	0,0	1,6	3,1	1,0
Flow-on effects	59	35	92	100	0	35	64	23	5%	2,9	1,8	4,6	5,0	0,0	1,8	3,2	1,1
Social									**15%**	**7,8**	**2,3**	**12,8**	**15,0**	**0,0**	**2,4**	**7,7**	**1,7**
Wages	52	15	85	100	0	16	51	11	15%	7,8	2,3	12,8	15,0	0,0	2,4	7,7	1,7
Total									100%	**53,2**	**59,5**	**51,5**	**44,9**	**44,5**	**59,0**	**56,8**	**57,3**

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Final Remarks

- Level of complexity varies between case studies
- Some cases a clear management alternative, in others compromises need to be made
- Not always a single scenario achieves the objectives, instead a set of viable alternatives to facilitate decision-making
- The impacts of different stakeholder's priorities can be assess with sensitivity analysis
- Weighting system must be made evident to MCA users

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Looking Forward

- Great steps towards including economic and social variables
- Wider range of social indicators still needed
- Ensure economic data is modelled as realistic as possible
- Need for further interdisciplinary collaboration within modelling work
- Integration of Environmental, Economic and Social variables is a huge step in advancing EBFM

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