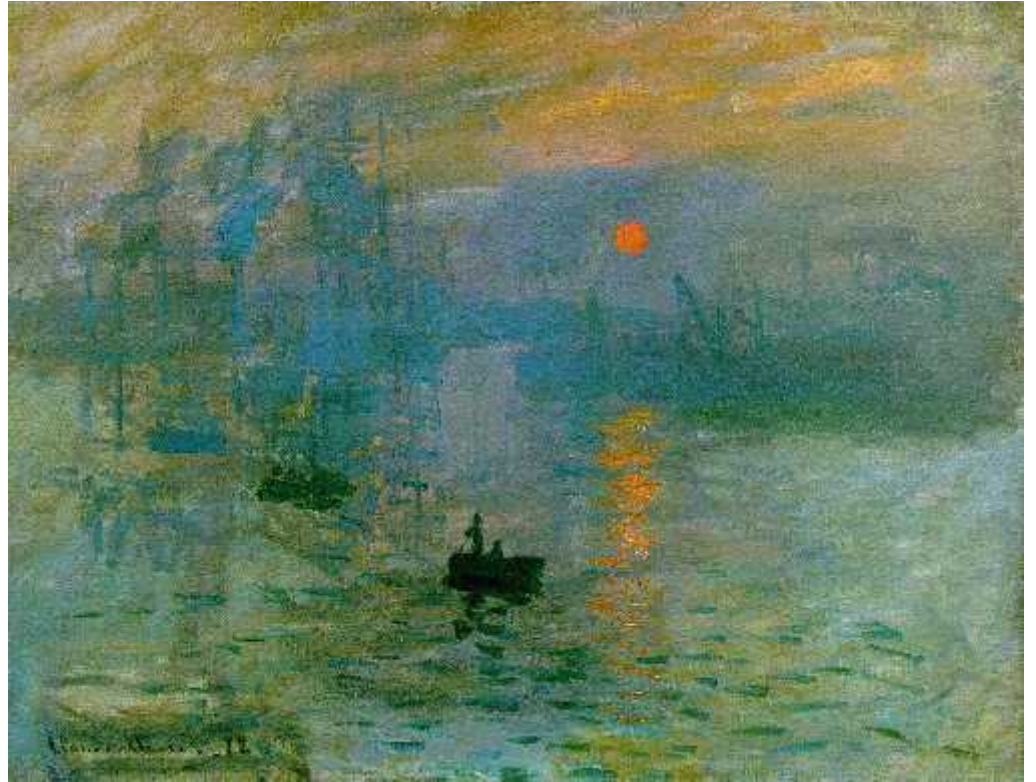


Integrating socio-economic and environmental aspects into decision-making about DSM



Sybille van den Hove

SPC Pacific ACP States 5th Regional Training Workshop

"Deep Sea Minerals: Financial Aspects"

13th-16th May, Rarotonga, Cook Islands

Content

- A brief introduction to MIDAS
- Socio-economic research in HERMES, and HERMIONE
- Some reflections on values, decision making, the broader picture, dilemmas and precaution





MANAGING IMPACTS OF DEEP
SEA RESOURCE EXPLOITATION

Project Objectives

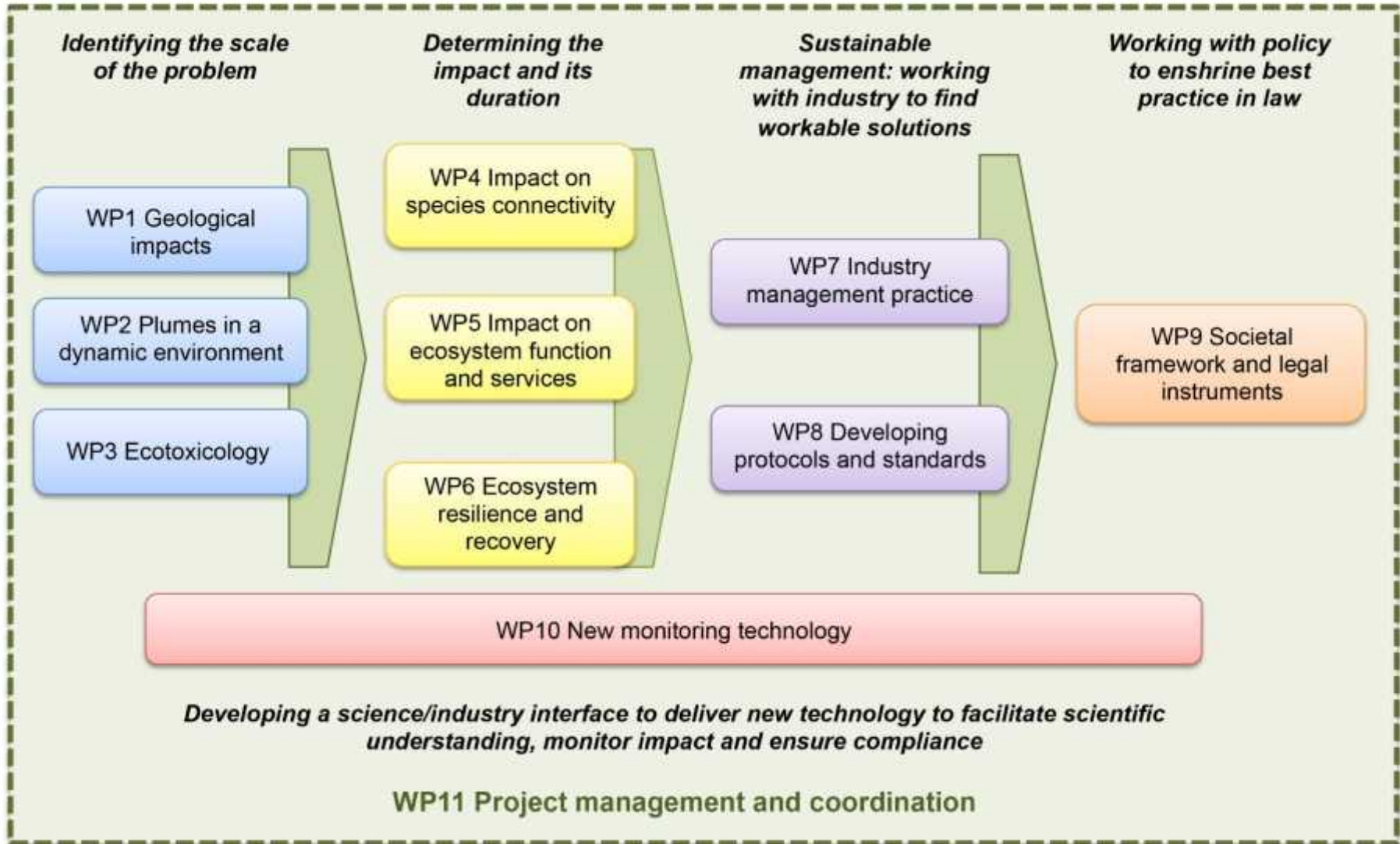
- Identify scale and duration of possible impacts on deep-sea ecosystems of different types of resource extraction activities → Impacts
- Develop workable solutions and best practice codes for environmentally sound and socially acceptable mining activities → Sustainable management
- Work with policy makers in the European and international arenas to enshrine best practice in international and national regulations and overarching legal frameworks → Governance

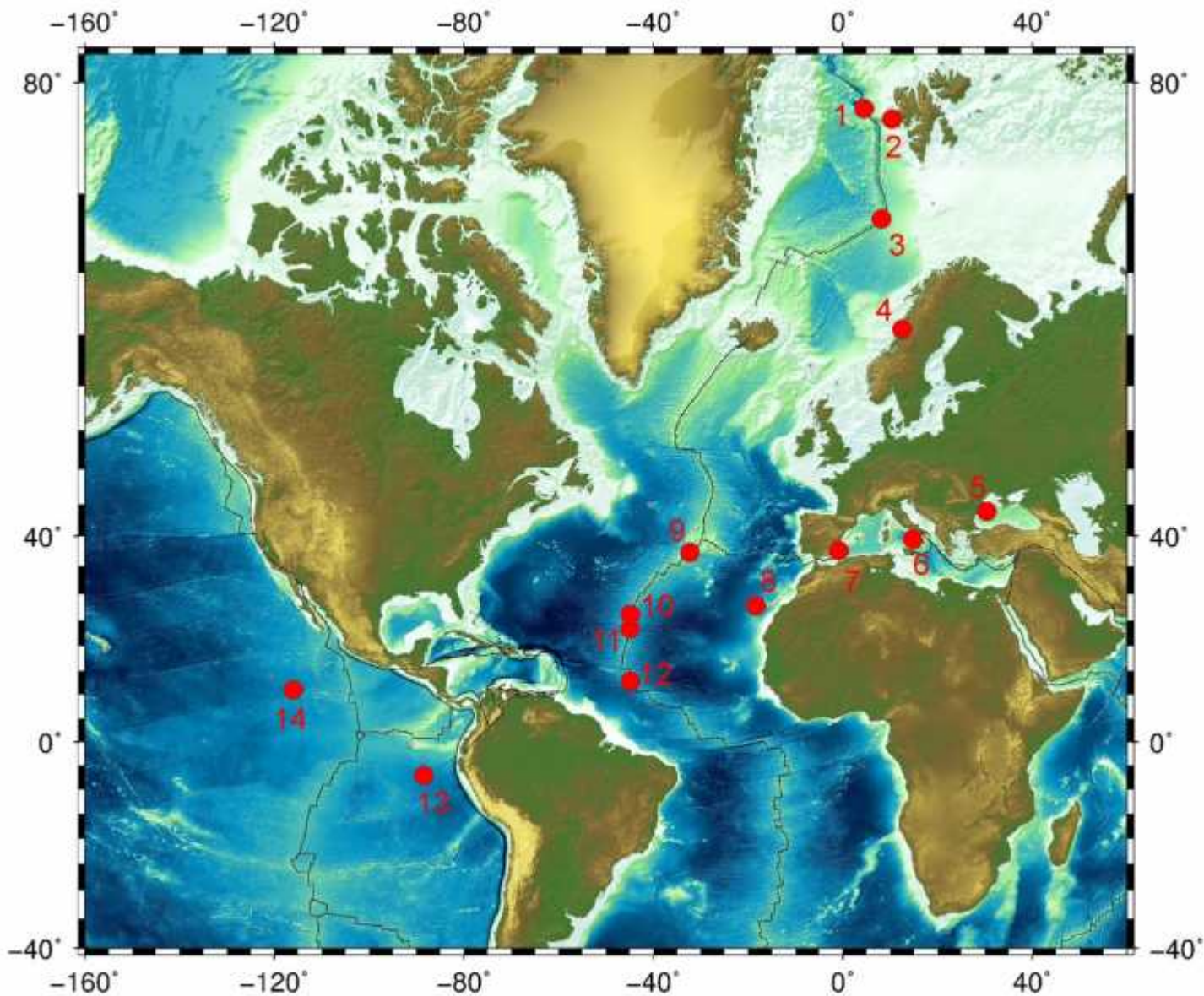
About the project

- ✧ Focus on 3 types of resources:
 - DS Minerals from sea-floor massive sulphides, Mn nodules & Co-rich Fe-Mn crusts
 - Rare earth elements
 - Gas hydrates
- ✧ Funded by the European Union's FP 7 Research Programme under theme "Sustainable management of Europe's deep sea and sub-seafloor resources" (Grant Agreement 603418)
- ✧ Project duration 3 years, starting 1 November 2013
- ✧ Budget € 12.5 million; EC contribution € 9 million
- ✧ 32 partners across 11 countries (UK, France, Germany, Portugal, Norway, Belgium, the Netherlands, Italy, Spain, Poland, Russia)
- ✧ Expertise includes marine scientists, policy & legal experts, social scientists, technologists, EIA practitioners

www.eu-midas.net

Work Programme





1. Hausgarten
2. Svalbard
3. North Atlantic hydrothermal area
4. Ranfjorden
5. Black Sea
6. Palinuro Smnt
7. Portman Bay
8. El Hierro
9. Lucky Strike
10. Snake Pit
11. TAG
12. MAR
13. DISCOL
14. Clarion
Clipperton Zone

Other relevant research projects



Hotspot Ecosystems Research on the Margins of European Seas

www.eu-hermes.net



Hotspot Ecosystems Research and Man's Impact on European Seas

www.eu-herminone.net



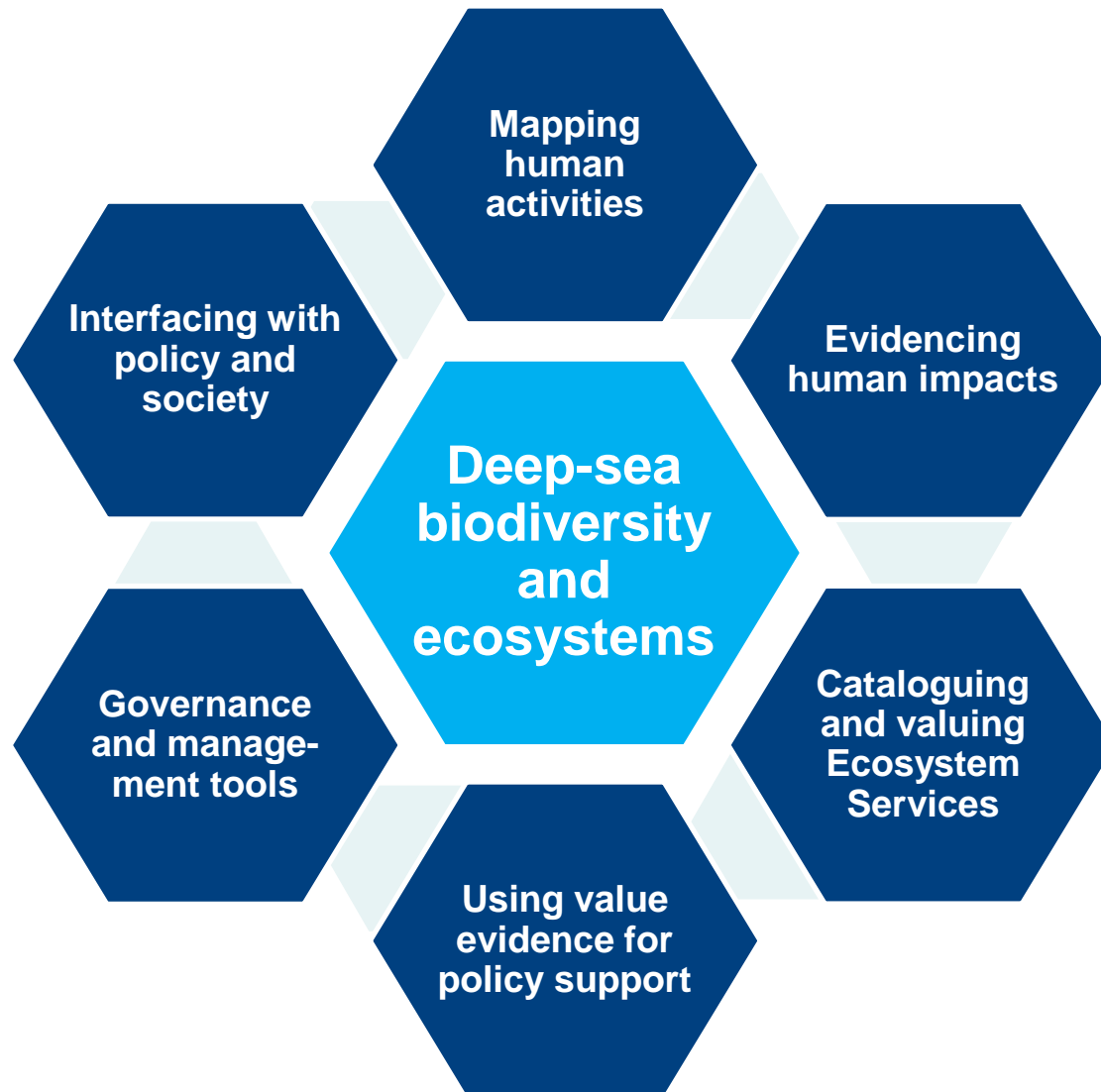
A scientific drive to discover and understand the ecosystems and the human impacts, combined to a recognition of the need for policy-relevant knowledge



Deep-sea Ecosystems

- ✓ Dimensions
- ✓ Distribution
- ✓ Interconnection
- ✓ Biological capacities
- ✓ Specific adaptations
- ✓ Functioning
- ✓ Importance of biodiversity
- ✓ Goods and services
- ✓ Values
- ✓ Governance
- ✓ Changes
- ✓ Drivers of change (climate change, human impacts, large-scale episodic events)
- ✓ Policy support
- ✓ Dissemination

Socio-Economic and Governance Research



Why care about deep-sea ecosystems?



- **Usefulness** arguments
 - ecosystem goods and services concept, captures dependence of human well-being on natural capital and flow of services it provides.
- **Ethical** arguments
 - e.g. intrinsic value; rights of other species/ mother nature; duty to preserve; stewardship; belonging...

Complementary justifications



Because they are threatened



Human activities & impacts in the deep sea

Fishing

Oil & gas industry

Mining

Bio-prospecting

Submarine cables

Dumping of waste

Dumping of offshore structures

Dumping of wrecks and ammunitions

Military activities (submarines, noise)

Scientific research

Shipping

Carbon sequestration

Gas hydrate exploration/extraction

Pollution from land-based activities

Atmospheric deposition of elements and contaminants

Climate change

Ocean acidification

**Direct and Indirect impacts
Combined pressures**

UNEP 2007

Glover & Smith, 2003

Thiel, 2003

OSPAR QSR, 2000

Benn et al. 2010



Because they are useful...



ECOSYSTEM SERVICES



Millennium Ecosystem Assessment, 2005

Deep-sea goods and services

Supporting services: Chemosynthetic primary production; nutrient cycling; resilience; habitat,...

Provisioning services: Fish; oil & gas; genetic resources and chemical compounds for industrial and pharmaceutical uses; waste disposal sites,...

Regulating services: Water circulation and exchange; Gas and climate regulation; Carbon sequestration and storage; Waste absorption and detoxification; Biological control of pests; ...

Cultural services: Educational; Scientific; Aesthetic; Spiritual;...

Goods and services provided by deep-sea ecosystems and the key roles they play in global biogeochemical and ecological processes are essential to the sustainable functioning of our biosphere and to human wellbeing.

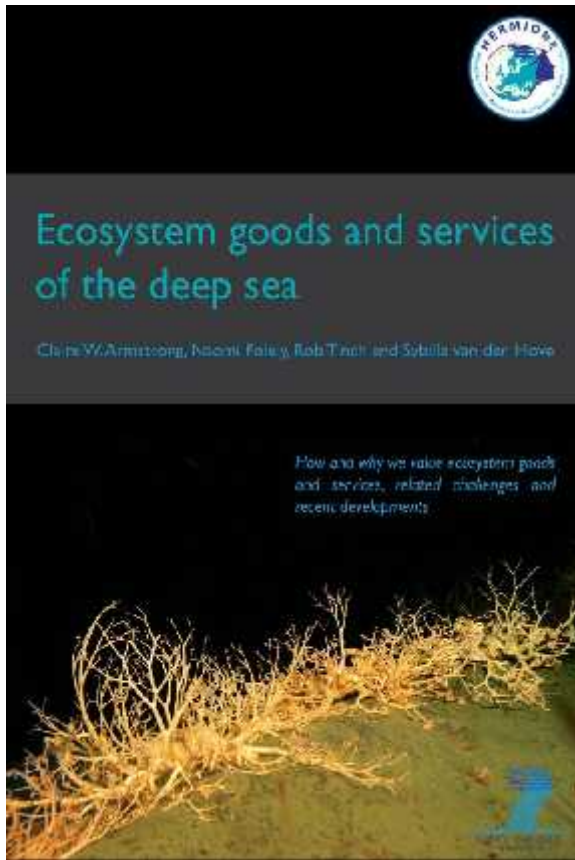


It is not just monetary values

- Value is a philosophical and ethical concept, not just an economic concept.
 - Values are implicit and/or explicit in everything we do.
 - Values cannot and need not necessarily be express in quantitative, monetary terms.
 - Values can be recognised in qualitative or quantitative terms, along various dimensions.
- There are different types of value evidence and different potential applications of value evidence in deep-sea governance

Can we develop value articulation processes which take into account normative and ethical dimensions, and re-establish the role of intuition, common sense and ethics in environmental and social valuation?





Reflecting on value evidence



Documenting value



Contents lists available at SciVerse ScienceDirect

Ecosystem Services

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




Services from the deep: Steps towards valuation of deep sea goods and services

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ABSTRACT

Very little work has been done to identify and characterise the goods and services of the sea, and even less for the deep sea. We present a first categorisation and synthesis of deep-sea ecosystem goods and services, and review the current state of human knowledge about these services, the possible meth



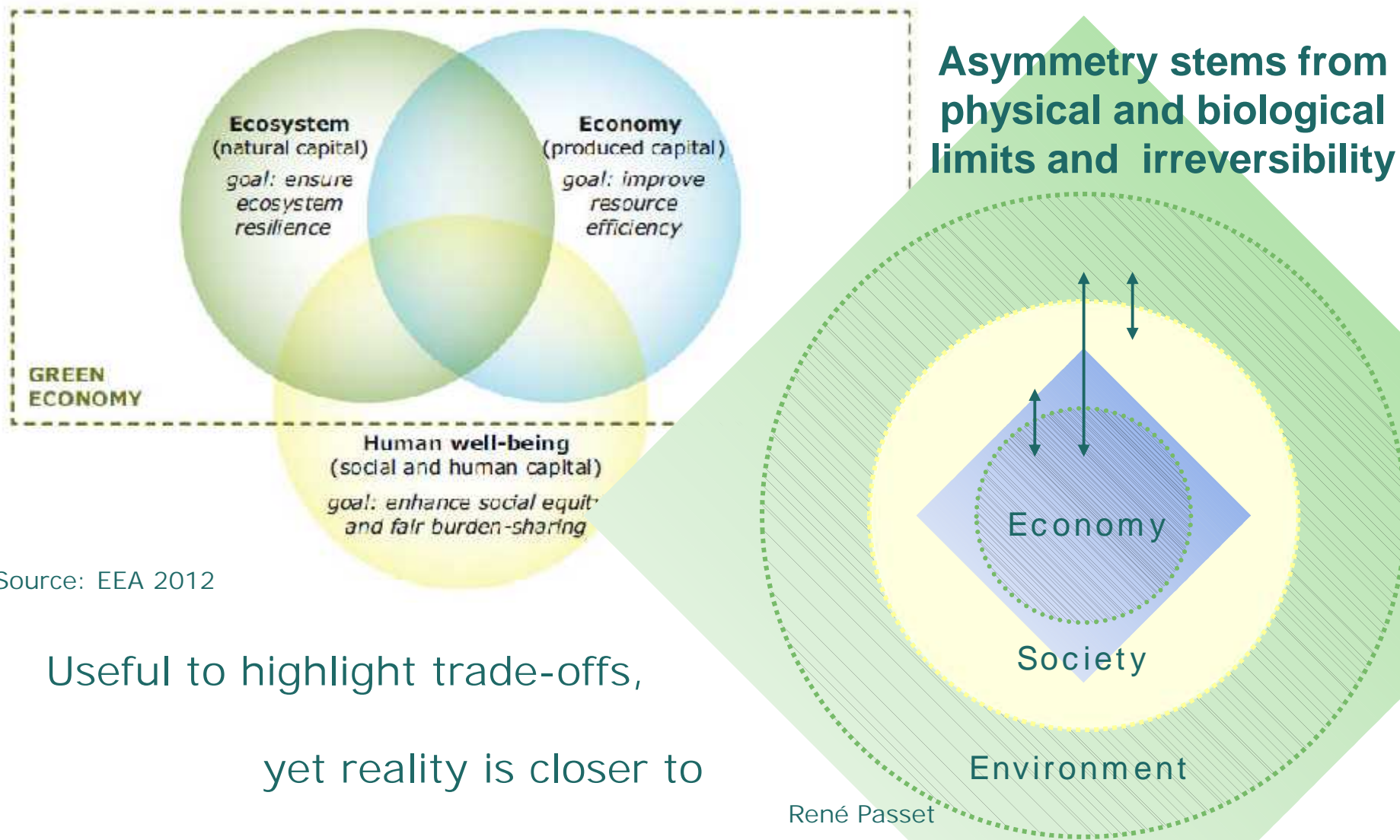


Uncertainties, irreversibilities

- Huge gaps in knowledge and uncertainties about:
 - deep-sea biodiversity
 - ecology of systems
 - goods and services provided;
 - relationships between biodiversity, ecosystem functions, services;
 - human activities and impacts;
 - baselines
- Uncertainties and indeterminacies inherent to complex social-ecological systems
- Knowledge is growing more slowly than anthropogenic pressure
- Yet impacts can/could be (quasi)-irreversible (e.g. trawling, some forms of deep-sea mining,...)



Asymmetry between the 3 'pillars' of sustainability



Source: EEA 2012

Useful to highlight trade-offs,
yet reality is closer to

Irreversibilities and precaution

- ❑ It is not the same to be wrong when impacts are reversible and when they are irreversible
- ❑ Reflect on pros and cons of being wrong
- ❑ Potential irreversibility and/or high stakes call for precautionary approaches:
 - Acknowledge the possibility of surprises
 - keep your options open
 - diversify to build resilience
 - avoid lock-ins
 - Revisit
 - Adapt
 - be humble ...



Acknowledging dilemmas, reflecting on aims

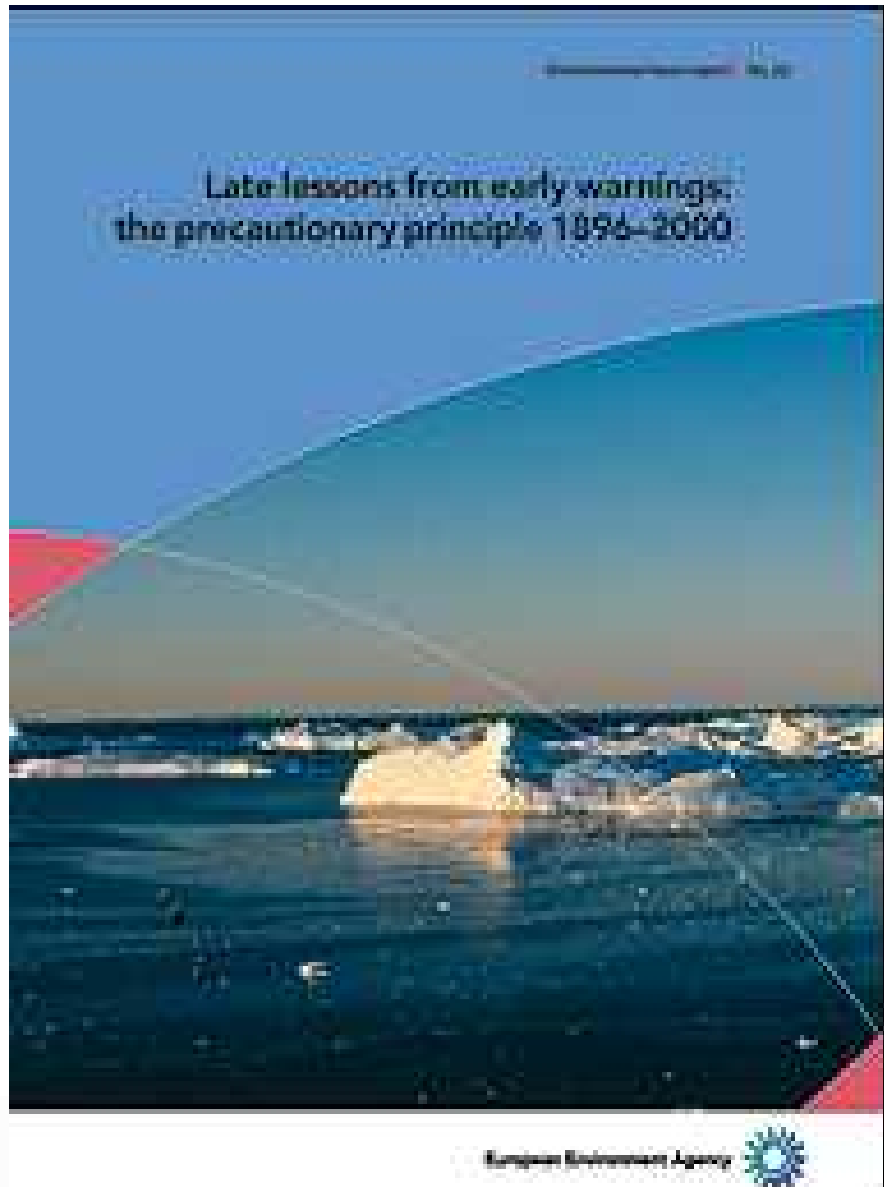
- ❑ Dilemma between (short term) profits/revenues and environmental + social risks/impacts
- ❑ Should we rush to exploit deep sea resources independently of the social and environmental risks and impacts?
- ❑ In "developed" countries, often justified by incantations to growth...
- ❑ In "developing" countries, by incantations to development...
... yet the questions "Growth: what for and how?",
"Development: what for and how?" are seldom asked
- ❑ In the private sector, incantations to profit, yet often a confusion of means and ends: what should the goal of a company? Making profit or delivering a service to society with profit being a necessary means towards that end?

"Perfection of means and confusion of goals seem, in my opinion, to characterise our age" A. Einstein (1941)

Going beyond the dilemmas

- Broaden the time horizon
 - Short term thinking can lead to wrong decisions
- Broaden the interest range
 - ⇒ broader set of values into the picture
 - Do not look only at the financial benefits
- Ask the "what for" question
- Break free of lock-ins: technological, institutional, ideological
- Learn to live with uncertainty, ignorance, imperfect (or absent) evidence, high risks and irreversibility
 - Humility, Precaution, Imagination

Late lessons from early warnings...



European Environment Agency | 11/2003

Late lessons from early warnings:
science, precaution, innovation



Towards more holistic governance approaches

- addressing the interconnectedness of issues
- building on concepts such as the ecosystem approach, integrated management, natural capital, ecosystem services, the precautionary principle, adaptive management, transformative capacity, ...
- allowing for progressive integration of information as it becomes available;
- and integration of different value judgement and logics;
- dynamic processes of capacity-building, aiming at innovative, flexible and adjustable answers (not all eggs in one basket, leave options open, avoid lock-ins, learn as you go).

Take home messages

- There is on-going research in Europe on deep-sea ecosystems and managing impacts of deep-sea resource exploitation
 - let's connect
- Decision-making on DSM should keep the broader picture in mind, including social and environmental aspects of sustainable development, alternative development paths, long-term and intergenerational issues, complexities,...
 - let's try not to repeat the errors from the past
- There is more to value than economic (monetary) value and there are limits to cost-benefit analysis
 - let's broaden our analysis of pros and cons
- Irreversibility (or quasi-irreversibility) of damages creates a fundamental asymmetry which, together with high stakes and uncertainties, calls for precautionary approaches

Meitaki

And thanks to the
HERMES, HERMIONE,
MIDAS and EEA teams

sybille@median-web.eu

MEDIAAN



MIDAS

