Marine economic accounts of maintenance cost in France

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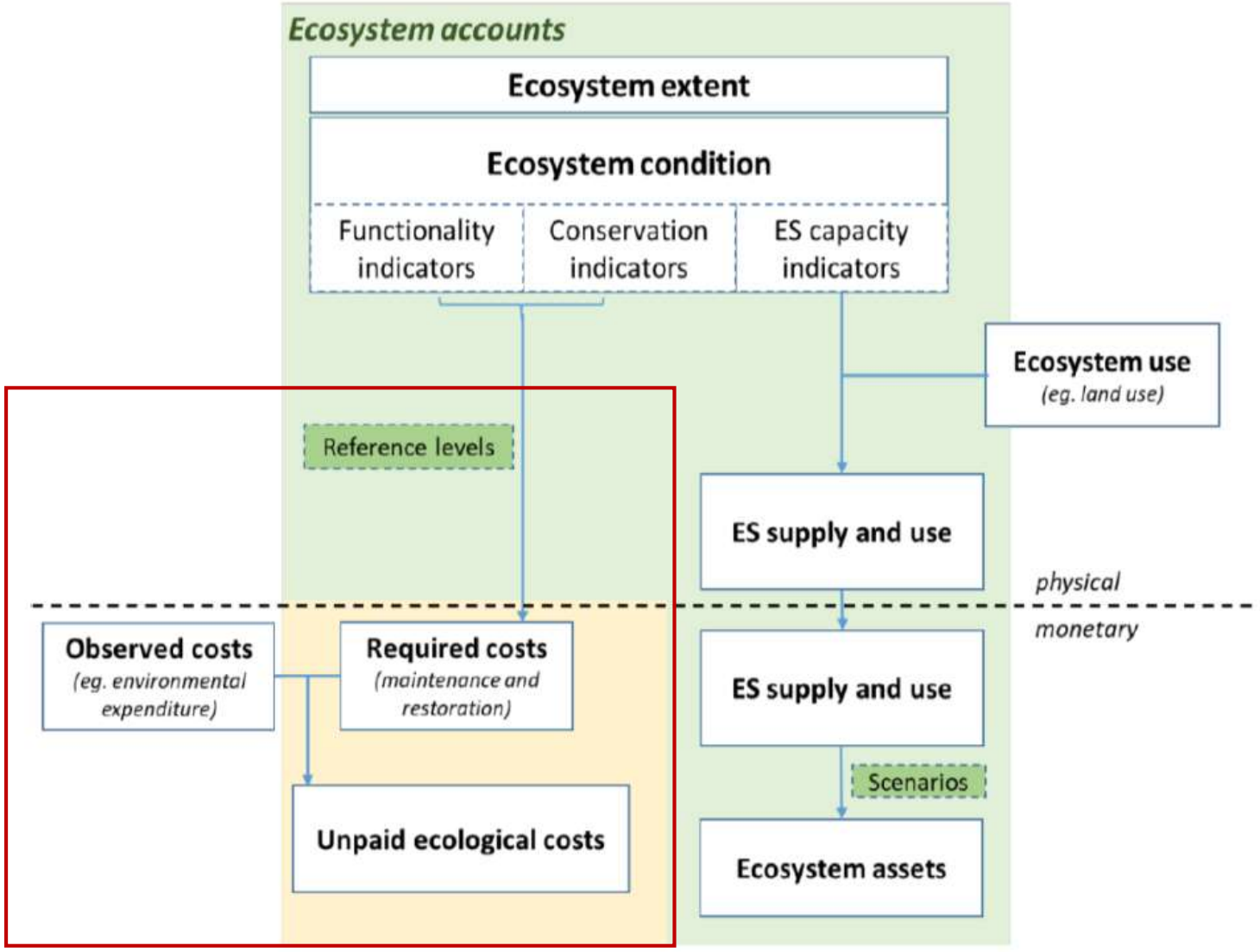
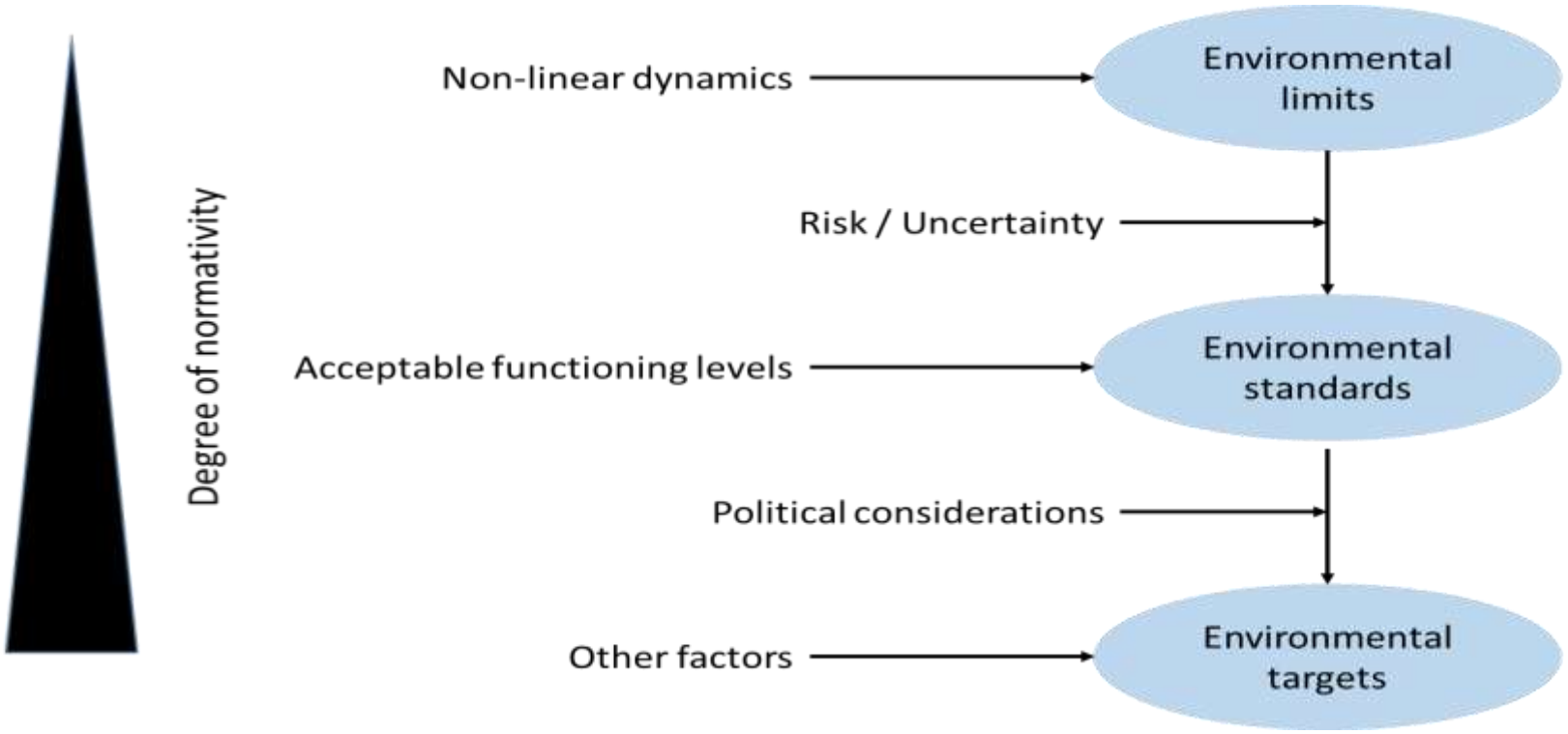
Conceptual framework of ecosystem accounts with maintenance costs



Comte, Kervinio, Levrel. 2020. CIRED Working Paper 2020-76

Environmental objectives: “Science-based targets” / collective values



Planetary boundaries
e.g. genetic diversity loss
e.g. nitrogen flows

International norms
e.g. Paris accord on climate
e.g. Aichi targets

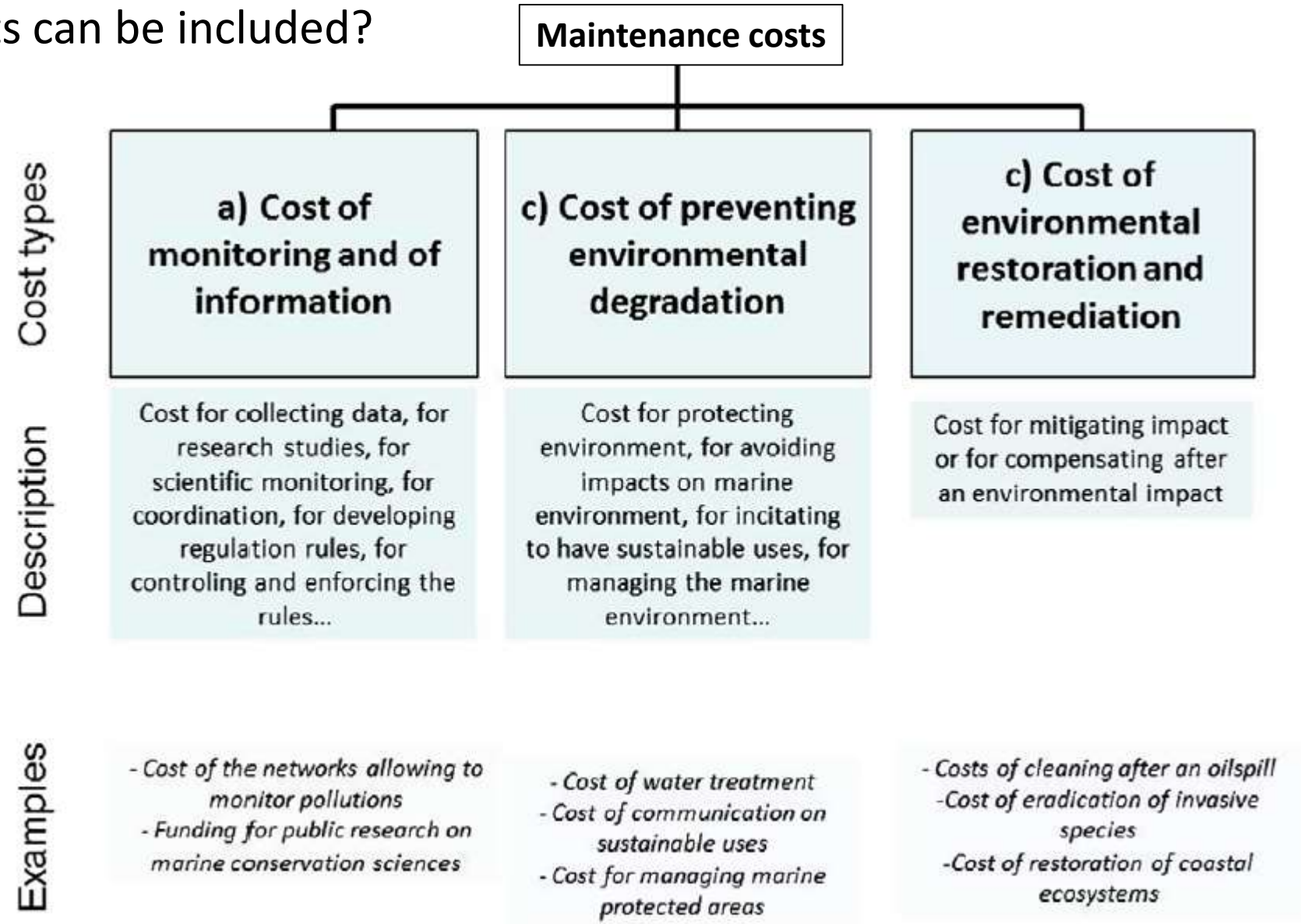
Public policies
e.g. No net loss of biodiversity
e.g. Good ecological status of waters

Source: adapted from Usubiaga et al., 2019 & Ekins et al., 2020

What policy use for cost-based valuations of ecosystems ?

- Complement new dashboard of indicators of wealth
- Contribute to biodiversity resource mobilization efforts
- Build standardized indicators to monitor the achievement of specific policy objectives
- Foster the design of innovative policy instruments such as ecological taxes and permits
- Annex to the Finance law
- Residual impacts of marine policy (MSFD) and budget needs to attain Good Ecological Status

What kinds of costs can be included?



Source: adapted from Levrel et al. 2014. Marine Policy

What are the methods to estimate required costs?

Cost transfers

Dose-response models

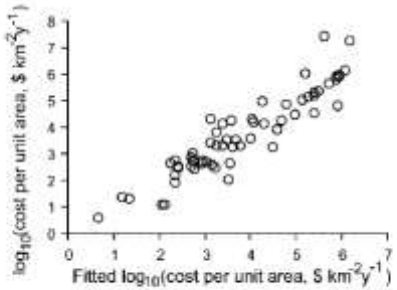
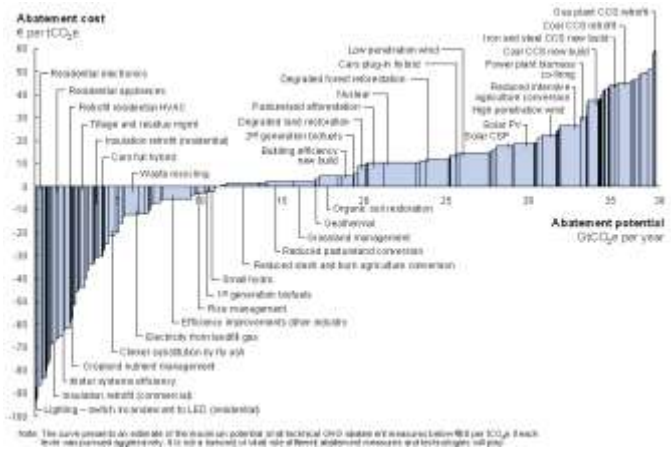


Fig. 2. The total annual cost per unit area of running MPAs plotted against fitted cost, estimated from the three-term model described in Table 1.

Balfmord et al., 2004

(abatement) cost functions



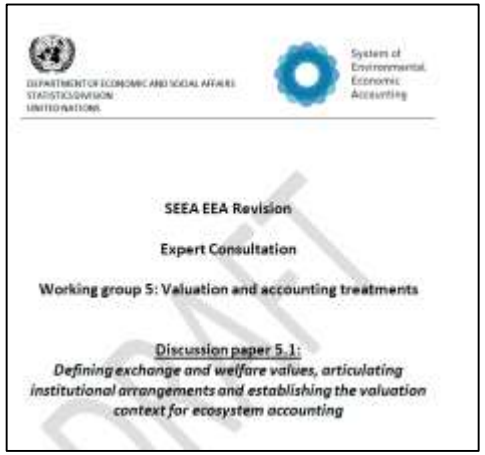
McKinsey's CO2 Marginal abatement cost curve

Expert opinion /budgeting

Bottom-up accounting from economic agents

CARE approach:
Rambaud & Richard, 2015

CHAIRE COMPTABILITÉ ÉCOLOGIQUE



SEEA EEA Revision

Expert Consultation

Working group 5: Valuation and accounting treatments

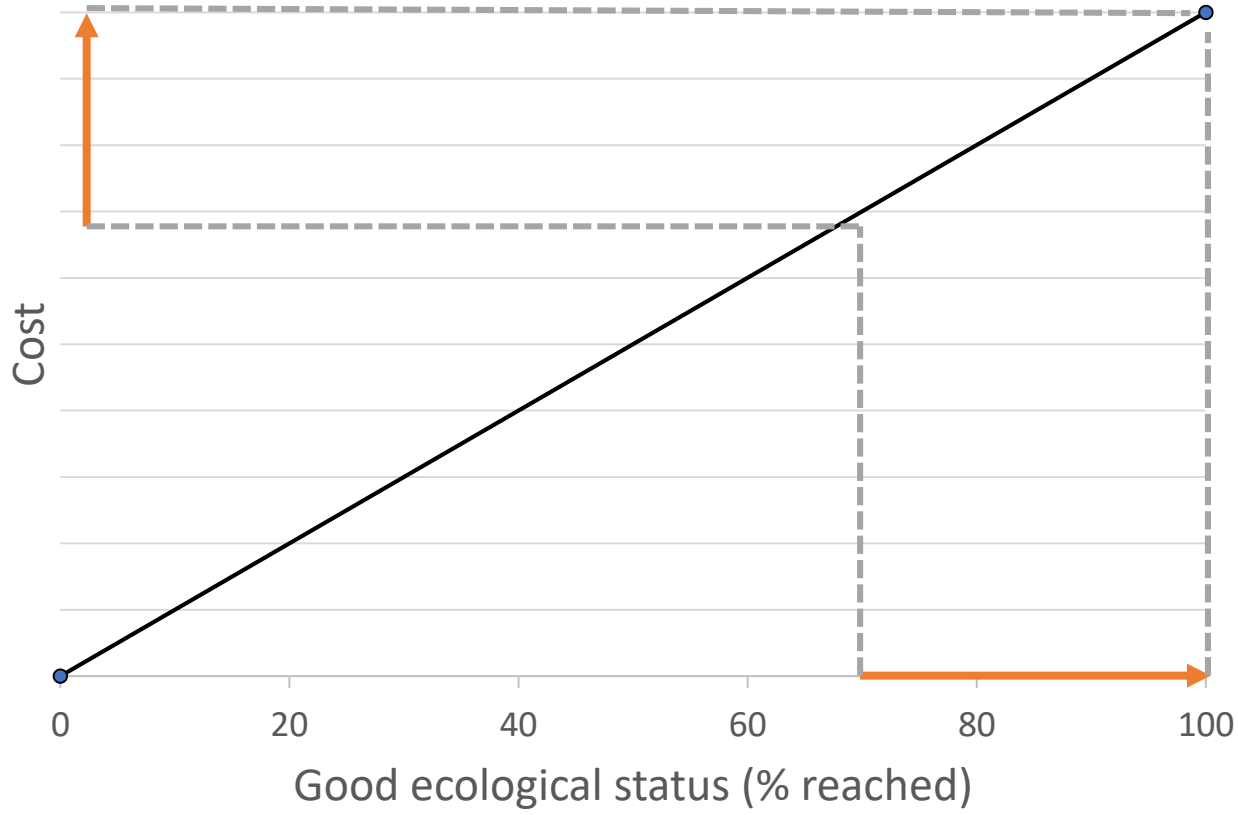
Discussion paper 5.1:
Defining exchange and welfare values, articulating institutional arrangements and establishing the valuation context for ecosystem accounting

Application to French marine ecosystems

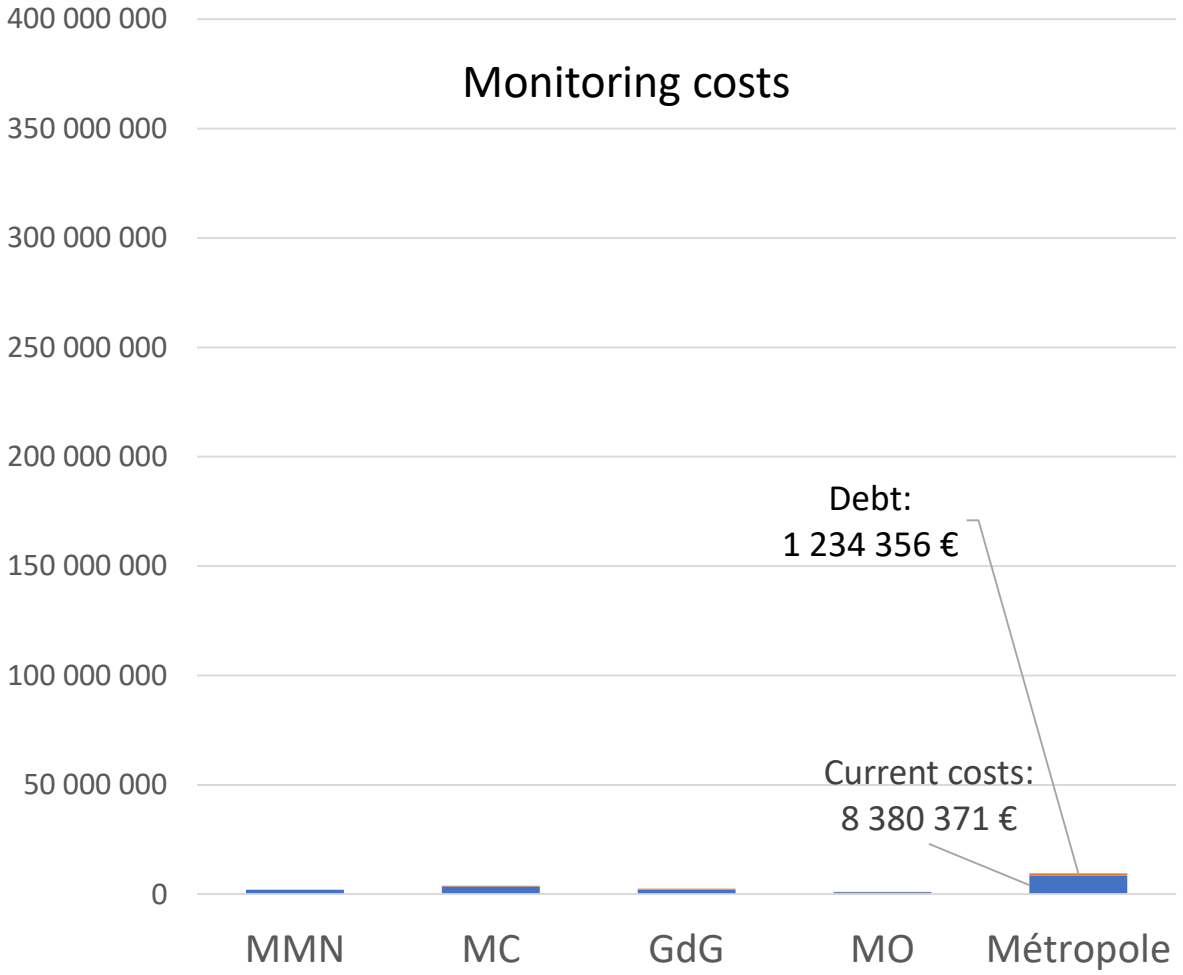
- Biodiversity (heritage dimension)
- Eutrophication (function dimension)
- Fishing (capacity dimension)

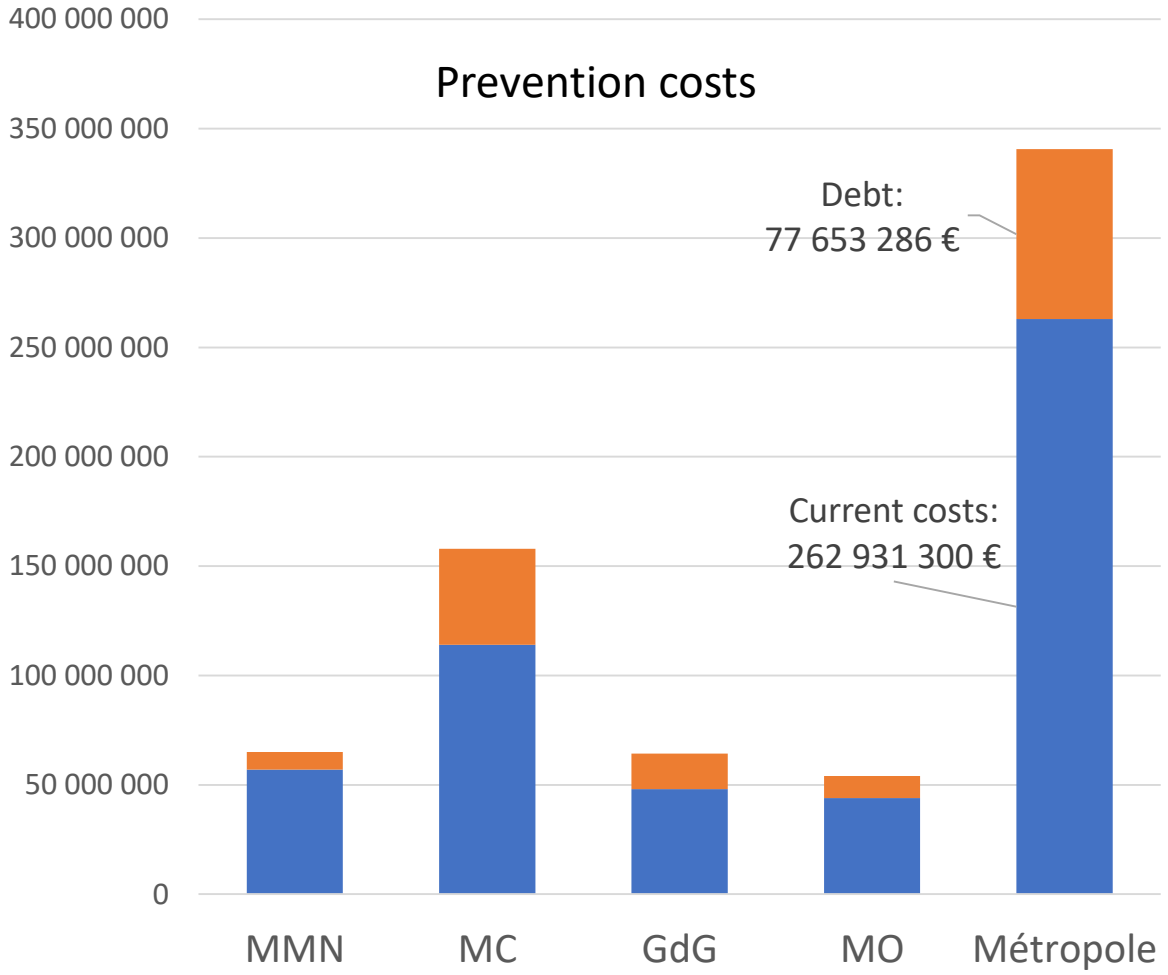
First approximations of unpaid ecological costs

- Linear relation between ecosystem condition and cost
- Unpaid ecological cost are yearly expenses
- Only monitoring costs and avoidance costs, no restoration costs for eutrophication and fishing
  - ➢ Natural regeneration

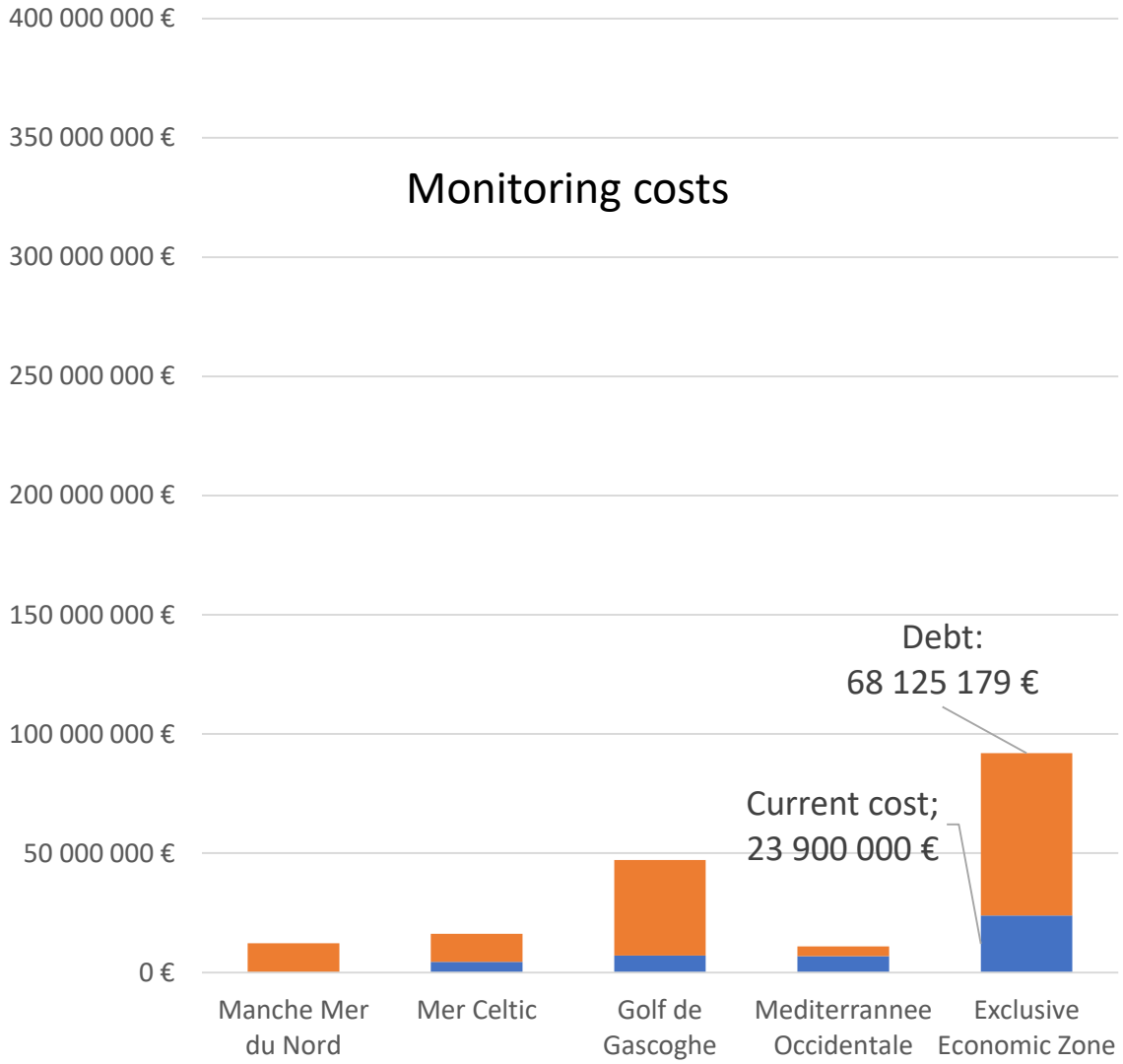


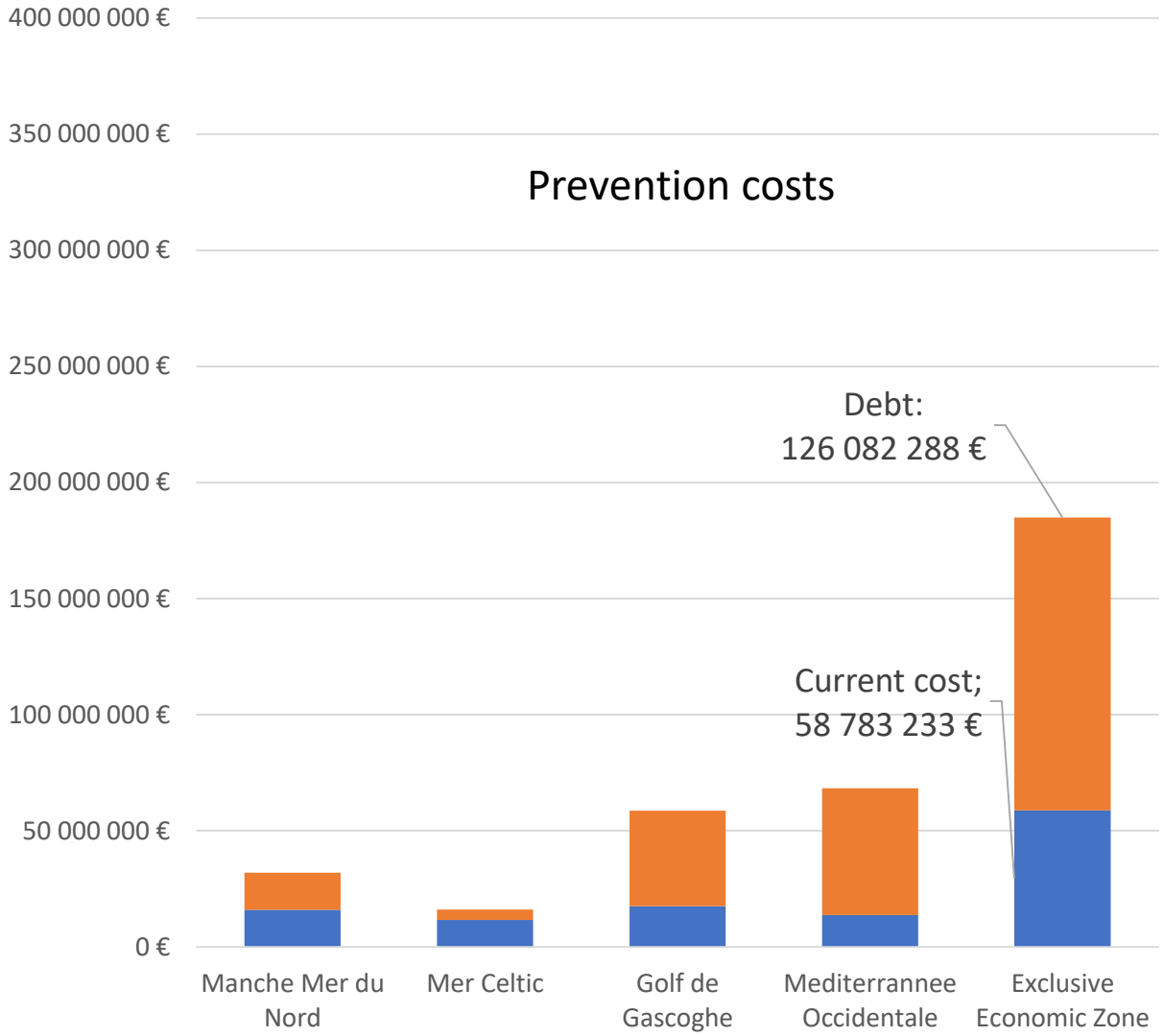
Unpaid ecological costs for eutrophication





Unpaid ecological costs for fishing





Fishing: alternative scenario based on a marginal approach

Fishing effort = T * N * Q ;

we can either modify T (temporary suspension) or N (definitive outings)

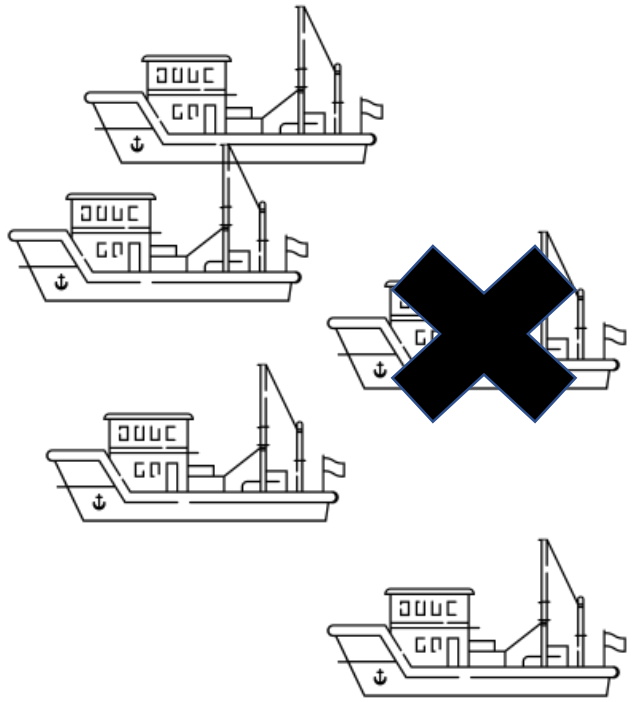
- Reglementary framework for compensation → observed costs

Temporary suspension of activity :

Pe = [((F x M x 0,3)/J) + (AP x M x (5/7))] + (AP x n)

Definitive outings : Pe = (q*η+θ)*r

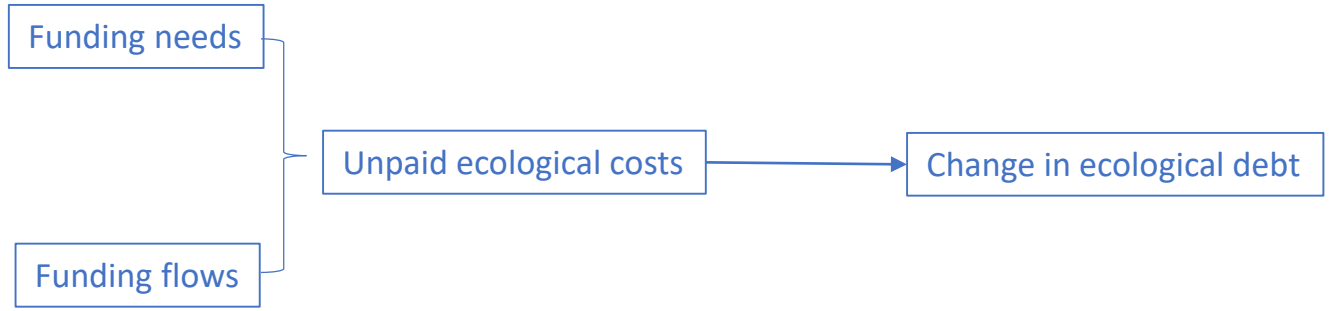
- Working on explicit link between the outing of vessels and the impact on fish biomass



Future work on calculating maintenance cost of the marine environment

- Refinement of the actual dynamics between attaining GES and cost of action (concave or convex relationships also possible)
- Assessment of maintenance cost for biodiversity using various environmental targets to be defined
- Focused on three out of 11 descriptors of the MSFD, so costs are not complete
- Boundary between marine, coastal, and terrestrial ?
- Communicating uncertainty (linked to resolution, valuation methodologies, data sources) ?
- Principles aligned with SNA ?

Interpreting the evolution of unpaid ecological cost



Over an accounting period, changes in UEC can result from:

- Re-evaluation due to changes in data sources or methods
- Re-evaluation due to changes in prices or technologies
- Re-evaluation due to changes in objectives
- Changes in ecosystem condition due to economic activities
- Changes in ecosystem condition due to external factors

What integration into national economic accounting?

	Reveal the value of nature (SEEA EA)	**Ecological debts (Vanoli 2015)** ***(SEEA EA chap.12.3)***	**Impute unpaid cost (SEEA 93 IV.2)**
New Institutional sector	Ecosystem trustee	"Nature"	No
Ecosystems	Assets	/	Assets
Production	Increased by ES	Unchanged	Unchanged
Degradation definition	ES loss	Condition of ecosystems	Condition of ecosystems
Degradation	Fixed Capital Consumption-like	Capital transfer (debt to nature)	Fixed Capital Consumption-like
Degradation-adjusted-GDP	Yes	No	Yes

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Thank you for your attention

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