

# Workshop

## “The economics of climate change adaptation measures under WFD, MSFD and ICZM ”

11-13 April 2016

ECRAN 61931

Influence of climate change on Cost effectiveness analysis and Cost Benefit Analysis (WFD and MSFD)



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## Structure of the presentation

- What is a CBA?
- CBA requirements under the MSFD and WFD
- Benefits and costs
- Examples of CBA assessment
- Economic approaches to consider CC in the CBA



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## CBA requirements in the MSFD

MSFD Article 13.3 indicates that MS shall ensure that measures are cost-effective, and shall carry out impact assessments, including CBA, **prior to the introduction of any new measure.**

Cost-benefit analysis (CBA) is a method for **comparing policy measures against the baseline situation in terms of their advantages and disadvantages.**

It is designed to show whether the total advantages (benefits) of a project, a programme or policy intervention – e.g. reducing N emissions to coastal waters – exceed the disadvantages (costs) – e.g. the costs to agriculture of reduced fertiliser use.

CBA can be done **at various levels**: both costs and benefits, or financial costs, etc.



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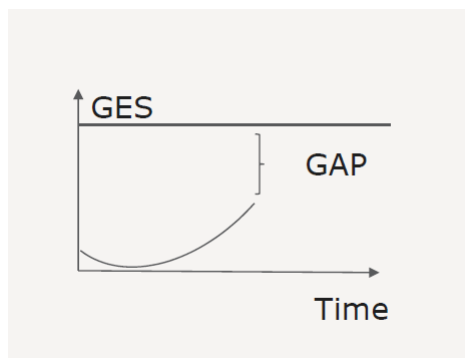


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## Why is CBA required?

Why is this necessary?

- MSFD/WFD requirement
- Political decision making
- Application for financing



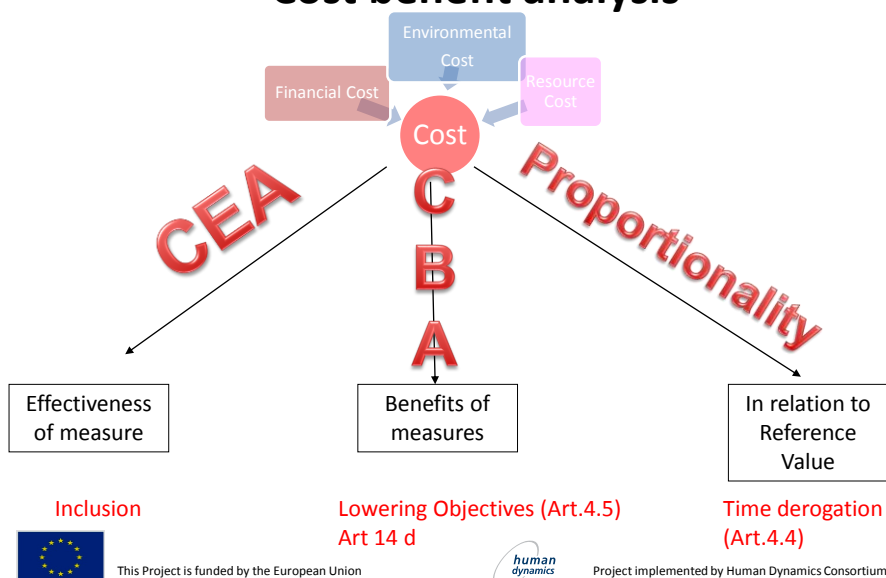
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## Cost effectiveness analysis vs Cost benefit analysis

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## Benefits of measures WFD MSFD

The benefits of a measure include the intended effect of the chosen measure.

The intended effect of the measure on the status of the water is disregarded in a CBA.

**The benefits taken into account for a CBA are the ones that go beyond the immediate effect that the measure has on the status of the water (rivers, groundwater, marine).**



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## Comparison WFD - MSFD

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### WFD

Modifications or alterations to the physical characteristics of marine waters brought about by actions taken for reasons of overriding public interest which outweigh the negative impact on the environment, including any transboundary impact.

### MSFD

Modifications or alterations to the physical characteristics of marine waters brought about by actions taken for reasons of overriding public interest which outweigh the negative impact on the environment, including any transboundary impact

### Rationale

The assumption is, that pressures on the status of the water are caused by human activities, necessary for certain environmental or socioeconomic needs.

If the measure designed to improve the status of the water is not applied, then the loss of environmental or socioeconomic benefit must be compensated (not entailing disproportionate costs).

If such a compensation is impossible, then the measure can be adjusted/omitted at the dispense of the initial objectives for the water body ("less stringent environmental objectives").



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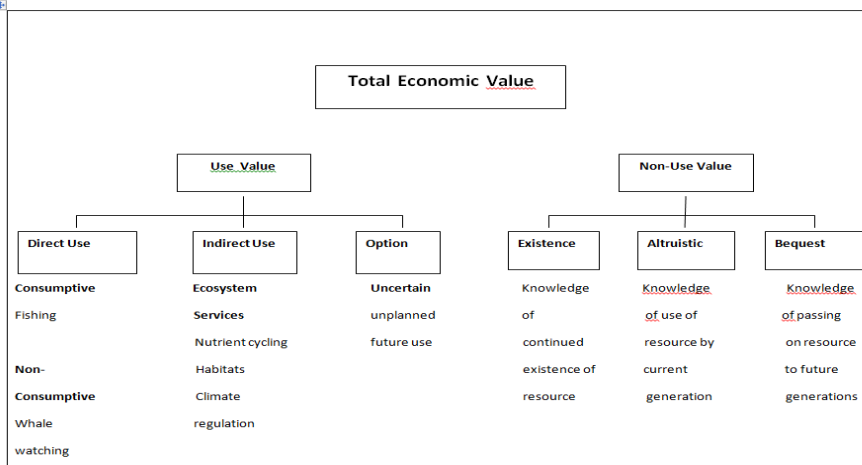


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## Estimated benefits

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How are benefits estimated in monetary terms?



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## Benefits and Costs (1)

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Pressure Benefits	Measure Costs	Measure Benefits	Other means
Pressures should yield benefits (environmental and socioeconomic needs).	The loss in “pressure benefits” must be included in the cost	Measure should yield benefits (environmental and socioeconomic needs) <u>beyond</u> water status.	Loss in “pressure benefits” could be compensated by other means.
Electricity	Electricity	non-aquatic environment, transport times, fishery, tourism,...	Electricity
Hydropower plant (WFD) Marine Wind plants (MSFD)	Deconstructed hydropower plant Deconstructed marine Wind plants	Naturalized stream	Windmills farm Thermoplants
☺ electrical power	☹ electrical power	☺ income from tourism, fishery, transport,...	☺ electrical power

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## Benefits and Costs (2)

The reference time should be different for CEA and CBA.

In CEA, the efficiency of a measure must be measured according to the WFD deadlines. This entails the same points of reference for the cost of the measure.

In CBA, the benefits of the measure (to society) can be projected into a different point in time (along with the corresponding cost!).

The discount rate used for calculating CBA can also differ from the one in CEA.

Transparency is essential!



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# Recommendations for MSFD and WFD Assessment

1. For all measures, keep track of their (economic) impact on all users
2. Define the measures, for which a CBA must be done
3. Define point in time and discount rate for CBA
4. For the chosen measures, do a generic qualitative assessment of the environmental benefits and scarcity rents
5. For the relevant benefits, tentative valuations should be done
6. For the chosen measures, perform cost assessment = CEA
7. Compare costs and benefits.



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## Example of CBA Assessment (1)

Measure: **Setting regulations on activities within Marine Protected Areas (MPAs) or potentially affecting the MPA (No constructions and industrial activities, regulation of fishery activities, no motorsports (high speed boats),...)**

- 1) Legislative preparatory work
- 2) Sectoral and public consultations
- 3) Finalisation (Approval and sign-off, advertising)

Implementation costs for a law, regulation, ...

Actions required	Estimated nr of days / meetings	Estimated rate per day / meeting (€)	Estimated one-off cost per action, €
Legislative preparatory work	100	70	7.000
Sectoral and public consultations	20	70	1.400
Finalisation (Approval and sign-off, advertising)	80	70	5.600
Meetings with neighbouring MS	2	600	1.200
Staff travel/accommodation	2	750	1.500
Total implementation cost			16.700



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## Example of CBA Assessment (2)

### Legislative adaptations

#### Management costs (yearly)

Actions required	Estimated nr of days/yr	Estimated rate per day (€)	Estimated cost per year €
Staff time (preparation, follow up)	50	70	3500
Meetings with neighbouring MS	1	600	600
Staff travel/accommodation	1	750	750
Total estimate:			4.850
Discounted to one off costs			25.500

### Scoring

Score	total cost
1	> € 1 million
2	€ 500.000 - 1 million
3	€ 200.000 - 500.000
4	€ 50.000 - 200.000
5	< € 50.000



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## Example of CBA Assessment (3)

### Benefit

Identify range of benefits	Consider time scale (immediate to long term benefits) (long 1, intermediate 3, short 5)	Benefits over the analyzed period (monetary if possible) (1 low 3 medium 5 high)	Qualitative description of benefits (if valuation is not possible)	Benefit estimate (weighted AVG of time scale score and benefit score)
Regulations on activities within MPAs Improved seabed Improved fish stocks Improved living conditions for mammals Improved recreational value	5	5	Improved marine environment In general the marine flora and fauna will benefit from regulated MPA's	5



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## Climate change impacts reflected in the CBA

Climate change impacts, in particular decreases in water availability in certain regions and seasons, are likely to lead to conflicts of interests among the users.

If water is scarce, water use for irrigation might conflict with minimum flow regimes needed for cooling water.

Adaptation may therefore require first the prioritisation of uses and then the selection of sufficient and appropriate ways of implementation.

Allocation of water resources should consider criteria and indicators which need to be developed on the basis of which such choices can be made.



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## CBA considering climate changes in the PoM

Decisions should be transparent and comprehensible to the affected sectors and the general public, in order to create acceptance among them.

Adaptation strategies should also consider the costs and the benefits of each measure and of the combinations of measures.

These costs and benefits should be discussed among the different users and stakeholders.



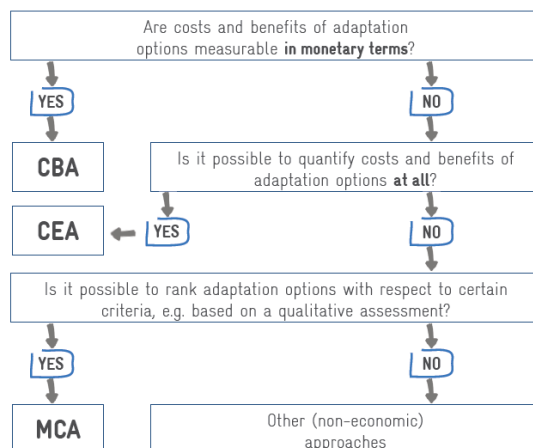
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# Selecting the suitable economic approach for assessing climate change adaptation options to support the decision-making process



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Thank you!



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