

Coastal Futures 2016 Review and Future Trends

January 20th & 21st January
SOAS, University of London

Delegate Notes



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Come and talk to us if you have any questions Jayne and Bob will be at the registration desks; or email or call Jayne or Bob:

Jayne O'Nions: jayne.onions@coastms.co.uk | 0775 913 4801

Bob Earll: bob.earll@coastms.co.uk | 01531 890415

Best Wishes
Jayne & Bob

Welcome to the conference

This information gives the answers to some of the most frequently raised questions that arise at the conferences.

Conference Outputs

The conference outputs will be available shortly after the event; we will email the link to access the delegate notes, speaker presentations and conference outputs.

Questions – Bookings – Receipts – In-house information

If you have any questions during the event about bookings, finances, talk to **Diana Hunt** at the registration desk or logistics please visit the registration desk where someone will be available to help.

Timing

We will try to ensure that the conference runs on time to allow the allocated time for speakers and as importantly for discussion. A bell will be rung 5 minutes before the start of sessions.

Refreshment Breaks

In running hundreds of events in London we have used two main refreshment breaks during the day that enable us to split the sessions and breaks more evenly. A sandwich buffet is available in the first break and sweet course during the second.

Food

There is always ample food at the events and you can come back for more. Once you have collected your food **could you move away** from the serving table. Catering staff are on hand if you need anything, including extra drinks.

Special diets – these should be collected from the downstairs registration desk

Delegate notes

An electronic copy of the full delegate notes will be emailed to delegates on the 14th January.

Delegate list

The delegate list to the 11th January is included in the delegate pack.

Evaluation form

There will be an evaluation form in the delegate pack; your views will help us improve future events. Please leave these at the registration desk along with your badge when you leave.

NB Valuables **If you have anything you value keep it with you i.e. do not leave laptops unattended.**

Before you leave

Check you haven't left anything in the conference hall. Please also take any **leaflets or reports**.

Coastal Futures Website

The [Coastal Futures website](#) is now up and running. The presentations and delegate notes will be uploaded after the conference and you can also find the archive of Coastal Futures conferences; the website also provides a single point of contact for future CF events.

Day 1 - Wednesday January 20th

9.00 **Registration and refreshments**

9.25 **Session 1 Welcome to the conference** Chair: **Sian John**, HaskoningDHV UK

Current developments in coastal management

20 minute presentations [15 minutes for presentation & 5 minutes for questions and answers]

9.30 **The Blue New Deal for Coastal Communities** **Fernanda Balata**, New Economics Foundation

9.50 **Enterprise Neptune 50 years on – lessons for Coastal Management** **Phil Dyke**, National Trust

10.10 **Tourism and recreation: Structuring and valuing the benefits for planning and management in the coastal and marine environment** **Rupert Haines**, ICF International

10.30 **Bringing a business model to coastal partnerships: lessons and case studies from the Thames** **Pat Fitzsimons**, Thames Estuary Partnership

10.50 **Delivering multiple benefits: The partnership approach for successful flood risk management, regeneration and development projects** **Peter Bide**, Planning for Water

11.10 **Applying economic tools in marine decisions: natural capital valuation and accounting** **Ian Dickie**, Director, economics for the environment consultancy

11.30 First Break: Sandwiches and refreshments

12.15 **Session 2: Chair: Mike Elliott**, IECS, University of Hull

The presentations in this session are 20 mins [15 mins for presentation and 5 mins for Q&A]

12.15 **The outcomes of the Paris Climate Change conference and the implications UK adaptation** **Daniel Johns**, Head of Adaptation, Climate Change Committee

12.35 **Emerging tensions between blue growth and good environmental status** **Peter Jones**, UCL

12.55 **The implications of the current policy agenda for coastal and marine**

This 40 minute session will explore recent developments of Government policy, with 3 short (6 minute) presentations and then a 20 minute discussion

- **Open Environment & Environment policy: an NGO perspective** **Joan Edwards**, The Wildlife Trusts
- **Integrating science for management purposes** **Dickon Howell**, MMO
- **Offshore wind: taking a positive view** **Adrian Fox**, The Crown Estate

13.35 **The Swansea Tidal Lagoon Project** **Tim Carter**, Head of Environment, TLP

13.55 -14.15 **Cumulative effects: Achieving practical solutions to implementation** **Philip Stamp**, Defra

One minute presentations – see delegate notes – networking

- **Tidal Energy Storage and Release: how environmental science, politics and economics must redefine the British Isles' 21st C coastal leadership roles** **Stuart Anderson**, Elected member for Conwy CBC & DECC Marine Energy Programme Board Member (Finance subgroup)
- **Modelled Mapping of Continuous Man-made Underwater Noise** **Elena San Martin**, ABPmer

14.17 Second break and refreshments

Session 3 Chair: Mike Cowling, The Crown Estate

15.00 **Marine biodiversity and policy: Coherence of policies and practices to use and conserve** **Jake Rice**, Chief Scientist (Emeritus) Fisheries and Oceans Canada and Vice chair Fisheries Expert Group IUCN-CEM

A 20 minute presentation and 10 mins for Q&A

Followed by five 20 minute presentations [15 + 5 Q&A]

15.30 **The Marine Strategy Framework Directive (MSFD): Update, measures and assessment**

Dominic Pattinson, MSFD Programme leader, Defra

15.50 **Openness and transparency: the implications of the Government's policy**

David Morris & John Pepper, OceanWise Ltd

16.10 **Developing a better understanding of the impact of noise in the marine environment**

Tony Hawkins, Loughine Ltd

16.30 **Solutions to marine litter: the importance of the circular economy**

Professor Richard Thompson, Plymouth University

16.50 **Integrated monitoring surveys: studying the pelagic ecosystems of the south west of the UK**

Jeroen van der Kooij, Cefas

17.10 **Wine reception**

Day 2 – Thursday 21st

9.00 Registration and refreshments

Session 4: Chair: Daniel Bastreri, Thomson Ecology Ltd

Marine Planning – perspectives and update

3 x 15 minute presentations and 15 minutes for questions and answers

9.30 **Marine Planning – Update on the English Programme** **Mel Nicholls**, MMO

9.45 **Marine Planning – Update on the Welsh Programme** **Paula Whitfield**, Welsh Government

10.00 **Marine Planning – reviewing the progress over 10 years** **Steve Hull**, ABPmer

10.15 Discussion

Three presentation 20 mins (15 + 5 Q&A)

10.30 **Protecting harbour porpoises in UK waters** **Lyndsey Dodds**, WWF-UK

10.50 **Recovery of aggregate dredging sites: our developing understanding** **Keith Cooper**, Cefas

11.10 -11.30 **The UK scallop fisheries: Time for a fundamental review** **Tom Appleby**, UWE
& **Bryce Beukers Stewart**, York University

One minute presentations – see delegate notes – networking

- **Towards coherence and cross-border solutions in Baltic Maritime Spatial Plans** **Dr Ingela Isaksson**,
Swedish Agency for Marine and Water Management (SwAM)
- **Improving evidence for fisheries assessments in MPAs** **Suzannah Walmsley**, ABPmer
- **Assessing the significance of the economic impact of marine planning proposals: MCZs in the Irish Sea upon the fisheries sector in Northern Ireland** **Francesca Moore**, Black & Veatch

11.35 First Break: Sandwiches and refreshments

12.15 **Session 5: Chair: Sam Fanshawe**, Marine Conservation Society

12.15 **Quota allocation** **Chris Williams**, NEF New Economics Foundation

20 minutes (15 + 5)

12.35 **Discards - The Landings Obligation- demersal species – An NGO perspective**

Sam Stone, Fisheries & Aquaculture Programme Coordinator, Marine Conservation Society

12.50 **Discards - The Landings Obligation- demersal species – An Industry perspective**

Mike Park, Scottish White Fish Producers Association

13.05 Discussion

13.25 **Electric Pulse Fishing – a shocking approach to beam trawling** **Jerry Percy**,

Executive Director for the Low Impact Fishers of Europe - LIFE

13.45 **The socio-economics of MPAs: Recognising the challenges** **Steve Fletcher**, Plymouth University

14.05 Second Break

Session 6 **MPA Management** **Chair: Joan Edwards**, Head of Living Seas, The Wildlife Trusts

Five 15 minute presentations and a 25 minute discussion.

14.50 **Approaches to the assessment of development effects on MPAs** **Miriam Knollys**, HaskoningDHV UK

15.05 **Improving MPA management: working together for better conservation** **Jen Ashworth**, Natural England &
Peter Barham, SUDG

15.20 **MPA management in the Scottish inshore and offshore zone** **Michael McLeod**, Scottish Government

15.35 **MPAs to help save Scottish seas: the NGO perspective** **Calum Duncan**, Marine Conservation Society

15.50 **Inshore management and protected areas – developing practice** **Rob Clark**

Southern Inshore Fisheries and Conservation Authority

16.05 **Panel Discussion**

16.30 **Conference Closes**

Introduction to Coastal Futures 2016 – The main ideas behind CF2016

This note sets out the key influences behind the 2016 Coastal Futures Programme. Post the 2015 election we have a new Government who are re-writing the policy agenda unhindered by the moderating influence of the Lib Dems. There was a clear change in sentiment among advisors and speakers in the preparation of the programme. Austerity and large cuts across departments clearly signal Government priorities and clearly environment isn't high in these. Policy assumptions that we've made for the last decade are being abandoned or severely tested and this in turn draws into question the values and commitment of the marine community and how it responds. The programme reflects those challenges.

Coastal management – lessons, and new approaches to delivery The challenges of funding and valuing what we want to achieve runs through the entire conference and the coastal theme of the meeting is no different. In 2015 the National Trust have been celebrating 50 years of the **Enterprise Neptune project**. It has protected over 750 miles of coast from development and has also enabled access and pioneered a range of major approaches to coastal management. **Phil Dyke** (National Trust) will highlight some of the key lessons of this hugely successful campaign. By contrast **Fernanda Balata** will present the **Blue New Deal** (New Economics Foundation) a project which is just embarking on its programme to look at ways of working with coastal communities and the natural environment to develop sustainable business models. There is a long standing understanding of partnership working among the UK coastal community to promote sustainable programmes and again in reflecting the spirit of the age **Pat Fitzsimons** will be looking at how **business models** can be applied to support partnership working. **Peter Bide** has developed and promoted the **partnership model to project delivery** to a wide range of regeneration, flood management, and development projects. By bringing stakeholders together, to identify objectives and funding, **multiple benefits** can be delivered by a wide array of projects.

Valuation and the use of new economic tools is one of this Government's major themes. Whilst most people see the point of using a common financial base to inform decision making, the challenges of providing the evidence to enable this in the coastal and marine environment are considerable. **Ian Dickie** (eftec) will provide a broad picture and place the current popularity of **Natural Capital accounting** in context. Everyone knows that the coast acts as a major attractor for tourism and recreation which people value very highly but **Rupert Haines** will reflect on the practicalities of actually valuing this. Whilst it seems Government finds working out the costs of MPAs relatively easy, the difficulties of assigning values to the benefits are being increasingly recognised. **Steve Fletcher** will discuss the current challenges of applying **socio-economic assessments to MPAs**.

Addressing the Elephants in the Room - responding to policy change Policy changes to UK Energy policy and new initiatives like 'Open Environment', and this Government's spending priorities and the cuts to Defra and its agencies and DECC will have a huge impact. A session that addresses these changes includes **Joan Edwards** (The Wildlife Trusts) looking at the NGO response to the Government's 'Open Environment' policy. **Dickon Howell** (MMO) will look at integrating science for management purposes and **Adrian Fox** (The Crown Estate) will look at the challenges being set for offshore wind. The following discussion will explore the audience's views. Europe is a massive issue for the UK with the impending in-out referendum but there is also a huge debate which **Peter Jones** (UCL) will address about the tensions between the drive for **blue growth and environmental protection**. Many in the data and information sector have been calling for a fundamental changes to access to state funded agency data. The Government have now embraced **open data** and **David Morris** (OceanWise) will describe what is happening.

The realities and challenges of **climate change** continue inexorably and **Daniel Johns** (Climate Change Committee) will reflect on the key messages from the Paris meeting. The Government's approach to the renewable sector despite the Paris conference has been shoddy and short sighted. The **Swansea Tidal lagoon project** is a major innovation in UK's energy generation which could have huge implications and **Tim Carter** (TLP) will discuss the current plans.

The **keynote speaker** this year - **Jake Rice** Emeritus Chief Scientist from Fisheries and Oceans Canada & Vice chair of the Fisheries Expert Group of IUCN - will look at whether our approaches to fisheries management and wildlife conservation can be reconciled into a more coherent approach to policy and science for the marine environment. He has direct experience of Canada's recent austerity programmes, as well as practical experience from Canada and around the world of fisheries and conservation, including implementing ideas like the precautionary principle and the ecosystem approach.

The Marine Strategy Framework Directive (MSFD) is providing the context for many elements of work on Europe's marine environment. It is the first real attempt at developing an ecosystem approach covering as it does the main impacts on the marine environment with the expectation that understanding will lead to effective management. **Dominic Pattinson** (Defra) will describe progress, including the recently published **programme of measures** and will set the scene for a number of other presentations. **Noise** is one of the new impacts to be recognised by the MSFD and **Tony Hawkins** (Loughine Ltd) who is an international expert in this field will provide a clear view of our current understanding of the impacts of noise and how we might improve this. Similarly **marine litter** is another new descriptor, the scale of which, especially in its concentration in all the world's major ocean gyres has taken the marine community by surprise. But what to do about it? **Richard Thompson** will outline the problem but highlight the importance of **the circular economy** to how we think about solutions. The way we still think about these problems is still very sectoral, and the MSFD descriptors perpetuate this thinking, however, limited finance could mean we need to join up – integrate - our thinking much more than in the past. **Dickon Howell** (MMO), **Jeroen Van der Kooij** (Cefas) and **Jake Rice** (Fisheries & Oceans Canada) will all be looking at integrated solutions especially from a science and assessment perspective. **MPAs** as a delivery mechanism and **fisheries** are also key MSFD elements and are covered on day two of the conference.

Marine Planning provides the overarching context for effective marine management and is fast developing in the UK, Europe and globally. The marine planning section of the conference will focus on the MMO's major programme which will see all the plans in place by 2021 will be described by **Mel Nicholls** and the progress in Wales will be presented by **Paula Whitfield**. **Steve Hull** (ABPmer) has been involved with marine planning since its outset over 10 years ago, with Irish Sea Pilot and many other projects subsequently; he will review the progress and highlight challenges.

Sustainable fisheries and Marine Protected Areas The effective management of fisheries is still one of the major challenges facing those concerned both with the wider environment and the success of fisheries. The issue of **discards – the landings obligation** – is coming to a head for demersal species. No one assumed that its implementation would be easy and **Mike Park** (The Scottish White Fish Producers Association) and **Sam Stone** (MCS) will reflect on the changes from an industry and NGO perspective. The **amount of fish allocated** to particular fishermen has also become highly contentious when it was revealed that 50% of the UK's quota was held by three vessels; **Chris Williams** (NEF) will describe this debate. Back in the mid 1990's when the current arrangements for **scallop fishing** were put in place, and when demersal fisheries were much more important, no one envisaged the scale and issues that would arise with the current roving scallop fleet. The environmental impacts of scallop dredging are well known but **Tom Appleby** (UWE) and **Bryce Beukers Stewart** (York University) will outline social, legal and regulatory impacts of this fishery and some of the solutions that might be used to manage the fishery more effectively. Fishing with electricity is illegal under CAP, but the 'pilot' programme of electric pulse fishing is now in routine use on 100 + boats, mainly Dutch, but also UK, German and Belgian vessels. No environmental impact statement, no regard to precaution; **Jerry Percy** (Low Impact Fishers of Europe) will highlight the concerns.

Marine Protected Areas are now coming on stream throughout Europe and were envisaged as a major tool of the MSFD. Although it is likely that a 3rd tranche of sites will be announced in January for England, and NI is currently consulting on four sites, the thrust of this year's programme will cover the practicalities of routine management and operation. **Steve Fletcher** will cover **the socio-economics of MPAs** and the need to recognise some difficult issues. How the seabed recovers after exploitation is a key issue for many sectors and an issue of debate in MPA management. **Keith Cooper** (Cefas) will describe our current understanding of **seabed recovery after aggregate extraction**. There is Government consultation pending on **porpoises and MPAs**, and **Lyndsey Dodds** (WWF) will describe

the background to this. The final session will see five presentations all looking at MPA – management issues. **Miriam Knollys** (HaskoningDHV UK) will describe the **assessment of development effects** and **Jen Ashworth** (NE) and **Peter Barham** (SUDG) will look at how the **conservation and industry co-operation** can produce productive outcomes. Having made good progress with the designation of MPAs in Scotland there has been strong **debate on the management measures** to be used; **Michael McLeod** (Scottish Government) & **Calum Duncan** (MCS) will provide perspectives on this. The IFCA's have been in the front line of **implementing management measures** and **Rob Clark** (Southern IFCA) will describe their work. There will be a discussion on these presentations.

One minute presentations Last year's CF audience overwhelmingly endorsed more time for questions but the downside of this is less time for speakers and presentations. So this year there is an experiment. The one minute presentations will enable the presenters to show their face to the whole audience, hopefully to encourage networking and get their project details into the delegate notes. Let me know if it works!

DAY 1 – Wednesday 20th January

Blue New Deal: good jobs for coastal communities through healthier coast and seas

Fernanda Balata

New Economics Foundation (NEF), Project Lead, Coastal and Marine Environment

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NEF is an independent think-tank working towards a more sustainable economy that can deliver greater wellbeing and a more equal society, whilst respecting the ecological limits of our planet.

In 2015, NEF launched the Blue New Deal: a UK-wide initiative to deliver good jobs and increased economic sustainability for coastal communities through activities and measures that support healthier and more resilient coastal and marine ecosystems.

The Blue New Deal [report](#) outlines some of the issues shared by many coastal communities in the UK, including the decline of traditional industries and the struggle to replace them; high levels of deprivation, underemployment and educational underachievement. At the same time, the absence of social and environmental goals in key coastal and marine industries over the years has placed undue pressure on coastal economies, communities and the environment.

In a context of increasing environmental and economic pressures, this initiative is looking for solutions to reconcile employment creation with environmental protection, bringing a fresh and hopeful perspective to coastal communities and supporting efforts towards marine conservation. The initiative wants to see coastal communities taking pride in their coastal identity and working towards reversing a story of unfulfilled potential.

In 2016, NEF is leading a collaborative effort that is bringing the many different voices and interests in our coast together to develop an action plan to help turn the Blue New Deal vision into a reality. Through working groups and wider engagement across the UK, including with policy makers, these discussions will develop specific measures covering key focal areas that include fisheries and aquaculture, energy, tourism and coastal management. The action plan will be supported by economic analysis specific for coastal areas and it will be launched in autumn 2016.

To find out more about the Blue New Deal, explore existing examples of innovative approaches on our coast and get involved in these discussions, visit www.bluenewdeal.org

About Fernanda Balata

Fernanda Balata is project lead for coastal and marine environment at NEF's environment team. She holds a degree in International Relations and has several years' experience as a strategist, global campaigns manager, researcher and external relations professional in the non-profit sector. Since joining NEF in January 2013, she has conducted research on fisheries and the coastal economy, mapped civil society organisations in Latin America who are engaged in new economics and led the innovative Paint a Fish campaign, a public facing initiative during the final stages of the reform of the EU Common Fisheries Policy. Fernanda is Brazilian/British and has lived in Brazil, Canada and the UK.

Enterprise Neptune 50 years on – lessons for coastal management

Phil Dyke

Coast and Marine Adviser, National Trust

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Dinas Oleu, a modest parcel of coastal land behind Barmouth in Wales was gifted to the Trust in 1895 by Fanny Talbot, against a backdrop of concern that the booming Victorian resort would 'vulgarise' the surrounding coast if its growth was left unchecked. By the early part of the 20th Century nature at the coast was clearly also under pressure, leading to a second strand of motivation for the National Trust to acquire coastal land emerging - to protect nature.

By the early 1960's concerns about inappropriate development from industry, housing, roads, infrastructure and coastal tourism, once again became dominant and led in 1965, to the establishment of Enterprise Neptune. Neptune was and remains a supporter led campaign and has seen us take our coastal ownership and the benefits we offer for coastal conservation and access to some 775 miles. In October 2015 we published the '[Mapping Our Shores](#)' report which reflects on the success over the past 50yrs of preventing inappropriate development along our most cherished coasts.

There are of course coastal landscapes where the Trust is simply not a player, such as Lincolnshire and Glamorgan. Equally there are some stretches of coast where the Trust has a perhaps surprising presence, landscapes where colleagues saw beyond the disfigurement and looked to restore damaged coastal landscapes, such as the former mining coast of Durham.

By the early part of the 21st Century, reflecting a growing awareness of the impacts of climate change at the coast, in the form of increased erosion and flooding, we developed our thinking and practice around adapting to change at the coast, under the banner of Shifting Shores. In November 2015 we published '[Shifting Shores – playing our part at the coast](#)'.

One hundred and twenty years of involvement in coastal management were celebrated in 2015 as we marked the 50th anniversary of Neptune. The lessons we have learned over this period are captured now in [Our Vision for the Coast](#). We seek a coast that is **Healthy and Adaptable, Rich in Wildlife and Culture**, a coast that is **beautiful and enjoyed** and where it can help deliver these aims, a coast that is productive.

Our Vision for the Coast is clearly shared with many across civil society. We all have strong emotional connections with our own coastal special places, even if we only get to visit fleetingly from our everyday landlocked lives. The coast remains a wonder to us all, a sense of wonder that was captured in 2015 by Dr John Cooper-Clarke in his collaborative poem '[Nation's Ode to the Coast](#)'.

See

Shifting Shores - <https://www.nationaltrust.org.uk/documents/shifting-shores-report-2015.pdf>

Mapping our Shores - <https://www.nationaltrust.org.uk/documents/mapping-our-shores-fifty-years-of-land-use-change-at-the-coast.pdf>

Coast Our Vision - <https://www.nationaltrust.org.uk/documents/coast-looking-after-our-ever-changing-shores.pdf>

Dr John Cooper Clarke *Nation's Ode to the Coast*- <http://www.nationaltrust.org.uk/features/our-coastal-poem>

Tourism and recreation: Structuring and valuing the benefits for planning and management in the coastal and marine environment

Rupert Haines

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Tourism and recreation are clearly important – they feature heavily in sectoral and issues analyses in marine research and planning processes – they also resonate with high volumes of individuals. To adequately represent tourism and recreation - the nature and value of the sector - in marine planning and management processes, requires sensible and pragmatic thinking about definitions, conceptual theories and valuation approaches. These need to be appropriate for the purpose of the planning process, to enable the anticipated issues to be adequately captured and presented and the impacts of planning and management policy and tools to be demonstrated. This presentation will consider some of the definitions that have been applied to tourism and recreation and what the implications of these are; what frameworks are available that can help structure thinking about tourism and recreation and their interaction with other activities and the environment; and how we can best demonstrate value.

Bringing a business model to coastal partnerships: lessons and case studies from the Thames

Pat Fitzsimons

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The 2012 Baseline report for developing Partnership working at the coast commissioned by the Marine Management Organisation (MMO) identified the common threats to Coastal Partnerships was falling funding: Funding cuts have consistently been identified by CPs as being the main threats facing successful Partnership working, in both the short and long term. During the development of this report, certain CPs underwent further funding issues resulting in the reduction of both services and staff; in addition to (in some cases) the dissolution of some CPs completely. The loss of staff and the associated high staff turnover can also result in a loss of momentum and corporate knowledge.

This is of no surprise to anyone working in the public sector/voluntary or community sector since the 2008 financial crisis and resultant austerity policy of the government. Any organisation that depends on public sector funding will have been losing that funding over the past few years.

Thames Estuary Partnership is no stranger to these reductions in public sector funding. TEP has lost public sector funding from national as well as regional public sector bodies over the years and continues to face further cuts in core funding. This has necessitated development of a new strategy for TEP's fundraising. In addition, TEP has contact with a very wide range of organisations that are facing the same issues, and has been party to many discussions about how to address these shared issues.

This session will explore the financial future of Coastal Partnerships through the experience of TEP's Director over the past two years. While still a work on progress, this strategy includes:

- Finding the best organisational structure to attract funding
- Monetising the services CP deliver
- Developing new partnerships and services which can be monetised

For background on Coastal Partnerships read:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/312716/cpn_baselinereport.pdf

http://randd.defra.gov.uk/Document.aspx?Document=ME1405_7569_FRP.doc

For information on Thames Estuary Partnership visit:

www.thamesestuarypartnership.org.uk

Delivering multiple benefits: the partnership approach for successful flood risk management, regeneration and development projects

Peter Bide

Planning for Water

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Bringing together the management of flooding, water and biodiversity at the full range of spatial scales from the catchment through the district to the individual building provides opportunities to reduce flood risk across whole communities. It also regenerates communities and provides vital housing, whilst at the same time enhancing biodiversity and water availability and quality, and improving the public realm.

If the bodies and organisations with an interest work in partnership they can achieve multiple benefits. However linking the businesses and organisations that can fund actions with each other and with the community groups that can do things, in ways that bring benefits to all is a challenge

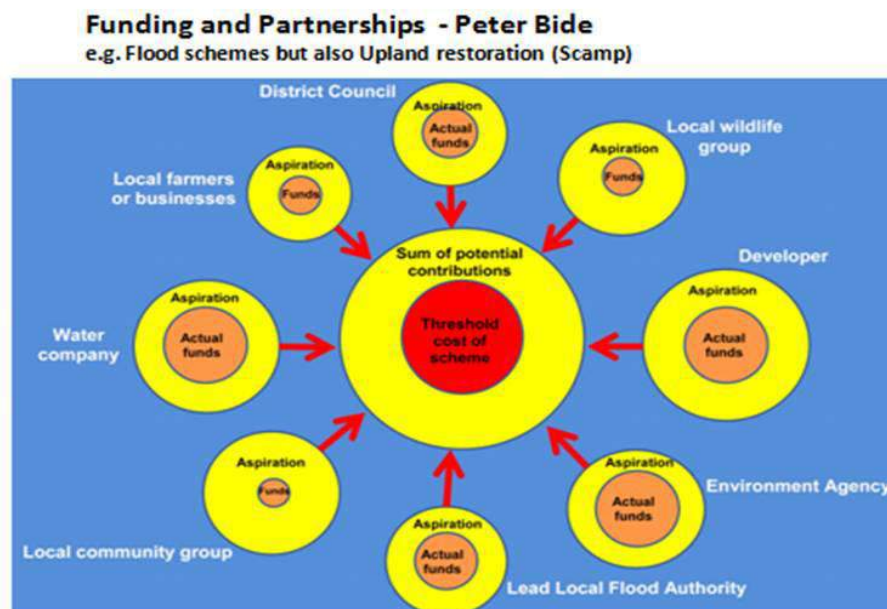
Unlocking local contributions for partnership funding is especially challenging for the larger-scale projects that can bring the biggest benefits. Partnerships are the key to responding to the challenges of communication and linking up the people that can make things happen.

Working in partnerships pooling resources enables schemes to go ahead that are not affordable for the individual partners on their own. Additionally, the sum of the pooled resources can be greater than the threshold cost of the scheme, allowing more to be achieved for the money, or savings to be made by the partners. Either way, this is getting more for less.

See:

Planning Advice for Integrated Water Management

<http://www.ciwem.org/planningadvice>



Applying economic tools in marine decisions: natural capital valuation and accounting

Ian Dickie

Economics for the Environment Consultancy

Director

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Economic valuation of the environment reflects the relative importance or worth of a change in the environment to people in a particular context. Taking account of this context, using best available science, is important in all economic valuation approaches. Scientific indicators and data link with economics to show the value of nature in studies such as the UKNEA¹, MEA², and TEEB³. This evidence places attention on the capacity of the environment to produce ecosystem services and on interdependencies with the users of these services. Capacity for production (of services as well as goods) is what economists refer to as 'capital', and hence work developed in recent years has used the term 'natural capital'. This term also created resonance in business circles as it is more familiar than the academically-originated science-based 'ecosystem-services'.

Economic valuation of natural capital uses a variety of methods. Market price data is used when available, and some methods can determine values by observing individuals' behaviour. In other contexts observed data is not available and so specific survey methods are needed to identify economic values. There is an established academic literature on how and when to use these different methods. This has been translated in policy guidance in the UK⁴. Practices for business are less well established, but this is a gap being addressed by the forthcoming Natural Capital Protocol⁵.

Economic valuation enhances our understanding of how changes in the environment affect people's wellbeing. As well as providing monetary values, it helps understand who is affected, how, when, why and where. This information can be used in processes that demonstrate the values of decisions or trade-offs, such as impact assessments for policy decisions (like MPA designations⁶). They can also be used in accounting approaches, which are under development worldwide at a national level, led by the United Nations⁷, and at corporate level⁸.

Understanding and demonstrating value paves the way for using economic instruments, such as compensation, subsidies or taxes. England is currently developing a 25-year plan for nature⁹, and part of the evidence base for this is potential investments to protect and improve marine and coastal natural capital¹⁰.

Application of environmental economics is expanding within public policy and business activities. Work is also aiming to make the methods used more understandable to a wider range of stakeholders¹¹. The marine environment still lags behind terrestrial analysis in terms of economic valuation evidence and application of relevant techniques, but the links in this note illustrate work that is narrowing that gap.

¹ UK National Ecosystem Assessment (2011) The UK National Ecosystem Assessment: Technical Report. UNEPWCMC, Cambridge.

² Millennium Ecosystem Assessment: <http://www.millenniumassessment.org/en/index.html>

³ The Economics of Ecosystems and Biodiversity : <http://www.teebweb.org/>

⁴ <https://www.gov.uk/government/publications/an-introductory-guide-to-valuing-ecosystem-services>

⁵ Natural Capital Protocol: <http://www.naturalcapitalcoalition.org/natural-capital-protocol/developing-the-protocol>.

⁶ <http://www.gov.scot/Topics/marine/marine-environment/mpanetwork/developing/FinalBRIAs>

⁷ <http://unstats.un.org/unsd/envaccounting/seea.asp>

⁸ Corporate Natural Capital Accounting: <http://www.naturalcapitalcommittee.org/corporate-natural-capitalaccounting>

⁹ <https://www.gov.uk/government/publications/natural-capital-committees-third-state-of-natural-capital-report-government-response>

¹⁰ <https://www.naturalcapitalcommittee.org/investing-in-natural-capital.html>

¹¹ <http://valuing-nature.net/news/demystifying-economic-valuation-group-invitation-join>

The outcomes of the Paris climate change conference and the implications for UK adaptation

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The Committee on Climate Change is an independent statutory body tasked with advising the UK and devolved administration governments on setting and meeting greenhouse gas emission targets whilst considering how best to prepare for climate change.

The Paris Agreement reached in December 2015 is a major step in the process of limiting global greenhouse gas emissions and trying to avoid dangerous climate change over the course of this century. There is a new heightened ambition to limit global warming to less than 2 degrees Celsius, with the aim for it to be no more than 1.5 degrees.

However, the national commitments to reduce greenhouse gas emissions that have been made so far are significantly out of step with achieving this ambition. As a result we are still on course for around 3 degrees of global warming this century. And this assumes that countries fulfil their commitments and there are no nasty surprises in how the Earth's biosphere responds to further warming.

Whether the final outcome will be 1.5 degrees of global warming, or closer to three degrees, climate change will have profound effects on the United Kingdom, especially its coastline. Sea levels around the UK have already risen by 20 centimetres, and our coastal waters have already warmed and acidified.

The Committee on Climate Change is currently updating the UK Climate Change Risk Assessment, due for publication in July 2016. This will consider the latest evidence in terms of observed warming to date in the UK, attribution of extreme weather events to climate change, and what the recent flooding events tell us about the changing nature of river and coastal flood risk.

This presentation will an early glimpse of the findings from the new UK Climate Change Risk Assessment, and give an overview of new research commissioned by the CCC that provides the first consistent assessment of current and future flood risk across the whole UK.

Daniel will also provide an overview of the CCC's first statutory report to Parliament, and what this said about the progress being made in addressing current vulnerabilities to extreme weather impacts.

Related Information:

UK Climate Change Risk Assessment 2017 website: <https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/climate-change-risk-assessment-2017/>

Sayers & Partners (2015) for the ASC: Projections of future flood risk in the UK
<https://www.theccc.org.uk/publication/sayers-for-the-asc-projections-of-future-flood-risk-in-the-uk/>

ASC (2015), Preparing for climate change: 2015 Progress Report to Parliament
<https://www.theccc.org.uk/publication/reducing-emissions-and-preparing-for-climate-change-2015-progress-report-to-parliament/>

ASC (2014), Managing risks to the well-being and the economy
<http://www.theccc.org.uk/publication/managing-climate-risks-to-well-being-and-the-economy-asc-progress-report-2014/>

Emerging tensions between blue growth and good environmental status

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The European Environment Agency provides independent scientific assessments and advice to the European Commission and European Parliament. Its recent *European Environment — State and Outlook 2015* report highlights some worrying issues and trends, particularly for the marine environment. In the face of these worrying trends, and with the deadline for restoring Europe's seas to Good Environmental Status by 2020 under the Marine Strategy Framework Directive (MSFD 2008) looming, it would be reasonable to assume that the European Commission's maritime policies would be **steered towards marine conservation priorities** as a matter of urgency. Unfortunately, this is far from the case, in fact the policies seem to be **veering off course towards blue growth**, as indicated by a number of recent developments:-

- The EC's recent public consultation on ocean governance appears to be more focused on promoting the growth of the maritime economy of European countries (i.e. blue growth) than on marine conservation and environmental protection, the latter being only implicitly mentioned under the headings of 'Responsibility' and 'Sustainability', presumably (see figure below);
- The recent appointment of a commissioner with an unprecedentedly broad brief that includes both the environment ministry (DG Environment) and the maritime and fisheries ministry (DG MARE), where each of these ministries previously had a separate commissioner. Whilst this could potentially improve integration, concerns that this could reinforce the focus on economic blue growth at the expense of the health of marine ecosystems are exacerbated by the fact that the new commissioner must report directly to and liaise closely with the Vice-President for Jobs, Growth, Investment and Competitiveness, and that whenever he is asked a question about biodiversity conservation, his answers focus mainly on sustainable development and blue growth;
- Such concerns are also reinforced by the letter announcing this appointment, which states that a priority for the new Commissioner will be an overhaul of the Habitats and Birds Directives which legally underpin the *Natura 2000* network of MPAs, to ensure these directives are modern and 'fit for purpose'. It also assumes that this legal framework for conservation is 'complete and mature' when the lists of designated sites are still being completed and there is an urgent need to improve the protection afforded to these designations, as the above figures indicate. The appointment letter otherwise repeatedly highlights blue growth as a priority!

There appears to be growing tensions between policies that focus on an ecosystem-based approach (MSFD, Birds/Habitats Directives, etc) and policies that focus on blue growth, as we have previously discussed (Qiu and Jones 2013). The recent Maritime Spatial Planning Directive (2014) has arguably increased these tensions, as its main agenda is to promote blue growth, along with the Integrated Maritime Policy (IMP) that this directive legally underpins.

Why does all this matter? The tensions between these policies and the recent prioritisation of blue growth are a major worry, as they are symptomatic of the wider growing focus on economic development in the wake of the global financial crisis (2007-08). They also reflect a wider political agenda across the European Union whereby the EC is seen as a body that should interfere less with the decisions taken by member states, including decisions related to whether economic development priorities should over-ride environmental protection priorities. Reducing such interference could be key to the re-negotiation of the balance of powers between the EC and its constituent member states, which many see as vital to the future of the European Union.

These developments at an EU level reflect a wider worrying trend at an international level whereby integrated-use focused maritime spatial planning (MSP) is evolving into a model which is in

competition to ecosystem-based marine spatial planning, i.e. the two are drifting apart and diverging from their co-evolutionary roots and becoming competitors. This is certainly a worry in Europe, as it would seem European maritime policy is veering off course towards an integrated-use model of maritime spatial planning in which ecosystem protection/restoration through measures such as MPAs to achieve good environmental status is demoted to just another sectoral priority, with trade-offs consistently steered towards economic development. It could also be reflective of a wider worrying trend whereby integrated-use maritime spatial planning becomes the focus rather than ecosystem-based marine spatial planning (top tip - look at which of these words are being used and whether they reflect this divergence).

We need to ensure that marine spatial planning co-evolves and converges with MPAs and wider environmental protection measures to achieve a balance between marine ecosystem protection and maritime blue growth, and that integrated-use maritime spatial planning does not become a competitor to and diverge from an ecosystem-based marine spatial planning approach. EB-MSP approaches could include both sustainable blue growth and effectively governed MPAs. We need both, but the worry is that MSP is veering off course and that MPAs are sinking down the agenda, along with the health of the marine ecosystems that they help protect?

Qiu W. and Jones P.J.S. (2013) The Emerging Policy Landscape for Marine Spatial Planning in Europe. Marine Policy 39(1), 182-190. Open access paper available at <http://tinyurl.com/bgorges>
See full version with links at <https://www.openchannels.org/blog/pjsjones/european-marine-spatial-planning-policies-towards-good-environmental-status-our-seas>

Open environment and environmental policy: an NGO perspective

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Introduction

In the current political climate we all know that our natural environment faces huge challenges. Our environment both on land and at sea is unfortunately still in decline despite our best of efforts and we still have to continue the balance of wanting to develop these resources as well as giving them the space to recover and hopefully flourish. In this session I will consider three of these challenges.

1. Defra cuts and independent expertise and advice

Firstly, is the challenge of delivering for the environment in the current age of austerity. Cuts to Defra and the Defra family including JNCC and Natural England have resulted in an ongoing erosion of independent advice and expertise, both on land and at sea.

2. Europe

Secondly, Europe. The result of the in-out referendum, which we know will happen as late as the end of 2017, or as early as summer 2016, will have huge ramifications for natural environment policy in the UK.

3. 'New' ways of thinking about nature

Thirdly, and more positively, I want to talk about a new way of thinking about nature conservation that now prevails among our colleagues on land and perhaps is an opportunity we in the marine sector need to give more consideration. My land colleagues are rapidly moving away from purely thinking about biodiversity conservation but are now focusing on the wider benefits it brings to people and our natural capital.

So this means that there are some big challenges facing the sector in the upcoming year. Which leaves with me with a set of questions that I wanted to leave you with.

1. How well does current marine conservation policy and practice align with the wellbeing agenda? Is the evidence for the former better on land than at sea, and is this something that should be addressed?
2. What would leaving Europe mean to nature conservation and business? Would all the work on management fisheries in European marine sites be lost over night?
3. Likewise for the natural capital agenda – how confident are we with the evidence base to support a natural-capital led approach to managing and recovering our seas? If not, who should address this?
4. How can we ensure that government policy continues to be evidence based without independent Nature conservation advisors

Finally, I believe the challenge we now face is to think differently and find ways to continue to manage our marine environment in a more collective manner where resources are shared and where developer, conservationist and regulator share the same values and work together to reach a common goal.

Integrated Marine Management in England

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The term “Integrated Marine Management” (IMM) has become ever more prominent over the last decade to describe the effective governance, regulation and management of our marine space. In many ways IMM has evolved from the well-established concept of Integrated Coastal Zone Management (ICZM) which the EU defines as “the coordinated application of the different policies affecting the coastal zone... by the application of... the ecosystem approach¹”.

This definition is useful and can be used as a starting point from which to develop a definition for what a system of IMM should be. When developing such a definition it is important that one addresses some key questions, the most important of which is “what is actually being integrated?”

It could be argued that the integration in question relates to the decision making undertaken within any IMM system, i.e. that it should integrate environmental, social and economic information in line with the ecosystem approach. However, taking this view would only describe one of the constraints bounding the behaviour within the system rather than the functioning of the system as a whole. It can sometimes be more meaningful to look at integration within the system of management itself rather than the detail within it.

From a governmental perspective, any system for managing our marine space should have the overall objective of delivering successful policy outcomes in the most effective manner. At the highest level, these marine policy outcomes could be focused primarily on commercial exploitation of our marine resources, or primarily on marine conservation. Alternatively they could be focused on the sustainable management of our seas, with sustainable development as an overall goal, as they are in the UK.

It is important to note that it is the achievement of successful policy outcomes that drives the formation and behaviour of any system of IMM. Other factors, such as legislation, finance and resources provide certain constraints and undoubtedly drive certain interactions within any such system but they are not primary outcomes of the system. For example, any system of IMM in the UK should not be setup primarily to achieve compliance with the Habitats Regulations, rather it should focus on the policy outcome which gave rise to the need for such legislation in the first place. The system would need to have consideration of any such legislation as it would shape interactions, but it should not be driven by it. Trying to frame the successful delivery of policy outcomes by the complexity of the legislative landscape is a fundamental misunderstanding of how government works.

If you therefore take the view that IMM is describing a governmental system to manage our marine space in an integrated way, in order to fully understand what we aiming for, one must first understand what we mean by a system. A system can be described as an entity that maintains its existence and function as a whole through the interaction of its parts. We are used to thinking in this way when we look to understand our natural environment, but when we look to understand our human environment or indeed our governmental environment we tend to focus on the parts which we are either involved in, or have most interest in, rather than the functioning of the system as a whole. It is a truism that most people are doing the best they can within the system they are operating in. When this is the case, and the system still does not deliver, it is the structure of the system and its interactions that need addressing rather than the effort of the people within it.

Systems thinking looks at the whole, the parts and the connections between the parts; studying the whole to understand the parts. A good system is one where the output is greater than the sum of the parts. What joins the different parts of the system is the interfaces, and it is the interfaces that maximise

¹ <http://ec.europa.eu/environment/iczm/home.htm>

the output so they are greater than the sum of the parts. Effective integration should maximise the impact of the interface and bring greater value to the system as a whole.

In order to maximise the interfaces you must be very clear on what the outputs are and what the individual parts of the system are. At a generic level one could say that the output of any system of IMM is the delivery of successful policy outcomes for the government that has implemented it. In the UK, this suite of policy outcomes is encapsulated within the marine policy statement which sets out a vision, a delivery pathway for that vision through marine planning and then a set of outcomes which government is hoping to achieve. One of the principles within the MPS is that decision making should be conducted in a manner that meets requirements under UK and EU legislation and is consistent with our obligations under international law. This principle makes the distinction that the policy outcomes must meet legal requirements but are not driven by them.

So, if the output of the system is the MPS, then what are the parts of the system? One could take the different governmental organisations involved in the delivery of the MPS as the different parts of the system. This method of analysis would certainly give one some knowledge of how the system worked, but it would not necessarily lead to a deep understanding of the synthesis needed to deliver successful outcomes. What is important is that the interfaces between the different parts of the system are as effective as possible. As a system maintains itself through the interaction of its parts, so it is the relationship and mutual influence between parts that is important, rather than the number or size of the parts themselves.

At the highest level, one could set out that any system of IMM needs the following parts, each of which may be delivered by one or multiple organisations:

- Policy formulation
- Information, knowledge and analysis - this includes research, evidence, statistics, monitoring of the natural and human environment, data and economics
- Management – this is the front end of the regulatory process and covers any management activity such as planning, permitting, or licensing of marine activities, any statutory advice regarding those processes or any direct management activity in pursuit of a policy outcome
- Enforcement of management actions

The last part of any definition of IMM must be that any functional behaviour within it should look to support an ecosystem approach. 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. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems.

So, IMM is a system with functional and effective interfaces whose output is the successful delivery of governmental marine policy outcomes. The parts of that system should consist of policy formulation; information, knowledge and analysis; management; and enforcement, and the behaviour of the system should be underpinned by the ecosystem approach. Using this definition, one could review and assess the current system in England and the bodies that operate within it to understand, from a system perspective, how it could be improved.¹

1

The implications of the current policy agenda for coastal and marine

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Last November, immediately prior to the United Nations Paris Climate Conference, the new UK Government set out its policy agenda for the UK's energy mix in the coming years. Hard on its heels followed the world's first universal agreement to take action to limit the global temperature rise to 2C above pre-industrial levels.

The speech from the new Secretary of State for Energy and Climate Change, Amber Rudd setting out Government energy policy objectives, stated that it remains committed to deliver secure, affordable, and sustainable energy, stressing the importance of energy security, as well as maintaining energy affordability, but importantly not to the detriment of decarbonisation. However what has changed is the Government's view on how to achieve this. Rudd expressed the need for a 'course correction' to a 'consumer-led, competition focused energy system that has energy security as its heart'. With an energy market that is built around competition and innovation, and seeks to move away from government intervention and subsidies by utilising competitive markets, with the Government 'out of the way as much as possible by 2025'.

So what are the implications for low carbon energy solutions in the marine environment?

Offshore wind in the UK is firmly on course to double its capacity by the end of the decade and meet 10% of the UK's electricity demand with around 10GW in operation by that date. Provided that costs continue to fall this capacity could then double to 20GW by 2030. The UK is leading the world in installed capacity and is continuing to attract investment in the infrastructure and supply chain. Public support for offshore wind remains high and the industry is maturing rapidly with signs that a truly global offshore wind sector is just around the corner.

Wave and tidal stream technology has not progressed as fast as had been expected and they are now clearly on different timelines to commercialisation. Moving ahead faster, tidal streams' first commercial array is underway at the Pentland Firth and the technology appears to have largely converged on a generic solution. Test sites at EMEC and wave hub are however now filling up fast with prototypes and individual demonstration sites are also moving forward on the south coast and around Wales.

Making the best use of our own natural resources makes a huge positive impact on security of supply and embracing innovation to deliver cheaper, low carbon generation can meet both affordability and decarbonisation objectives. As an island nation it is inevitable that the marine environment will play an ever increasing role in delivering sustainable energy for the UK and beyond as we start to look at the next stage of developments such as floating wind, tidal range and offshore energy storage.

Are we all at sea with the new policy direction? In the long run the literal answer is a resounding yes.

See:

Secretary of State for Energy and Climate Change policy reset:

<https://www.gov.uk/government/speeches/amber-rudds-speech-on-a-new-direction-for-uk-energy-policy>

The Swansea Tidal Lagoon Project – update and ongoing assessment work for future projects

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Consent for Tidal Lagoon Swansea Bay (TLSB) was granted by the Secretary of State for Energy and Climate Change through the Development Consent Order (DCO) on 9 June 2015. As the project is in Wales, a Marine License from Natural Resources Wales Marine Licensing Team is also needed.

The Severn Estuary holds the second highest tidal range in the world and within this Swansea Bay benefits from an average tidal range during spring tides of 8.5m. The construction of the lagoon to harness this natural resource will help the UK transition to a low carbon future with greater energy security and lower electricity costs, while providing regenerative economic and recreational benefits to the local community.

An Adaptive Environmental Management Plan (AEMP) is being developed as part of the project. The AEMP sets out proposed survey work and monitoring that will seek to confirm impacts predicted in the Environmental Statement. It will also confirm the effectiveness of mitigation measures and inform future management interventions, should these be needed.

Swansea is the first in a series of lagoons that are planned in the Severn Estuary, including a proposal at Cardiff. The Scoping Report for Tidal Lagoon Cardiff was submitted in early 2015 with the Scoping Opinion being adopted by the Secretary of State on 10 April 2015.

Following engagement with relevant statutory consultees, extensive baseline environmental survey work is underway to inform the Environmental Impact Assessment for the Cardiff project.

<http://www.tidallagoonswanseabay.com/>

<http://www.tidallagooncardiff.com/>

<http://www.tidallagoonpower.com/>

Cumulative effects: Achieving practical solutions to implementation

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www.gov.uk/government/policies/marine-environment

The strategic management of the marine environment or the consenting of certain activities includes various requirements for cumulative effects assessment (CEA).

CEA is an important consideration for a number of decision-makers and their advisors in the marine environment including: the Department for Environment, Food and Rural Affairs (e.g. MSFD implementation), the Marine Management Organisation (e.g. marine planning and licensing, Harbour Revision Orders, MPA management), the Department of Energy and Climate Change (e.g. oil and gas, large-scale renewable energy developments), the Department for Transport (e.g. major port development), local authorities (coastal development consented through the Town and Country Planning Act), harbour authorities (management of port activities under local Acts), the Environment Agency (e.g. discharge consents and Water Framework Directive implementation) and for the devolved administrations in relation to the full range of consents for which they are responsible.

The assessment of cumulative effects may also require cooperation between different agencies as well as between national jurisdictions, as pressures and their effects can have transboundary consequences. Work is underway, for example, within the OSPAR Convention to develop a common understanding of the requirements of CEA and evaluate possible methodologies.

While the overall aim of CEA is understood and accepted, there is a lack of consensus on how it should work in practice, both at the assessment and management stages. The concern expressed by certain stakeholders is that there are fundamental differences over the basic principles and approaches that should be applied to CEA. This may result in inconsistent methodologies, whether applied at programme, plan or project scale and uncertainty over what kind of evidence may be expected by statutory advisors and regulators during the authorisation process, or indeed whether such evidence is capable of being produced. Such inconsistency or uncertainty can act as an unnecessary regulatory burden, increasing project risks and adding to costs.

Currently there is no cross-sectoral consensus on what constitutes best practice for CEA and what can and cannot be achieved. It is argued by some that only by providing clearer strategic direction from the centre will it be possible to create a more efficient and integrated approach to the assessment of cumulative effects.

A cross-Government working group has been set up by Defra to examine the opportunities for improving the efficiency and effectiveness of cumulative effects assessment, including its application through management measures e.g. licensing conditions, at a variety of scales in line with policy and regulatory drivers. It is developing a strategic work programme to deliver or promote those improvements, with a focus on creating a more consistent and predictable assessment and management process.

Over the last six months the working group has gathered views from stakeholders on the main issues of concerns and ideas for improvement. We are now formulating the work programme. We recognise that there are many interested stakeholders and practitioners outside of Government who may wish to be involved in various aspects of this work. We will aim to make best use of existing expert groups to get input and comment. As individual pieces of work are taken forward it may also make sense to involve relevant experts in those work streams and we will ask for expressions of interest when the draft work programme is circulated.

See (recent examples of relevant UK work):

- Renewable UK: Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms - considers a number of practical solutions in order to overcome the challenges of CIA. These including defining what a meaningful assessment is, and tackling challenges on scoping, data, assessment and monitoring and mitigation.

<http://www.renewableuk.com/en/publications/index.cfm/cumulative-impact-assessment-guidelines>

- Natural England: NECR147 generic framework for informing cumulative impact assessments related to Marine Protected Areas - develops a generic framework for undertaking CIA and provides clear guidance on the processes and steps which could be adopted when undertaking robust and comprehensive CIA for all types of project affecting MPAs.

<http://publications.naturalengland.org.uk/publication/6341085840277504>

- MMO Evaluation of the current state of knowledge on potential cumulative effects from offshore wind farms (OWF) to inform marine planning and marine licensing (MMO 1009).

<http://webarchive.nationalarchives.gov.uk/20140507202222/http://www.marinemangement.org.uk/evidence/1009.htm>

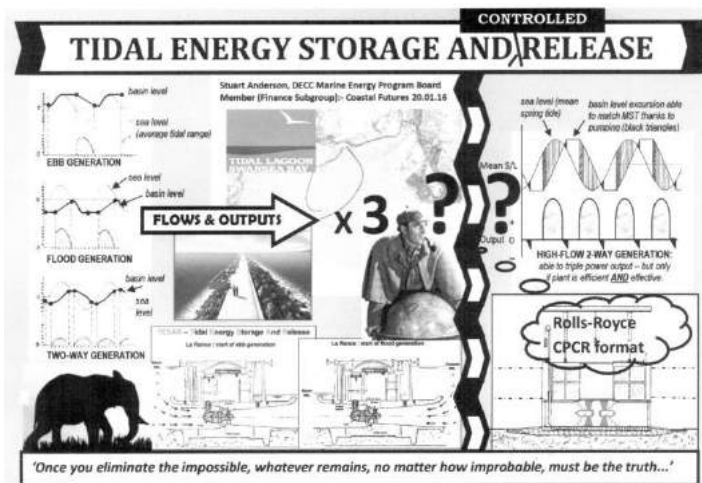
- MMO strategic approach to cumulative effects (MMO 1055).

<https://www.gov.uk/government/publications/a-strategic-framework-for-scoping-cumulative-effects-mmo-1055>

Tidal Energy Storage and Release: How environmental science, politics and economics must redefine the British Isles' 21st C coastal leadership roles

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Small variations in hydraulic efficiency can mean relatively big differences in water release, affecting overall energy extraction to a surprising extent when a hydro-electric scheme's supply is from a reservoir. A change in terminology seems essential to avoid overlooking this pitfall in two-way tidal range schemes, as evidenced at La Rance in Brittany in the 1970's. A workshop-based thought experiment* suggests why, with singly mounted bulb turbines, otherwise good improvements are unlikely to correct this problem as efforts are made to increase two-way flows by of order three times. The 2010 UK government sponsored Atkins/Rolls-Royce SETS (Severn Embryonic Technologies Scheme) study outlined a superior alternative arrangement, broadly similar to the counter-positioned, contra-rotating (CPCR) format that the author had put forward at the outset of SETS in 2008.

The Swansea Bay lagoon is well placed to serve as the generic pilot scheme then envisaged. As foreseen, the symmetric workings of such a format are essential to allow tidal impoundment schemes to offer 'naturalised' basin excursion patterns, dispensing with sluices to extract energy smoothly and effectively from inside and outside the enclosure. But though such technology was confirmed by Atkins/Rolls-Royce as also 'ideal for lagoons', its wider generic implications are still ignored. This is not just because their main was focus on a Severn Barrage, but also from failure to kill off the recurrent fallacy that bulb turbines' technological maturity equates to being fit-for-purpose. Such a mistaken view, alongside the Engineering Technology Institute's notion of 'over-extracting' tidal energy (an idea slipped in as if definitive, yet itself without any definition, or reference to the overall climate threat) now risks exposing the UK to ridicule as a Cargo Cult. How else could future generations judge once-proud maritime engineering nations for failure to collaborate in nurturing the market for a significant, predictably accessible clean energy resource for so many vulnerable coastal communities worldwide? In the British Isles alone the list must eventually include Dublin, London, Cardiff and Edinburgh.

With a potential 50 GW installed capacity, helping efforts both to adapt and mitigate, the realistic potential dwarfs other marine renewables and arguably already exceeds offshore wind in strategic importance. Regional devolution and the Paris Agreement combine to make early, multi-level debate and well-informed collaborative modelling essential.

For information incl. Energy Innovation 2016 application see: <http://www.bright-sparks.biz/energy-innovation/>

*With workshop assistance from Dr Hugh Hunt (Reader in Engineering at Cambridge University); and Ben Drakeford (Lecturer in Economics at Portsmouth University and UK Focal Point for the EU's Atlantic Strategy).

Modelled Mapping of Continuous Man-made Underwater Noise

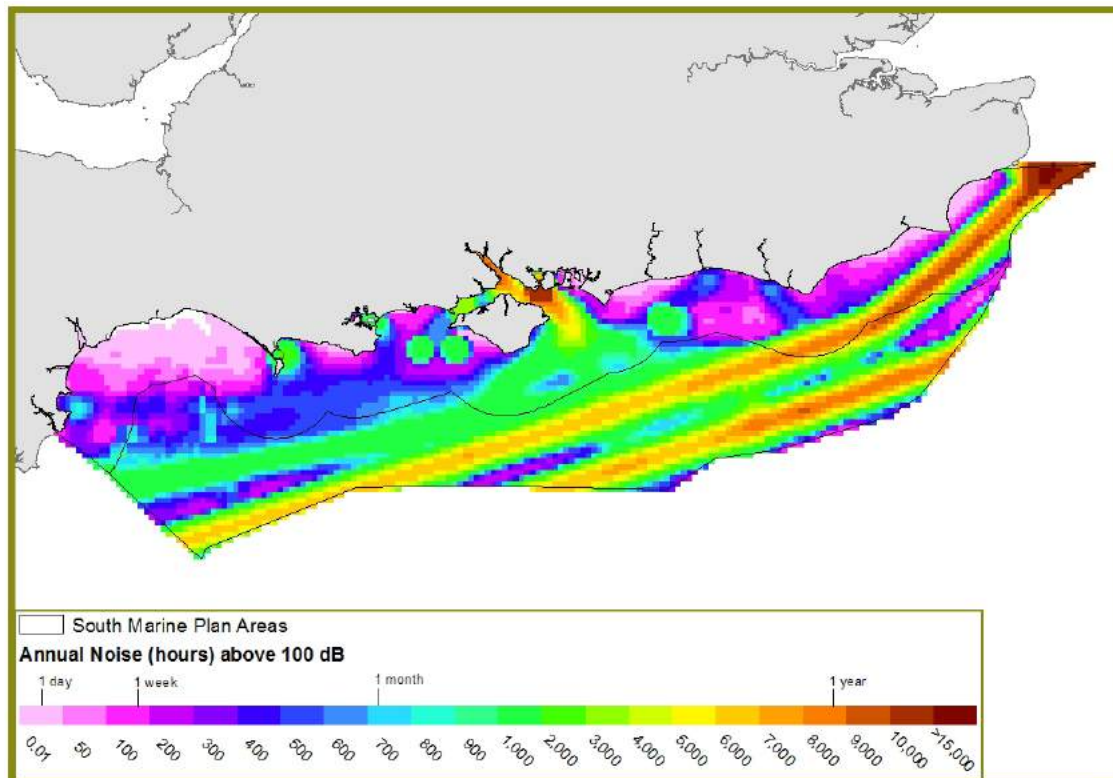
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Quantification of underwater noise is a current and evolving topic in marine environmental science that is relevant to marine plan policy development. There is currently insufficient data to support a quantitative assessment of underwater noise levels and its impact on the natural environment at marine plan or national scale. Research and development work has been undertaken by ABP Marine Environmental Research Ltd (ABPmer) on behalf of the Marine Management Organisation (MMO) to address this gap.

This work resulted in the development of a reusable GIS tool that enables modelled mapping of underwater noise. The GIS tool is based on a simple sound transmission model and produces a grid of annual exposure hours at different sound pressure levels. It uses noise source values identified in a detailed literature review in combination with Automatic Identification System (AIS) shipping category density data, Electronic Monitoring System (EMS) aggregate dredging data and Vessel Monitoring System (VMS) fishing data which are consistent at the plan scale.



There are currently a number of limitations associated with the GIS tool and its outputs should therefore be considered indicative at this stage. Several recommendations have been made for its further development which would improve the accuracy of outputs.

See:

Modelled Mapping of Continuous Underwater Noise Generated by Activities (MMO 1097)

<https://www.gov.uk/government/publications/underwater-noise-1097>

Marine biodiversity and policy: Coherence of policies and practices to use and conserve

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In an emeritus position I am no longer responsible for the delivery of policies and management measures nor the science advice on which they are supposedly based. However, I now have the distance to take “big picture” perspectives on cross-sectoral and cross-community issues. I also get elder statesman roles in activities like the Group of Experts for the World Ocean Assessment and co-chair of the IPBES Regional Assessment for the Americas. In these roles and from this perspective I am focusing increasingly on what I consider the dominant challenges for this globalized planet. Our oceans and coasts do not just have to be used sustainably, with their main features conserved. They have to be shared by a wide diversity of societies and cultures with genuinely different values. The differences in values apply to both how they choose to use or enhance the ecosystem services available and how they view different knowledge systems. The dominant challenges are finding governance mechanisms that allow the different cultures to coexist on scales from kilometers to global and feel they are being treated justly, and finding processes to feed all the knowledge systems into these governance processes in ways that are credible and legitimate.

The Marine Strategy Framework Directive (MSFD): Update, measures and assessment

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Defra, the Northern Ireland Executive, the Scottish Government and the Welsh Government published their [Marine Strategy Part Three: UK programme of measures](#) on 17 December 2015. The programme outlines a comprehensive set of existing and planned measures that will contribute towards the maintenance and achievement of Good Environmental Status (GES) in UK seas. The Marine Strategy Part Three is the final part of our Marine Strategy which also includes, in parts [One](#) and [Two](#), our targets and indicators and the monitoring programmes that will be used to assess progress towards GES.

The Marine Strategy Framework Directive (MSFD) requires Member States to take action to achieve or maintain GES in their seas by 2020. GES involves protecting the marine environment while using marine resources sustainably. A key element of the MSFD is the importance of coordinating action with other Member States sharing the same waters. The UK's Marine Strategy sets out how we are implementing the MSFD in the UK. The aims of the MSFD are consistent with the UK Government and Devolved Administrations' vision of *clean, healthy, safe, productive and biologically diverse oceans and seas* as set out in the UK Marine Policy Statement.

The next phase in the implementation of the MSFD is an updated assessment of the state of our seas which is due in 2018. This will involve an update of the initial assessment set out in the Marine Strategy Part One which drew heavily on Charting Progress 2 and other regional reports. The 2018 assessment will demonstrate progress since the initial assessment and show how we are coordinating our efforts with other Member States.

This presentation will set out the approach we took in producing our UK Programme of Measures and explain how we plan to produce the next assessment of our seas.

Related Information:

The Marine Strategy Part Three can be found at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/486623/marine-strategy-part3-programme-of-measures.pdf

The UK government response to the consultation on the Marine Strategy Framework Directive programmes of measures which was held between 30th January and 24 April 2015 can be found at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/486624/marine-strategy-part3-consult-sum-resp.pdf

The Marine Strategy Parts One and Two can be found at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69632/pb13860-marine-strategy-part1-20121220.pdf

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/341146/msfd-part-2-final.pdf

Making Open Data work in the Marine Environment

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Open Data in the UK has been actively embraced by Government since 2012 (see links below). “*The most data rich department in Whitehall*” (Defra Secretary of State) has taken a lead opening its data vaults (8,000 “*within the year*”, with the Cefas Data Hub providing direct access to some 800 marine datasets since November, alongside, among others, the Environment Agency DataShare site). However, whilst there are significant non-marine uptakes of Open Data, the same is not obvious in the marine. The Data Deluge we feared at Coastal Futures 2015, with its associated inversion of the traditional Data-Information-Wisdom ‘pyramid’, is not, apparently, as great a factor in the marine as it is elsewhere, especially in terms of data re-use.

We think there are a number of reasons for this apparently low uptake from an oft-stated pent-up demand. Recent availability and related low awareness may be two, but we think that the lack of a more general, less specialist, uptake arises from the very nature of the bulk of the marine environmental data collected (and the subsets made available). It may be available but is it readily accessible? We offer a simple paradigm change that might help make things work better.

We suggest that marine environmental data is, in reality, more than just a bit different from, say, its terrestrial equivalent because of the “connections” provided by the water itself. It is also inherently more costly and resides much more in the domain of the specialist scientist doing specialist science in difficult to get to places. This makes any un-adapted marine environmental Open Data, almost by definition, complex **JIGSAW** (piece) data; specifically designed and shaped pieces of data (aka datasets) that form part of whatever specific puzzle the scientists involved were trying to piece together at the time. To re-use and re-purpose these datasets and do, say, an assessment of change or status, you need (simple) **LEGO**® bricks of data that you can assemble as you need.

Marine environmental **JIGSAW** datasets need to be decomposed into marine environmental **LEGO**® bricks.

Technically this is easy and there a number of ways to do it, Linked Data being one, simple decomposition is another. No one except us is using **JIGSAW** and **LEGO**® as relevant descriptive terminology but we think it helps explain the concept and is a good stepping stone towards uptake, re-use.

Think marine environmental **LEGO**® bricks. Think individual, standalone, physical, chemical and biological parameters, each located in space and time and linked to metadata for context. Or, if we want to go the whole hog, and past experience tells us we don't yet; think Marine Linked Data.

Telling us what **you** need now, where and when, and what, will help data publishers prioritize their efforts in terms of which **LEGO**® bricks are required.



Figure 1 <http://lego.wikia.com/wiki/Divers>

- UK Transparency Agenda - <http://www.nationalarchives.gov.uk/webarchive/transparency-agenda.htm>
- Open Data White Paper 2012 - https://data.gov.uk/sites/default/files/Open_data_White_Paper.pdf
- UK Public Sector Transparency Board <https://www.gov.uk/government/groups/public-sector-transparency-board>
- G8 Open Data Charter: UK Action Plan <https://www.gov.uk/government/publications/open-data-charter/g8-open-data-charter-and-technical-annex>
- Defra Open Data Strategy <https://www.gov.uk/government/publications/defra-open-data-strategy> and https://data.gov.uk/sites/default/files/Defra%20Open%20Data%20Strategy_10.pdf
- Defra Open Data Maturity Model <https://defradigital.blog.gov.uk/2015/02/09/are-you-a-mature-open-data-publisher/>
- Environment Agency DataShare - <http://www.geostore.com/environment-agency/>
- Met Office Open Data - <http://www.metoffice.gov.uk/datapoint>
- Environment Secretary unveils vision for open data to transform food and farming - <https://www.gov.uk/government/news/environment-secretary-unveils-vision-for-open-data-to-transform-food-and-farming>
- Cefas Data Hub - <http://data.cefas.co.uk>

Developing a better understanding of the impact of noise in the marine environment

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Increasing attention is being paid to the consequences of increasing levels of underwater noise generated by industrial activities, including oil and gas exploration and extraction, shipping, and the construction of offshore renewable energy devices. There is particular concern over the extension of these activities into previously undeveloped areas of the oceans, including the Polar Regions. Much of the current research is aimed at filling significant data gaps for bird, marine mammal, and sea turtle populations. However, in terms of impacts upon marine ecosystems, effects upon fishes and invertebrates may also be of importance.

Sound is crucial to aquatic animals as it offers unrivalled advantages for fast, long distance information transmission especially in an optically poor medium like water. Sounds propagate through water almost 4.5 times faster than in air. Long wavelength, low frequency sounds are relatively unaffected by absorption, scattering and reflection within the medium and may travel great distances. Many marine animals use sound to communicate with conspecifics, detect prey and predators, navigate from one place to another, and select appropriate habitats. It is likely that many marine animals use sound to learn about their environment by detecting and using the soundscape or "acoustic scene." In effect, sound detection provides animals with three-dimensional information from a wider space around them than is possible using vision, olfaction (the sense of smell), or electro-reception. Sound detection may be especially important for migratory animals, including fishes like the salmon, which may navigate by using positional cues provided by natural geophysical sound sources.

The EU Marine Strategy Framework Directive requires Member States to establish monitoring programmes for the ongoing assessment of the environmental status of their marine waters. Monitoring is intended to provide data on a series of indicators for key environmental "descriptors" in order to assess whether Good Environmental Status has been achieved. One of the chosen descriptors is for "Energy including Noise". However, so far monitoring has been restricted to examining noise sources, rather than assessing effects upon environmental status.

The impact of noise is generally assessed by setting noise exposure criteria; specifying sound pressure levels that will have deleterious effects if they are exceeded. Sound propagation models are applied to determine zones of effect. However, the criteria selected are the ensuing environmental impact assessments are often largely speculative and the legal framework is ill defined. There is a lack of information on how marine animals respond to sound, and which of their responses indicate impairment of vital functions. In particular, no well-defined structure or system currently exists for assessing the impact of noise generated by offshore activities on fish and invertebrates. A number of recent papers have now defined the research requirements of highest priority for extending current noise impact assessment procedures on these animals.

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Solutions to marine litter: the importance of the circular economy

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Marine Litter is a global environmental problem with consequences for human health, the economy and wildlife. This litter is pervasive throughout our oceans from the poles to the equator and from sea surface and shoreline to the deep sea. It is hazardous to seafarers resulting in unnecessary coastguard and rescue callouts and has substantial economic consequences for the local authorities responsible for clean-up. Perhaps most widely documented are encounters with wildlife which can result in direct harm and death. Well over 600 species of marine organisms are reported to encounter marine litter and the majority of these encounters are with plastic items.

However, marine litter is an environmental problem that can be solved. The majority of the items that become marine litter are single use disposable items including packaging and sewage related debris. Such items can bring considerable societal benefit, for example in terms of food security and light weighting to reduce fuel usage, however these benefits can all be realised without the need for any emissions of litter to the ocean. Hence the long term solutions lie in recognising that if designed, used and disposed of appropriately, then end-of-life items that currently accumulate in waste management facilities and as litter in the natural environment can be used as a resource for production of new products. Working toward a circular economy of this kind will help reduce our reliance on non-renewable resources and simultaneously reduce the quantity of waste requiring disposal.

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Integrated monitoring surveys: studying the pelagic ecosystems of the south west of the UK

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Sustainable management of the marine environment requires data of many different types, from many sources. Remote sensing techniques and ecosystem models are used increasingly frequently to supply and interrogate, respectively, these data, and their use is forecast to grow. However, both methods and indeed other aspects of monitoring of marine resources, also depend on empirical data, often collected during at sea surveys. The growing need for data and falling budgets for data collection now motivates a general drive to make more efficient use of survey programmes. Traditionally, marine monitoring programmes have focused on specific aims such as the mapping and quantifying of commercially important fish species in support of fisheries management advice. Recently, the focus of these monitoring programmes has changed with many becoming more multi-disciplinary, deploying a number of different instruments to study wider aspects of the marine environment beyond the original primary aims. True integration of these surveys allows not just for monitoring of the status of the ecosystem, and changes therein, but also provides an understanding of key processes at play. An example of such a survey is presented from the western English Channel and eastern Celtic Sea. The primary aim of the survey was to study the little known small pelagic fish community, but our adoption of a wide range of different data collection methods has enabled us to improve our overall understanding of the pelagic food web and ecological interactions in these coastal waters.

Day 2 – Thursday 22nd January

Marine Planning in England

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Through the Marine and Coastal Access Act 2009 (the Act) the Marine Management Organisation (MMO) is required to produce marine plans for all of England's marine areas under authority delegated by the Secretary of State. The EU Maritime Spatial Planning Directive requires this to be completed by 2021. Marine plans guide those who use and regulate the marine area to encourage sustainable development while considering the environment, economy and society.

The East Inshore and East Offshore Marine Plans were approved on 2 April 2014. Work is now focussed on their implementation and monitoring their effectiveness.

The plans for the South inshore and offshore marine areas are in development. The MMO has embarked on comprehensive rounds of stakeholder engagement on evidence and issues, vision and objectives and policy options. The plan is currently being subject to government write-round with the aim to notify a Consultation Draft in early 2016. To facilitate engagement with public authorities and promote policy effectiveness the MMO has “front-loaded” planning for implementation and monitoring of the South plans.

A number of options have been considered for the production of plans for the four remaining marine areas. The MMO is minded to produce all four plans concurrently, but the final decision lies with the Minister and is imminent.

The Act seeks compatibility of marine plans with adjoining plans including other marine plans and terrestrial plans. The challenge over time is to work towards integration between the various plans and the processes through which they are produced. A particular challenge is to promote a joined-up approach to cross-border planning for areas that lie within the marine areas of more than one marine planning authority. With the national marine plan for Wales in an advanced stage of development, ready for notification of a Consultation Draft in mid-2016, attention is drawn to the Severn and Dee Estuaries. The MMO is working closely with the Welsh Government to promote this essential “joining-up”. This will ensure that the Welsh plan recognises its relevance to the South-west and North-west marine areas of England. In return this liaison will ensure recognition of the converse situation for the England plans in regard to the Welsh marine areas once their development is initiated.

See:

[Marine Planning film](#)

[The East marine plans](#)

[The South marine plans page](#)

[Marine Information System](#)

Development of the Welsh National Marine Plan

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The Initial Draft of the Welsh National Marine Plan

<http://gov.wales/topics/environmentcountryside/marineandfisheries/marine-planning/welsh-national-marine-plan/?lang=en>

Wales' Marine Evidence Report collates the best available evidence and identifies issues.

<http://gov.wales/topics/environmentcountryside/marineandfisheries/marine-planning/other-supporting-evidence/wales-marine-evidence-report/?skip=1&lang=en>

The Evidence Portal presents various data sets we have gathered through an interactive map of Wales. <http://lle.gov.wales/apps/marineportal/>

Marine Planning

The first Welsh National Marine Plan is being developed – with a pre-consultation draft being shared widely for comment (until Feb 2016) in advance of formal consultation later in the year with adoption to follow that. The plan's purpose is to guide the sustainable development of our marine area. It covers both Welsh inshore waters (out to 12 nautical miles) and offshore waters (beyond 12 nautical miles) as a whole. It will apply to the exercise of both Welsh Government powers and reserved functions within this area

Marine planning provides an overarching framework for managing Welsh seas, helping to ensure that marine natural resources are managed and used in a sustainable way and thereby contributing to Wales' well-being of future generation goals and the requirements of the Environment legislation which is being introduced. The High Level Marine Objectives (HLMOs) set out in the Marine Policy Statement (agreed in 2011) have directly informed development of the plan. They align with the Welsh Government's well-being goals and principles for sustainable development and also the direction provided in the EU Directive on Marine Spatial Planning 89/2014. The HLMOs have also guided marine planning in the rest of the UK. Wales is working with other marine planning authorities to ensure integration and with the MMO in particular, with workshops being planned to take place this winter. Through an integrated and plan-led approach, marine planning will:

- support delivery of Wales' well-being goals;
- promote sustainable development;
- enable Wales to move towards a low-carbon economy, in order to mitigate the causes of climate change and ocean acidification and adapt to their effects;
- ensure a sustainable marine environment which promotes the maintenance and recovery of biodiversity as part of healthy, functioning marine ecosystems and that protects marine habitats, species and our heritage assets; and
- contribute to the societal benefits of the marine area, including the sustainable use of marine resources to help to address local social and economic issues.

Whilst marine planning will make an important contribution to delivering our vision for our seas, it is only part of a wider picture. There is a wide range of important regulatory requirements already in place which relate to the marine environment. This plan seeks to provide direction on the future use of our seas where it can and to sign-post to existing requirements and practices as appropriate.

Marine Planning – reviewing the progress over 10 years

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The presentation will review progress with implementing marine planning in UK waters and highlight some of the issues and challenges that have emerged.

Background

Against a backdrop of increasing competition for space amongst human use activities in the marine area and a continued decline in marine biodiversity, Safeguarding our Seas (Defra, 2002)¹, identified an 'urgent need for a coherent and integrated approach to planning and management in UK seas to address the continuing decline in marine biodiversity and to ensure efficient use of marine resources'.

Between 2004 - 2006, Defra conducted a pilot exercise covering the UK parts of the Irish Sea to test options and approaches for developing marine plans². The findings of the pilot study significantly influenced the content of the Marine & Coastal Access Act 2008 and devolved Marine Acts (hereafter 'Marine Acts') which provided the basis for marine planning in UK seas.

The Marine Acts introduced a statutory system of marine planning which provides a plan-led approach to decision-making. In effect this means that any responsible body taking decisions affecting the relevant marine area needs to do so in accordance with marine plan policies unless relevant considerations indicate otherwise.

A UK-wide Marine Policy Statement was published in 2011³ which provides the overarching framework within which national and regional marine plans are to be prepared. To date a limited number of national and regional plans have been prepared:

- East of England Inshore and East Offshore Marine Plans (East marine plans) (adopted 2014)⁴;
- a national marine plan for Scotland (adopted 2015)⁵
- Shetland Islands Marine Spatial Plan (SIMSP) (adopted 2014)⁶
- Pentland Firth and Orkney Waters (PFOW) Marine Spatial Plan (consultation draft published in 2015)⁷

Work is underway to develop national marine plans for Wales⁸ and Northern Ireland⁹ and the regional plan for the South Inshore and South Offshore Marine Plans¹⁰ in English waters. In Scotland work is also beginning on the development of Regional Marine Plans¹¹ with the first partnerships for the Clyde and Shetland expected to be established in 2015. In late 2015, as part of its six year progress report on the implementation of marine plans in England¹², Defra indicated that it intended to review how the

¹ <http://eelink.net/~asilwildlife/BritishMarineStewardship.pdf>

² <http://www.abpmer.net/mspp/>

³ <https://www.gov.uk/government/publications/uk-marine-policy-statement>

⁴ <https://www.gov.uk/government/publications/east-inshore-and-east-offshore-marine-plans>

⁵ <http://www.gov.scot/Topics/marine/seamanagement/national>

⁶ <http://www.nafc.uhi.ac.uk/departments/marine-science-and-technology/strategy/marine-spatial-planning>

⁷ <http://www.gov.scot/Topics/marine/seamanagement/regional/activity/pentlandorkney/Consultation>

⁸ <http://gov.wales/topics/environmentcountryside/marineandfisheries/marine/marine-planning/?lang=en>

⁹ http://www.planningni.gov.uk/index/policy/common_policy-marine-plan-for-northern-ireland-home.htm

¹⁰ <https://www.gov.uk/south-inshore-and-south-offshore-marine-plan-areas>

¹¹ <http://www.gov.scot/Topics/marine/seamanagement/regional>

¹² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/474148/marine-plan-progress-report.pdf

remaining regional marine plans for English inshore and offshore waters were prepared. It is now understood that the remaining English regional marine plans are to be progressed in parallel as part of a single exercise.

The Maritime Spatial Planning Directive adopted in 2014 requires Member States to implement marine plans covering waters under their jurisdiction by March 2021 in co-operation with other relevant Member States. UK marine plan authorities will be required to co-ordinate with other marine plan authorities in the relevant marine region. This could contribute to 'joining up' marine planning across national borders.

Key themes to be covered in the presentation

- Improvements in the provision of marine information, particularly spatial data
- Reflections on plan making processes
- Efficacy of plan policies
- Application of the ecosystem approach and the extent to which integrated planning and management is being achieved
- Monitoring and evaluation of marine plans

A White Paper which provides a more in-depth review can be downloaded here:

<http://cmscoms.com/wp-content/uploads/2015/10/Marine-Planning-in-the-UK-ABPmer-Steve-Hull1.pdf>

Protecting harbour porpoises in UK waters

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The harbour porpoise is the UK's most widely-distributed cetacean and UK seas account for a high proportion of the European population of this charismatic species. The UK has identified one Special Area of Conservation (SAC) in Northern Ireland for the harbour porpoise and 26 sites in which the species is listed as a 'non-qualifying feature'. In these 26 sites, the 'non-significant populations' found there do not enjoy the protective measures afforded under the Habitats Directive (Article 6). For example, management measures for these sites do not need to consider the use of the site by harbour porpoise. Similarly, Member States are not required to take preventative measures to avoid deterioration for interests other than those for which the site has been designated. In short, none of the management and protective measures afforded under Article 6 of the Habitats Directive will necessarily apply to harbour porpoise in UK waters other than in the one SAC that has been designated to date.

The delay in proposing sites for harbour porpoise protection has meant that potentially damaging activities are not being adequately considered with regard to the needs of the protection of the species, and is a key gap in the wider ecologically coherent and well-managed network of MPAs the UK Government has committed to. In 2011 WWF produced a 'shadow list' of indicative SACs in UK waters¹ for the harbour porpoise and submitted this with a legal complaint to the European Commission. The complaint was upheld and a Reasoned Opinion was sent to the UK Government outlining the need to designate sites for the harbour porpoise to avoid infraction proceedings.

WWF is pleased that the UK Government has responded positively to WWF's complaint to the European Commission by initiating a process led by JNCC to identify a suite of sites for harbour porpoise protection in UK waters, based on extensive scientific monitoring conducted over many years. Whilst we have not yet had the opportunity to scrutinise the proposals in detail, we believe the process is needed to bring the UK into line with its legal obligations under the Habitats Directive and is consistent with that demonstrated by neighbouring Member States in which contiguous populations of the species occur.

WWF recognises that MPAs are one of a suite of conservation tools for species which frequently range across large areas of sea. However, there is increasing evidence that MPAs can be important for specific life stages such as mating or nursing, or activities such as feeding, and if they fit into a framework of ecosystem-based management, they can contribute to the protection of wide-ranging species such as the harbour porpoise. Inevitably, the value and success of any protected area depends on the management measures implemented within it, and also on the timescales for management of change. The development of appropriate management measures to maintain or restore the species to Favourable Conservation Status will be key to the success of these areas and will need to address the specific threats to the species posed by activities within the sites.

WWF supports sustainable development in multi-use marine SACs, backed by effective Habitats Regulation Assessment, whereby development proposals can demonstrate that they will have no significant impact upon the conservation status of the harbour porpoise within these sites. Our vision is that the marine environment should be a rich and healthy ecosystem, enjoyed by all, supporting sustainable livelihoods and multi-sector use. This includes fishing based on healthy fish stocks and the deployment of renewables at scale. Marine planning also has a valuable role in guiding potentially damaging activities away from these sites. Given the lengthy delays in designating sites, it's crucial that we move quickly to address the gaps in harbour porpoise conservation and provide both certainty for industry and a healthy and resilient harbour porpoise population in the UK.

See: ¹Protecting the harbour porpoise in UK seas. P.E Evans and Prior, J.S. (2012) A report to WWF-UK. http://assets.wwf.org.uk/downloads/protecting_the_harbour_porpoise_in_uk_seas_aug2012.pdf

Recovery of aggregate dredging sites: our developing understanding

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Summary

The UK marine aggregate dredging industry produces sand and gravel (aggregate) from licensed extraction areas located around the coast of England and Wales. Marine aggregates are used in construction, fill and coastal defence projects.

The process of aggregate dredging can create some localised environmental impacts (e.g., changes in seabed topography, changes in sediment composition and loss of benthic fauna), although these vary considerably (see Newell & Woodcock, 2013 for a review). For reasons of sustainability, it is important to understand the processes of seabed recovery. For instance, does it occur? and, if so, how long does it take?

Whilst the number of seabed recovery studies following aggregate dredging is limited (see Foden et al., 2009), it is never-the-less possible to make some generalisations.

For example, faunal recovery is relatively fast in high energy, sandy environments. This fast recovery is a result of a preponderance of so called 'r-selected' species that are fast growing, highly fecund, naturally tolerant to disturbance. These characteristics allow animals to rapidly recolonise an area after dredging (Kenny and Rees, 1994).

Conversely, faunal recovery times tend to be slower in more stable coarse sediments (e.g., Waye-Barker et al., 2015), as a result of the prevalence of so-called 'k-selected' species, with slower growth and reproductive rates, and the often numerous interactions between different species present in the community (Newell et al., 2004).

Other factors can also affect faunal recovery times. For example, the intensity of dredging, changes in sediment composition (as a result of the exposure of different underlying strata, or the rejection of unwanted sediments) and the extent to which the environment can naturally winnow away any sediment overburden resulting from dredging.

The preferred option for recovery is simply to allow extraction sites to recover naturally (see Elliott et al., 2007). However, where dredging has resulted in a long-term or permanent change in the nature of the habitat (physical environment), then a full faunal recovery may be unrealistic without some form of active restoration.

Research concerning possible restoration approaches for use at aggregate dredging sites shows that options do exist (Emu Ltd, 2004) but that they are typically expensive (Cooper et al., 2013b), and outcomes are not always certain (Cooper et al., 2011; Collins and Mallinson, 2006). For this reason, Newell and Woodcock (2013) suggest that the existence of unacceptable residual impacts should signify a failure of the monitoring/management process.

One of the difficulties for managers has been in recognising what constitutes an unacceptable impact, as most monitoring is concerned with describing the impacts of ongoing dredging, with much less attention given to what is likely to happen to the site after dredging.

In response to this issue, a new approach to monitoring the impacts of aggregate dredging has recently been proposed (Cooper 2012, 2013a). The aim of the new approach is to ensure that the seabed, within the footprint of dredging, is left in state that will allow the return of the original faunal assemblage. This is achieved by setting Acceptable Change Limits (ACLs) for sediment composition

within the footprint of dredging effect. These ACLs are based on the range of particle size conditions that are naturally found in association with different faunal assemblages in the wider region.

This new 'similar sediments' approach to monitoring is central to the Regional Seabed Monitoring Plans (RSMPs) being adopted across the UK by the marine aggregates industry. The RSMPs includes 3 elements: (i) the monitoring of sediment composition within the footprint of potential dredging effect, (ii) a network of long-term benthic monitoring stations. The purpose of these stations is to ensure that healthy faunal communities remain within the areas surrounding extraction sites. These communities will have a role in recolonisation of extraction areas post dredging, and they can also tell us something about the capacity of the region to cope with the particular level of anthropogenic pressure, and (iii) dedicated regional research sites, allowing available resources to be focused on a single site to help provide more robust answers to questions. In theory, the network of long-term benthic monitoring stations could offer, at no additional cost to industry, benefits for UK in terms of making a contribution to assessments for Good Environmental Status (GES) under the Marine Strategy Framework Directive (Barrio-Frojan et al., submitted).

The RSMP approach is designed to improve environmental protection by making it clear when unacceptable changes are occurring, allowing for early management intervention. In addition, the approach is expected to significantly reduce the costs of monitoring for the aggregates industry. RSMPs are currently being developed across all UK aggregate dredging regions (Humber, Anglian, Thames, East Channel, South Coast, Bristol Channel and North-West). In order to implement the approach, sediment ACLs are currently being identified using a large dataset specifically compiled for this purpose. The dataset includes some 30,000 samples sourced from government and industry (Marine Aggregate, Offshore wind, New Nuclear, Oil & Gas).

In summary, the growing understanding of seabed recovery has allowed the aggregates industry to switch to a more effective and cheaper approach to monitoring, with potential benefits beyond licence compliance monitoring.

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The UK scallop fisheries: Time for a fundamental review

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The global fishing industry is facing unprecedented pressures. In the past (for a variety of reasons) the entire ocean was designated as a fishery using any gear type but increasingly this approach is untenable. The seas and the fishery (albeit through some strange legal mechanisms) belong to the public who are making a greater range of demands on their public resource than just fishery and navigation; marine conservation, oil exploration, windfarms and commercial dredging are all making a more complex environment for fishers to operate within and are causing increased scrutiny on the basic operational parameters of the fishing industry. For a variety of legal reasons ranging from marine protected area designations to the rights of the seabed owners it is no longer possible to use any gear type in any area without consideration of the ramifications on other users. Former legal loopholes relating to everything from health and safety to slavery are rapidly being closed in relation to fisheries as the ability to enforce against vessels at sea increases and legal norms are incorporated from elsewhere.

Perhaps no fishery exemplifies the tensions generated by the former freedoms of the sea as much as the scallop fishery. The increasing use of subsea cabling, the establishment of marine protected areas and a larger array of zonal fisheries management measures have all brought scallop dredging into conflict with other marine users as well as increasing focus on gear conflict within the industry particularly those engaged in static fisheries. The introduction of effort controls for over 15 meter vessels via days at sea restrictions in 2015 and other technical measures are the first attempts to directly control the fishery but there is still a long way to go before the public endorsed uses of the sea (and the seabed) are properly protected from perceived wide rights granted to scallop dredgers. It is time to reverse this approach and identify where scallop dredging should take place and control it that way rather than having dredging as a default fishery. Such an approach is the norm in other areas of land management.

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Despite now being one of the UK's most valuable fisheries, the dredge fishery for scallops is also one of the most controversial and potentially damaging to marine ecosystems. This damage is most acute in

sensitive biogenic habitats such as maerl, seagrass and mussel beds. There is widespread agreement among scientists, conservationists and the majority of fishing industry representatives that such areas should therefore be protected from dredging. At the other end of the spectrum, dredging appears to have limited effects in mobile sediments subject to high levels natural disturbance. The problem is that most scallop dredging occurs in sandy / gravelly habitats that lie somewhere between these two extremes. Quantifying the effects of dredging in these areas (e.g. using monitoring & experiments) is difficult because most have already been already been dredged for decades. A more robust way to examine dredging effects in these habitats is to monitor recovery when sections of them are protected over long periods of time. To date this has only been possible in a handful of areas around the UK – but recovery of biodiversity has often been surprising, even in apparently featureless areas subject to moderate levels of natural disturbance. The recent designation of mobile gear bans in areas of English and Scottish inshore waters (by IFCAs and in Scottish MPAs) offers an unprecedented opportunity to fully understand the biodiversity these areas are capable of supporting in the absence of dredging.

Given the growing nature of UK scallop fisheries, and the multitude of other pressures on, and uses of, our seas, the time appears ripe for taking a new approach to managing these fisheries. Attempts to modify scallop dredges in order to reduce their environmental effects have so far had little success. Management should therefore focus on increasing effort and spatial control to ensure sustainability of the stocks, improve conservation efforts and reduce conflicts with other users. More than for any other group of species, there is evidence that well placed protected areas will actually benefit scallop fisheries overall. Zonal management of inshore waters, such as being proposed by the Sustainable Inshore Fisheries Trust for the Clyde in Scotland, appears the best way forward. If combined with local co-management and real-time flexibility, this could also pave the way for even more innovative measures such as scallop re-seeding schemes and rotational closures. However, shifting from the status quo to this more inclusive approach continues to be met with resistance from some user groups.

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Towards coherence and cross-border solutions in Baltic Maritime Spatial Plans

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Maritime Spatial Planning (MSP) is an essential instrument for efficient management of maritime activities. It ensures that activities are sustainable and in line with ecosystem approach to marine management.

The Baltic SCOPE collaboration unites, for the first time, Maritime Spatial Planning authorities in the Baltic Sea Region and pan-Baltic Regional Sea organizations to find planning solutions to transboundary issues and improve Maritime Spatial Planning processes. The two-year collaboration is co-funded by European Commission DG MARE.

The main goal of our collaboration is to come up with common solutions of cross-border maritime planning, leading to greater alignment of national maritime plans in the Baltic Sea region.

Two MSP cases are performed. The southwest Baltic Sea area; encompasses Sweden, Denmark, Germany, and Poland and the central Baltic Sea area which comprises Estonia, Latvia, and Sweden. Both cases focus on shipping, energy production, fishing, and environment. Solutions developed for the case areas, will deliver a set of generic good practices, methods and results which will be filtered into the pan-Baltic MSP process. Lessons learnt and recommendations will be generated through a comparative analysis of the two cases on the basis of a systematic, integrated research process. Baltic SCOPE will also generate recommendations for evaluating the MSP process. Moreover, recommendations will be developed for implementing an ecosystem based approach to MSP, the use and exchange of data in MSP, the SEA process and institutional stakeholder consultation.

Improving evidence for fisheries assessments in MPAs

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The Department for Environment, Food and Rural Affairs is implementing a revised approach to managing commercial fisheries in European Marine Sites, which requires assessment of fishing activity and its impact on protected features. We developed and trialled a range of methodologies to maximise the potential for evidence-based approaches to these assessments. Specifically, this related to improving the evidence on the distribution and intensity of fishing activities through analysis of VMS data and interviews with inshore fishermen; the effects of fishing gears on habitats and species; and levels of natural disturbance and how this compares to fishing disturbance.

Three case studies were carried out: flatfish beam trawling in the North Norfolk Sandbanks and Saturn Reef SCI; shrimp beam trawling in The Wash and North Norfolk Coast SAC; and otter trawling in Margate and Long Sands SCI. The sensitivity of the habitats and their characterising species to pressures caused by fishing was assessed based on existing evidence, biological traits and expert opinion, using defined scales of tolerance and recoverability. Interviews with the fishing industry in each site provided key information on gear details and configurations, fishing patterns and areas, particularly for under-15m vessels. Modelling of the physical impacts of the gears was carried out for sediment resuspension and depth of penetration of the different gear components. Exposure to fishing was calculated for individual gear components. VMS 'footprint polygons' were created based on tracks between consecutive fishing pings which were buffered to reflect the width of individual gear components. This allowed a clear distinction to be drawn between the different pressures caused by individual gear components and their spatial extent. Frequency of exposure was considered based on the number of tracks between consecutive 'fishing' pings that crossed each cell of a grid.

Subtidal sandbanks are typically subject to high levels of natural disturbance by tidal flows and/or waves. These natural processes are important to the maintenance of subtidal sandbank features and the benthic invertebrates living in these environments are adapted to high levels of natural physical disturbance. Natural disturbance modelling was carried out to allow fishing disturbance to be considered in the context of levels of natural disturbance.

The data and methods developed through this project help address a number of key data gaps for assessments of fisheries in MPAs in relation to the extent, intensity and frequency of impact for both under- and over-15m vessels. This has improved the evidence base on which the assessments are based, reducing the level of uncertainty and the need for precaution to be used in managing fishing activities. We conclude that assessments of fishing in MPAs should be based on impacts and exposure at the level of individual gear components. The methods developed under this project provide an approach for implementing this, and are repeatable for other sites. There is potential for further development of the methods to assess exposure, to obtain a more accurate picture of the actual footprint of fishing activity on the seabed.

The project was undertaken by ABP Marine Environmental Research Ltd and Ichthys Marine Ecological Consulting Ltd on behalf of the National Federation of Fishermen's Organisations and funded by the Sea Fish Industry Authority and the European Fisheries Fund.

See:

www.abpmer.co.uk/experience/fisheries-and-aquaculture-experience/assessing-fisheries-mpas/

Assessing the significance of the economic impact of marine planning proposals: MCZs in the Irish Sea upon the fisheries sector in Northern Ireland

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In January 2015, Defra withdrew three of four proposed Marine Conservation Zones (MCZs) in the Irish Sea from consideration in Tranche 2, due to concerns that their designation “could have a significant impact on the fishing sector, particularly in Northern Ireland” (Defra, 2015, p.5). Although research has quantified the impact upon the fisheries sector, very little has actually looked at the significance of this impact. This research sought to address this gap.

The research developed a methodology for assessing the significance of the economic impact of designating MCZs upon the fisheries sector, and upon the local and regional economy; using qualitative and quantitative tools. The methodology was applied to four proposed MCZs in the Irish Sea (West of Walney, Slieve Na Griddle, South Rigg and Mud Hole) which are important to the Northern Ireland fisheries sector, as they overlap prawn fishing grounds. It has modelled the impact of the decrease in fisheries landings associated with MCZs only; not the impact of any potential increase in future landings of prawns.

The findings indicate that whilst the designation of these four MCZs in the Irish Sea could incur job losses in the three fishing ports of Ardglass, Portavogie and Kilkeel due to the associated decrease in landings of prawns into Northern Ireland; the significance of this impact upon the Northern Ireland fisheries sector and the Northern Ireland economy (in terms of employment, GVA and business resilience – see presentation and Fran at first break for more information) is perhaps less than perceived. Economic significance assessments, using the approach set out in this research, can provide useful contextualisation and support the designation process of MCZs and other aspects of marine planning; particularly those which are controversial in nature.

www.abpmer.co.uk/experience/fisheries-and-aquaculture-experience/assessing-fisheries-mpas/

Quota Allocation

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Total Allowable Catches (TAC), a conservation measure, are agreed upon at EU level by the Council of Ministers every December. The Council is provided with scientific advice from ICES and STECF on which to base their negotiations. The TAC is allocated to Member States following *relative stability* which keeps the percentage entitlement between Member States the same (1).

Once the UK receives its TAC entitlement for each species, these are allocated in the form of quotas to the UK fishing industry, mainly to Producer Organisations. The UK industry is however divided, between members of Producer Organisations, and non-members ('under tens' and non-sector vessels over 10m in length) (2).

The way UK quota is allocated (Fixed Quota Allocations - FQAs) has developed in a manner which means the majority of working fishermen in England, who are not PO members have little access to quota, and face high costs to lease quota for the species they catch in mixed inshore fisheries, which impacts the number of active fishermen as well as recruitment into the industry (3, 4).

The theory of why tradable quotas are used in fisheries management relates mainly to the economic concept of *efficiency*. A rights-based management (RBM) or quota system that is designed with only this theoretical idea in mind, may have negative social consequences and is not in itself a conservation tool, nor in many cases is it even *efficient* (5).

Article 17 of the reformed Common Fisheries Policy (CFP) requires Member States to use transparent and objective criteria when allocating fishing opportunities. Reallocating some quota to small scale fishermen would bring social benefits in the form of local employment and revenue (6). The need to reform the UK quota system and improve distribution is clear.

- (1) EC http://ec.europa.eu/fisheries/cfp/fishing_rules/tacs/index_en.htm
http://ec.europa.eu/fisheries/documentation/publications/cfp_brochure/how-we-manage-our-fisheries_en.pdf
- (2) MSEP Facts and figures on capture fisheries <http://www.mseproject.net/capture-fisheries>
- (3) Defra / MMO <https://www.gov.uk/government/publications/allocation-of-additional-quota-in-england/allocation-of-additional-quota-in-england>
Fixed Quota Allocation Units (FQAs) <https://www.gov.uk/government/publications/fixed-quota-allocation-units>
FQA register <https://www.fqaregister.service.gov.uk/>
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Discards - The Landings Obligation- demersal species – An NGO perspective

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In 2012, 82,000 tonnes of North Sea cod, haddock, whiting and plaice were discarded - a staggering 34% of the total catch of these species. Over 870,000 people signed a petition to end this wasteful practice and a subsequent obligation to land catches of commercial species (A discard ban) became a key component of the recently reformed EU Common Fisheries Policy (CFP). The discard ban came into effect in pelagic (mid-water) fisheries in 2015 and is being phased in for demersal fisheries (bottom dwelling) between 2016-2019¹.

The discard ban represents a fundamental change to how European fisheries resources are managed and for the first time, what vessels catch will need to align with the available quota. Additional quota is being provided to allow fishers to essentially land what they were previously throwing away (quota uplift), yet fishers will also have to adapt their practices to become increasingly selective and better avoid species they do not have sufficient quota to land. Such changes come with significant challenges for the industry and managers, but also significant risks to our shared fisheries resources². Enhanced monitoring of catches at sea will be crucial and the right balance of bottom-up and regional solutions together with suitable incentives and deterrents will be required to ensure that all stakeholders benefit from the discard ban.

¹European Commission. Discarding and the landing obligation. Delegated regulations available at http://ec.europa.eu/fisheries/cfp/fishing_rules/discards/

²Hedley, C., Catchpole, T. and Santos, A.R., 2015. The Landing Obligation and its Implications on the Control of Fisheries. Prepared for the European Parliament Policy Department B: Structural and Cohesion Policies. ISBN 978-92-823-7939-4 doi:10.2861/303902. Available at [http://www.europarl.europa.eu/RegData/etudes/STUD/2015/563381/IPOL_STU\(2015\)563381_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2015/563381/IPOL_STU(2015)563381_EN.pdf)

The Landing Obligation presents the fishing industry with its biggest challenge since the introduction of the precautionary approach - How we are we planning and how will we fair?

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The review of the Common Fisheries Policy and the delivery of a new way of managing Europe's fisheries has created wide spread confusion across the seafood sector. Why exactly this change was required at this particular time given recent improvements in levels of mortality and improvement in a number of major commercial stocks is still a question that remains unanswered.

Introduction of the Landing Obligation began for Pelagic fisheries and the Baltic on the January 1st 2015 although for the waters around the UK coastline the starting date was 1st January 2015.

There is a possibility that mortality rates could increase across a range of fisheries given that fishers have now, by law, to land all catches of regulated species. This provides an unhelpful incentive and opportunity for a once anarchic sector to return to ways of old. There is a period of phased introduction, which the industry has fought hard for but even with a new focus on regionalisation and supposed better governance across Europe's fisheries even this has been hard to achieve.

The fishing industry has a huge challenge ahead of it none more so than developing the next generation of selectivity and avoidance, which will be essential if we are to prosper in the medium to long term. Not since the transformation from sail to steam and from steam to diesel has the fishing sector faced such a significant challenge and change.

Electric Pulse Fishing – A shocking approach to beam trawling

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Beam trawling operates by towing a heavy steel beam, with a number of 'tickler chains' arrayed behind it, to force flatfish species, mainly Sole, Plaice and Turbot etc out of the seabed and into the path of the collecting net.

With concerns rising over the impact on the benthos and the by catch from beam trawling, and the fact that the method is particularly fuel intensive, leading to negative gross incomes in the sector and despite the use of electricity, poisons or explosives being explicitly prohibited under EU Regulation 850/98 [as amended], in 2009, the European Commission provided a derogation for a maximum 5% of national beam trawler fleets operating in the North Sea to use electric pulse equipment on an experimental basis.

From an initial five Dutch vessels, referred to as the 'study group' that began using electricity to replace tickler chains in 2010, and during 2015, benefitting from Article 14 of the then new Common Fisheries Policy that provides opportunities for 'pilot projects' to improve selectivity and reduce fuel use and benthic impacts, the number of vessels using this technology has increased at the present time to over 100, mainly from Holland but also from the UK, Germany and Belgium, with some conversions funded by the EU.

The widespread use of this equipment as an alternative to traditional beam trawling has replaced one set of concerns with another in that catches of some species, notably Sole have increased dramatically, the lighter gear has allowed vessels to fish in previously unfishable areas, there has been a significant increase in local aggregations of pulse vessels, leading to worries related to localised overfishing and the method does produce an element of damage, including broken backs and electrical burns in both the retained catch and to fish left on the seabed.

To date there has been little effective long term research in the North Sea with regard to the use of electricity in fishing operations and the widespread, increasing and largely unregulated use of technology that may have significant impacts on benthic species is cause for concern.

The socio-economics of MPAs: Recognising the challenges

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The need to consider the economic and social perspectives of Marine Protected Area (MPA) designation and management is increasingly recognised as critical to achieving effective conservation outcomes. However, the operationalisation of this recognition is challenging. Challenges include the actual and perceived reliability of the methods used to determine the social and economic value of MPAs, the relative weight given to economic and social evidence in comparison to ecological evidence, and how different evidence types are introduced into decision-making frameworks related to MPA designation and management. This presentation will present a synthesis of the challenges and current progress being made towards effective approaches to capture the social and economic values of MPAs and to then incorporate such values into decision-making. Key topics to be discussed in the presentation include:

- The dual approach in many MPA impact assessments in which costs are presented as quantified monetary values calculated using conventional economic assessment methods whereas benefits are described in non-monetary qualitative terms. This duality of impact assessment makes accurate weighing of positive and negative impacts extremely difficult.
- The growing emphasis on using ecosystem services assessments to determine the benefits and costs of MPA designation or new management measures is a potentially positive step that begins to recognise social and economic aspects of MPAs. There are however many challenges of this approach, including the persistent emphasis on economic quantification of all services, the reductionist linkage between service generation and individual habitats and species, the spatial differentiation between where a service is generated and where it is consumed which often mislocates 'value', and since many service values are generated by volume of usage (e.g. tourism, recreation), accessible coastal MPAs tend to be more 'valuable' than remote or offshore sites creating a skew in many economic assessments.
- It is generally more reliable to calculate the costs than the benefits of MPA designation (or the imposition of a new management measure) because costs can be directly measured (as they are real values that already exist) whereas potential future social and economic benefits are predictions often based on ecological change models combined with economic assumptions. The result is that the costs of MPAs are generally more reliable than predicted benefits.
- The social and economic costs of not designating an MPA or adopting a particular management measure rely upon an agreed understanding of the ecological baseline from which costs of 'business as usual' or 'doing nothing' can be extrapolated. However, in many cases the ecological baseline is unclear or contested making social and economic impacts of inaction challenging to calculate.

The presentation will conclude by noting that there is a need to move the social and economic assessment of MPAs forward to keep pace with shifting perspectives in conservation and resource use management. Routes forward include:

- 1) the incorporation of novel assessment methods of social and economic value change, potentially using ecosystem services as an evaluative framework;
- 2) reframing MPA costs as investment in natural capital infrastructure rooted in sustaining human wellbeing;

3) recognising that 'location matters' from an ecological and a socio-economic perspective and that the same 'rules' for accounting cannot be applied uniformly to all MPAs; and

4) simplifying the language and communication related to social and economic aspects of MPAs, which is currently difficult to interpret for non-specialists and potentially isolating for the intended stakeholder audience, would be very beneficial.

Further reading:

New Economics Foundation infographics showing costs and benefits of MCZ designation:

<http://www.mseproject.net/infographic-ia>

Various reports and summaries are available from the VALMER project which undertook ecosystem services assessments of sites in the Western English Channel in UK and France (including MPAs) and evaluated the extent to which the resultant values were incorporated into marine and coastal decisions. There are reports on methods for ecosystem services assessments in MPAs, methods to engage stakeholders in scenario planning in MPAs, and guidelines to support effective links between MPA management and social and economic value. All reports are available at:

<http://www.valmer.eu/results/>

Assessing Development Impacts in Marine Protected Areas – an approach to MCZ assessments

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The first Marine Conservation Zones (MCZs) were designated in November 2013, with a second tranche currently being considered for designation by the UK Government. The ongoing program of MCZ designation, together with new plans and projects coming forward in the marine environment, means that demand for expertise in MCZ assessment continues to increase.

Any plan or project that is likely to impact on a designated MCZ, or a MCZ currently being considered for designation through formal public consultation, must go through an assessment process to address the potential environmental impacts on the designated interest of the site.

The Marine Management Organisation (MMO) has introduced a new three stage sequential assessment process for considering the environmental impacts of a plan or project on the features of a MCZ. Whilst this sets out the process for assessment there is currently limited information available to developers on what steps they need to undertake to meet the requirements of this assessment process.

Royal HaskoningDHV has recently produced a capability statement with guidance for developers on the practical steps that need to be undertaken when a stage 1 and stage 2 MCZ assessment may be required. This talk will present our recommendations on the practical application of the MMO assessment process including, provision of environmental information, socio-economic assessment (public benefit) and considerations of equivalent environmental benefit.

See:

The Royal HaskoningDHV capability statement can be obtained from the following link: [RHDHV MCZ Assessment Guidance](#)

Improving MPA management: working together for better conservation

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Natural England have been working on a major programme of work to prepare Conservation Advice packages (CA) for all marine MPAs (European Marine Sites and Marine Conservation Zones). This follows a recommendation from the Habitats and Wild Birds Directive Implementation Review. From the outset, Natural England recognised that if this work was to be successful, it would be important to engage fully with stakeholders who would be using the packages and to this end Natural England set up an Advisory Group which contained members from a range of organisations - regulators, NGOs and industry - and has been working closely with them throughout the process.

Conservation Advice packages comprise descriptions of sites and their protected habitats and species, along with up to date maps of their location, details of conservation objectives and how to meet these and advice on the likely impact of operations (activities) on the protected habitats and species. The advice on the conservation objectives outlines the various attributes that contribute to the favourable condition of a habitat or species (and targets for those attributes). The advice on operations describes how activities can cause pressures and the sensitivity of habitats and species to these pressures. To achieve consistent advice and an agreed evidence base has been a huge task; for example for the 100 marine activities that Natural England advise on, there are 242,600 relevant activity-pressure considerations for all the habitat and species that need to be reviewed!

SUDG has always understood that working with others towards achieving agreed outputs is a very productive way of working and from the outset has been a very strong supporter of the work done by Natural England. Recognising the huge amount of information that is contained within the work that Natural England is doing and that the information is of considerable value to both regulators and industry, SUDG members across a range of sectors have been working closely with Natural England through workshops and bilateral discussions to prepare agreed understanding of the potential impacts of industry activities which can be applied consistently.

This work has had important outputs which are nearing completion and create a common basis for action by industry and regulator. Importantly for both Natural England and industry is that agreed understanding of the potential impacts of activities are based on the fact that Natural England has compiled a very extensive database of information about the ecology of the marine environment and the potential impacts of activities on this ecology. This has two very valuable consequences; firstly, information used to determine the requirements for Habitats Regulations (HRA) and MCZ assessments is based on objective information which has a clear source and, secondly, the fact that there is greater confidence in the information provided means that there is less need to rely on the precautionary principle.

The summarising of all this into clearly understood and agreed risk proformas for each key marine sector means that there is a common basis for determining the work required for HRA and MCZ assessments which will save time and money for both industry and regulator. The next important step will be to ensure that the approach is tested and shown to be effective, following which it could be more widely applied by decision makers. To support this we are working on joint guidance on how to use CA packages in assessments and for proactive management measures.

Further information

- Landing page for Conservation Advice on gov.uk

- <https://www.gov.uk/government/collections/conservation-advice-packages-for-marine-protected-areas>
- Brief guidance on how to use CA packages
 - <https://www.gov.uk/guidance/conservation-advice-for-marine-protected-areas-how-to-use-site-advice-packages>
- Flow charts for how CA can be used for EMS Habitats Regulations Assessment / MCZ assessments
 - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/441299/hra-process.pdf
 - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/441298/mcz-process.pdf
- MarLIN sensitivity assessments for habitats and species <http://www.marlin.ac.uk/evidence>
- APEM mobile species sensitivity report (to be published soon, available on request from Natural England)
- www.sudg.org.uk

Delivering effective fisheries management of Marine Protected Areas in Scotland's Seas

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See:

Marine Scotland webpage

www.gov.scot/Topics/marine

Marine Protected Area management

www.gov.scot/Topics/marine/marine-environment/mpanetwork/MPAMGT

The Scottish Marine Protected Area (MPA) Network comprises a range of different designations. The three principle types are:

1. Nature Conservation MPAs designated under the Marine (Scotland) Act 2010 or the Marine and Coastal Access Act 2009.
2. Special Areas of Conservation (SACs) designated under the EU Habitats Directive.
3. Special Protection Areas (SPAs) classified under the EU Wild Birds Directive.

For most licensable activities there are legal duties that apply when regulators determine a licence application. These ensure that protected habitats and species are not placed at significant risk. In the case of fishing most licences are more general in nature allowing access to a wide sea area. Whilst this is an effective means of managing fisheries it does not lend itself to site level assessments of potential impacts.

Over the last 18 months site level risk assessments have been undertaken to determine the management requirements. For inshore waters management forums were used to involve stakeholders before public consultation. Some of these measures are to be implemented using the new Marine Conservation Order powers. For offshore waters stakeholder workshops have been held and the proposals are about to be taken forward through the Common Fisheries Policy process.

MPAs to help save Scottish seas: the NGO perspective

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In July 2014, the Scottish Government designated 30 new nature conservation Marine Protected Areas (ncMPAs) under the Marine (Scotland) Act 2010 (for inshore territorial waters to 12 nautical miles) and Marine and Coastal Access Act 2009 (for offshore waters beyond 12nm). These new sites augmented the existing network of EU marine Special Areas of Conservation (SACs), increasing the area of Scotland's seas within the emerging MPA network from 12% to 23%. Within territorial waters, 29% are now designated as ncMPAs, marine SACs and other components of the network such as intertidal SSSIs. However, in order for these designated sites to deliver the protection and recovery that Scotland's seas need, it is vital that they are not 'paper parks' and must be properly protected from the most damaging activities.

The Marine Conservation Society, and partner Non-Government Organisations (NGOs) in Scottish Environment LINK's www.savescottishseas.org project, share a concern that the biodiversity in Scotland's seas, including seabed habitats and higher trophic species, has been declining as a result of anthropogenic activity. We have therefore constructively engaged with the Scottish MPA project which started in March 2011 in order to support delivery of a coherent network of MPAs, and subsequently with workshops established to determine fisheries management options for ncMPAs and marine SACs.

In response to the winter 2014/15 Scottish Government consultation on fisheries management measures for 20 of the most vulnerable inshore ncMPAs and SACs, MCS were core contributors to the www.savescottishseas.org campaign #DontTakeTheP, supporting fisheries management options that would provide the greatest confidence that site conservation objectives could be met, site integrity maintained or met (depending on current site status) and that the network would effectively contribute to wider marine ecological recovery. It was the view of MCS and partners that peer-reviewed studies coupled with the evidence of widespread concern in seabed status and species populations declines set out in Scotland's Marine Atlas supported the ecological case for our preferred management proposals. The duty in the Marine (Scotland) Act 2010 to enhance the health of Scotland's seas (s.3) provided an overarching legal imperative to not simply protect the current status of remnant marine biodiversity, but, where appropriate, to help improve it. The #DontTakeTheP campaign struck a chord for many, eliciting over 4,700 responses in support of management measures that adequately controlled the most intrusive forms of bottom-towed mobile fishing gear in order to help protect and recover fragile seabed habitats and support much-needed marine ecological recovery. Lower impact forms of fishing would be able to continue across much of the MPA network and mobile gear still operate in zones of some of the larger inshore sites, all potentially benefitting from the resultant boost in biodiversity and productivity.

The final decisions on fisheries management measures for the 20 inshore sites are awaited (as I write January 2016), and management options are yet to come for the remaining inshore ncMPAs and SACs and Offshore MPAs, not to mention the potential designation of four further ncMPAs to be consulted on. The MPA management workshops, consultation and aftermath, in the context of a wider debate about managing fisheries in Scotland's inshore waters and the socio-economic status of coastal communities, have highlighted the undoubted complexity of the task to achieve well-managed MPAs and some of the difficult decisions that have to be made. But by getting the MPA management measures right, proportionately protecting them from the most damaging activities, this and future generations stand to benefit from healthier seas.

Marine (Scotland) Act 2010: http://www.legislation.gov.uk/asp/2010/5/pdfs/asp_20100005_en.pdf

Scotland's Marine Atlas:

Scotland's Marine Atlas: www.gov.scot/Topics/marine/science/atlas

Marine Conservation Society Marine Protected Area pages: www.mcsuk.org/mpa

Scottish Environment LINK's #DontTakeTheP proposals: www.savescottishseas.org/dont-take-the-p-out-of-mpas/

Inshore management and protected areas – developing practice

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The 10 Inshore Fisheries and Conservation Authorities (IFCAs) in England have a shared vision to “lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry.” As one of the 10 IFCAs in England, with powers and duties in the Marine and Coastal Access Act, 2009, Southern IFCA is responsible for the sustainable management of inshore fisheries off the coast of Hampshire, Dorset and Isle of Wight. More recently the focus of the Southern IFCA's work has been to implement management of Marine Protected Areas through 'a revised approach to the management of commercial fisheries in European Marine Sites'* policy.

As an indicator of the progress made to deliver this policy in 2014 Southern IFCA introduced byelaws to protect 'reef' and 'seagrass' habitats within in European Marine Sites (EMS) from potentially damaging mobile fishing gear; enforcement of these byelaws means that up to 25% of the total Southern IFCA district area is permanently closed to high impact fishing methods. And last year (2015) Southern IFCA introduced the first restricted entry permit byelaw, which enables the management shellfish dredging activity within and adjacent to a Special Protected Area (SPA) and within this same broad area the IFCA was granted rights to manage aquaculture by way of a Several Order. Currently (2016) Southern IFCA is developing, through consultation, further management measures for the Solent European Marine Site.

Does this add up to an ecosystem based approach, and is the pursuit of conservation objectives for marine protected areas enough to deliver the IFCA vision? This is clearly work in progress, and there are many tensions, but the work of the Southern IFCA to implement management of fisheries in Marine Protected Areas is demonstrably making progress towards the principles of the ecosystems based approach, and the Governments vision for the marine environment – of clean, healthy, safe, productive and biologically diverse oceans and seas.

The benefit of effective fisheries management in marine protected areas, in accordance with the IFCA vision, is not just in nature conservation but accrued in the important commercial and recreational inshore fisheries which rely on the productivity of our nearshore waters. Co-management to deliver sustainable solutions in these areas is essential; yet the scale and pace of the management (at a local, national and international scale) required under the current frameworks is a challenge that can only be met and resourced through a partnership approach between regulators, industry and NGOs. The development of further more effective and resilient partnerships is essential and their full potential is yet to be fully realised.

Background papers and references

*A revised approach to the management of commercial fisheries in European Marine Sites

<https://www.gov.uk/government/collections/fisheries-in-european-marine-sites-implementation-group>

The Defra 4 year report to Parliament on the Conduct and Operation 2010 – 2014 of Inshore Fisheries and Conservation Authorities <http://www.association-ifca.org.uk/Upload/About/ifca-review-2010-2014.pdf>

The Association of IFCAs recent report entitled 'Achievements and success in delivering fisheries and conservation management' <http://www.association-ifca.org.uk/Upload/Reports/The%20IFCAs%202011-2015%20Achievements%20and%20Success%20Report.pdf>

The FAO Technical Guidelines on the ecosystem approach to fisheries (FAO 2003) define an ecosystems based approach as the attempt “to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.” <http://www.fao.org/fishery/topic/13261/en>