MSFD: Impact Assessment Scoping

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marine environmental research

Creating sustainable solutions for the marine environment

MSFD
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RPA

Introduction

Scoping Study for Elements of the Marine Strategy Framework Directive Impact Assessment Evidence Base

- Defra funded Study
- Partnership between ABPmer and RPA
- Aim: Scope the range of costs and benefits which may result from implementing the MSFD
- Key: Understanding how the marine environment is currently managed and how this is likely to change with the introduction of the MSFD
- Presentation: Focus on the methodology and key conclusions

Study Methodology

1. Legislative commitments
2. Contributing monitoring programmes
3. Baseline Environment
4. Development of baseline scenarios
5. Review of strengths and weaknesses
6. Development of GES descriptor scenarios
7. Gap analysis of measures required
8. Costs and Benefits of MSFD Implementation for each GES

Baseline Scenarios

- Low: despite the policy measures already in place or planned, observed environmental quality between now and 2020 is lower than currently anticipated
- Best estimate: environmental quality comparable to expected based on current understanding of ecosystems and how effective current and planned interventions will be in delivering improvements in environmental quality
- High: assumes environmental quality will be higher than currently expected

Baseline Scenarios

GES Descriptors		Comments/Key Relevant Legislation	Baselines		
			Low	Best Estimate	High
1	Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.	Bonn Convention on Migratory Species; Water Framework Directive (for waters within 1km (3km in Scotland) excluding Highly Modified Water Bodies): Birds and Habitats Directives; Marine Bills	Biodiversity loss is not fully halted. [Biodiversity at a national scale is not benefiting sufficiently from the maintenance of protected areas, habitats and species.] Many waters within 1nm (3nm in Scotland) will not achieve WFD good ecological status by deadline in 2015. Natura 2000 and other protected sites (including those introduced under Marine Bills provisions - MCZs, MPAs in Scotland) will not have sufficient measures in place to achieve favourable condition. Management measures for Listed species and habitats (e.g. OSPAR, BAP) insufficient to lead to their full recovery to favourable status. Risks to biodiversity outside of protected areas and listed species and habitats not addressed.	Biodiversity loss is halted. Most waters within 1nm (3nm in Scotland) will achieve WFD good ecological status by deadline in 2015. Natura 2000 and other protected sites (including those introduced under Marine Bills provisions - MCZs, MPAs in Scotland) will be in or moving towards favourable condition. Management measures in place for Listed species and habitats will lead to their partial or full recovery to favourable status. Risks to biodiversity outside of protected areas and listed species and habitats only partly managed.	Biodiversity loss is halted and there is recovery of impacted areas and mobile species. All waters within 1nm (3nm in Scotland) will achieve WFD good ecological status by deadline in 2015. All features in the protected areas network (Natura, MCZs, Scottish MPAs) are in favourable condition. All Listed species and habitats are in favourable status in UK waters. Risks to biodiversity outside of protected areas and listed species and habitats largely managed through Marine Spatial Planning.
2	Non-indigenous species introduced by human activities are levels that do not adversely alter ecosystems.	International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (when ratified); Water Framework Directive; Marine Bills; Ballast Water Convention; UK Non-native Species Strategy; Scottish Aquaculture Strategy (A fresh start, the renewed Strategic Framework for Scottish Aquaculture); Aquaculture and Fisheries (Scotland) Act	New introductions of non-indigenous species are reduced but some ecosystem impacts remain at a national scale.	New introductions and existing non-indigenous species are significantly reduced to limit ecosystem impacts at a national scale.	Introduction of new species is minimised as far as possible and existing non-indigenous species managed to avoid ecosystem damage at a national scale.
3	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.	Common Fisheries Policy (main management tool); Marine Bills (inshore fisheries); Sea Fisheries Committee byelaws (inshore fisheries, England); Water Framework Directive (indirectly)	Fish stocks remain lower than safe biological limits. Species abundance maintained only to recent historic levels and sizes remain low.	Populations of all commercially exploited fish and shellfish within safe biological limits but size and age class structure adversely affected when populations are assessed at the level of the whole of the UK's marine area.	Populations of all commercially exploited fish and shellfish are at maximum sustainable yield, within safe biological limits with no significant distortion of size and age class structure when populations are assessed at the level of the whole of the UK's marine area.

GES Descriptor Scenarios

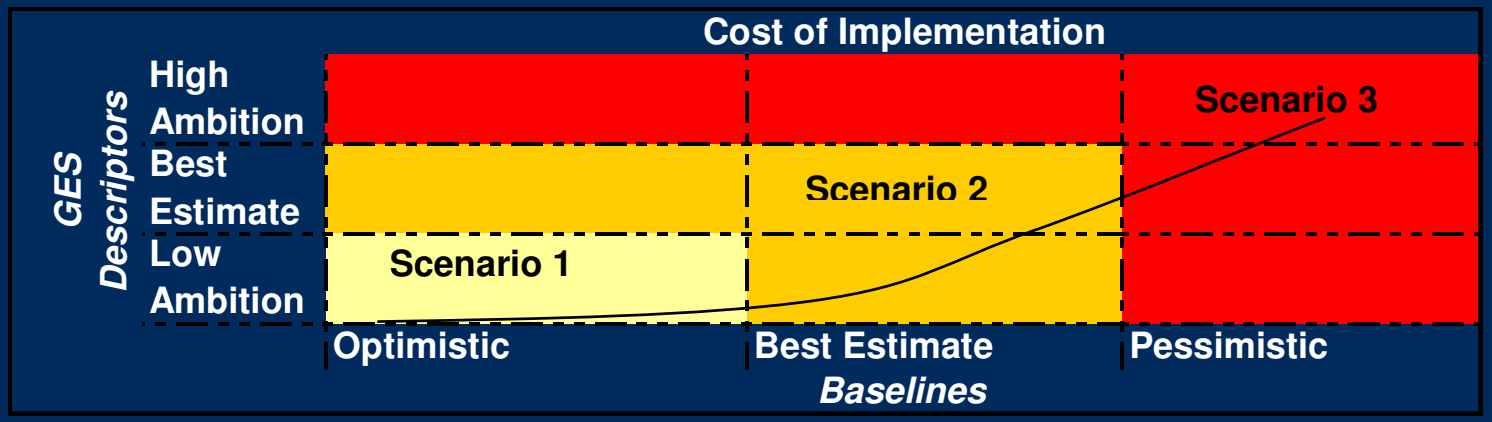
- Commission developing criteria and methodological standards to underpin the GES Descriptors mid 2010)

- The low outcome scenario may be delivered in the most part by existing legislation (perhaps with a small amount of additional effort);
- The best estimate outcome scenario will be largely delivered by existing legislation for some Descriptors but for others additional effort will be needed; and
- The high outcome scenario will require considerable additional effort for many of the Descriptors but, with the right resources, could be delivered by 2020.

GES Descriptor Scenarios

GES Descriptors		GES Outcomes		
		Low Outcome	Best Estimate Outcome	High Outcome
1	Biological diversity is maintained	Biodiversity loss of important (i.e. Listed) species and habitats is halted, with some recovery within protected areas.	Biodiversity loss is halted and significant recovery to favourable status of important (i.e. Listed) species and habitats in UK waters	Biodiversity loss is halted and recovery to favourable status for all species and habitats in UK waters
2	Non-indigenous species	Risk of new introductions are minimised and new and existing non-indigenous species are managed to limit the most significant ecosystem impacts	Risk of new introductions is significantly reduced and existing non-indigenous species managed to avoid ecosystem damage	Risks of new introductions are minimised and existing non-indigenous species reduced to a level which does not significantly impact the natural ecosystem structure.
3	Populations of all commercially exploited fish and shellfish are within safe biological limits	Populations of all commercially exploited fish and shellfish are within safe biological limits for the majority of the time but variability results in frequent returns to outside of the limits.	Populations of all commercially exploited fish and shellfish are consistently within safe biological limits but stock production below optimum, age and size structure impaired.	Populations within safe biological limits consistently and stock production optimum; age and size structure appropriate.

Developing Costs and Benefits



1. Small amount of additional effort
2. Additional effort in some areas
3. Substantial improvements and effort needed

Gap Analysis

GES Descriptors		Scenario		
		Scenario 1: Low Outcome/High Baseline	Scenario 2:Best Estimate Outcome/ Best Estimate Baseline	Scenario 3: High Outcome/ Low Baseline
2	Non-indigenous species	No additional measures	Measures to protect against spread of non-indigenous high impact species (e.g. Spartina anglica, japanese seaweed, chinese mitten crab, pacific oyster, Ficopotamus) affecting potential areas.	As for Scenario 2 plus: Eradication programmes initiated for certain key species. For example, chemical treatment, physical removal or biological control. Some additional measures required to reduce aquaculture escapes (e.g. improved cage design and construction - shock absorbing panels, reinforcing at corners, anti-chafe panels; greater use of anti-predator nets, predator control; Improved management systems and monitoring of fish farms (better farm management and escape plans); Additional eradication of marine non-indigenous species over and beyond efforts of UK NNS Strategy and WFD. Shipping: no ballast water exchange; all ballast water requires high level of treatment prior to discharge requiring best treatment technology on board vessels; vessel inspection/cleaning (especially around ballast water intakes and areas prone to fouling).

Identifying Measures

- GES 3 (Eutrophication) and GES7 (Hydrography): unlikely to require additional measures.

- Commercial Fishing: Significant measures
- GES3 Fisheries: Assumes CFP Reform will deliver under scenarios 1 and 2 (GES 3 Fisheries).
- ID under all scenarios for GES 1 (Biodiversity), GES4 (Foodwebs) and GES6 (sea floor integrity) – wider env. impacts

- Offshore energy – also a number of measures identified (restoration and aftercare)

Uncertainties

- Details of some existing commitments
- How Descriptors will be assessed
- How much influence the UK Government has to deliver GES
- Definition of what sustainable use actually means.
- Information on the spatial and temporal distribution and value for some activities (e.g. commercial fishing) is incomplete or hard to define, making it difficult to assess the implication of spatial measures.
- Uncertainty of location and extent of future activities (e.g. marine renewable energy development)
- The behavioural responses of affected businesses cannot easily be predicted

Overlaps

- Measures to restrict use of the most damaging types of fishing gear and to reduce fishing effort will impact upon biodiversity, fisheries, marine food web and sea floor integrity outcomes; and
- Measures concerning monitoring of noise from construction activity and noise reduction measures for ships will impact upon biodiversity and noise outcomes.
- The presence of such overlaps makes it difficult to assess the costs and benefits of achieving GES for a particular Descriptor (as there is no clear basis for allocating the costs between the Descriptors impacted) and may result in an overestimation of the costs of achieving GES overall.

Data Gaps

- Noise limits for ships (Descriptors 1 and 11, Scenario 3);
- Measures to reduce the risk of the spread of non-indigenous species (Scenario 2) and measures to eradicate, non-indigenous species (Scenario 3) for Descriptor 2;
- Remediation of contaminated sediments in ports (Descriptor 8, Scenarios 2 and 3); and
- UV treatment of sewage discharges affecting shellfish water (Scenarios 2 and 3) and measures to reduce storm overflow impacts (Scenario 3) for Descriptor 9.

Conclusions

- The scenarios gave a wide range of costs for each descriptor
- Small changes in assumptions – large changes in costs
- Overlapping costs and benefits
- Very good and transparent starting point for further investigation

Thanks for listening

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