

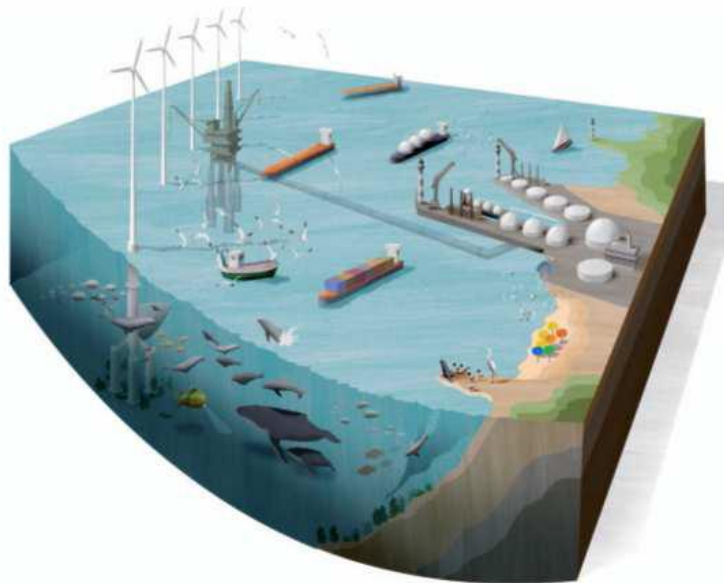
Marine Management – ‘Is an Integrated Approach to achieve SDG14 Targets possible?’

Michael Elliott and Suzanne Boyes

Institute of Estuarine and Coastal Studies
(IECS),
University of Hull, Hull, UK



Challenges for marine science & management:



There is only one big idea in marine management: *how to maintain and protect ecological structure and functioning while at the same time allowing the system to produce ecosystem services from which we derive societal benefits.*

Risk Assessment & Risk Management (RA&RM):
Hazard Identification:
Risk Assessment:
Risk Management:
Risk Communication:

- Recovery/coping with historical legacy
- Endangered coastal and marine ecosystem functions
- Legal & administrative framework
- Economic prosperity and delivery of societal benefits
- Coping with climate change & moving baselines

Ocean & Coastal Management 93 (2014) 88–99



Contents lists available at [ScienceDirect](#)

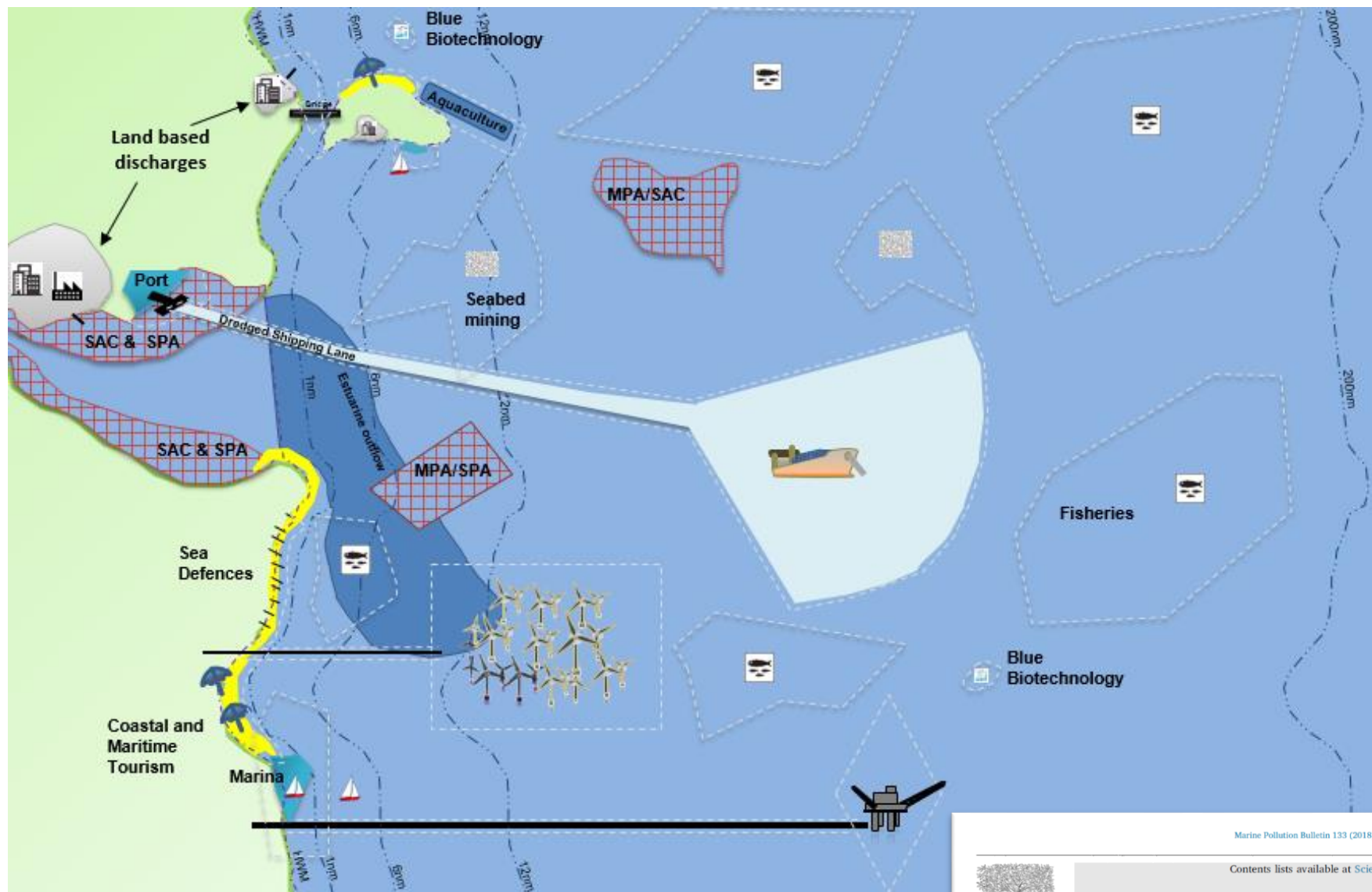
Ocean & Coastal Management

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

Review

A typology of marine and estuarine hazards and risks as vectors of change: A review for vulnerable coasts and their management

Michael Elliott^{a,*}, Nicholas D. Cutts^a, Anna Trono^b



Challenge – to merge environmental quality management (e.g. MSFD) with maritime spatial planning and Blue Growth initiatives (e.g. MSPD)

Marine Pollution Bulletin 133 (2018) 367–377

Contents lists available at ScienceDirect

Marine Pollution Bulletin

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

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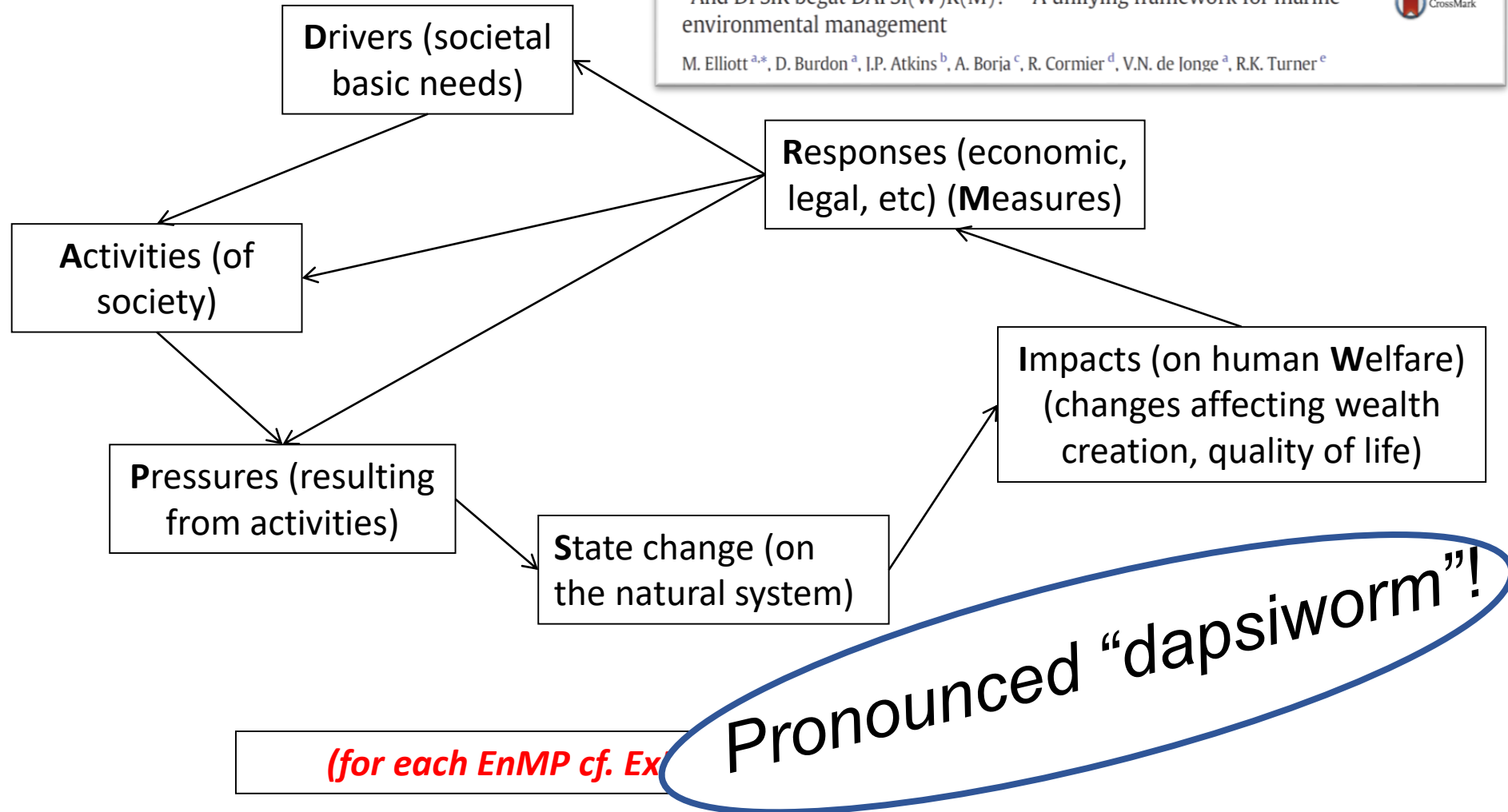
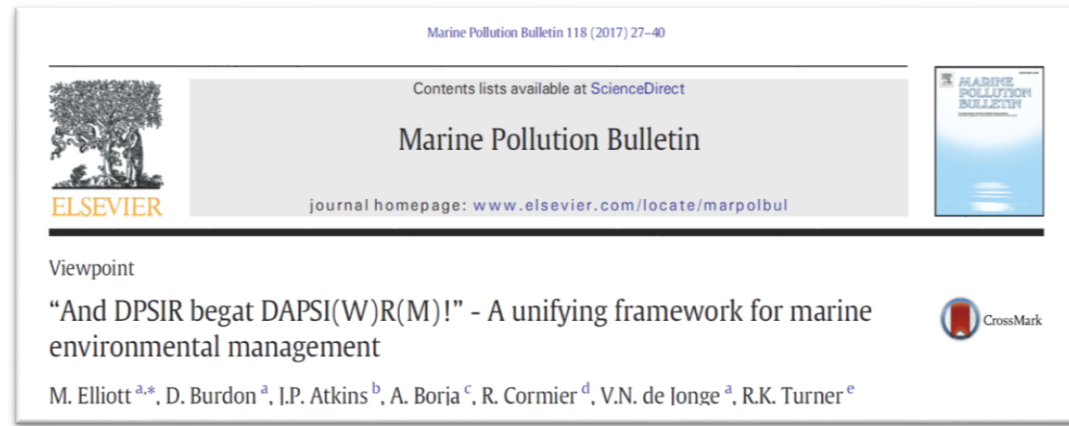
Viewpoint

Using best expert judgement to harmonise marine environmental status assessment and maritime spatial planning

Michael Elliott^{a,*}, Suzanne J. Boyes^a, Stephen Barnard^a, Ángel Borja^b

Check for updates

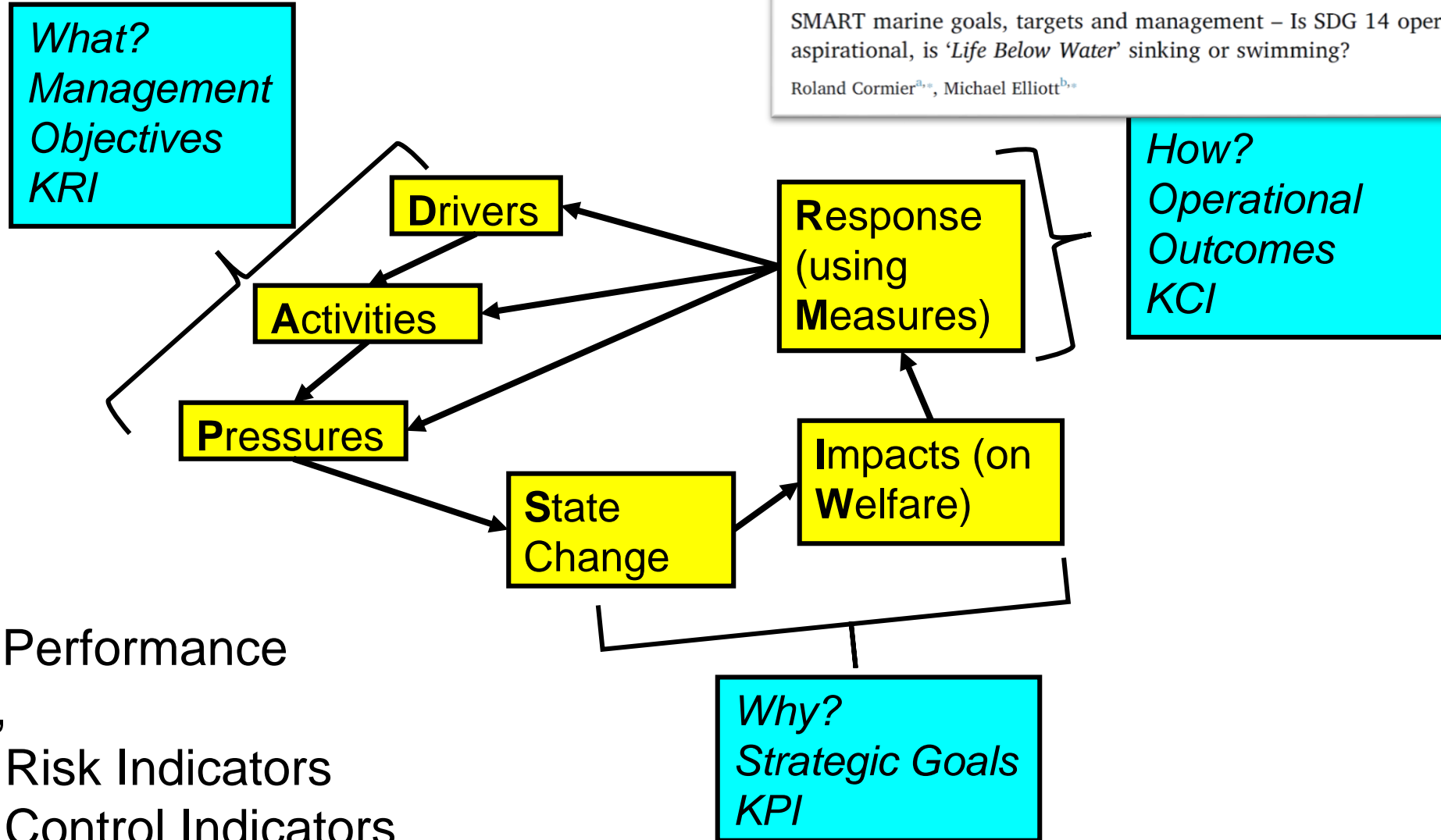
DAPSI(W)R(M) framework



Viewpoint

SMART marine goals, targets and management – Is SDG 14 operational or aspirational, is ‘Life Below Water’ sinking or swimming?

Roland Cormier^{a,*}, Michael Elliott^{b,*}



KPI - Key Performance Indicators,
 KRI - Key Risk Indicators
 KCI - Key Control Indicators



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The 10 tenets:

To be successful, management measures or responses to changes resulting from human activities should be:

- Ecologically sustainable
- Technologically feasible
- Economically viable
- Socially desirable/tolerable
- Legally permissible
- Administratively achievable
- Politically expedient
- Ethically defensible (morally correct)
- Culturally inclusive
- Effectively communicable

(cf. PESTLE)

Marine Pollution Bulletin 62 (2011) 651–655



Contents lists available at ScienceDirect

Marine Pollution Bulletin

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



Editorial

Marine science and management means tackling exogenic unmanaged pressures and endogenic managed pressures – A numbered guide

Marine Pollution Bulletin 74 (2013) 1–5



Contents lists available at ScienceDirect

Marine Pollution Bulletin

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



Editorial

The *10-tenets* for integrated, successful and sustainable marine management

ENVIRONMENTAL SCIENCE & POLICY 51 (2015) 181–191



Available online at www.sciencedirect.com

ScienceDirect

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



The 10-tenets of adaptive management and sustainability: An holistic framework for understanding and managing the socio-ecological system

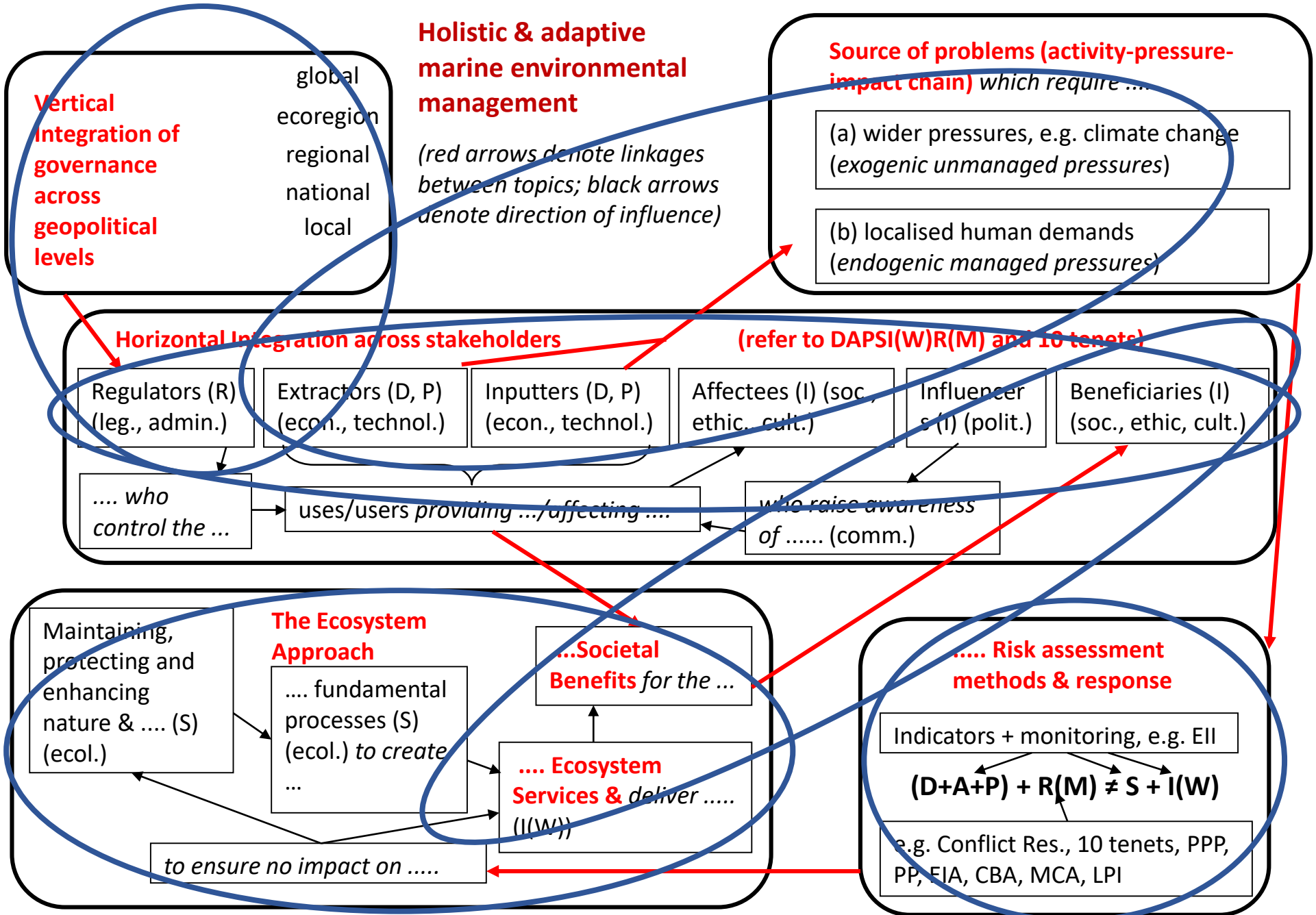


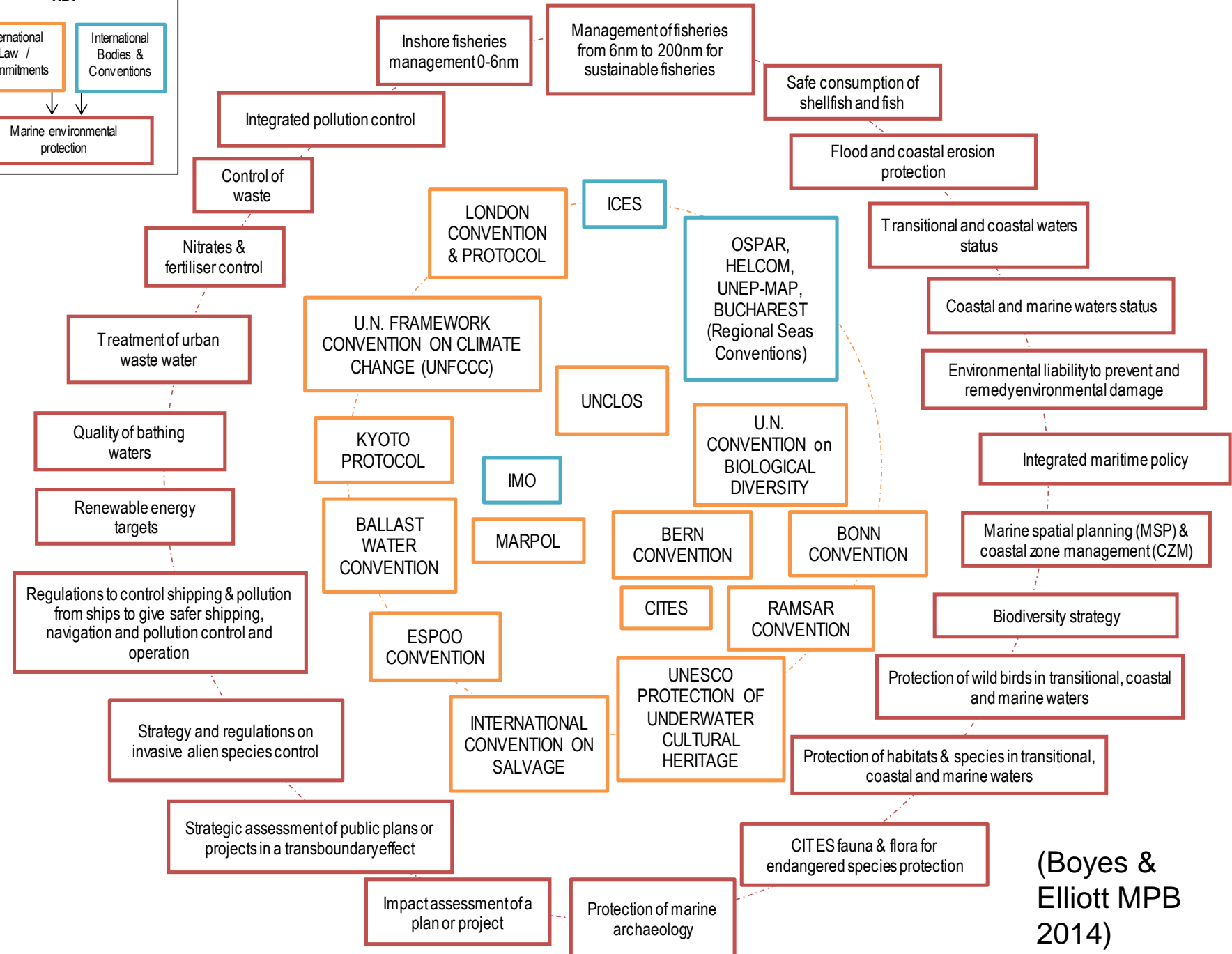
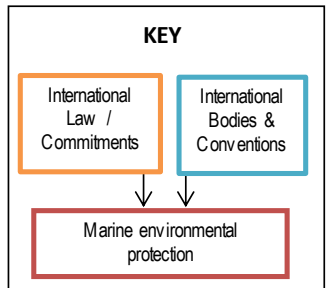
Steve Barnard*, Michael Elliott

Governance as the tool in management:

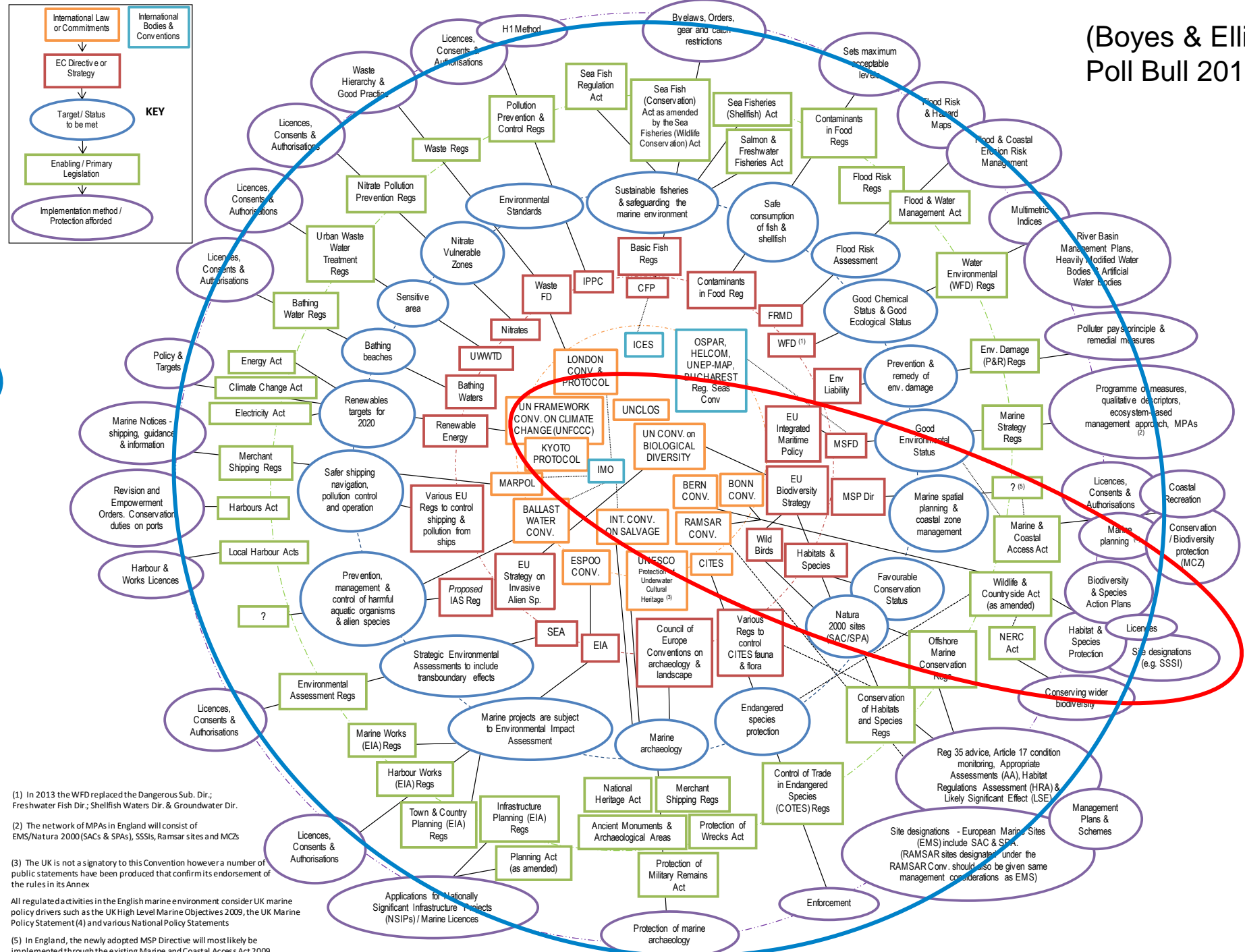
defined as globally-agreed underlying ***policies, politics, laws and administrations*** for adopting internationally recognised principles which together comprise ***The Ecosystem Approach***:

- ecologically sustainable development
- inter-generational equity
- the precautionary principle
- conservation of biological diversity and ecological integrity
- ecological valuation
- economic valuation of environmental factors
- the 'damager debt' / 'polluter pays' principle
- waste minimisation, and
- public participation - the role of individuals and ethics.





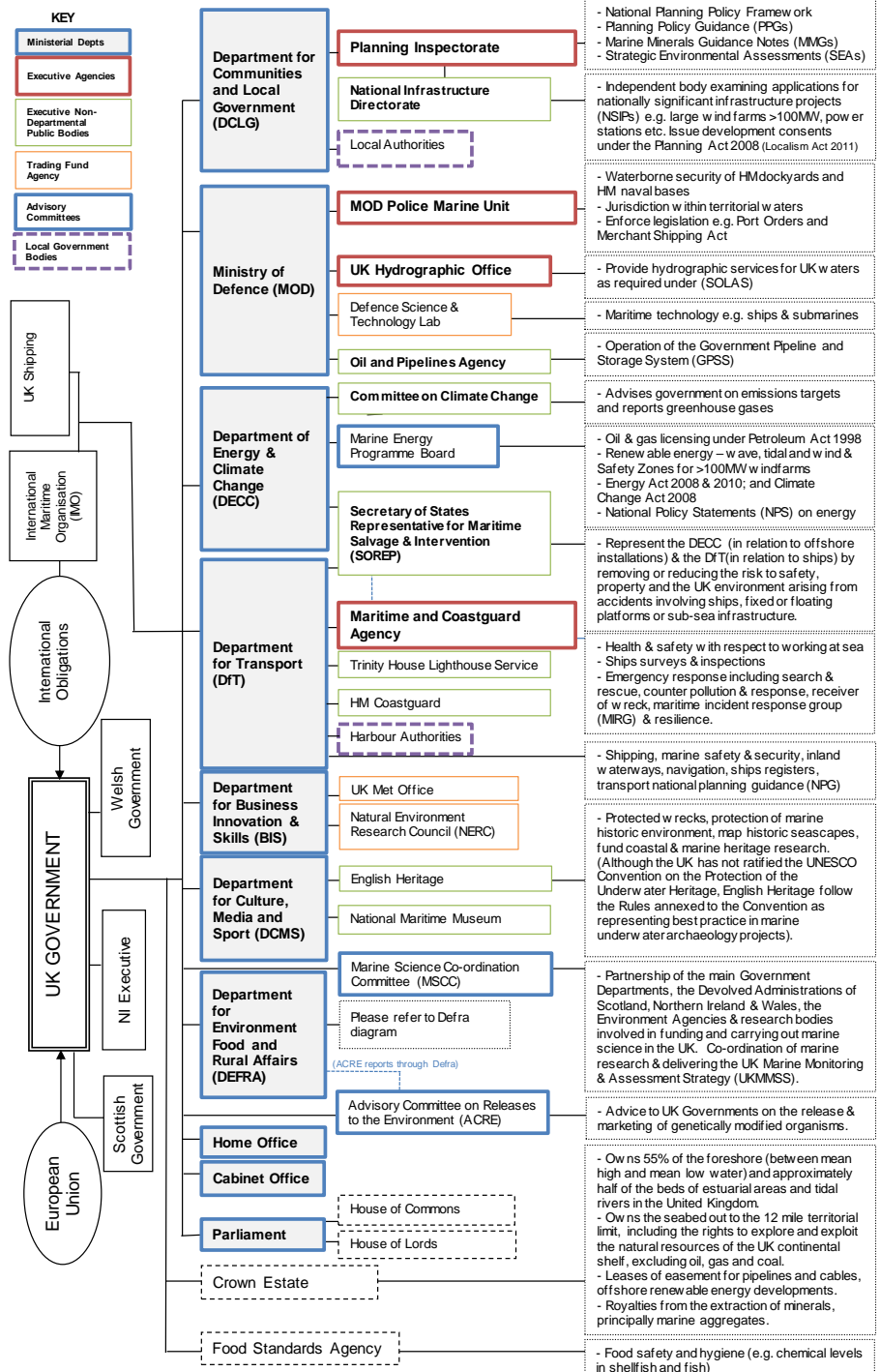
(Boyes & Elliott MPB 2014)



Horiz. int.

Vert. int.

(1) In 2013 the WFD replaced the Dangerous Sub. Dir., Freshwater Fish Dir., Shellfish Waters Dir. & Groundwater Dir.
 (2) The network of MPAs in England will consist of EMS/Natura 2000 (SACs & SPAs), SSSIs, Ramsar sites and MCZs
 (3) The UK is not a signatory to this Convention however a number of public statements have been produced that confirm its endorsement of the rules in its Annex
 All regulate activities in the English marine environment consider UK marine policy drivers such as the UK High Level Marine Objectives 2009, the UK Marine Policy Statement (4) and various National Policy Statements
 (5) In England, the newly adopted MSP Directive will most likely be implemented through the existing Marine and Coastal Access Act 2009



Tenet: Administratively achievable

Marine Pollution Bulletin 86 (2014) 39–47



Contents lists available at ScienceDirect

Marine Pollution Bulletin

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



Viewpoint

Marine legislation – The ultimate ‘horrendogram’: International law, European directives & national implementation

Suzanne J. Boyes*, Michael Elliott



Marine Policy 51 (2015) 57–65



Contents lists available at ScienceDirect

Marine Policy

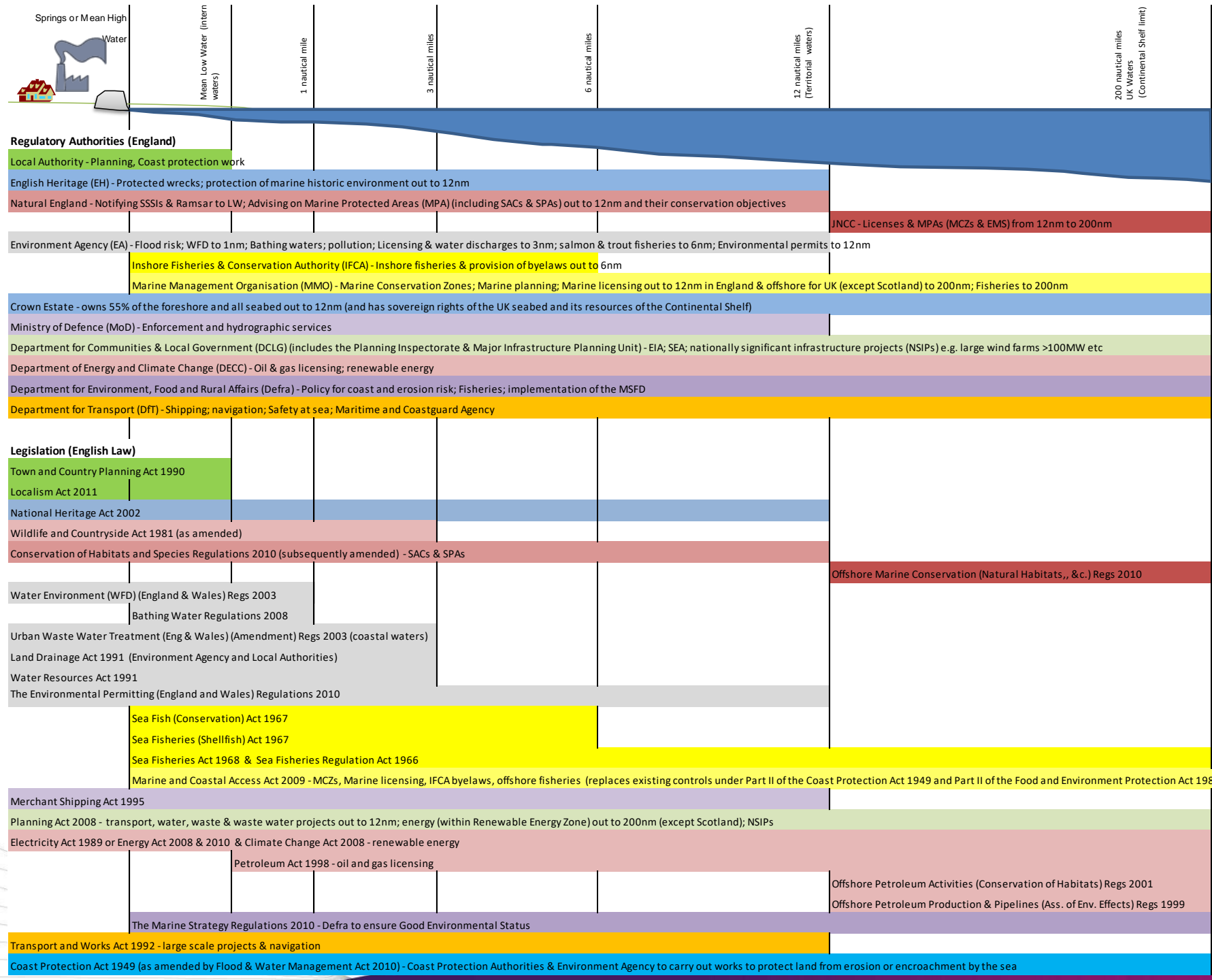
journal homepage: www.elsevier.com/locate/marpol

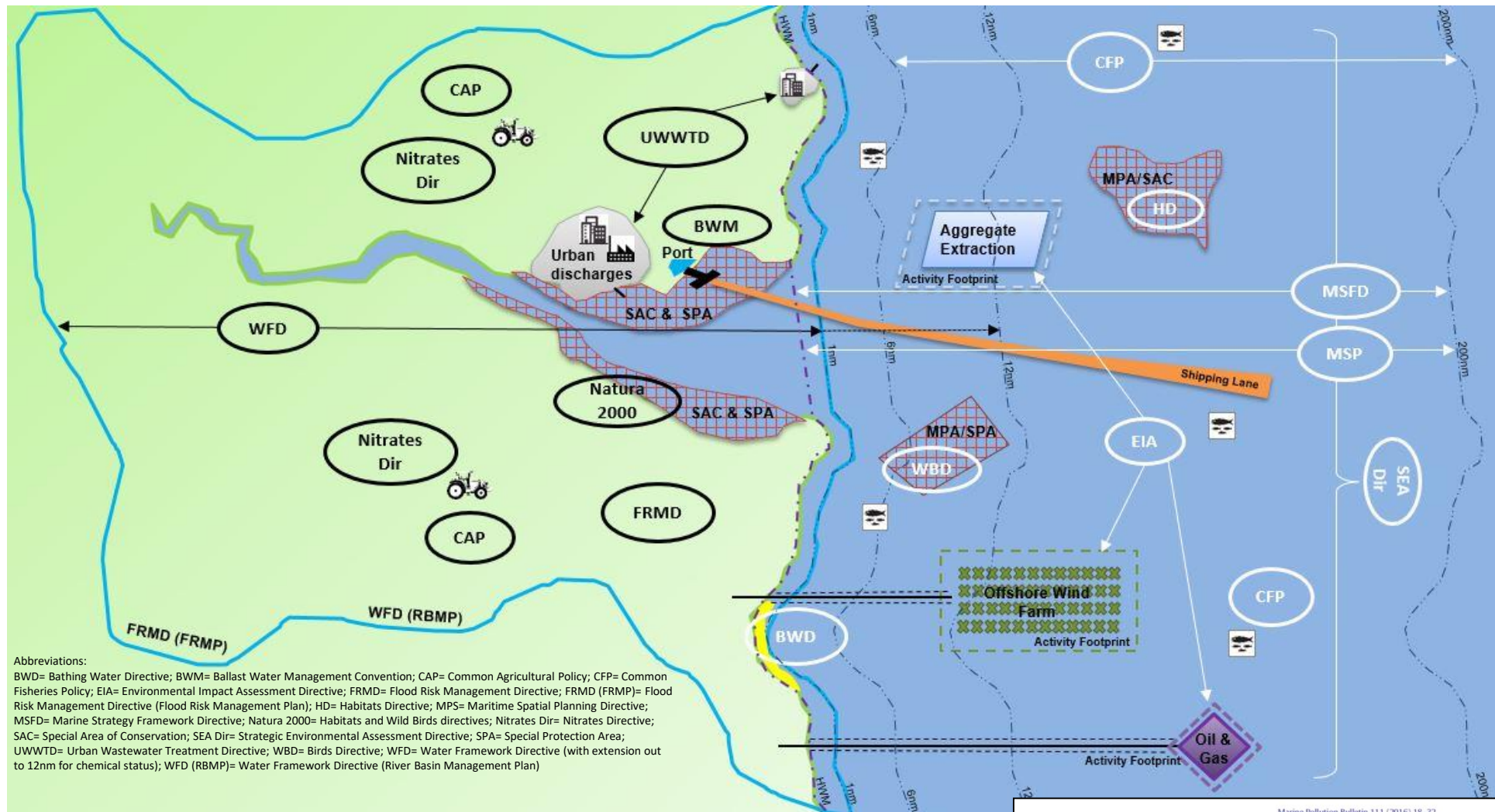


The excessive complexity of national marine governance systems – Has this decreased in England since the introduction of the Marine and Coastal Access Act 2009?

Suzanne J. Boyes*,¹ Michael Elliott¹







Geographical scope and competencies of EU legislation

Marine Pollution Bulletin 111 (2016) 18–32

Contents lists available at ScienceDirect

Marine Pollution Bulletin

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

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Review

Is existing legislation fit-for-purpose to achieve Good Environmental Status in European seas?

Suzanne J. Boyes ^{a,*}, Michael Elliott ^a, Arantza Murillas-Maza ^b, Nadia Papadopoulou ^c, Maria C. Uyarra ^b

SDG14 Target – Policy Integration Required

Target #1	Policy integration needed
<p>By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution</p>	<p>Point-source pollution controls – discharge standards Diffuse pollution source controls – land-use standards, controls on nutrient and pesticide use Catchment controls on run-off, land-use IPPC – land, air and water discharge standards Controls on aerial deposition Societal controls on litter – increased education, economic incentives Controls on noise pollution Manufacturer controls, recycling and reuse targets Sewage treatment plant controls for microplastics Disposal at sea controls – dredging, vessels emissions (GHG, litter, ballast water)</p>

SDG14 Target – Policy Integration Required

Target #2	Policy integration needed
<p>By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans</p>	<p>Determine and assign protection levels and areas (MPA, PSSA) Define and protect priority habitats and species Increase coastal resistance and resilience from climate change effects Control resource removal (biological and physical resources) Coastal flood and erosion protection schemes Proactive coastal (in)habitation schemes (set-back, building regulations) Legislation to restore habitats</p>

SDG14 Target – Policy Integration Required

Target #3	Policy integration needed
Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	Exogenic unmanaged pressure (not addressing impacts) Create source controls on GHG Encourage science to detect effects But society to control causes Increase global cooperation Acknowledge geopolitical differences in aerial discharge levels

SDG14 Target – Policy Integration Required

Target #4	Policy integration needed
<p>By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics</p>	<p>Fisheries controls – derive and implement Increased regulations - closed areas, seasons, species, sizes Increase reporting and monitoring at quayside Increase vessel-tracking (VMS on all vessels) Increase aerial surveillance Type-A and Type-B ecoengineering (protect habitats and re-stocking) Accommodate the paradox – if it is IUU then not known Increased cooperation on straddling stocks and transboundary/high seas controls Increased national funding, equipment and support for fish stock monitoring especially in small and under-developed states</p>

SDG14 Target – Policy Integration Required

Target #5	Policy integration needed
<p>By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information</p>	<p>Increase MPA area legislation and implementation within a state Conservation area designation and monitoring Check and implement risk-based management Implement internal regulations and laws Implement regional laws Implement international agreements and protection of transboundary sites Trade-offs between countries/regions</p>

SDG14 Target – Policy Integration Required

Target #6	Policy integration needed
<p>By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation</p>	<p>Determine which fisheries subsidies occur and where Reform of national fisheries policies Identify IUU fishing and whether there are subsidies Overcome paradoxes (if IUU then how given subsidies) Reform of WTO rules Include developing and least-developed countries in WTO Consider how to challenge internal state economies using international controls</p>

SDG14 Target – Policy Integration Required

Target #7	Policy integration needed
<p>By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism</p>	<ul style="list-style-type: none"> Reform economic incentives Ensure economic benefits stay inside a country Increase policy for sustainable management Greater pollution and EIA controls on aquaculture effects and consequences Integrate land-management and planning for areas for differing marine resources Implement legislation on Maritime Spatial Planning Increase management controls on fisheries Overcome the conflict between environmental and economic effects of tourism Overcome the paradox of tourism ('more tourists required by a state which then degrades the reason for tourists to visit') Increase MSP legislation on transboundary basis

SDG14 Target – Policy Integration Required

Target #8	Policy integration needed
<p>Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries</p>	<p>Increase profile and funding for science (cf. Borja and Elliott, 2017)</p> <p>Knowledge transfer from scientifically-developed nations</p> <p>Increase transparency and knowledge dissemination</p> <p>Increase data availability and open-access especially from industrial sources</p> <p>Ensure marine technology available for poorer states</p> <p>Change marine management in states to be more receptive to new knowledge</p> <p>Implement science-policy strategy committees (or learn from developed, maritime states)</p> <p>Less-developed states to adopt the marine management legislation (e.g. for MSP and Good Environmental Status) from developed states (reduce ‘wheel re-inventing’)</p>

SDG14 Target – Policy Integration Required

Target #9	Policy integration needed
Provide access for small-scale artisanal fishers to marine resources and markets	<p>Derive and implement local agreements for fisheries</p> <p>Increase local control on fishing resources to prohibit industrial fishing</p> <p>Legislate for changes to economic incentives</p> <p>Increase legislative and administrative controls on fishing areas in less-developed states</p> <p>Increase stakeholder cooperation to achieve economies of scale</p>

SDG14 Target – Policy Integration Required

Target #10	Policy integration needed
<p>Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want</p>	<p>Coordinate national and international conservation controls Adhere to international agreements by local and national action Coordinate fisheries and conservation legislation Coordinate fisheries and conservation administrations Conflict of allowing fisheries and protecting areas Increase national enabling legislation towards holistic and transboundary marine management Less-developed states to adopt the marine management legislation (e.g. for MSP and Good Environmental Status) from developed states (reduce ‘wheel re-inventing’)</p>

Recipe Leading to Integrated Marine Management

- Need to understand how our activities lead to which pressures
- Need to understand which pressures are within and outside our control
- Need to understand ecological structure and functioning
- Need to understand what state changes on the natural system occur from those pressures
- Lead to describing the impact on human welfare as effects on Ecosystem services and Societal benefits
- Lead to defining the appropriate responses as management measures
- Require implementation of governance (policies, politics, administration and legislation)
- Within a multiuser system requiring resolution of conflicts amongst users
- Communicate by working with stakeholders

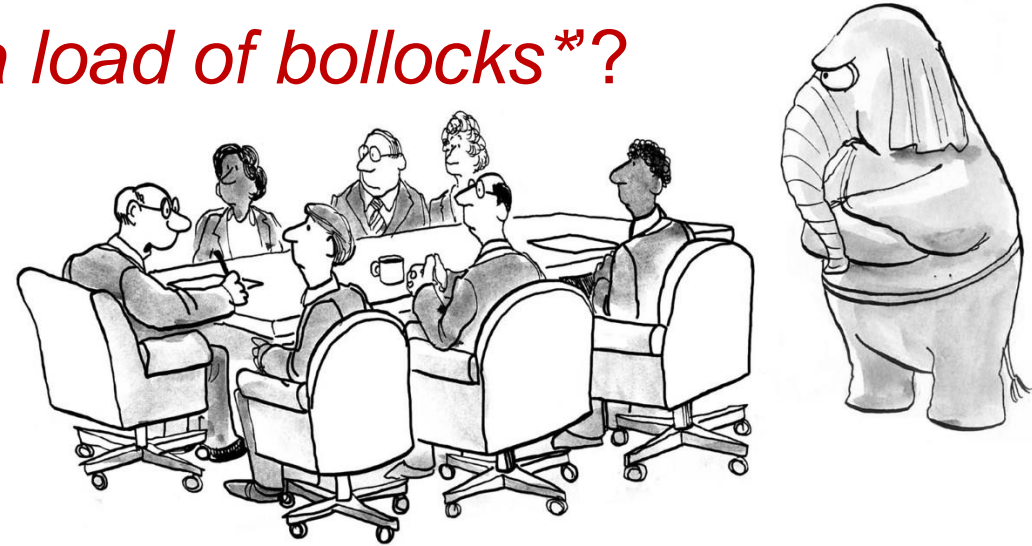


So is SDG14 attainable or *'just a load of bollocks'**?

- The targets are aspirational not SMART;
- They still give the 'what' and 'why' but not 'how';
- Very few, if any, countries:
 - have integrated marine legislation systems which allow cross-silo action;
 - have administrative systems which allow/encourage managers to operate across sectors;
 - know what marine management they have;

But:

There are some good models from which to learn (e.g. MSFD, MSPD, MMO)



"I suppose I'll be the one to mention the elephant in the room."

"How come it's always the old, bald-headed guy with glasses in cartoons?"

(* term allowed in English Law!)

Challenges – management outcomes

- Achieving balance/trade-offs between desirable services and benefits – ‘lowest common denominator’ vs. ‘healthy dictatorship’ (or ‘he who shouts loudest’)
- Accommodating stakeholders and conflict acknowledgement and/or resolution
- Knowing when management measures have worked
- Encompassing national to global frameworks (e.g. SDG)
- Achieving an ability to cope with hazards and their risks – hierarchy of risks and scale
- Determining the cycle of degradation and recovery – panarchy – matching natural and social systems
- Measuring the success of many r’s – restoration, recovery etc



Require:

- Independent science advisory bodies
- Managers clear about what they want and can achieve
- Decision Support Systems to guide managers, developers and consultees
- Defendable science and scientists – openness, transparency, peer review – accommodate any challenge to the science
- Ensuring adequately-trained scientists and managers (breadth of view)
- Effectively communicable?

But depressing reading:





(Open Access book)



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