



National Administration “Romanian Waters”

Economic analysis for the Programme of Measures developed for the implementation of the MSFD in the Black Sea

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**ECRAN Regional Training on MARINE STRATEGY
FRAMEWORK DIRECTIVE (MSFD)**

Place: ISTANBUL, TURKEY

18 – 20 May 2015

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□ Introduction . Legislative context

Scope of ESA : to estimate the impact of use of marine environment on marine related economic activities including the positive and negative impact (increasing the level standards /costs)

Users of marine environment are subject of economic analyze based on macroeconomic indicators (GDP, GVA, Production Values..)

Art. 8 MSFD Assessment :

(c) an economic and social analysis of the use of those waters and of the cost of degradation of the marine environment

❑ Introduction . Legislative context

Art 13.3

When drawing up PoMs, MS “shall give due consideration” to sustainable development and in particular to the social & economic impacts of the measures. MS to ensure that measures are cost-effective and technically feasible, carry out IA, including CBA, prior to the introduction of any new measure.

→ crucial requirement of the MSFD, where a common understanding / exchange of best practices is needed to better perform CEA and CBA

→ need to discuss how to carry out such assessment and at which level

□ Introduction . Legislative context



Need to prioritize from potential measures under consideration to cost effective and technically feasible measures (Art 13.3)

- ❖ Selecting between certain measures is a integral part of the decision making process and depends on numerous factors (list provided) influencing costs & benefits;
- ❖ Criteria for evaluation measures in terms of feasibility or relevance provided for MSFD purpose:
- ❖ Due to limited knowledge of the ecosystem functioning, quantitative description of effects & benefits may not always be possible
- ❖ Exchange of CEA/CBA application experiences take place;

□ ESA Overview RO approach

2 possible approaches:

- based on marine ecosystem services- !!??

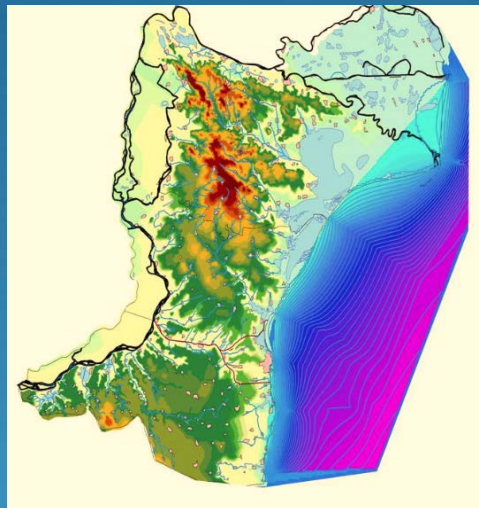
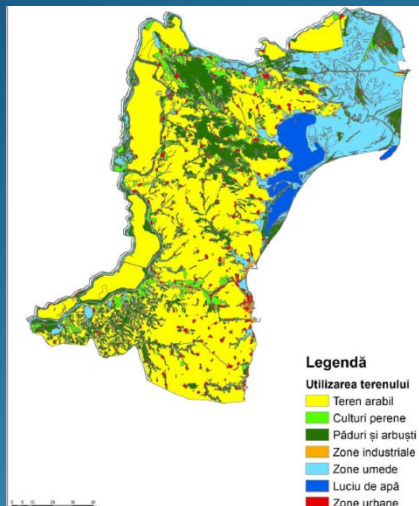
Gap: lack of empirical , analytical and integrated studies for an economic assessment of cost/benefits related to the modifications in the frame of marine quality elements

- **based on economic indicators in relation with the marine waters users**

- Identification and description of interest area;
- Identification and description of the economic sectors in the relation with the use of marine waters;
- Identification and quantification of benefits of marine water users based on macro economic indicators (GDP, GVA , No employers, Revenues)
- identification and possible monetary quantification of the impact economic sectors on marine environment.

□ ESA Overview RO approach

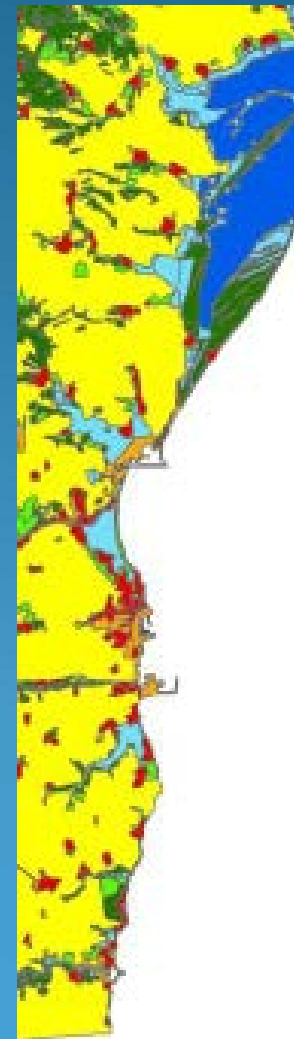
Interested area: Coastal area, Marine Area , Hydrographic area Dobrogea



Hydrographic area
Dobrogea - Litoral

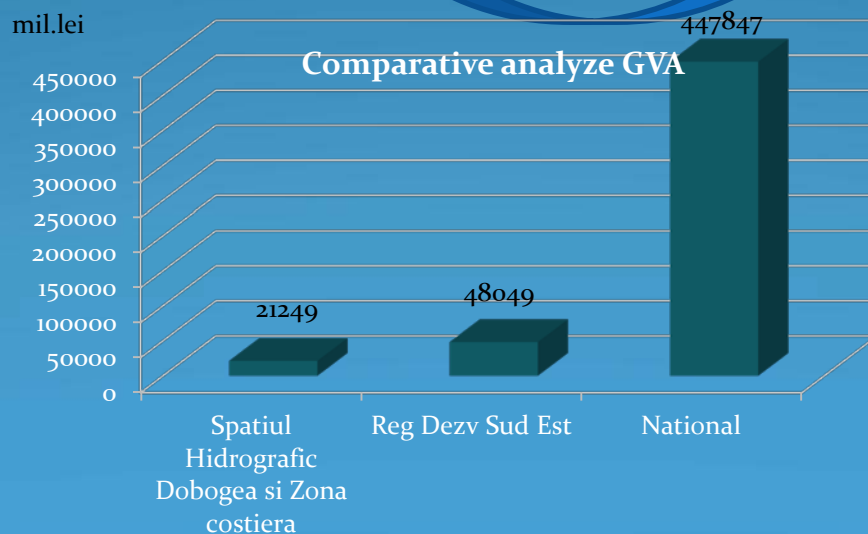
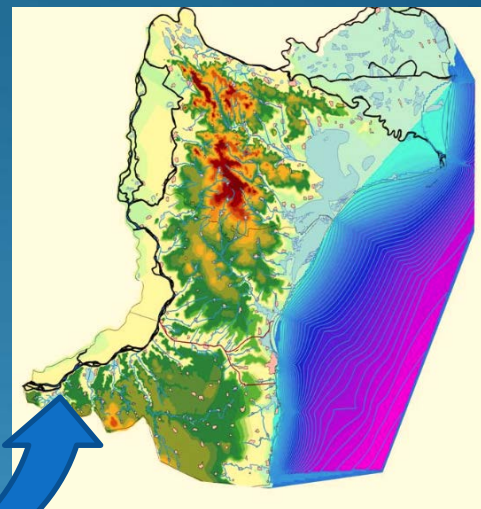


Nr.Crt	County	Surface (km ²)	Populațon 2008	Population 2009	Population 2010
1	Constanța	7.071	718.330	722.360	723.796
2	Tulcea	3.742	235.641	247.444	245.899
3	Brăila	996	4.895	5.000	5.000
4	TOTAL	11809	958.866	974.884	974.965



❑ ESA Overview RO approach

Interested area: Coastal area, Marine Area , Hydrographic area Dobrogea



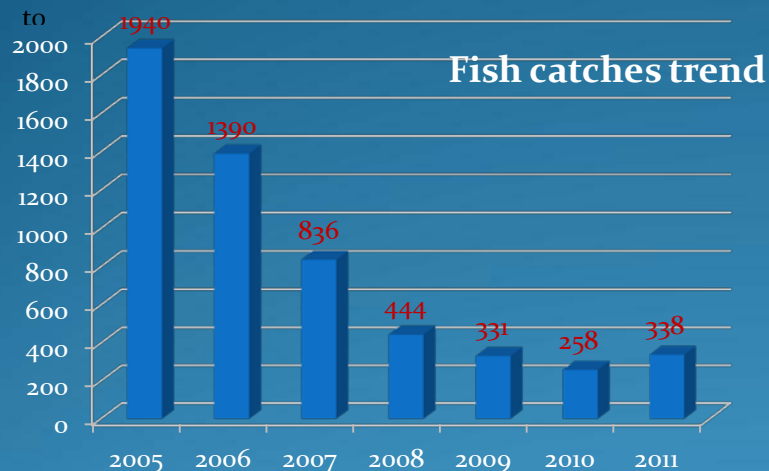
Identification and description of the economic sectors in the relation with the use of marine waters

- based on macro economic indicators (GDP, GVA , No employers

Pressure	Economic activity	Subactivities/ Use the marine waters
Biological disturbance	Fishery	Capture of living resources Fish/Shelfish
Physical damages	Antropic structures	Flood protection for coastal area
		Harbors operations
		Location and operation of offshore structures (other than energy production
		Oil/natural gas extraction
Other physical disturbance	Transport	Marine transport
		Marine liters
	Turism	Turism and recreation
	Ships constructions	
Nutrients and organic substances discharge	Human agglomerations //Industry /Agriculture	Industrial waste water discharge
		Waste water discharge from municipalities
		Nutrients discharge from Danube
Contamination with Hazardous substances	Industry	Hazardous substances discharge from Danube.

Identification and description of the economic sectors in the relation with the use of marine waters

Fishery



Production value of fish catches

2011 - 2.33 mil lei (0,51 mil Euro)

2012 - 2,27 mil.lei (0.50 mil lei)

Contribution of marine fishery in the frame of Constanta GVA



□ CEA - key components

Why we need to assess the cost-effectiveness of potential measures for achieving the environmental objectives set out in the MSFD ?

- Making judgements about the most cost effective **programme of measures** which could be implemented in order to bridge a potential gap in water status between the baseline scenario and the Directive's objectives ;
- Assessing the cost-effectiveness of **alternative measures** in order to estimate whether those programmes of measures are disproportionately costly or expensive

□ CEA - Key components

- are **costs** and **effects** on water of the measures fully assessed by focusing on the largest cost components and the major determinants of the effectiveness of measures.;

What question we should answer ?

- 1) CEA based on financial costs (as a proxy for economic costs) and estimates of water environmental costs;
- 2) CEA based on economic costs, including estimates of non-water environmental costs ;
- 3) CEA effectively being expanded to a CBA, including wider economic costs and benefits

□ CEA - Key components

What cost we should we consider in a CEA

Cost Considered in the CEA		
Actual cost of measure	Economic cost of measure	Definition Term
(Direct) financial cost of measure =CAPEX, OPEX, etc.	Adjust for taxes and subsidies if any	Direct, indirect, maintenance, and operating
+ associated water @ non-water environmental costs of measure ???	WTP to avoid damage WTP – wiligness to pay	Non-water environmental costs
= Total cost	= Total social cost = Total economic cost	

□ CEA Basic approach



□ Identify potential measures

□ Collate information on measures

Costs (operation and maintenance, investments, economic costs...)

Effects

Time-related parameters (implementation period, time lag for effects)

Institutional setup – who decides, implements, finances

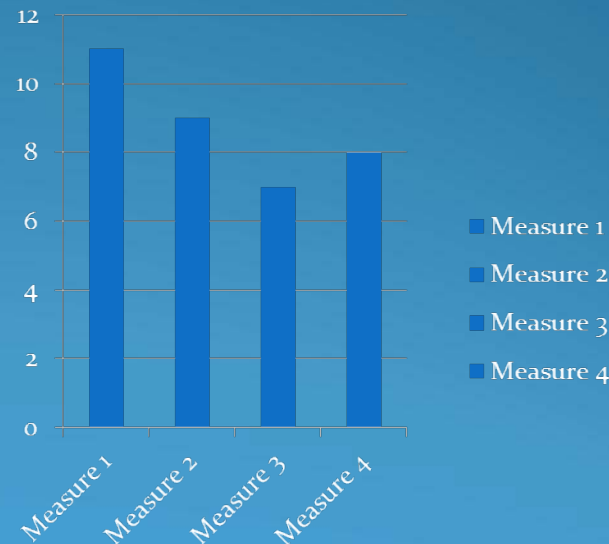
□ Calculate (annualised) cost-effectiveness ratio

□ CEA Basic approach

- Rank measures according to cost-effectiveness ratio
- Select set of measures required for reaching good water status
- Assess financial impact/plan, other impacts

	Score Criteria 1 Reduce the pollution	Score Criteria 2 Financial affordability	Score Criteria 3 Synergy with other directives	Score Criteria 4 Environmental impact (aquatic ecosystem)	Total score
Masura 1	3	3	3	2	11
Masura 2	3	2	1	3	9
Masura 3	2	2	2	1	7
Masura 4	3	2	2	1	8

Ranking the measure in relation with criteria 1-4



□ Example CEA approach

Joint Program of Measures RO-BG (ARCADIS – Project)

Per measure, assessment of:

- Relative importance of driver/source/activity/size/intensity (1-5)
- Relative importance of driver/source to reduce pressure (1-5)
- Expected effectiveness of type of measure (1-5)
- Geographical dimension
- Stakeholder acceptance

Relative importance of driver/source/activity (size/intensity)	Relative impact of driver/source/activity (per unit of activity) to reduce pressure	Expected effectiveness of type of measure (see sheet 'Typology measures')	Importance to reach target - Potential reduction of pressure as result of the measure (value 1-5)	Geographical dimension of the effect. 1 (local) to 5 (whole area)	Overall effectiveness	Overall effectiveness
1-5	1-5	1-5	Mean Round	1-5	1-5 (integrating Column W-Z)	1-5 (integrating Column W-Z)

ine the result

□ Example CEA approach

Joint Program of Measures RO-BG (ARCADIS – Project)



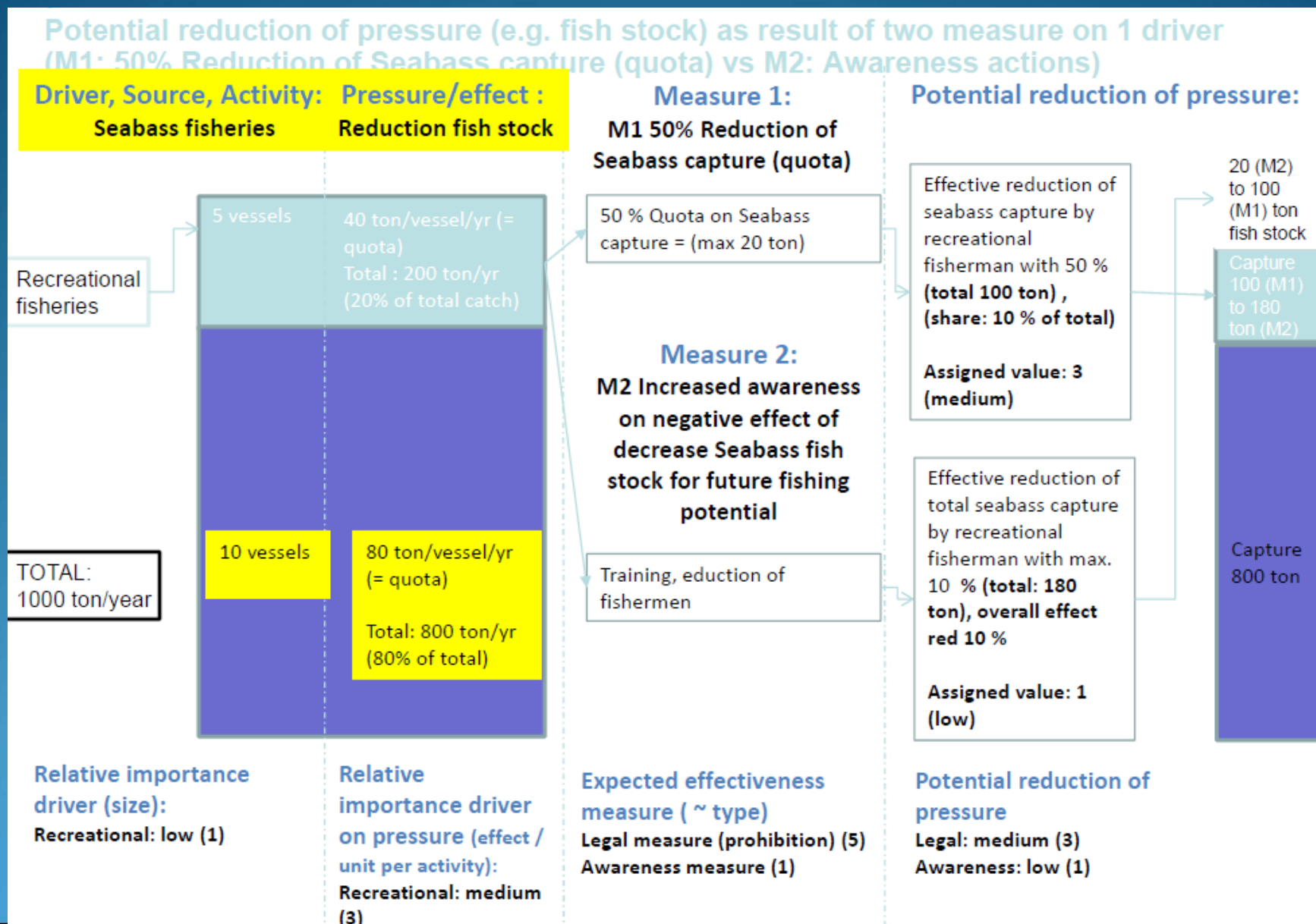
Overall Effectiveness (1) – potential to reach target

- **Potential to reach target (value 1-5)**
 - ✓ Potential reduction of pressure as result of the measure (value 1-5)
 - ✓ Relative importance of driver/source/activity (size/intensity)
 - ✓ Relative impact of driver/source/activity (per unit of activity) to reduce pressure
 - ✓ Expected effectiveness of measure (e.g. prohibition vs awareness raising)
 - ✓ Geographical dimension of effect (local vs total area)
 - ✓ Local vs subregional vs wider scale

Detailed selection (only for preselected measures) (1): Overall effectiveness (1-5)

Relative importance of driver/source/activity (size/intensity)		Relative importance (effect) of driver/source/activity (per unit of activity) to reduce pressure		Expected effectiveness of type of measure		Importance to reach target - Potential reduction of pressure as result of the measure (value 1-5)		Geographical dimension of the effect. 1 (local) to 5 (whole area)		Overall effectiveness 1-5 (integrating Column N-O)
						Mean	Round			
1-5		1-5		1-5				1-5		
recreational trammel nets fisheries (150 ind; low)	1	Medium (~by-catch)	3	High (Prohibition)	5	3	3 or 2?	GS: ± 15 km² (of Belgian part North Sea)	1	to be decided

Example CEA approach Joint Program of Measures RO-BG (ARCADIS – Project)



❑ Example CEA approach

Joint Program of Measures RO-BG (ARCADIS – Project)

Overall Effectiveness

- ✓ Scoring expected effectiveness of measures
 - 5 Legislative measures: Prohibition
 - 5 Technical measures: Implementation
 - 3 Legislative/ Management: Enhancing control & enforcement
 - 3 Economic/Technical: Stimulating alternative techniques (economic incentives)
 - 3 Spatial & temporal distribution controls: to influence where or when an activity is allowed or not
 - 1/3 Management coordination (depending on credibility, complexity)
 - 1 Communication/ education / awareness
 - 1 Monitoring/ research: Feasibility studies, Monitoring
- ✓ Scoring: Relative importance of driver/source/activity (size/intensity) * 2
- ✓ **Sum** of criteria

❑ Example CEA approach Joint Program of Measures RO-BG (ARCADIS – Project)

✓ Cost estimate

- ✓ Basis: use of cost ranges (to be determined)
- ✓ Illustrative example (to be decided on regional scale)
 - (5) € < 10,000 (low cost)
 - (4) € 10,000 – 50,000
 - (3) € 50,000 – 200,000
 - (2) € 200,000 – 1 Million
 - (1) € > 1 Million (High cost)

✓ Cost-effectiveness

		Effectiveness				
		5	4	3	2	1
Cost	1	3	3	2	1	1
	2	3	3	3	2	1
	3	4	4	3	2	2
	4	5	4	3	3	3
	5	5	5	4	3	3

**CEA/CBA
will sustain
the
decision-
making
process**

Development the Program of
measure & Prioritization of
measures

- Transparency to stakeholders/public/EC, allowing consultation and experience exchange
- Stakeholders acceptance

Different scale for CEA assessment :

- CEA to compare individual measures
- CEA of measures grouped per descriptor/indicator/pressure reduction - measures may be combined or mutually exclusive
- CEA of various PoM scenarios:
 - To balance measures targeting various descriptors/indicators + addressing significant pressures

□ CBA

- the analysis of **costs and benefits** remains in most cases the basis for **deciding on cost disproportionality** and implicitly on exemptions (WFD@MSFD)
- Focus on - in which proportion the total costs of POM related to different economic sectors could be considered disproportionate ? (which is the threshold for disproportionality ?)
- Whether social and distributional impacts, including ability to pay should be considered or not in the justification for exemption due to disproportionate costs
- whether distributional impacts on the public budget should also be considered , as the public budget might have its own constraints and limitations (cost recovery, EU rules on budgetary deficit,...) that might hamper the implementation of measures.

❑ CBA Approach WFD

- Qualitative & Quantitative approach
- A standard environmental benefit template was developed for supplementary measures (WFD) similar the approach for MSFD
- Each supplementary measures was assessed in relation with standard environmental benefit template
- Only for supplementary measures related to **Nutrients pollution, organic and hazardous substances from human agglomeration and industry point pollution** sources a direct benefit analyse (cost – income) was assessed based on **NPV**

Approach on DCA

Estimation of cost benefit ratio < 1, > 1

Criteria :

- ❑ If the **benefit is above the total costs** than an financial affordability analyze was performed.



Ex: if financial resources has been identified than the WB related to the proposed measure will **not** be the subject of exemptions due to DC)



Ex: if financial resources has not been identified than the WB related to the proposed measure will be the subject of exemptions – Art.4.4 due to DC)

- ❑ If the **benefit is less than total costs** than the WB related to the proposed measure will be the subject of exemptions – Art.4.4)

□ CBA Approach MSFD

Main steps

- ✓ Identification of benefits
- ✓ Qualitative description of benefits
- ✓ Ranking of benefits (equivalent)
- ✓ Valuation of benefits based on economic valuation
- ✓ Ranking the costs
- ✓ Cost benefit ratio

□ CBA Approach MSFD

Total economic value

Use value

Direct use

Consumptive
fishing
Non
consumptive
Watching
dolphins

Non direct use

**Ecosystem
services**
Nutrient
cycling
Climate
regulation

Non use value

Existence

Knowledge
of
continuous
existence
of the
resource

Altruistic

Knowledge
of use of
resource
by current
generation

Request

Knowledge
of passing
resource to
future
generation

The measure

- › Designation of zones for beam trawling. Long-term observation on the impacts in the designated zones permitted for beam-trawling. Research on the activities. When necessary change of usage requirements. remove or stress element of the food chain

- › **What are the direct benefits from this measure?** (the environmental target) – less beam trawling – maintain the distribution of seabed species/habitats, reach MSY (by reduction of mortality)
- › **Who will benefit from the impact of this measure?** Society through improved seabed, biodiversity and food chain
- › **How ambiguous is the measure?** (How much of the GAP does it cover?) Depends directly on the share of zones

How are the benefits estimated:

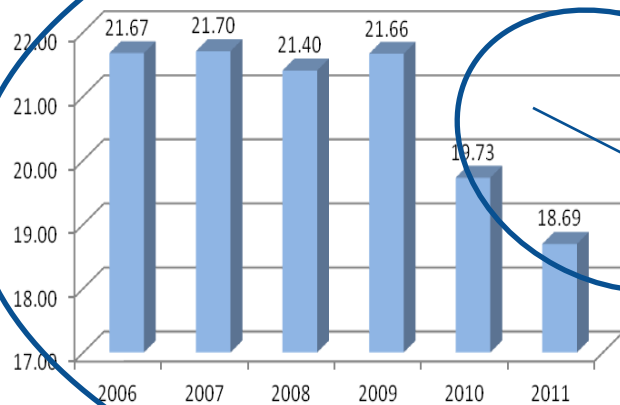
- › increase in income for the fishing sector in mid to long term
- › Example 2-5 fold if changing from present fishing regime to MSY, 8- 20 years till realised
(source: The Economic Value of Rebuilding Fisheries, OECD)
- › maintain quality of seabed habitats - CV of the protection of species. Example from Dogger bank (17,600 km²)
- › protection of 10% species 5.7 Ł
- › protection of 20% species 7.2 Ł
- › remove or stress element of the food chain

CBA considers whether measures or a PoM would provide net gains to society

~ “Member States shall give due consideration to sustainable development and, in particular, to the social and economic impacts of the measures envisaged”

Turism

Pondereea activitatii turism litoral la nivelul turismului national



- algae bloom !!!



- eutrophication

Nutrients
pollution

Human
agglomeration
Agriculture

D P S I R

Response

Measures

Danube wide scale
(DRBMP)
Coastal

BENEFITS

WTP study

- Increasing in number of tourists - 10%-15% in weekend
- Increasing in number of tourists per holiday - till 5%

If algae bloom will be not a problem
do you intend to go more often to the
seaside??

Increasing GDP
for tourism
....2-3%/year



THANK YOU FOR YOUR ATTENTION