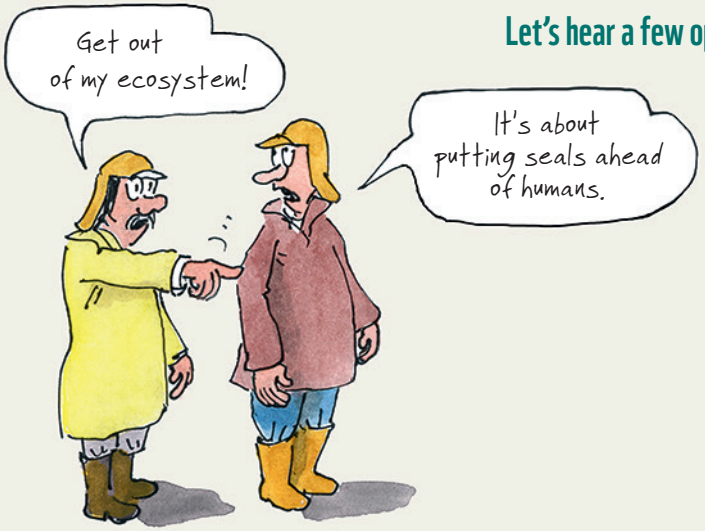
WWF

How to safeguard the seas with ecosystem-based management

So just what is EBM?

Let's hear a few opinions:



Ecosystem-based management (EBM) is really just a new way of describing the basic principles for managing human activities in a complex environment. You'll find the term EBM in a lot of legislation – but it's fair to say it's not widely understood.

When it comes to implementation, it seems difficult to answer the simple questions: "What does EBM really mean for me and my industry? In practice, what must I do to comply with EBM and its aims?"

WWF aims to find answers to these questions. This small booklet contributes to a basic understanding of what EBM is – and what it isn't.

For practical reasons, we use the Baltic Sea with its defined geographical boundaries and well-defined catchment area as an example. To better illustrate what EBM means in practice, we've selected some specific stakeholder groups.

In a nutshell

EBM is

» A management principle, which aims to support a sustainable, long-term responsible economic approach

» A guide to how to secure the resilience of natural systems and the provision of the ecosystem services that form the basis for all human economic activity

» A life insurance policy for all stakeholders and the oceans.

EBM is not

» A one-size-fits-all solution

» A green ideology

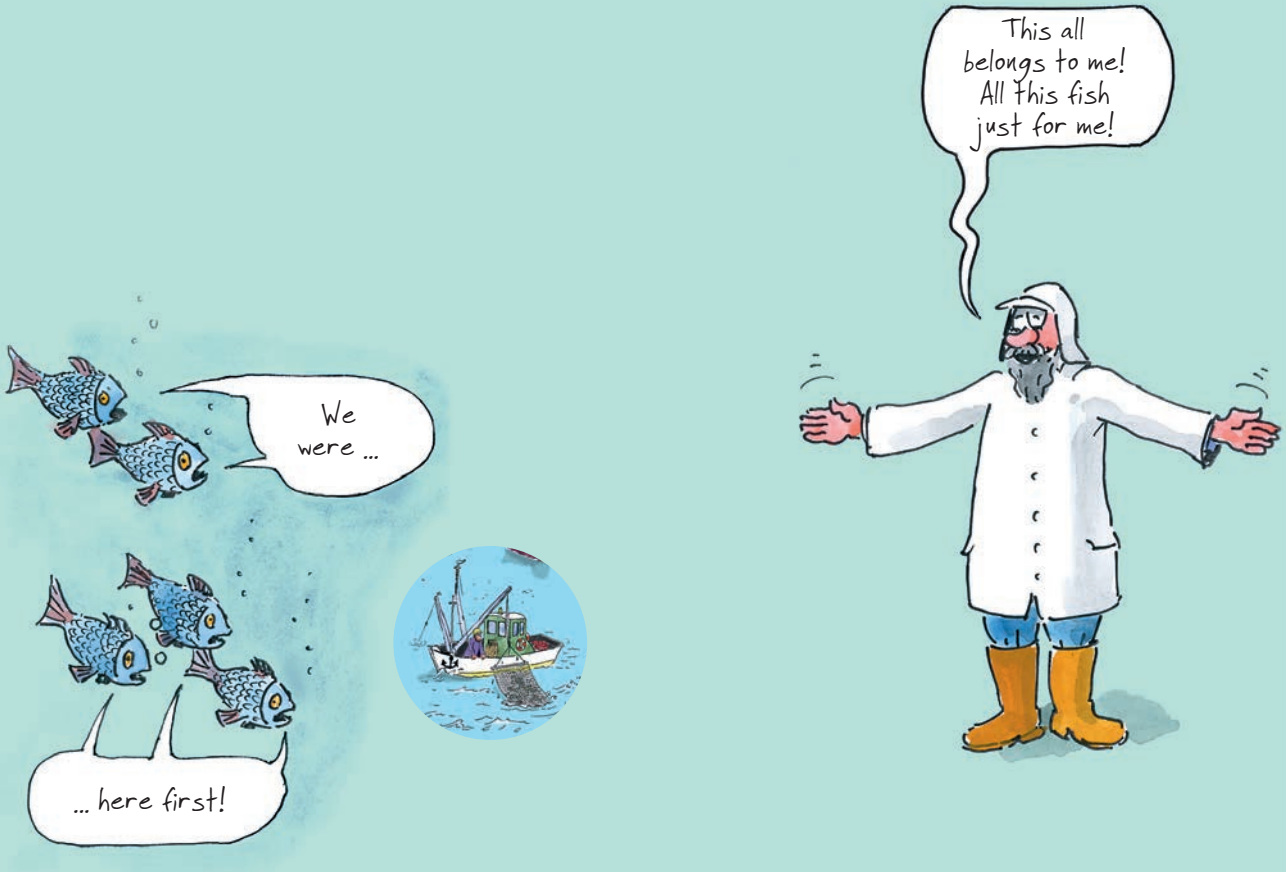
» A firm legal framework.

Seven simple things you need to know about EBM

An undisturbed ecosystem does not need managing. It regulates itself through a large number of related natural processes. Ecosystems provide essential services for humans, as they deliver water purification, clean drinking water, renewable natural resources, waste disposal, and so on. Humans tend to weaken the ability of ecosystems to deliver these services. For example, we can take too much of a natural resource or produce more waste than the ecosystem can handle. That means we need to manage our own impact on this ecosystem.

Ecosystem-based management comprises seven interrelated layers

1. Ecosystem functions and services
2. Humans as an integral part
3. The time dimension
4. The spatial or geographical dimension
5. The knowledge base and adaptive management
6. The precautionary principle where risks are not fully understood
7. Respect for the planet's global carrying capacity to maintain sustainable use and safe operating space for humans.



Things were easier when there weren't so many of us with different interests.

If there were just one fisherman using the sea, he would not present much of a problem. He would never seriously endanger fish stocks. And the same is true for others living off the riches of the Baltic Sea. If there were just a handful of cargo boats, they would not need traffic rules or shipping lanes. There would not be any need for EBM or any other kind of complex management.

Managing one sector bears limited risks

As human population grows, so does the consumption of natural resources. Overfishing starts when the fishermen's catch is greater than the natural reproduction levels of the fish.

This is where things start getting complicated

Need for regulation starts with more sectors, more sea users and new technology intensifying sea use.

If marine activities are not coordinated with one another and if there is no way or no will to enforce rules, then it will be the most powerful and the least concerned who call the shots, and people who care about doing things responsibly will be at a disadvantage.

Fishermen might be able to ignore each other. But only until catches decline seriously and fishing becomes uneconomical. And they cannot ignore other, more powerful industries using the sea. Why don't we all try to come to terms with all the other users and competing interests?

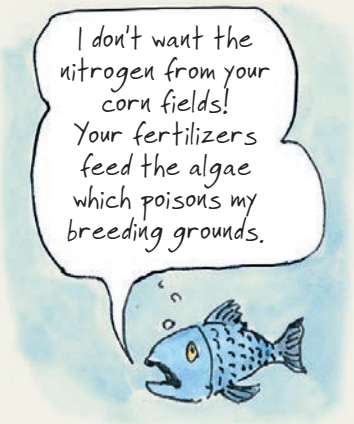
EBM at sea involves the land too

Coastal sites for power plants are cool: free cooling water and cheap transport!

Hey! Put your plant where you heat cities instead of boiling our fish!

The coastal areas and the wider catchment are directly linked with the Baltic Sea and influence the entire ecosystem.
Ports and maritime industries depend on waterways and marine infrastructure, while coasts are the dominant tourist destinations for millions of people.

Interlinked from sea to soil to summit



The right scale for EBM is the scale at which ecosystems operate.

Proper management is not possible without taking into account the far-reaching effects from land away from the shore and even outside the river catchment areas, like nutrients transported by winds. For regional seas like the Baltic all areas, from the surrounding mountains to the deep sea basins, are interlinked, regardless of national borders.

EBM – a must for integrated ocean management

Globalization needs truly global EBM

Features of open oceans

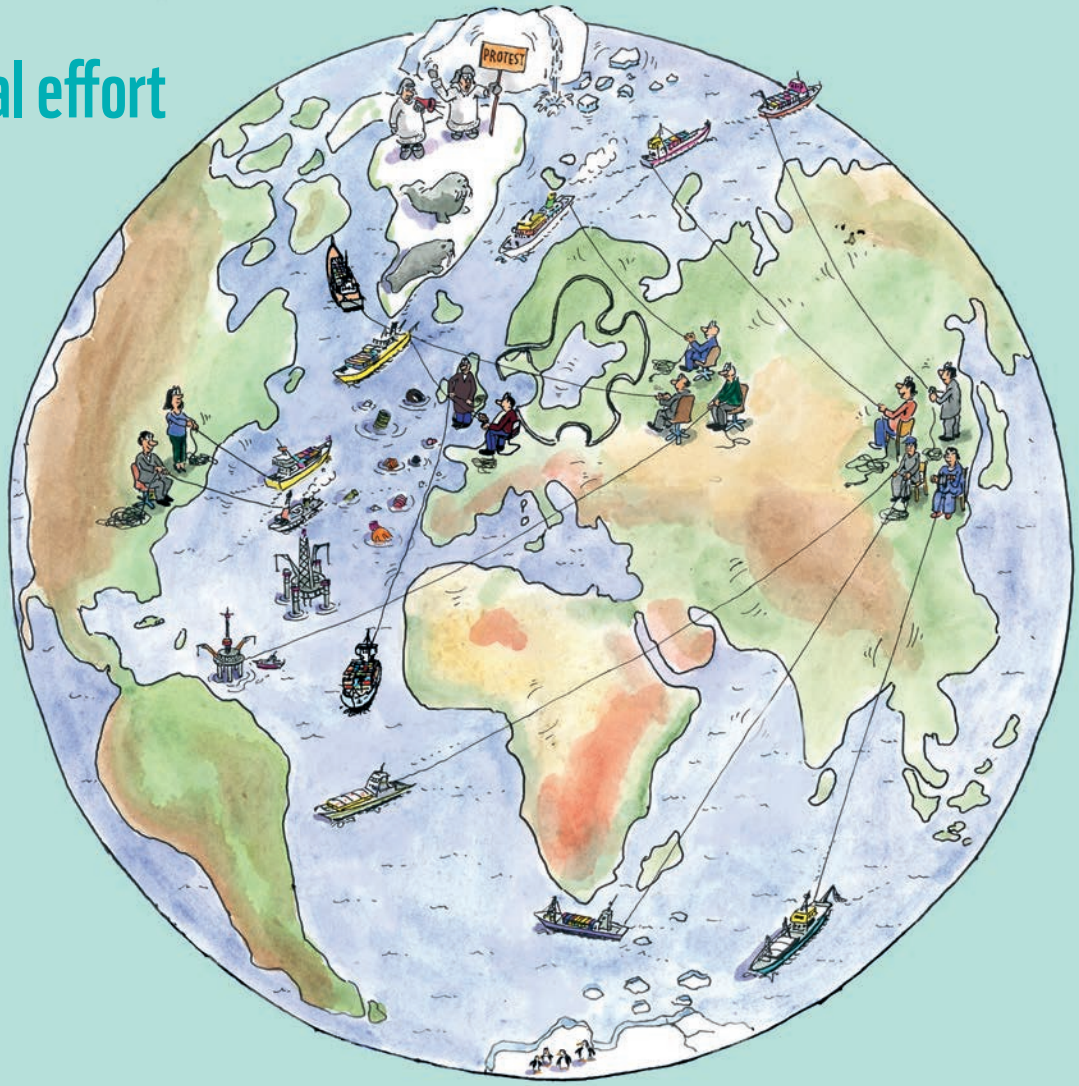
» Remoteness
» Local stakeholder communities have limited influence
» A need for regionalized approaches
» Difficult to manage on national level
» Extremely vulnerable, especially deep-sea features
» Global threats have immediate impact
» Shared resources are under pressure from exploitation
» Sparse knowledge about the deep sea

Even though EBM can be seen as primarily useful for coastal and enclosed areas, it is also highly relevant to the management of our global ocean.

Specific challenges make the implementation of EBM even more important. More than 80 per cent of global transport is conducted by ships. Routeing, risk management, emission control and waste management are issues of global concern – as the issues around the release of ballast water regularly show. Marine litter turns out to be a global challenge for ocean health.

Greenhouse-gas emissions lead to ocean acidification, with the greatest impacts on cold water bodies such as in polar regions, or coral bleaching in the tropics. The absorption of greenhouse gases weakens the resilience of entire ocean systems.

A global effort



Sea uses and effects that have to be addressed on a global level to enable survival of the planet:

- Seabed/deep-sea mining
- Fishing
- Marine litter
- Pollution – waste and nutrients
- Climate change
- Protection of areas of high conservation value

International bodies that should incorporate EBM into their policies:

- International Maritime Organization (IMO)
- International Seabed Authority (ISA)
- UN Food and Agriculture Organization (FAO)
- Division for Ocean Affairs and the Law of the Sea (UN DOALOS)
- Regional fisheries management organizations (RFMOs)
- Secretariat of the Convention of Biological Diversity (CBD)
- World Bank
- Global Environment Facility

Management needs more than space – the time dimension

Decisions and actions can have long-lasting effects. The algal blooms which may spoil the future summers of our great-great-grandchildren are caused by the fertilizers used in agriculture today. We have to consider the long-time effects of our actions today.

Roles of humans: part of the ecosystem, driver of degradation and gatekeeper of sustainability

» Our lives depend on the resources and services the ocean provides.

» We shape the ecosystem through our uses of the sea, by exploitation, altering of habitats and pollution.

» Humans also define the legal frameworks for the management of the sea.

Stakeholders

Although healthy ecosystems are in the interest of society and sea users it is sometimes hard to find a balance between long-term sustainability and short-term profit interests. Involving stakeholders in decision making has proven to be a key element of EBM.

Traditional sea user communities, non-governmental environmental or cultural organizations, scientists and interest groups deliver substantial input for good shared decisions.

Humans are only one part of nature and share the ecosystem with many other species. Birds and seals need fish for their survival. All species need space and the right conditions to reproduce and care for their offspring and to feed.

Without properly enforced regulations fish stocks can be over-exploited and jobs can be lost. Biodiversity and the self-regulatory functions of the ecosystem can be jeopardized.

Making informed decisions

Management must be built on a good understanding of the functions and processes which characterize a specific ecosystem. EBM must be adaptive and anticipate trends, new developments and the long-term implications of management decisions. Adaptive planning starts from existing knowledge. It does not have to wait until all questions are answered because in reality this will never be the case. EBM also requires regular updates.

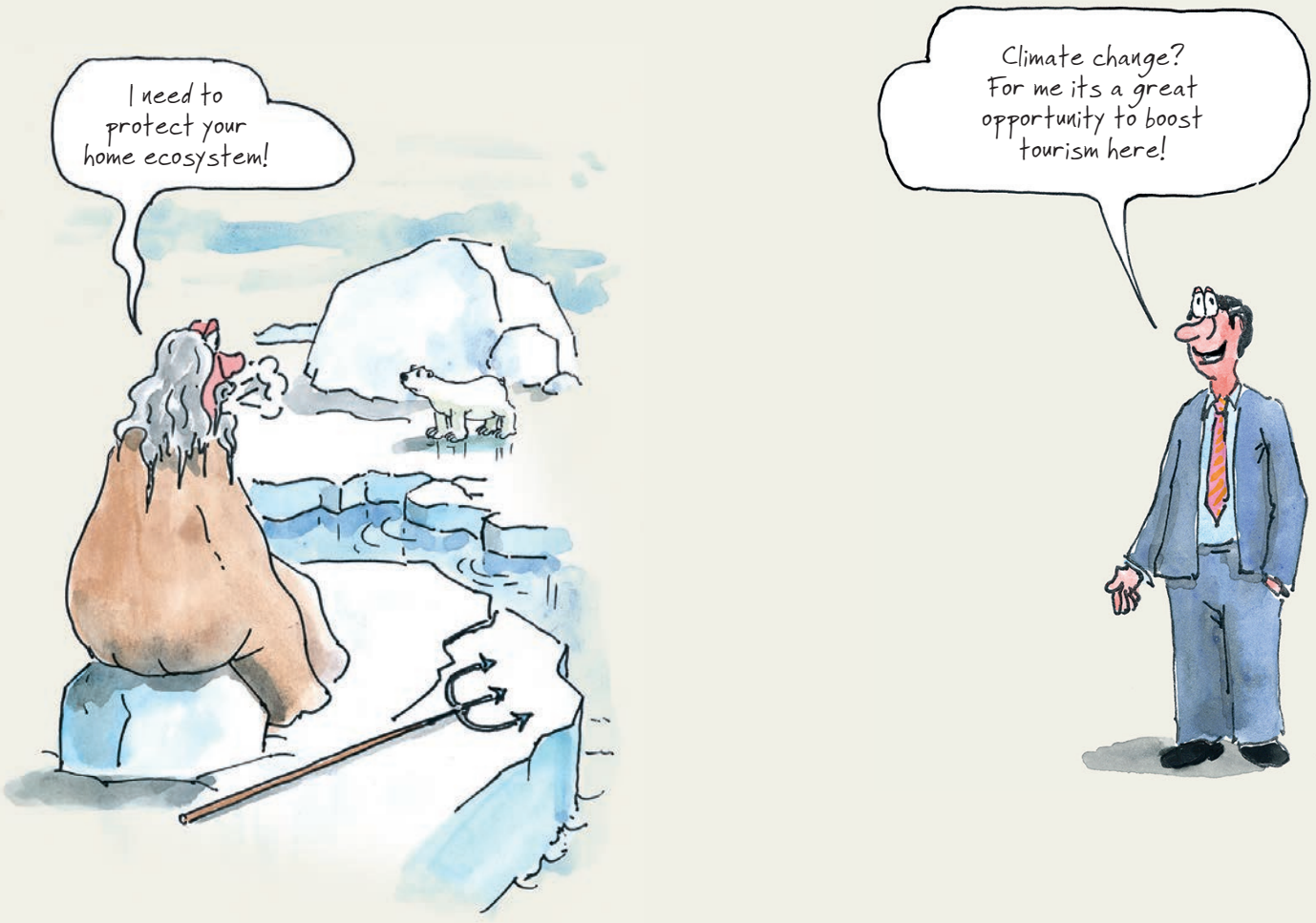
Good knowledge is the basis for targeted management

Using and combining existing data in a creative way can generate the information needed. Examples include maps of underwater landscapes that help define habitat conditions and information from fishermen about locations of lost nets. Transforming scientific knowledge into operational information demands access to data and focused research.

Ecosystem services provide ocean protection

As we've seen, ecosystems provide essential services for humans. Over 70 per cent of the ocean's economic value depends on healthy ocean assets like living marine resources, productive coastal areas or carbon absorption.

Human impacts on ocean ecosystems need to be carefully managed. If they aren't, then the people and economic activities that depend on healthy ocean assets will suffer.



More and more institutions recognize and promote an ecosystem-based approach for managing the human use of natural resources and the environment.

The definition provided by the Convention on Biological Diversity is very helpful:
"The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way."

Within the framework of EU marine policy, the EU Marine Strategy Framework Directive defines a Good Environmental Status which provides measurable indicators for EBM.

The goal of EBM is, according to the European Environmental Agency, "to maintain ecosystems in a healthy, clean, productive, and resilient condition, so that they can continue to provide humans with the services and benefits upon which we depend. It is a 1) spatial approach that builds around 2) acknowledging connections, 3) cumulative impacts and 4) multiple objectives rather than traditional single aspect approaches."

EBM is an approach for protection, restoration and maintenance of our living planet. In the case of the marine world, which covers about 70 per cent of the planet's surface, it is a tool to manage the top sea surface layer, the rich and sometimes unknown underwater bodies, and the little-explored sea floors.

EBM also needs to address global trends that could potentially jeopardize our living oceans. It needs to be part of the delivery of global policy management systems that govern the seas, like the United Nations Convention on the Law of the Sea (UNCLOS). And it must anticipate how the seas will respond to the the negative effects of so many human impacts.

The 12 principles of the ecosystem approach

1. It's up to society to choose the objectives for how we manage land, water and living resources.
2. Management should be decentralized to the lowest appropriate level.
3. Ecosystem managers should consider the potential and real impacts of their activities on adjacent and other ecosystems.
4. There's usually a need to understand and manage the ecosystem in an economic context. This should (I) reduce any market distortions that adversely affect biological diversity; (II) incentivize biodiversity conservation and sustainable use; and (III) internalize the costs and benefits to the ecosystem.
5. Conservation of ecosystem structures and functioning should be a priority.
6. Ecosystems must be managed within the limits of their functions.
7. The ecosystem approach should take place within the appropriate geographical context and time scales.
8. Objectives should be set for the long term - taking into account the varying time scales and slow-release impacts that characterize ecosystem processes.
9. Management must recognize that change is inevitable.
10. Strike the right balance when integrating conservation and the use of biological diversity.
11. Be open-minded - and be prepared to listen to scientific, indigenous and local knowledge, and apply innovation.
12. Involve all relevant sectors of society and scientific disciplines.

* IUCN The Malawi Principles

+1 Managment protects and maintains the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems.

+2 Plan, manage and effectively govern the use of marine space and resources, applying inclusive methods like maritime spatial planning.

What does it mean for my sector?

All sectors with an impact on the marine environment should acknowledge the EBM approach. The following pages show a few examples.

Shipping

A global sea use with global impacts, moving 90 per cent of all cargo.

EBM is a useful overarching approach for:

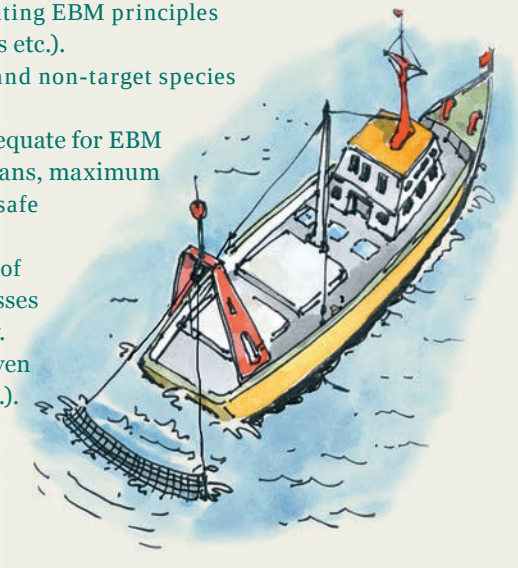
» Voyage planning
» Particularly Sensitive Sea Areas (PSSAs) and other routeing designations
» Risk prevention and risk abatement
» Ballast water and the unwanted introduction of species
» Emissions and energy management/climate change
» Waste water and waste management
» Planning and maintenance of shipping ports
» Fleet capacity planning.

Players:
IMO
EMSA
Shipping sector associations
Classification societies
International Chamber of Shipping
Global shipping companies

Fisheries

The most widespread sea use and the one with the biggest impact on ocean ecosystems.

» Focus on maintaining natural structures and functions and their productivity (avoid bottom destruction, respect spawning areas and life cycles).
» Incorporate human uses and values of ecosystems in managing fisheries.
» Recognize that ecosystems are dynamic and constantly changing.
» Operate within a policy framework incorporating EBM principles (regional fisheries management organizations etc.).
» Incorporate adequate information on target and non-target species (ICES advice, certification schemes).
» Ensure the fishery management system is adequate for EBM to be effective (multi-annual multi-species plans, maximum sustainable yield, place-based management, safe biological limits etc.).
» Recognize the value, role and representation of small-scale fishers in decision-making processes that affect their livelihoods and food security.
» Consider external events that may affect a given resource (climate effects, natural hazards etc.).
» Reverse the burden of proof, so that industry has to prove that a certain use is sustainable.

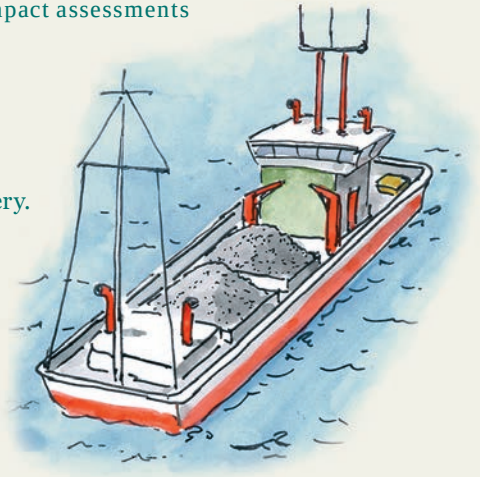


Players:
RFMO
FAO
EU Commission and Parliament
EU Regional Advisory Councils
Fish certification schemes e.g. Marine Stewardship Council (MSC)

Mining and mineral extraction

Players:
ISA
Permitting authorities
Mining companies

» Mining and dredging only when a land alternative does not exist.
» Weigh the long-term ecosystem service of sediments against short-term consumption.
» The framework for any mining should be approved in advance supported by high standard strategic environmental assessments and environmental impact assessments based on good quality baseline data.
» Adaptive and flexible step-by-step planning.
» No funding for duplicate infrastructure.
» Take note of the impacts of dumping on the ecosystem.
» Real-time monitoring e.g. reducing spreading of sediment plumes.
» Significant reduction of waste/tailings in areas of little or slow recovery.



Energy exploitation and transport

Players:
Oil & gas industry
Intertanko
National permitting authorities

» Zero emission and discharge policy.
» Best technology as principle – adapting to greater knowledge.
» Risk assessments to highest standards.
» Espoo Convention (which requires impact assessments at an early stage of planning) as a basis.
» Statutory strategic environmental impact assessments.
» No deep-sea drilling and exploration in marine protected areas.
» Burden of proof should be on the impacting sector.
» Take cumulative effects into account.
» In deep sea situations the precautionary principle is paramount.
» Siting of installations, turbines, pipelines and cables may not conflict with shipping, migration routes.
» Installations should be reversible over time.
» Plan for a transition to a post-carbon era.

Planning

Maritime spatial planning offers a good comprehensive spatial planning tool.

Players:
National planning agencies
Regional seas conventions
EU commission
UN DOALAS
UNESCO
Key ocean users
Coastal communities

- Planning and governance of sea space need to be harmonized and coordinated between sectors, administrative levels and across national boundaries.
- Ecological quality standards need to be agreed, made operational, measurable and regularly monitored.
- Environmental data needs to be regularly translated into spatial and planning information.
- Coherent environmental, social and economic quality objectives and standards are developed with broad participation and transparency sea basin wide.
- Areas critical for biodiversity and productivity need to be identified and protected via well-managed networks of marine protected areas.
- Within protected areas harmful uses will be excluded via zoning to strengthen biodiversity, resilience and productivity.
- Sensitive areas and areas critical for the life stages of marine species are taken into account for zoning on a basin-wide level.
- All sectors need to be part of the planning scheme, and sectoral legislation harmonized (e.g. transport, fisheries).
- Energy infrastructure should be located outside of sensitive conservation or shipping areas.

Financing

To create the enabling conditions for EBM the financial sector should ensure that finance and investment criteria help incentivize solutions leading to zero impact.

Players:
World Bank
WTO
G7/8
Euro group

- Financial instruments such as taxes, subsidies and fees should be aimed at internalizing environmental and social benefits, costs and risks to society.
- Public sector should set clear economic signals to offer incentives for sustainable practices and disincentives for unsustainable performance.
- Institutions should identify “no go areas” for unsustainable investment and “go areas” for financing those technologies replacing unsustainable ones.
- Private finance should incorporate environmental, social and governance criteria in investment decision making and ownership practices and allocate more, if not all, its capital to sustainable financial products.

Sustainable blue economy

The world's oceans are the largest ecosystems on the planet and a precious part of our natural heritage. They are also vital to the livelihoods and food security of billions of people and to the economic prosperity of most nations.

Overexploitation and degradation have driven these natural assets into steep decline. Active leadership is needed, in both the public and private sectors, to steer the "blue economy" in a sustainable direction.

A sustainable blue economy is a marine-based economy that:

- Provides social and economic benefits for current and future generations, by contributing to food security, poverty eradication, livelihoods, income, employment, health, safety, equity, and political stability.
- Protects and maintains the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems, upon which its prosperity depends.
- Is based on clean technologies, renewable energy, and circular material flows to secure economic and social stability over time, while keeping within the limits of one planet.

WWF is proposing definitions and principles for a sustainable blue economy. WWF invites all actors to use these principles and to embed these definitions, descriptions, and actions into marine policy and activities, all around the world.

In addition to the aspects laid down in this booklet WWF expects from actors in business, policy and finance sector, that:

- Decisions are based on measurable consistent targets for a sustainable blue economy, which are regularly assessed and transparently communicated.
- They follow global sustainability standards based on best practice and steady improvement of performance.

Definition

Ecosystem-based management is an integrated approach that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impact of different sectors.

from: Scientific consensus statement on marine ecosystem-based management

More reading

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Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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