



Dräger Foundation



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KIEL MARINE SCIENCES

THE EARTH INSTITUTE  
COLUMBIA UNIVERSITY

EU-U.S. Conference Series

# Sustainable Oceans: Reconciling Economic Use and Protection

Conference No. 1

**The Use of the Oceans' Energy Resources,  
Risk Management, and the Need for Regulation**  
Hamburg, Germany, June 29 to July 1, 2011

Conference No. 2

**Developing a New International Architecture  
for Maritime Policy**  
New York, NY, USA, July 11 to 13, 2012

Conference No. 3

**Good Governance for Sustainable Marine Development**  
Cascais, Portugal, June 3 to 5, 2013



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Under the High Patronage of



**H.S.H. Prince Albert II of Monaco**

President, Prince Albert II of Monaco Foundation

(Conference I, II & III)

and



**H.E. Anibal António Cavaco Silva**

President of the Portuguese Republic

(Conference III)

# The Organizers





## The Organizers

### Dräger-Stiftung Dräger Foundation

#### DRÄGER FOUNDATION

The Dräger Foundation, located in Lübeck, Germany, was established in 1974 by Heinrich Dräger, entrepreneur and economic and social scientist. The Foundation is a nonprofit institution committed to the promotion of science and research, especially in the fields of national and international economic and social order, international policy and law, and the environment. The Foundation regards its role as that of an initiator tackling topical and future-oriented subjects in its conferences and other events.

The Malente Symposia are the Foundation's most comprehensive recurrent events. Young Leaders Study Groups are designed to foster leadership qualities in young professionals by stimulating dialogue across national boundaries and across professional sectors and to create a new network of future global leaders. In addition, the Foundation is involved in a range of activities serving the public good in Lübeck and the surrounding region, among others in the field of medicine, music, art and culture, as well as the protection of the landscape and the environment.



#### FUTURE OCEAN – KIEL MARINE SCIENCES

The Cluster of Excellence “The Future Ocean” pursues a research approach that is unique in Germany: marine researchers, geologists and economists join forces with mathematicians, computing, medical, legal, and social scientists to investigate ocean and climate change from a multidisciplinary perspective. A total of over 200 scientists from Christian Albrechts University of Kiel (CAU), the Helmholtz Centre for Ocean Research Kiel (GEOMAR), the Institute for the World Economy (IfW) and the Muthesius Academy of Fine Arts are using innovative means to share their findings with the international scientific community, stakeholders, decision makers, civil society and the public at large because they believe that by understanding the ocean we can sustain our future. In order to transfer this interdisciplinary approach to the education of young scientists, the Integrated School of Ocean Sciences (ISOS) was created as a central element within the Cluster. A new focus of the Cluster is the support of young scientists within the network of Integrated Marine Postdocs (IMAP). Further, scientists of the “Future Ocean” have access to a wide-ranging and excellent research infrastructure. These Platforms include tools for ocean observation, numerical simulation, isotope and tracer analysis and molecular biosciences. The Cluster of Excellence “The Future Ocean” is funded by the German Research Foundation (DFG).

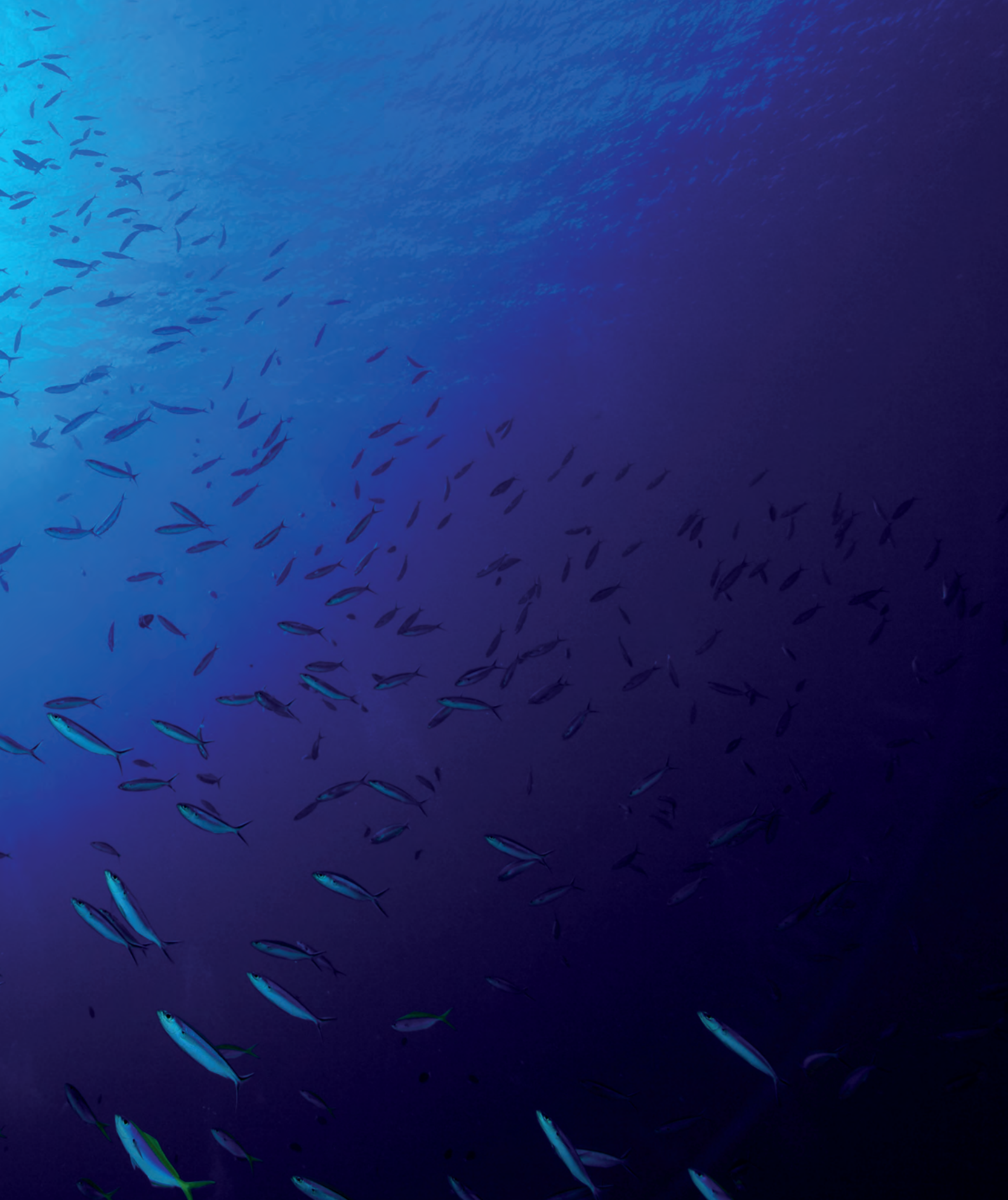
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### THE EARTH INSTITUTE COLUMBIA UNIVERSITY

#### THE EARTH INSTITUTE

The Earth Institute, Columbia University mobilizes the sciences, education and public policy to achieve a sustainable earth. Through interdisciplinary research among more than 700 scientists and researchers in diverse fields, the Institute is adding to the knowledge necessary for addressing the challenges of the 21st century and beyond. With over two dozen associated degree curricula and a vibrant fellowship program, the Earth Institute is educating new leaders to become professionals and scholars in the growing field of sustainable development. We work alongside governments, businesses, nonprofit organizations and individuals to devise innovative strategies to protect the future of our planet.

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# Foreword & Introduction







## Foreword: Good ocean governance is a shared international responsibility

I've always believed that we can make better use of the sea than we do now. Nor should we underestimate the importance of the sea in our economy. There's more than a chance that today's innovations and tomorrow's life-changing inventions may come from the marine world. Every year new products are developed from marine species through biotechnology. We use them in pharmacology, food, cosmetics, agriculture and even biofuel production.

So there is scope for oceans, seas and coasts to generate economic growth and to give jobs to our underemployed youth – provided we understand that they are complex and interconnected systems. Looking at one single sector at a time is never good enough: adaptive and all-encompassing maritime governance is much more effective. Moreover, there is no one-size-fits-all approach. Each sea-basin is different and requires a specific combination of measures. This to me is the key to sustainability.

We really have no choice: on land we are running out of space. We can't cut down yet more forests or drain yet more wetlands. We rely on energy sources that are by their very nature finite. Even in today's economic climate, the challenges posed by marine renewable energies or by deep-sea exploration are not the problem: they are the solution. But if the sea is the new frontier, we don't want the "Wild West": we want proper, responsible, smart and

long-lasting growth. And to get there we need to share responsibility on the protection of biodiversity. If we act as one, we have it within our power to beat overfishing, to slow down climate change, to protect our coasts from erosion and to challenge all the man-made threats that marine environments face today. We need to preserve our seas' ability to provide for us and future generations. But the time of the nice declarations is over. Action is what we need now.

Within the European Union, we are advancing with small steps: the new European fisheries policy, our fight against illegal fishing, our mapping of sea beds and our integrated management of sea areas... these are real concrete actions – building blocks to a brighter future. But only by working together on a much wider and broader international scale, we can really advance on reconciling the protection of our oceans with the economic use. I felicitate the EU-US conference series for picking up this issue and advancing the thinking on good governance, a new international architecture for Maritime Policy as well as the regulatory issues surrounding the responsible use of the oceans Energy resources.

**Maria Damanaki**

European Commissioner for  
Maritime Affairs and Fisheries



## Introduction

Our future is determined by our present decisions and actions. These actions will have a major impact on whether we move towards a sustainable future or, instead, enter the uncharted territory of dangerous human interference with nature. Issues of such profound importance for humankind must be framed internationally. Heinrich Dräger's philosophy captures the fundamental need for international exchange in order to shape our future. In pursuit of this vision, the Dräger Foundation has been creating platforms for international exchange for the joint development of ideas for the future of global society since 1974. Oceans and their significance for the world's climate, biodiversity, economy, and human development have naturally emerged from previous Dräger Foundation conferences on questions of energy security and climate change.

To examine the role of our oceans in a sustainable future world, the Dräger Foundation organised an initial conference in 2008, the XVII Malente Symposium "More than Water – Oceans and Global Responsibility". This conference then led to an EU-US conference series entitled "Sustainable Oceans: Reconciling Economic Use and Protection", convened in cooperation with the University of Kiel's Cluster of Excellence "The Future Ocean" and Columbia University's Earth Institute. The first event in this conference series took place in 2011 in Hamburg, Germany under the title "The Use of the

Oceans' Energy Resources, Risk Management, and the Need for Regulation". The second event, hosted by the Earth Institute in New York, USA in 2012, focused on "A New International Architecture for Maritime Policy". The third and final conference took place in 2013 in Cascais, Portugal, and discussed "Good Governance for Sustainable Marine Development".

The oceans play a key role in supporting life on earth. They are our most diverse and important ecosystem, and contribute to global and regional cycles and dynamics.

Despite tremendous threats to the global environment posed by disruptions of the natural state of the oceans, the mitigation of marine environmental problems and calls for the sustainable use and development of marine resources frequently have a very low priority in many states. It is an encouraging development, however, that awareness is growing for the life-supporting role of the oceans and the corresponding need to ensure that ocean affairs are adequately represented in larger discussions surrounding economic and human development.

Among the key questions raised during the conference series, participants debated how marine scientific research can be conducted and natural resources can be utilized to support economic growth without causing adverse effects on the

marine environment. Economic benefits derived from ocean uses must always be weighed against the deterioration of ocean health due to pollution, the depletion of fish stocks and decreasing biodiversity. This is particularly the case in regard to deep-sea exploration, where it must be ensured that proposals include comprehensive, precautionary risk assessments and take fully into account the costs of establishing effective international risk management systems. This applies not only to the exploitation of marine resources in areas under national jurisdiction, but also, and equally importantly, to Areas Beyond National Jurisdiction – the High Seas. As these areas are underprotected under the United Nations Convention on the Law of the Sea (UNCLOS), it is therefore of utmost importance that international action is taken to ensure that the exploration and exploitation of resources here is conducted sustainably.

The Dräger Foundation conferences aimed to reaffirm the need for internationally coordinated action and the identification of appropriate steps to prevent further damage to the oceans caused by overfishing, shipping and other human activities. The conferences explored options for fostering and strengthening international cooperation towards good governance and sound maritime policies for sustainable marine development. As an example, an essential element for guiding sustainable ocean management could be the realization and implementation of a sustainable development goal (SDG) for Oceans and Coasts. The creation of a comprehensive set of sustainability indicators for the oceans would help assess the current status of marine systems, identify emerging trends, and provide necessary information for forward-looking, sustainable ocean governance. Conference participants discussed topics such as the need for a coordinated, comprehensive and transparent offshore management regime with effective enforcement mechanisms. The conferences also examined the increase in national and international conflicts triggered by the growing exploitation of energy, minerals and other resources, and proposed measures to counter this trend.

One of the key objectives of the conference series was to explore the benefits of establishing an independent European Ocean Alliance (EOA) made up of experts from all ocean-relevant fields and disciplines. In cooperation with the U.S. Joint Ocean Commission Initiative, an EOA could communicate the state of the oceans and coasts to stakeholders including the political and business sectors, suggest necessary measures for maintaining ocean balance, and promote a comprehensive

and coordinated action plan for sustainable oceans. This would help ensure that the future use of ocean resources is sustainable. An EOA could also contribute to the implementation and monitoring of efforts undertaken to protect the oceans, supporting the enforcement of international obligations.

The following report summarizes the main topics discussed during the three conferences, including suggested solutions for some of the most critical problems presently faced by the world's oceans.



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# Sustainable oceans

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Sustainable Oceans: Reconciling Economic Use and Protection

# Discussion of Challenges, Possible Solutions and Recommendations

Martin Visbeck, GEOMAR Helmholtz Centre for Ocean  
Research Kiel, Germany and  
Peter Schlosser, The Earth Institute, Columbia University,  
New York, USA



Martin Visbeck

## Background – Why are the oceans important to human society?

The oceans cover 70% of the earth's surface, regulate the global climate, provide humans with natural resources such as food, raw materials, (bio)chemical substances and energy, and are essential for international trade, recreation and cultural activities.

Human activities are increasingly leaving their mark on the oceans. Free access to, and availability of, ocean resources and services, together with human development and economic growth, have placed great pressure on marine systems, ranging from overfishing, increasing resource extraction, alteration of coastal zones, to various types of pollution.

According to World Bank figures, globally 350 million jobs are linked to the oceans. One billion people in developing countries depend on fish for their primary source of protein. Global society must recognize that our oceans and coasts are in serious trouble with major implications for the entire Earth system. According to the Global Partnership for Oceans, pollution has produced more than 400 coastal dead zones in the oceans, the combined size of which is comparable to New Zealand. Today, less than 2% of ocean space is protected, although there is ample proof that protected areas have recovered substantially. 90% of large predators are extinct due to overfishing, pollution and noise. 38% of coral reefs have been seriously impacted or destroyed since 1980 according to the latest figures published by UNEP. This not only means loss of beauty and sense of place, but also loss of

natural habitats for fish, since coral reefs provide the primary home for about 25% of all fish species. One of the reasons for this loss is acidification – dubbed the 'osteoporosis of the sea'.

Sustained provision of vital ocean services requires healthy and productive oceans. Pollution and over-utilization of these services, in turn, place ocean health at risk. A significant proportion of ocean services rely on intact marine ecosystems. The oceans host the largest continuous ecosystem on Earth, embracing all continents, climate zones and containing over 80% of the biomass on the planet. They provide a multitude of habitats distributed throughout the deep sea, seamounts, the open ocean, the continental shelves and coastal zones surrounding the land masses. However, the unique





# use and protection of the ocean

characteristics of marine ecosystems are shaped by their environment, and are therefore sensitive to changes in the oceans' physical and chemical characteristics. Ongoing and future changes possibly lead to large shifts in species distribution and to reshaping or displacement of ecosystems. From primary production to top predators, the diversity of the oceans' biosphere is collectively referred to as the marine ecosystem. Biodiversity is typically referred to as a measure of species richness, i.e., the number of different species in a given ecosystem. Changes in the abundance and diversity of species can decrease the ability to absorb shocks and may alter the functioning of ecosystems. On a global level, a decrease in primary production (Boyce et al. 2010), fish biomass (Worm et al. 2009) and whale abundance (Whitehead 2002) has already been observed. Changes in the relative abundance of species, the composition of habitats and in ocean functions are projected to become very significant in the coming decades. This is certainly true for the world's fish stocks where catch levels over the last 20 years were maintained only by expansion to new species and new fishing grounds. Although expert calculations of the degree of overfishing vary, official FAO estimates show that roughly one quarter of all stocks are overfished and more than half of all stocks are fished at their maximum sustainable yield. However, reliable numbers on the state of fish stocks are only available for roughly 500 of 1500 stocks currently exploited.

The major impediments for sustainable fisheries are non-existent or poor management, together with the absence of compliance and control mechanisms. Illegal, unregulated, and unreported fisheries (IUU fisheries) are a major threat. Existing international



instruments addressing IUU fishing have not been effective due to a lack of political will to ratify and means to implement their key provisions.

Ocean warming, sea level rise, ocean acidification, depletion of fish stocks, loss of biodiversity and coastal pollution are just some prominent examples of the non-sustainable path our ocean is following into the future. How do we achieve a sustainable balance between use and protection of the ocean? Awareness of this dilemma has increased in politics, ocean-related industries and in civil society. However, we are still not at the point where we are addressing ocean issues with sustainable solutions, based on solid scientific understanding. Such solutions require consensus and global cooperation on hard decisions by a diverse group of stakeholders.

**Achim Steiner, UNEP, Kenya:** *It must be underlined that, despite a legal regime in place for ocean governance and despite regional and other management regimes, there is a governance vacuum at sea. This is particularly the case in the high seas which account for roughly 2/3 of the world's ocean.*





Peter Schlosser

## Ocean Services – What is their value?

The ocean and its ecosystem provide fundamental services to our societies. They are essential for human life on earth. Ocean resources will be increasingly needed in the future to support a growing global population. Today it is impossible to fully assess the ocean's economic value. Nevertheless, the communication of even rough estimates of the value of ocean services may be a means of drawing appropriate attention to ocean services. This could, in turn, help promote the need for sustaining healthy and productive oceans and coasts for present and future generations.

As Pushpam Kumar of UNEP reported at the first conference on sustainable oceans, there is no doubt about the importance of pricing the ocean and its components or services. For example coral reefs or fisheries might be a good starting point. Although pricing coral reefs looks difficult at first, it can be approached by focusing on their relevance and function for human beings. UNEP has roughly estimated the value of all coral reefs at around US \$172 billion per year. These numbers are based on an estimate that 500 million people are dependent on the reefs. Some ongoing coral reef damage is irreversible and is leading to permanent losses in ecosystem services. Concerning fisheries, about one billion people rely on fish as their main or sole source of animal protein. Half of wild marine fisheries are fully exploited at maximum sustainable yield, with little safety margin to allow for environmental change. A further quarter is already over-exploited and at risk of collapse. Fishing alone provides an estimated annual income of about

80 – 100 billion USD including about 27 million jobs. Studies of mangroves, which are important for food, raw material provisioning and for recreation, show a worldwide decline. By 2050 the loss of mangroves will be valued at around \$6.6 billion. According to studies from Kiel, ocean acidification will result in annual losses of income from shellfish fisheries alone of up to 6 billion EUR. These are just a few examples of how value can be assigned to some ocean services. Such estimates could also be made for sulfate deposits and other minable materials. Also the loss of services due to pollution events such as the oil spill in the Gulf of Mexico, the Fukushima accident and global pollution should be quantified.

The economic value of the oceans is not based on living and non-living resources alone. The ocean provides the oxygen we breathe, plays a major role in regulating global and regional climate and supports the mitigation of climate change through





Tiago Pitta e Cunha

CO<sub>2</sub> uptake. Ocean circulation regulates the hydrological cycle and the distribution of nutrients and other key substances.

Although assessing the value of these fundamental ocean services is challenging, for some sectors first estimates already exist and we should strive towards a more comprehensive valuation.

#### FISHERIES

It is expected that the growing world population will increasingly depend on the wealth of marine living and non-living resources. Fish is an important resource for more than 1.5 billion people and contributes around 19% of their average protein supply (FAO 2010). The fishing industry and its associated infrastructure has become an important economic factor in coastal areas, including its harbours, fishing fleets, fish farms, and aquaculture production sites. The maritime industry thus supports many livelihoods around the globe. World fisheries directly employ 44.9 million people with over more than 150 million additionally employed in the processing sector (FAO 2010).

**Manuel Pinto de Abreu, Secretary of State, Lisbon, Portugal:** *The race to the ocean, the last race for the nations on earth, is underway. The New Era of Discoveries is creating an ocean of new opportunities for blue growth. Marine spatial planning is a major tool for the sustainable use of the ocean.*

#### BLUE TECHNOLOGY

The ocean also serves as a natural laboratory and source for 'blue' biotechnology. The oceans provide unique opportunities for substance research and discovery. Only 20% of living species of marine flora and fauna are currently known and have been screened for their use in chemical and pharmaceutical applications. In particular, deep sea areas are largely unexplored (O'Dor 2004). More than 90% of marine biomass is composed of bacteria, fungi, microalgae, and viruses. Together with corals, sponges, and other marine organisms, this biomass contains an uncountable array of interesting substances for medical and pharmaceutical research, food additives and the cosmetic industry. Several marine substances have already been utilized as key ingredients in approved drugs (Leal et al. 2012).



**Tiago Pitta e Cunha, Counselor to the President, Portugal:** *If 'blue' growth is a summary of economic activities related to the ocean, we must turn this blue growth into smart blue growth to enlighten sustainability.*

#### MINERAL RESOURCES

The ocean provides humankind with an abundance of non-living resources. Coastal waters provide sand and gravel, and afford an opportunity to extract salt and freshwater through the desalination of seawater. Minerals such as tin, titanium, gold and





diamonds are exploited from the shallow coastal waters of Africa, Asia and South America (WOR 2010). Due to on-going technological developments in marine mining, it is predicted that exploitation of the large stocks of resources in the deep sea will be possible in the near future. Currently the focus lies on manganese nodules on the seabed, cobalt crusts along the flanks of undersea mountain ranges, and massive sulphide deposits associated with undersea volcanic activities.



The importance of raw materials from the deep sea is increasing because of i) the growing scarcity of resources on the continents, ii) the fact that these resources are often located in politically fragile states or in areas difficult to access, and iii) the higher concentration in oceanic formations compared to terrestrial ores for gold, silver, copper and rare earth elements (WOR 2010).

#### ENERGY

The ocean is also an important source of renewable and non-renewable energy. Oceans and coasts

provide space for offshore wind farms, as well as the potential for thermal and tidal power generation. The ocean ecosystem holds the potential to facilitate large scale algae-based production of hydrogen, and extensive fossil fuel resources are stored below the seabed. At present, the known sub-sea-floor oil reserves that can be extracted are estimated to represent about 26 % of global oil reserves (WOR 2010). Increasing efforts to access reserves in water depths below 2000 m will increase the size of exploitable marine fossil reserves for global energy provision.

Furthermore, the resources of the Arctic are attracting growing attention. The rapidly retreating summer sea ice cover due to global climate change is promising easier access to marine resources in the northern polar regions. According to a recent study 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids (USGS 2008), as well as metals such as gold, silver and platinum may be found below the Arctic Ocean.

#### TRANSPORTATION

Of immense importance is the use of ocean and coastal waters for maritime transport. Shipping has always been the most cost-effective method for transporting commodities over great distances. Today more than 90 % of global trade is via sea routes (IMO 2012). Since 2001, global shipping has shown a rapid increase. From 2008 to 2012 the world shipping fleet grew by 37% (UNCTAD 2012). Tankers, container ships, bulk carriers, and cargo vessels transport large volumes of goods such as oil and gas, coal, iron ore, phosphate and bauxite mainly between Asia, Europe and the United States (UNCTAD 2011). The passenger and roll-on roll-off cargo fleet increased on average by 2.9% per year from 2008 to 2012. Due to the growing popularity of recreational cruises, the recent tonnage development of the passenger fleet grew on average by 5.5% per year in the same period and is largely dominated by fleet additions of larger cruise vessels (ISL 2012).

In summary it has become clear that more work is needed to price ocean services in a sectorial, regional but also integrated and global context. Innovative frameworks and approaches are needed to answer the simple question: "What is the price of ocean services for humanity?"

**Tony D. J. Haymet, Scripps Institution of Oceanography, La Jolla, CA, USA:** *We must strive to make tangible the economic value of the oceans as they are in their present state.*



## Ocean Sustainability – What do we need to achieve?

What do we want the ocean to look like in the future? And what do we mean by ocean sustainability? A first step towards sustainable development of oceans and coasts would be to ensure a healthy and productive marine environment with all basic supporting and regulating functions and services. This requires viewing the ocean and the subsequent provisioning of ocean services as a vital part of the Earth system that enables human life.

**Martin Visbeck, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany:** *We have to draft some concrete sustainability goals, timelines, milestones, institutional design, ideas for governance and the coalition of regions.*

### CHALLENGES

There are a multitude of threats to marine ecosystems and ocean functions caused by human activities, both directly on sea and on land. They include overfishing, pollution with chemicals, heavy metals, radioactive substances, and plastics, but also indirect effects like eutrophication caused by agricultural run-off.

### MARINE POLLUTION – PLASTICS

Today, undisturbed marine areas have largely, if not completely, ceased to exist. In addition to direct marine pollution, land-based waste, hazardous substances, and other kinds of pollution are finding their way into the ocean. Transported by currents, they can cause harm even in areas quite remote from the source of pollution. The U.S. National

Academy of Sciences estimated in 1997 that around 6.4 million tonnes of litter enter the world's ocean each year. Most of this litter is made up of barely degradable plastics. Nonetheless, correct estimation is difficult because litter can enter the marine environment in a number of ways. The main sources of marine litter are river and coastal inputs followed by shipping, fishing, and offshore installations. The measure normally used when estimating plastic debris is the number of items per square kilometre or square meter. According to this measure more than 4 items of plastic debris have been found in Indonesian coastal waters in every square meter and up to 1 million in the North Pacific Gyre per square kilometer. However, most of these items in the Pacific are small particles, only detectable using fine-meshed nets. Larger particles sink and, in European waters, some 100.000 larger items have already been found on the seafloor in European waters per square kilometer by visual count alone (Greenpeace 2006).

Although these larger particles are also detrimental to the environment, the greater threat might be the so-called microplastics. These particles, ranging from 20 to 50 micrometres in size, are ingested by zooplankton and dispersed into the food chain through both the digestive systems of living organisms as well as their tissues and body fluids. The implications of microplastics are still unclear, but softeners and other chemicals might directly poison or act as hormones affecting the health and development of marine flora and fauna.





**Iris Menn, Greenpeace e.V., Hamburg, Germany:**

*A sustainable use of the ocean resources is the only option for the future - from a social, ecological as well as economic perspective. Financing sustainable use of marine resources and ocean protection is possible, and its benefits will exceed its costs.*

#### OXYGEN DEPLETION AND DEAD ZONES

Nutrients in coastal waters originating from agriculture, industry, and sewage in surface waters can lead to marine eutrophication resulting in more frequent and longer lasting algae blooms. Such algae blooms may change the turbidity of seawater and limit light penetration into deeper water layers. As the algae bloom recedes, degradation processes of plant material stimulated by bacteria consume large amounts of oxygen, which in turn can cause dead zones in waters below the surface mixed layers. Ocean circulation can transport low oxygen water into coastal upwelling zones causing local near shore 'dead zones'. Furthermore, those low oxygen environments are conducive to some microscopic algae that can cause harmful algae blooms. When occurring in large numbers, they have the potential of producing toxins with adverse impacts for humans and animals.

#### CLIMATE CHANGE AND SEA LEVEL RISE

Warming of the oceans and melting of land-based glaciers both contribute roughly equally to global sea level rise. Recent studies suggest that mean sea levels could rise one meter or more by 2100 (Nicholls and Cazenave 2010; Rahmstorf 2010). But even the somewhat lower projections of up to 80 cm in the 21st century brought forward by the IPCC (2013) could have severe impacts on coastal physical environments, ecosystems, coastal settle-

ments and economies through inundation, flooding, coastal erosion, shoreline relocation, and salinization of aquifers (Brown et al. 2013; Nicholls and Cazenave 2010).

#### COASTAL ZONE VULNERABILITY

Coastal zones are particularly vulnerable. Coastal zones have always been of great interest to humankind: as a space for settlement, as a source of diverse natural products, for establishing global networks of trade and transport, for recreational activities and as tourist destinations. Because of this special attractiveness and human appreciation of coastal zones, significant human interventions have taken place in the coastal zones, accompanied by on-going population growth and coastal development. Approximately two-thirds of the world's megacities over eight million people are located in the coastal zones, with the largest share in Asia. Population growth, urbanization rates, and population densities have been found to be significantly higher in coastal than in non-coastal areas (Balk et al. 2009; McGranahan et al. 2007). In China, for example, the rate of land conversion is globally among the highest, with coastal urban areas growing at more than three times the national rate (McGranahan et al. 2007; Seto et al. 2011). This development is related to on-going rapid economic growth as well as specific policies driving trade-related coastal movement.



Robert B. Gagosian

Coastal development is a critical driver of ocean change. It leads to increased utilization or even over-exploitation of natural resources both on land and in the sea, and generates high pressure on the environment at the land-ocean interface (Patterson and Hardy 2008). For example, 90 % of global fishery activities actually occur within coastal jurisdiction, and the use of coastal space for wind energy generation is growing rapidly (World Ocean Report 2010). Other human interactions with the coastal zone that exert pressure on the environment

include tourism and recreational activities, as well as burials at sea.

Physical interactions along coasts and in the hinterland such as dredging, damming of rivers and river deltas, extraction of liquids and gases from the ground, land reclamation, habitat modification, and coastal engineering greatly impact the coastal environment. Consequences range from changes in sediment supply and coastal dynamics to coastal erosion, subsidence and decrease in drinking water supply. Through land reclamation and other human activities, shallow-water coastal areas have also been greatly reduced. These areas are critical for ocean functions as light can penetrate to the sea floor and enable plants to grow which provide refuge to juvenile marine organisms.

Changes in storm patterns (e.g. intensity of hurricanes and typhoons) and increased impacts of storm surges due to climate change induced sea level rise with its associated biophysical and socio-economic consequences are imposing further pressures on the coastal zone, especially on low-lying coastal areas, deltas and on small islands (IPCC 2012; Nicholls et al. 2007).

Severe natural disasters such as Hurricane Katrina in 2005 not only pose a direct threat to human health but can also cause psychological trauma and displacement-related social problems (Legerski et al. 2012). In addition, loss of and damage to valuable ecosystems like mangroves, tidelands, or marshes also lead to a reduction in natural coastal protection and may further increase the vulnerability of coasts to erosion.

A particular challenge for ocean sustainability is to increase resilience of the rapidly growing coastal communities.



#### OPPORTUNITIES

In the wake of the Rio+20 conference the countries of the world have decided to articulate a set of Sustainable Development Goals (SDGs) that will build upon the Millennium Development Goals (MDGs) and replace them by 2015. This framework provides the global ocean community with the opportunity to develop, negotiate and agree to a set of concrete sustainable development goals for oceans and coasts. These need to be backed up with targets, timelines and milestones for implementation.

**Peter Schlosser, The Earth Institute, Columbia University, New York, NY:** *A collective strategy and need-based scientific research projects are necessary first steps for finding pathways towards the sustainable future of the ocean.*







### MAKING THE OCEAN PART OF THE SUSTAINABLE DEVELOPMENT GOALS

During the preparations for the third Dräger Foundation conference, a proposal was developed to articulate a dedicated Sustainable Development Goal 'Ocean and Coasts':

**The SDG 'Ocean and Coasts' would aim at ensuring a healthy and productive marine environment with all basic supporting and regulating functions and services, viewing the ocean and the subsequent provisioning of ocean services as a vital part of the Earth system.**

In order to achieve this goal suitable mitigation and adaptation strategies for climate and global change have to be developed, equitable access to ocean resources be provided, and harvesting and extraction practices of living and non-living resources that do not impair basic ecosystem functions be ensured. The development of sustainable and resilient coastal communities has to be encouraged. National and regional maritime policies have to be harmonized and cooperation in coastal and global Marine Spatial Planning has to be encouraged. International cooperation and effective governance are required to protect the marine environment and promote sustainable use of marine resources in a way that the environmental values of current generations and the needs of future generations will be met. For that purpose, developing and agreeing on an SDG 'Oceans and Coasts' could be an essential element. Although ensuring environmental sustainability in general is one of the eight MDGs, the ocean is not explicitly addressed. Furthermore, the creation of a comprehensive underlying set of ocean sustainability targets and effective indicators would help assessing the current status of marine

systems, diagnose on-going trends, and provide information for inclusive, forward-looking and sustainable ocean governance.

**David E. Johnson, Seascope Consultants Ltd, UK:** *The ocean does not respect national boundaries. Securing blue growth means collaboration, compromise, consensus and partnerships, working towards a 'collective arrangement'. Up to now scientific advice has not led to good practice.*

New ocean and coastal governance needs should be articulated so that possible institutional designs can be developed. Increasing global ocean literacy, expert education and sharing of best practices would help to build global ocean expertise and scientific technical capabilities. Reward mechanism for developing sustainable ocean solutions need to be established. Overall we encourage relevant UN governmental and non-governmental bodies to contribute to the challenge of 'living with the ocean' in a sustainable manner.

### FUTURE OCEAN SPATIAL PLANNING

In order to develop concrete ocean sustainability targets a forward looking planning approach was suggested. Future Ocean Spatial Planning (FOSP) is envisioned as a framework to guide sustainable development of the ocean and coasts inspired by the Marine Spatial Planning (MSP) approach. According to the Intergovernmental Oceanographic Commission of the UNESCO, MSP is understood 'as a promising way to achieve simultaneously social, economic, and ecological objectives by means of a more rational and scientifically-based organization of the use of ocean space' (Douvere 2010: 1, 60). The approach should be ecosystem-

# equitable access to ocean resources must be provided

and area-based, integrated, adaptive, strategic, and participatory (Douvere 2010:59-67). Furthermore, FOSP needs to be linked to Integrated Coastal Management (ICM) in order to respect the transitional character and interdependencies of coastal and marine systems.

Today ICM and MSP provide useful policy arenas to frame and resolve spatial conflicts and conflicting interests in the pursuit of coastal resilience. FOSP will take this approach into the future and can provide a framework to detect future areas of conflict for ocean development and allow the exploration of comprehensive development pathways towards ocean sustainability and appropriate global governance structures. Considering that there are growing national interests in securing resources and, in turn, increasing potential for conflicts, for example over maritime boundaries (Houghton et al. 2010), harmonized governance strategies at local, national and global levels are needed.

## THE WAY FORWARD

Understanding the oceans and the subsequent provisioning of ocean services as a vital part of the Earth system, a healthy and productive marine environment with all basic supporting and regulating functions and services must be ensured. Suitable mitigation and adaptation strategies for climate and global change must be developed. Equitable access to ocean resources must be provided, and it must be ensured that harvesting and extraction of living and non-living resources do not impair basic ecosystem functions. To this end, we must encourage the development of sustainable and resilient coastal communities, harmonize national and regional maritime policies and encourage cooperation in coastal and global marine spatial planning.

**Haitze Siemers, DG Mare, EU Commission, Belgium:** *There must be a race to the top for maximum sustainability. We must aggressively pursue ambitious goals. Today's concepts are too soft.*

The definition of an SDG for oceans and coasts (SDG 'Oceans and Coasts'), the formulation of a set of specific targets and the development of an underlying indicator set to measure these objectives are essential elements of a prudent ocean management strategy. Importantly, both the Sustainable Development Goal and the corresponding indicator set should cover the coasts, the exclusive economic zones, and the high seas. Furthermore, an SDG 'Oceans and Coasts' should reflect the ecosystem approach and make reference to the polluter-pays principle.

**Biliana Cicin-Sain, Global Ocean Forum, USA:** *We made progress but missed the historic opportunity. But this assessment must be tempered by the tremendous mobilization of national leaders, UN agencies, civil society groups, industry, and academia which took place at Rio and around the world. For oceans, the main story is the great attention that oceans received in the Rio+20 process and at Rio+20 itself.*

**Wendy Watson-Wright, IOC/UNESCO, Paris, France:** *The Rio+20 follow-up process and, in particular, the definition of a dedicated Sustainable Development Goal for oceans and coasts will be an important step towards improving ocean management.*



## Continue the dialogue – Prospects for creating a European Ocean Alliance\*

A potential outcome of the conference series which was discussed at the third and final conference, is the need for and prospect of establishing a European Ocean Alliance. Such an alliance – possibly supported by a European Ocean Foundation – could provide a medium-term, possibly permanent, inclusive and flexible platform for dialogue among experts, government representatives, stakeholders, and civil society on all aspects relating to oceans and coasts. It could advance and integrate the need for protecting, managing, and sustainably using marine resources into the definition and implementation of relevant policies and actions.

Such an alliance could build on the EU-U.S. Conference Series on Sustainable Oceans and the preceding EU-U.S. dialogue “Cooperation Across the Atlantic for Marine Governance Integration”. It should raise awareness and educate the public on the consequences of careless human behavior. It should develop options and recommendations for EU policy and action. It should continue and build on international dialogue among EU Member States and between the U.S. and Europe, having an initial focus on the wider Atlantic, the Arctic and the marginal seas in the region. It could help in the development of an EU position on global policy towards the oceans and coasts. A new level of cooperation will enhance the continuity, coherence and effectiveness of policies, notably of policies



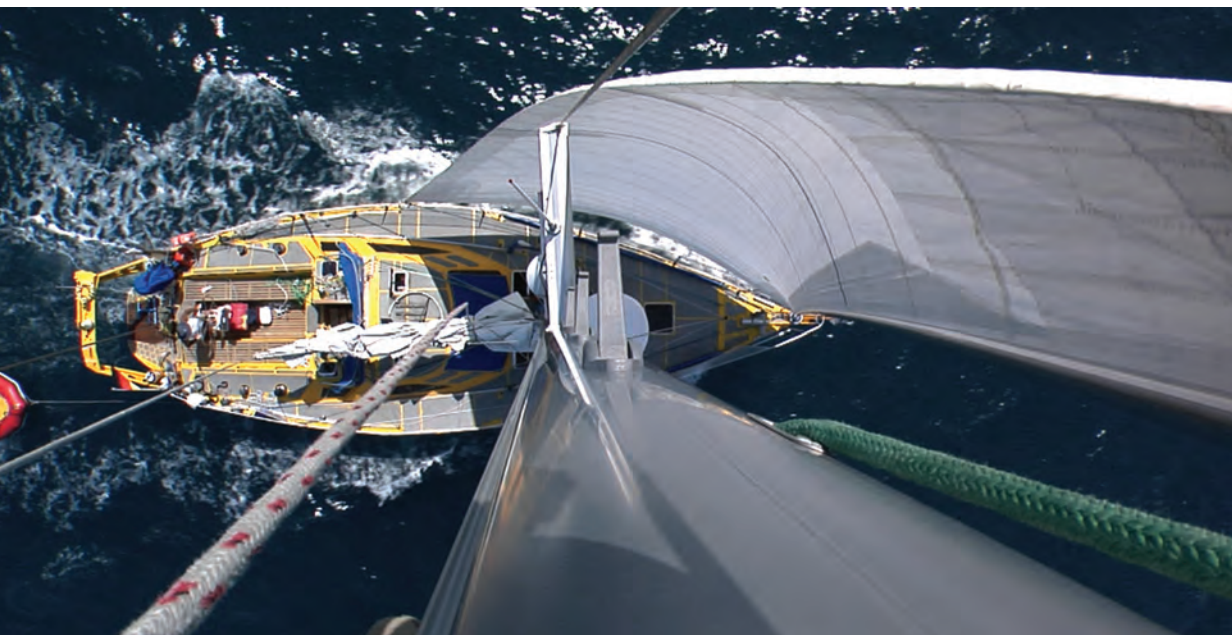
within Europe, between the EU's internal (or “domestic”) and external policies. It could facilitate the harmonization of EU policies and its positions in international organizations concerned with ocean governance.

**Paul Holthus, World Ocean Council, USA:** *A European Ocean Alliance would be an opportunity to engage with the business community; bring together leadership companies across the Atlantic in a transatlantic effort, and make sure that we engage in blue growth while maintaining a sound marine environment.*

A European Ocean Alliance could further provide a neutral, open space for dialogue and an intellectual framework for coordinating policies and actions as

\* The idea of a European Ocean Alliance that came up in the course of the conference series was adapted for further discussion in a Position Paper produced for the third conference by R. Andreas Kraemer, Ecologic Institute, Berlin, Germany. The full paper introducing possible further steps towards its foundation can be found in this report.





Research vessel ALDEBARAN

they affect the human use of the oceans and coasts. This approach is based in an understanding of the oceans as nested ecosystems, which in turn interact with physical processes such as currents, temperature or salinity gradients, or the overturning circulation or biological systems such as the food web or populations of migratory species. The field of activities should be broad and include emerging issues such as the prevention and removal of



marine litter, deep seabed mining, marine and ocean-based renewable energies, geo-engineering, marine genetic resources, the consequences of global warming, sea-level rise, and ocean acidification. Knowledge exchange and the sharing of good and best practice in ecosystem-based marine resource management, about the connections between the marine environment, land-based societies, and land-ocean-atmosphere interactions will foster stronger, better resourced and organized 'constituency' for the ocean and its coasts and their living resources.

Tight cooperation between the European Ocean Alliance and the U.S. Joint Ocean Commission Initiative could lead to an influential transatlantic ocean partnership. Such a partnership could bring further countries and international ocean stakeholders on board in order to push ocean conservation policies and enable ocean sustainable development on a global scale.

**H.S.H. Prince Albert II of Monaco:** *Extending beyond borders, driven by extremely long timeframes, which does not respond to short-term interventions, and above all requiring global action, environmental protection often remains the blind spot of our political systems.*

## SUMMARY REMARKS

From the perspective of the organizing team, the following topics for action became evident during all three conferences and warrant follow-up:

1. Articulate an **SDG 'Oceans and Coasts'** to guide ocean development and governance.
2. Develop **Future Ocean Spatial Planning** as a framework for developing ocean sustainability targets.
3. Pursue the **Pricing of Ocean Services** to motivate all stakeholders to fully engage in ocean sustainable development.
4. Explore the benefits of establishing a **European Ocean Alliance** to increase and improve the European, transatlantic and international cooperation for ocean sustainability.

We hope that we can initiate action planning for these challenges in the near future, engaging a broad range of ocean stakeholders in order to accomplish a healthy, productive and more sustainable Future Ocean.

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# Position Papers

Prepared for the 3rd Conference\*

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## Session 1

**Managing the world's oceans – A brief history of ocean policy and management**

Michael K. Orbach, Professor of Marine Affairs & Policy,  
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**Managing the world's oceans – Securing 'blue' growth, jobs, and a sound maritime environment**

Paul Holthus, CEO, World Ocean Council, Honolulu, HI, USA

\* Position Papers reflect the view of the authors





Michael K. Orbach

## MANAGING THE WORLD'S OCEANS – A BRIEF HISTORY OF OCEAN POLICY AND MANAGEMENT

### BACKGROUND

Since the early 1600s, ocean policy has been defined by the concept of the “freedom of the seas”, crafted basically because no single maritime power was powerful enough to control ocean space. The first incursion on total freedom of the seas came in the 1790s with the establishment of the 3-mile Territorial Sea, initiated by the new United States to ward off their old rulers the British, but soon adopted universally by coastal nations.

That remained the ‘law of the sea’ until the World War II (WWII) era. Although there had been various claims by individual countries such as Peru for a “Patrimonial Sea” extending hundreds of miles offshore, no such proposals gained traction until after WWII. In 1945, in the wake of WWII, President Truman of the United States declared by Presidential Proclamation jurisdiction over the resources of the continental shelf contiguous to the U.S., primarily for exclusive access to the oil and gas resources of the continental shelf. This was an example of the general history of ocean governance: One nation making a claim, and others following suit or not. When nations did follow suit, the result was incorporated into “international law” (i.e., everyone agreed to follow the same rules).

Also in this post-WWII period, many nations significantly expanded their ocean presence, primarily in military, shipping and fishing sectors. Various policy and management entities also expanded in this period, including Regional Fisheries Management Organizations such as the Inter-American Tropical

Tuna Commission (IATTC) in the Pacific and the International Commission for the Conservation of Atlantic Tunas (ICCAT) in the Atlantic; the International Maritime Organizations (IMO), and others.

With minor changes in the post-WWII period, including the first two United Nations Conference on Law of the Sea (UNCLOS) meetings in 1958 (I) and 1960 (II), no major changes in ocean jurisdictions occurred until 1976, when the U.S., in response to foreign fishing fleets fishing close to the coasts of the U.S., passed the Fisheries Conservation and Management Act, which extended U.S. jurisdiction over fishing out to 200 nautical miles from shore. Once again – this time in part because such an extension was in the process of being “authorized” by the UNCLOS III (1973-1982) – other countries followed suit and ‘extended jurisdiction’ became “international law”, at first only for fisheries.

The UNCLOS III Convention became “available for signature” in 1982, and formally came into effect in 1996. Included in the Convention were the next two important changes in ocean jurisdiction: 1) the “authorization” of the 200-mile Exclusive Economic Zone (EEZ), expanding adjacent nation jurisdiction beyond only fishing to all economic activities and resources; and 2) the establishment of the International Seabed Authority (ISA), established under the principle of “the Common Heritage of Humanity”, to govern seabed mining in the “Area” beyond national jurisdiction (ABNJ). The law and policy developed in this third LOS Convention has since been supplemented and elaborated in such instruments as the Straddling Fish Stocks and Highly Migratory Fish Stocks Agreement; the Rio

# respect and value the oceans

Conference on Environment and Development (1992), Johannesburg Summit 2002 and Earth Summit (Rio, 2012); Convention on Biological Diversity; and other instruments and agreements.

Along the way other ocean policy and management entities have appeared, primarily in specific sectors, with varying degrees of success and durability. For example, several more Regional Fishery Management Organizations (RFMO) have been formed.



Entities such as the International Maritime Organization have had principal roles in sectors such as shipping. The United Nations Environment Programme Regional Seas Programme and the Large Marine Ecosystem (LME) concept have helped to organize attention to regional ocean issues. Ongoing discussions such as those organized by the Global Ocean Forum have kept ocean issues alive in the broad international policy arena. The Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR) is an attempt to provide new environmental protections

outside of the country Exclusive Economic Zones (EEZ). Public and private activities such as the Pew Ocean Commission and the U.S. Commission on Ocean Policy in the U.S.; the Directorate-General for Maritime Affairs and Fisheries (DG MARE) in the European Union; the World Ocean Council; Global Partnership for the Oceans; Global Ocean Commission; and the UN Division of Ocean Affairs and Law of the Sea and Fisheries and Agricultural Organization (FAO) are all attempts to organize and advance policy and management of the world ocean and its resources and environments.

There remain both disagreements and conflicts regarding ocean jurisdiction and law and policy, such as the EEZ border between Canada and the U.S.; the situation in the South China Sea; questions regarding the application of the ISA structure to oil and gas resources; or the ability to exclude nuclear weapons or propulsion from EEZs; and there are also new “initiatives” in Areas Beyond National Jurisdiction (ABNJ) or on continental shelves such as the Portuguese extra-jurisdictional claim around their Azores EEZ, or the Russian claims to continental shelf resources in the Arctic.

What remains true is the dynamic and initiative-based nature of national and international law and policy with respect to the oceans, and the fact that approximately 60% of the world ocean – approximately 40% of the earth’s surface – and its resources and environments lie in the ABNJ, outside of the Exclusive Economic Zones of coastal countries and therefore outside of the influence of a direct, authoritative policy and management body superior to individual nation states (with the exception of the International Seabed Authority).



Paul Holthus

## **MANAGING THE WORLD'S OCEANS – SECURING 'BLUE' GROWTH, JOBS, AND A SOUND MARITIME ENVIRONMENT**

In discussing "Good Governance for Sustainable Marine Development" it is critical to have a clear understanding of the status and trends in economic use of marine space and resources – as well as the potential new kinds and areas of use. Achieving a balance between 'blue' growth, jobs, and a sound maritime environment will largely be based on addressing the opportunities and challenges facing the diverse, extensive set of existing ocean activities outlined below. Success in improving ocean governance and sustainable marine development will require coordinated leadership and collaboration by the diverse ocean business community.

### **OCEAN ECONOMIC ACTIVITY**

#### **Shipping**

International shipping traffic growth has been twice that of economic activity for the past 60 years, during which time world trade more than trebled to 45% of global GDP. There are approximately 50,000 internationally operating merchant ships in service. Globally shipping is generally either as liquid cargo, e.g. oil, petroleum products, chemical, or as dry cargo/bulk goods, for which the most important are: iron ore, coal, grain, phosphates, bauxite, non-ferrous metal ores, feed and fertilizers. The most significant cargo worldwide is crude oil, which makes up about 25% of all goods transported by sea. Most goods otherwise travel by container ship and since 1985 global container shipping increased by about 10% annually, with about 137 million containers transported in 2008. There are a relatively small number of principal transport routes, and the

busiest are the approaches to the ports of Europe, US and East Asia, particularly Japan but also Shanghai, Singapore and Hong Kong. Narrow straits concentrate maritime traffic, e.g. Straits of Dover, Gibraltar, Malacca, Lombok and Hormuz, and the Cape of Good Hope. The heavy traffic to N Europe and the Eastern US, and between these 2 areas, makes the N Atlantic an area of especially high shipping traffic, with associated challenges.

#### **Offshore Oil and Gas**

Offshore oil and gas industry fields explored in the past were relatively shallow and limited in size. Now, 45% of the 2,700 billion barrels of recoverable oil left is offshore and energy firms will gradually move to deeper waters as shallow waters reservoirs are depleted. By 2035, deep-sea production will almost double to 8.7 million barrels a day, driven by developments in the US Gulf of Mexico, Brazil, West Africa and Australia (mainly for gas).

The Gulf of Mexico remains the world's most valuable deepwater province, despite the many recent large finds elsewhere. Since the discovery of ultra-deep oil reserves under a thick layer of salt off Brazil, the offshore oil and gas industry is exploring ever deeper and drilling further under the sea bed - exploring the subsalt layers 7 km below sea level (below 2.5 km of ocean water, 3 km of rock, and 2-3 km compacted salt). "Ultra-deep" wells, drilled in water at least 1.5 km deep, now account for more than half of all the world's new discoveries. Pre-salt reserves in Brazil were already producing over 14,000 barrels of oil a day, less than four years after their discovery.

Addressing the technological and safety challenges requires significant capital, with investment in the global deepwater and ultra deepwater exploration





Antje Boetius



and production market expected to be worth US\$3.2 billion in 2013 in an industry where a single offshore well may cost US\$70,000,000 to drill. In a global fleet of over 1,200 rigs and drilling vessels, more than 80 rigs now have the ability to work in ocean depths of more than 2.5 km. That compares to fewer than 10 in the year 2000 and double the number at work just two years ago.

### Fisheries

The world's most productive fishing grounds are largely confined to areas that make up less than 10% of the global ocean, often associated with areas of strong primary production of biomass in the oceans, i.e. continental shelves and upwelling areas. Marine fishery catches increased from 16.7 million metric tons (MT) in 1950 (86% of total world production) to a peak of 87.7 million MT in 1996. Since then, global landings of fish and seafood have declined, with fluctuations reflecting the variation in catches from a few highly productive areas, particularly the NW and SE Pacific that account for a large portion of pelagic species catches. Marine fisheries stabilized at about 80 million MT in 2009, and now represent 49% of the world's fish production. Based on average catches in the 2005–2009 period, the most productive fishery areas are the NW Pacific (25%), SE Pacific (16%), Western Central Pacific (14%), NE Atlantic (11%), and Eastern Indian Ocean (7%). All other marine fishing areas contribute less than 5% of the global total catch. This includes the other six areas that make up the Atlantic: NW, W Central, E Central, SW, SE, and the Atlantic Antarctic. The proportion of overfished stocks has increased from 10% in 1974 to 26% in 1989. After 1990, the number of overfished stocks continued to increase, but the rate slowed, reaching about 30% in 2009.



The patterns of marine fisheries landings differ over time. Some areas have oscillations in total catch but a declining trend is not evident. In the Atlantic, this includes the E Central and SW areas. Many other have a decreasing trend in catch; this includes four of the Atlantic fishery areas: NW (down 55%), W Central (down 46%), and NE (down 35%), with the SE down somewhat less. Thirdly there are areas that have shown a continual increase in catch since 1950 - none in the Atlantic. In the ABNJ migratory tunas and related species are the most valuable high-seas fishery resource, with production highest in the Pacific, followed by the Atlantic and Indian Oceans. The harvest of high-seas fishery resources increased from less than 0.5 million MT in the early 1950s to 5.5 million MT in 2006.

### Aquaculture

Aquaculture provides half of the 15.7% of the animal protein consumed globally. Aquaculture has grown at 6.6% per annum, making it the fastest-growing animal-food-producing sector - much faster than the 1.8% annual global population increase. While



aquaculture production (excluding aquatic plants) was less than 1 million MT per year in the early 1950s, production in 2008 was 52.5 million MT, with a value of US\$98.4 billion. Aquatic plant production through aquaculture in 2008 was 15.8 million MT, with a value of US\$7.4 billion. By 2030 aquaculture will account for 65% of fish protein production. World aquaculture is heavily dominated by the Asia-Pacific region, which accounts for 89% of production in terms of quantity and 79% in terms of value, and is growing at more than 5% a year. This is mainly because of China, which accounts for 62% of quantity and 51% of value. Aquaculture production bordering the Atlantic is a minor component of global totals: Europe (3.6%), South America (2.2%), North America (1.5%), and Africa (1.4%). In the EU aquaculture currently provides 25% of fish protein and more than 90% of aquaculture businesses in the EU are SMEs, providing around 80,000 jobs.

#### Mineral Resources

The seabed contains precious metal deposits, in polymetallic sulfides, cobalt-rich crusts, or manganese nodules. By 2020, 5% of the world's minerals, including cobalt, copper and zinc could come from the ocean floors, and this could rise to 10% by 2030. Global annual turnover of marine mineral mining may likely grow from virtually nothing to €5 billion in the next 10 years and up to €10 billion by 2030. There may be significant deposits of these mineral resources in the international areas of the Atlantic Ocean, and a number of leases for exploration of deep-sea sites have been applied for by several companies and countries. Within the EEZs are several other mineral resources: methane hydrates, a growing area of interest as countries look for new

natural gas reserves; sand and gravel, which continue to grow in use as the demand for construction materials increases with industrialization; and nearshore phosphates, which are being pursued as land-based sources begin to decline.

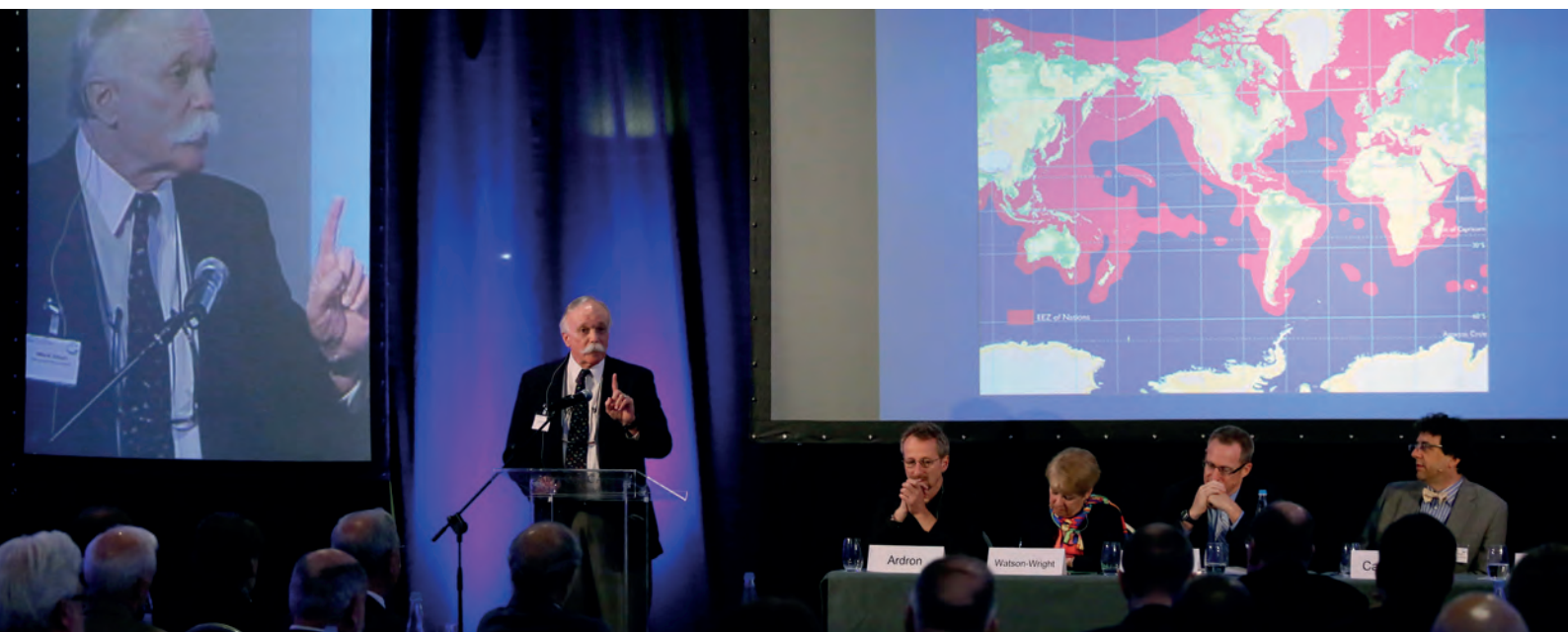
#### Offshore Wind and Ocean Energy

Offshore winds tend to blow harder and more uniformly than on land, providing higher potential for electricity generation and smoother, steadier compared to land-based wind energy. Globally, total installed offshore wind capacity was 3,117.6 megawatts (MW) in 2010, with 1,161.7 MW added in that year alone. The growth rate of 59% in 2010 was far above the growth rate of the wind sector overall. The share of offshore facilities in wind capacity worldwide went up from 1.2% in 2009 to 1.6% in 2010. The N Atlantic has the potential to generate considerable renewable energy from offshore wind, especially during the northern winter. As of 2010, offshore wind farms had installed by 12 countries, 10 of whom were in Europe. A total of 10 gigawatts (GW) of capacity had been installed, led by the



Dieter Feddersen





Michael K. Orbach

UK, Denmark, the Netherlands, and Sweden. The EU has a target of 40 GW of offshore wind power capacity by 2020 and 150 GW by 2030.

The world's ocean waves, currents, and tides are estimated to contain more than 5,000 times current global energy demand, with estimates that marine resources could feasibly provide 20,000 terawatt-hours (TWh) of electricity per year, which is more than the entire global generation capacity. A variety of mechanisms are under development to convert ocean energy efficiently from these sources into electrical power, and several devices are being tested, but the engineering challenges for technology to survive for long periods of time in the harsh marine environment presents many challenges. The maturation of ocean power technologies depends upon deployment of substantial demonstration and commercial projects in nearshore areas. In the Atlantic, some of the greatest potential and need for ocean energy is in the NE, and this is where the majority of the research and development is taking place. Currently, there are only a few hundred MW worth of projects installed around the world, mostly in European waters.



### Marine, coastal and cruise tourism

The number of cruise ship passengers has grown nearly twice as fast as world international tourist arrivals from 1998-2008. With about 14 million passengers in 2010, the industry is expected to grow at 8.5% per year over the next decade. The 100 plus ships of the main international cruise industry association account for about two-thirds of the world's cruise ships, comprise less than 5% of all passenger ships and only 0.2 percent of the world's trading fleet. About 70% of cruise destinations are in the Caribbean, Mediterranean, Western Mexico and the South Pacific. In 2001, the N American cruise industry contributed US\$20 billion to the US economy, a US\$2 billion increase over 2000. Within Europe cruise tourism employs nearly 150,000 people and generates direct turnover of €14.5 billion, with the European market growing rapidly. Still, about half of the world's cruise passengers depart from US ports for the Caribbean.

In the Caribbean, tourism overall provides over 18% of regional gross domestic product (and more than 50% in several individual nations), approximately 16% of employment, and 25% of foreign exchange earnings. Total tourism demand in the Caribbean region is currently US\$40.3 billion and expected to grow to US\$81.9 billion by 2014. Tourism receipts directly account for more than 75% of total exports and indirectly contribute to the growth of other sectors including agriculture, construction, and manufacturing. Capital investment in the industry is estimated at US\$7.4 billion, or 21.7% of total investment and generating one in seven jobs in the Caribbean. In Europe, the coast is the preferred holiday destination of 63% of European tourists and the maritime and coastal tourism is the largest single maritime economic activity,



employing 2.35 million people, equivalent to 1.1% of total EU employment. Cross-border coordination as part of a sea-basin strategy can contribute to the development of high-value tourism areas.

#### OCEAN INDUSTRY SUSTAINABILITY CHALLENGES AND OPPORTUNITIES

Leadership and collaboration by the diverse, international ocean business community is essential to addressing ocean governance and sustainability of the dynamic, interconnected global ocean. Ocean industries are increasingly held accountable for their impacts and are being confronted on a sector, incident, or local basis (e.g. oil spills, deep sea trawling, port expansion). Ocean sustainability concerns are increasingly being pursued through globally coordinated efforts and unfortunately there is often not a corresponding coordination of effort by the sectorally fragmented ocean business community to engage these cross-cutting issues. Ocean stakeholders are pushing for increased regulation in a variety of international venues where international ocean rules are established. Strategic, coordinated industry participation in these processes is lacking, as is balanced, comprehensive information regarding industry efforts to address marine issues. Marine industries are often portrayed only as the cause of ocean problems, and are unable to create any other perception if they are not “at the table” and constructively engaged in ocean developments. Ocean governance regimes and policies are emerging from processes in which industry is not well engaged. As a result, private sector access to ocean resources, services and space – even by companies with the best environmental record – is increasingly at risk from the loss of access and social license from the ocean governance emerging from processes in which industry is not well engaged. There have been efforts by responsible



Jochen Deerberg

companies to differentiate themselves from poor performers and try to do business in a more environmentally responsible way. However, the efforts of one company or even a whole sector are not enough to address collective global impacts by a diverse range of industries in a shared global ecosystem.

As the principle users of the marine environment and with the marine environment subject to increasing commercial use, ocean industries have the most to gain by developing and delivering solutions to sustainability. Responsible industry performers are well positioned to develop and drive business-oriented solutions to marine environmental challenges to address marine environmental issues, differentiate themselves from poor performers, collaborate with like-minded companies within and across sectors, and engage ocean stakeholders and policy processes. Cross-sectoral leadership and collaboration by the diverse mix of ocean industry sectors can result in significant business value for the operators committing to a healthy and productive ocean that supports sustainable use by the responsible ocean business community.



# Session 2

Equity on the extended continental shelf?  
How an obscure provision in UNCLOS provides  
new challenges for the ocean governance

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Aldo Chircop

### EQUITY ON THE EXTENDED CONTINENTAL SHELF? HOW AN OBSCURE PROVISION IN UNCLOS PROVIDES NEW CHALLENGES FOR THE OCEAN GOVERNANCE

One of the major novelties of the United Nations Convention on the Law of the Sea, 1982 is the legitimizing of coastal State claims to large areas of continental margins in all oceans by virtue of Article 76. In addition to exclusive economic zones (EEZs) of 200 nautical miles, coastal States whose continental margins extend beyond the EEZ limit are able to further claim the seabed and subsoil beyond the EEZ limit to 350 nautical miles from the baselines of the territorial sea or 100 nautical miles from the 2,500 metre isobath. The UN Convention established a procedure for this purpose, commencing with scientific and technical submissions to the Commission on the Limits of the Continental Shelf established in the treaty. To date, the Commission has received 65 submissions and a further 45 communications containing preliminary information.

What may not be readily apparent to many of the States making submissions is that the acquisition of an extended continental shelf comes at a postponed cost. Article 76 was the subject of some of the most difficult negotiations at the Third United Nations Conference on the Law of the Sea 1973 – 1982 and the finding of compromise text was only possible by establishing a quid pro quo with Article 82. Many land-locked and geographically disadvantaged States felt that the extended continental shelf entitlement was occurring at the expense of the international seabed area which was the common heritage of mankind. The compromise was Article 82, which establishes a duty on extended continen-

tal shelf States to make payments or contributions in kind with respect to production from the non-living resources of areas outside 200 nautical miles. The royalties are to be paid “through” the International Seabed Authority (the Authority), an intergovernmental organization established by the Convention with exclusive responsibilities for seabed mining in the international seabed area. The Authority is then charged with distributing the benefits to other States Parties, especially developing countries and other beneficiaries identified in the Convention. The only exception to the application of the Article 82 royalty is with regard to developing States that are net importers of an otherwise eligible mineral resource. The duty commences with the sixth year of production at 1% of all production, and increases by one percent per year until the ceiling of 7% is reached and which apply for the remaining production. Effectively, Article 82 introduces the first ever international royalty over non-living resource production within national jurisdiction. It was a necessary cost to achieve consensus on Article 76.

The United States and many European States (e.g., France, Ireland, Norway, Portugal, Spain, United Kingdom) are major beneficiaries of Article 76, as are many other coastal States. For example Portugal's likely entitlement over ocean space (including EEZ) is eighteen times the size of its national land territory. Although the United States is not a party to the Convention, under customary international law it remains entitled to a continental shelf. What is unclear is the procedure applicable to it for the definition of the outer limit. The requirement for States Parties is submission to the Commission on the Limits of the Continental Shelf, but the United States is not a State Party.



# ocean policy and management

Several coastal States have already opened areas for licensing or have commenced to issue exploration licences to areas on their extended continental shelves, including Canada, Norway and United States. However, such a windfall is accompanied by the Article 82 obligation, as well as more general responsibilities for the protection and preservation of the marine environment. At this time, it appears that only Canada, Norway and the United States have anticipated the implementation of the Article 82 royalty in licensing exploration activities on the extended continental shelf. Canada announced the royalty only in its most recent call for bids in 2013. Operators are thus forewarned that an additional royalty may be applicable.

Despite the short and simple text, Article 82 poses many governance challenges that need to be addressed so that implementation responsibilities are clear to all affected States and the Authority and also to ensure a pragmatic and functional implementation that facilitates, rather than constrains offshore development. There are numerous definitional matters that need to be resolved, including the meaning of production, volume, value, and site. It is unclear how the royalty may be paid through a contribution in kind and who bears the associated administrative costs. Moreover, the implementation of the provision will need to take into consideration a broad range of non-living resources, and not just hydrocarbons. It is possible that guidance on interpretation of some aspects might be needed by

States Parties to the UN Convention (SPLOS). The role of the Authority also needs to be clarified. It is unclear whether the Authority, in receiving the royalty payments and contributions in kind, should play any monitoring role as an implicit function of the responsibilities assigned to it in the Convention. Once it receives royalties, the Authority has the duty to distribute these on an equitable basis. In order to do so, it will need to develop equitable criteria for this purpose.

The relationship between a producing coastal State and the Authority promises to be even more complex where a resource captured by Article 82 straddles the outer limit of the extended continental shelf into the international seabed area. The exploration and production from non-living resources of the international seabed area are governed by an international mining regime established under the Convention and further developed by the Authority.

The implementation of Article 82 will require constructive cooperation among all involved. The Authority has commenced consideration of these complex issues through workshops of experts. The Authority is considering the development of guidelines and possible memorandum of understanding (MOU) model to assist implementation by coastal States. It will also need to give further consideration to the process for the development of criteria for the equitable distribution of Article 82 receipts.



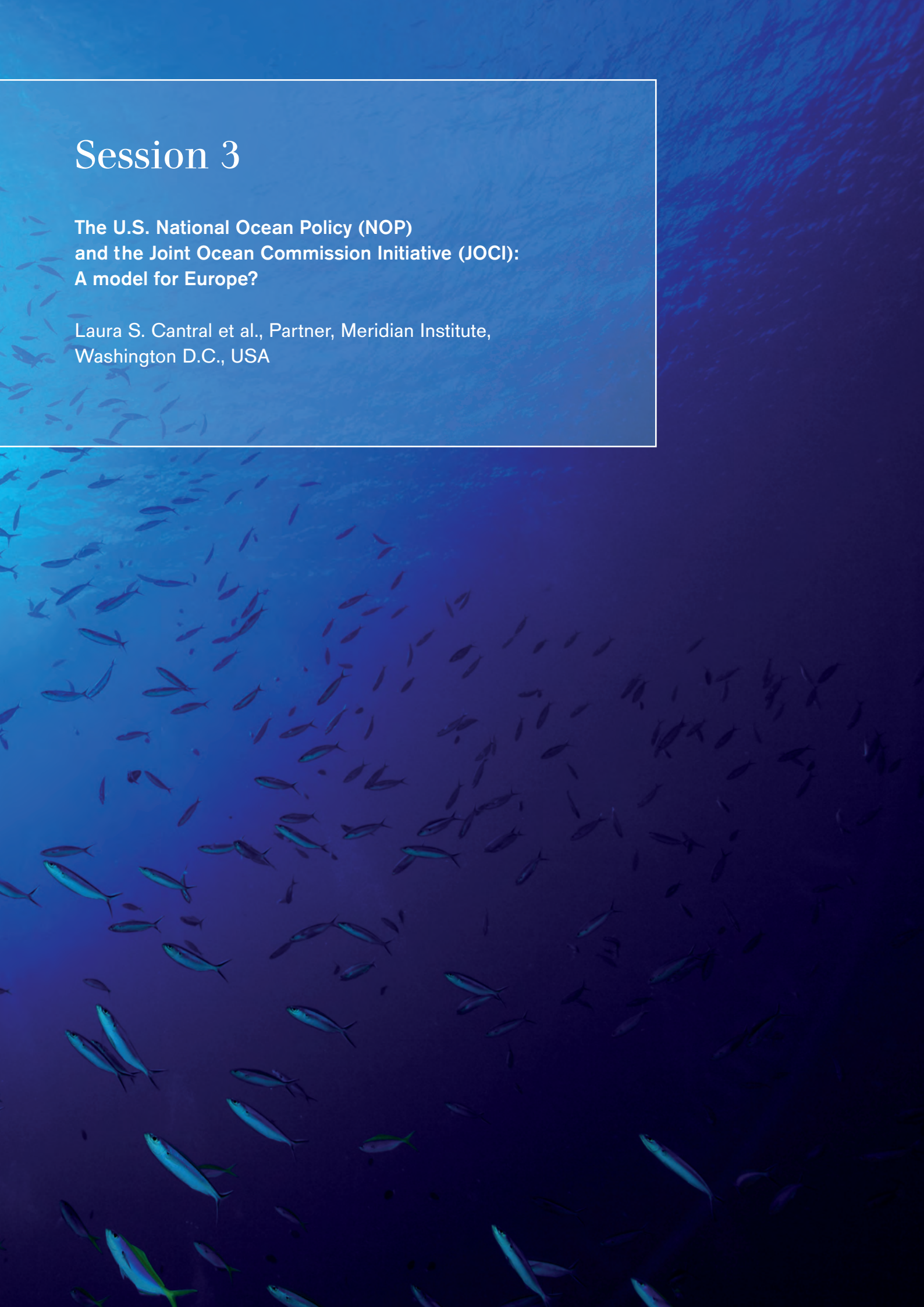




# Session 3

The U.S. National Ocean Policy (NOP)  
and the Joint Ocean Commission Initiative (JOCI):  
A model for Europe?

Laura S. Cantral et al., Partner, Meridian Institute,  
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Laura S. Cantral

## THE U.S. NATIONAL OCEAN POLICY (NOP) AND THE JOINT OCEAN COMMISSION INITIATIVE (JOCI): A MODEL FOR EUROPE?

### INTRODUCTION

The National Ocean Policy was established by President Barack Obama in 2010 and expresses a national commitment to protect, maintain, and restore the nation's ocean, coastal, and Great Lakes resources. The Joint Ocean Commission Initiative is a diverse, bipartisan, and high-level group – external to the government – with a primary goal to catalyze meaningful ocean policy reform. One of the long-standing priorities of the Joint Ocean Commission Initiative has been a national ocean policy that would more comprehensively manage ocean resources, improve coordination among federal agencies, and enhance collaboration among federal and state agencies, regional initiatives, local governments, and tribal nations. Much of what the Joint Initiative has pressed for is embodied in the National Ocean Policy created by President Obama. The challenge now will be to ensure that the policy is effectively implemented and lives up to its potential to improve the health of ocean resources, enhance national security, and better support coastal economies and the millions of American jobs that depend on them. In this session, panelists will explore the National Ocean Policy and the Joint Ocean Commission Initiative, functions provided by each, and whether either offers a model for Europe.

### NATIONAL OCEAN POLICY

In July 2010, President Obama signed Executive Order #13547 establishing the **National Policy for the Stewardship of the Ocean, Our Coasts, and**

**the Great Lakes.** This is the first National Ocean Policy in United States history, and it aims to significantly improve the way the nation manages these valuable resources. The policy establishes a national commitment with a goal to: Ensure the protection, maintenance, and restoration of the health of ocean, coastal, and Great Lakes ecosystems and resources, enhance the sustainability of ocean and coastal economies, preserve our maritime heritage, support sustainable uses and access, provide for adaptive management to enhance our understanding of and capacity to respond to climate change and ocean acidification, and coordinate with our national security and foreign policy interests. The National Ocean Policy recognizes that ocean ecosystem health is interconnected with the productivity of ocean-related sectors of the economy and society and identifies nine national priority objectives, listed as follows:

#### 1. Ecosystem-Based Management:

Adopt ecosystem-based management as a foundational principle for the comprehensive management of the ocean, our coasts, and the Great Lakes.

#### 2. Coastal and Marine Spatial Planning:

Implement comprehensive, integrated, ecosystem-based coastal and marine spatial planning and management in the United States.

#### 3. Inform Decisions and Improve Understanding:

Increase knowledge to continually inform and improve management and policy decisions and the capacity to respond to change and challenges. Better educate the public through formal and informal programs about the ocean, our coasts, and the Great Lakes.



#### **4. Coordinate and Support:**

Better coordinate and support Federal, State, tribal, local, and regional management of the ocean, our coasts, and the Great Lakes. Improve coordination and integration across the Federal Government and, as appropriate, engage with the international community.

#### **5. Resiliency and Adaptation to Climate Change and Ocean Acidification:**

Strengthen resiliency of coastal communities and marine and Great Lakes environments and their abilities to adapt to climate change impacts and ocean acidification.

#### **6. Regional Ecosystem Protection and Restoration:**

Establish and implement an integrated ecosystem protection and restoration strategy that is science-based and aligns conservation and restoration goals at the Federal, State, tribal, local, and regional levels.

#### **7. Water Quality and Sustainable Practices on Land:**

Enhance water quality in the ocean, along our coasts, and in the Great Lakes by promoting and implementing sustainable practices on land.

#### **8. Changing Conditions in the Arctic:**

Address environmental stewardship needs in the Arctic Ocean and adjacent coastal areas in the face of climate-induced and other environmental changes.

#### **9. Ocean, Coastal, and Great Lakes Observations, Mapping, and Infrastructure:**

Strengthen and integrate Federal and non-federal ocean observing systems, sensors, data collection

platforms, data management, and mapping capabilities into a national system and integrate that system into international observation efforts.

To carry out the policy, the President also created a new federal interagency coordinating structure led by a cabinet-level National Ocean Council. Supporting the National Ocean Council are entities that provide interagency coordination on key technical and policy matters at the federal level. In addition, the Executive Order created a non-federal Governance Coordinating Committee, consisting of state, tribal, and local representatives whose role is to coordinate with and advise the National Ocean Council. Finally, the Executive Order calls for the creation of regional entities composed of state, federal, and tribal government representatives who will be responsible for working with regional stakeholders to design spatially based regional ocean planning approaches. The purpose of these structures is to improve ocean management to be more coordinated, efficient, and forward-looking and engage regional, state, and tribal input in a more meaningful way.

To translate the National Ocean Policy into on-the-ground actions, the National Ocean Council released the National Ocean Policy Implementation Plan in April 2013. The Implementation Plan, which incorporates extensive input from wide range of stakeholders, including industry, conservation, and science perspectives, describes specific actions federal agencies will take to address specific ocean challenges, gives states and regions greater input in federal decisions, streamlines federal operations, and promotes economic growth.



#### JOINT OCEAN COMMISSION INITIATIVE

To formulate responses to severe threats to the health of oceans and coasts, two major national Commissions – the Pew Oceans Commission and the U.S. Commission on Ocean Policy – released reports in 2003 and 2004 that identified remarkably similar core priorities and made complementary recommendations in a number of key areas. These core priorities highlighted the need for a national ocean policy that included significant governance reforms, wide incorporation of ecosystem-based management, improved fisheries management, increased reliance on science in management decisions, more funding for ocean and coastal programs, and greater recognition of the links between oceans and climate change.

In 2005, the members of the two Commissions came together as the Joint Ocean Commission Initiative to bring a strong bipartisan voice to ocean issues. The Joint Initiative's primary goal is to catalyze ocean policy reform and action at the national, regional, state, and local levels. The Joint Initiative provides high level, credible, and bipartisan leadership and engagement on ocean and coastal policy issues and distills a clear sense of priorities, communicates them to key decision makers, and educates and cultivates current and new ocean champions. The Joint Initiative was originally co-chaired by Admiral James D. Watkins (chair of the U.S. Commission on Ocean Policy) and Leon E. Panetta (chair of the Pew Oceans Commission) and is currently co-chaired by William D. Ruckelshaus and Norman Y. Mineta. Along with the co-chairs, the Joint Initiative's 16-member Leadership Council brings expertise, credibility, perspective, and diversity of interests to the ocean policy dialogue. Meridian Institute serves as the secretariat for the Joint Initiative.

#### KEY FUNCTIONS OF THE JOINT INITIATIVE

The Joint Initiative works with people and organizations at the national, regional, state, and local levels to build durable support for ocean policy reform at all levels of decision making. Through its work, the Joint Initiative seeks to expand the collective understanding of the threats facing oceans and coasts and to enable actions that address them so that our oceans remain vibrant and healthy for current and future generations. The kinds of functions the Joint Initiative provide are listed below.

**Serving as a resource for national leaders.** The Joint Initiative Leadership Council meets with senior leaders of the Administration and Congress to pro-

David E. Johnson





# collective global impacts

vide guidance on activities and to offer assistance when the Council members can be useful in drawing attention to or providing support for critical actions. Such assistance may be in the form of letters from the Leadership Council members to selected targets, media outreach to highlight a specific issue, providing expert testimony to Congress, and/or serving as spokespeople at events to promote effective implementation actions.

**Convening a diverse community.** The Joint Initiative convenes leaders from across the diversity of the ocean community, including industry, science, and conservation leaders, to consider priority actions for leaders to take. Convening ocean leaders for this kind of discussion provides the ocean community with a forum to develop a set of common priorities as well as a clear sense of strategies for advancing those priorities through the collective resources, expertise, and influence of a range of ocean champions and organizations.

**Issuing reports and recommendations.** The Joint Initiative has released a series of reports, which began in 2006 at the request from a bipartisan group of U.S. Senators, with *Sea to Shining Sea* that outlines the top actions Congress should take to implement the recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission. The Joint Initiative updates its recommendations, which are grounded in the fundamental work of the original commissions, and keeps them current and relevant so that they focus high level attention on the key priorities of the moment as well as those that will lead to long-term and fundamental improvements to the system. Notably, the Joint Initiative released *Changing Oceans*,

*Changing World: Ocean Priorities for the Obama Administration and Congress* in April 2009 in which establishment of a National Ocean Policy by executive order featured prominently, an action then taken by President Obama early in his first term in office. In June 2013 the Joint Initiative will deliver its most recent set of recommendations to the Administration and Congress in a report entitled *Charting the Course: Securing the Future of America's Oceans*.

**Holding leaders accountable: Ocean Policy Report Cards.** The Joint Initiative releases Report Cards that assess the nation's progress to date in reforming ocean policy and outline specific actions that need to be taken in various branches and levels of government to continue making progress on ocean policy reform. Working in close concert with its partners in the ocean community, the Joint Initiative assessment reports are based on careful monitoring of ocean policy developments and communication with leaders in Congress, the Administration, and the states.

**Supporting implementation of policy reform at the state and regional level.** In addition to work at the national level, due to the geographic diversity embodied in the membership of the Joint Initiative, its leaders have credibility to engage in policy reform efforts at the state and regional levels as well. Joint Initiative leaders helped to catalyze a state ocean planning effort in the Commonwealth of Massachusetts, prompted action to address ocean acidification in Washington State, and have engaged in regional ocean planning and other collaborative ocean policy efforts in the multi-state regions of New England, the Mid-Atlantic, the Gulf of Mexico, and on the West Coast.





"Albatross", a Skeleton Sea Project



# Session 4

## **A brief history of international marine organizations**

Hans J. Peters, President, Baltic Maritime Advisers,  
Hamburg, Germany; George Mason University, Fairfax, VA, USA

## **Creating a European Ocean Alliance (EOA). Tasks, responsibilities and competences, members and participants, supporters and the timeline for its establishment**

R. Andreas Kraemer, Director & CEO, Ecologic Institute,  
Berlin, Germany





Hans J. Peters

## A BRIEF HISTORY OF INTERNATIONAL MARINE ORGANIZATIONS

Concern about the deteriorating state of the regional seas has been ubiquitous in Europe's political circles and within local communications, growing over decades. One could argue that the Torrey Canyon oil spill on the southwest coast of the UK in the spring of 1967 left an international legal and environmental legacy that influenced much to follow.

National and multilateral legislative initiatives and related control mechanisms to contain further degradation were already introduced in the 1960. The European Commission gradually took a lead in these efforts. But equally active were the UNEP through its Regional Seas Programme, UNESCO through its World Heritage Marine Programme and the IMO through Regional Marine Emergency Response centers. NGOs, such as Seas-at-Risk and the Advisory Committee on Protection of the Sea. Specialized trusts became increasingly involved as well, including the Pew Charitable Trust and the Oak Foundation providing support to efforts aimed at pollution control. The World Bank and the European Investment Bank engaged in expert advice and dedicated project lending. The Environmental Program for the Mediterranean was sponsored by both banks.

Europe's marine environment is predominantly characterized by three regionally confined seas: the Baltic, the Mediterranean and the Black Sea. For each of these seas unique policy and organizational frameworks for the protection of the marine environment have been established.

- the **Helcom Convention** (Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea area), adopted in 1992;
- the **Bucharest Convention** (Bucharest Convention on the Protection of the Black Sea against Pollution), adopted in 1992;
- the **Barcelona Convention** (Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean), adopted in 1995.

Unique to all three seas is the fact that up to 80 percent of marine pollution is of land-based origin (untreated urban effluents and nitrogen run-offs due to excessive use of fertilizers in agriculture). These circumstances invariably complicate any efforts to mitigate against marine pollution.

International cooperation to protect the marine environment of the northeast Atlantic has been established through the **Ospar Convention** that was adopted in 1992 by 15 contracting parties including all countries with coastlines between the Barents Sea and the southern tip of the Iberian Peninsula, and the European Commission for the EU.

Other regional seas programs were instituted, like the Southern European Clean Seas Programme (PERSEUS) with EU support. PERSEUS aims to design governance frameworks which will provide a basis for policy makers to turn back the tide on marine life degradation.

Individual governments pursue their own approaches to marine pollution control, like the U.K.'s recently initiated program "Protecting and Sustainably Using the Marine Environment through Marine Management Organizations (MMOs). Initiatives by local

# delivering smart, sustainable and inclusive growth

citizen groups sponsored by regional commerce, like the Dutch Local Authorities International Environment Organization (KIMO) provide valuable support to all these efforts.

Interestingly, the expressed target under most of these multilateral and national programs is to achieve a pollution-free marine environment between 2020 and 2025. A tall order.

In October 2007 the European Commission presented its vision regarding an Integrated Maritime Policy for the European Union. The vision document, also called **the Blue Book**, was accompanied by a detailed action plan, an impact assessment and a report on the results of a broad stakeholder consultation. The intention was to establish a Marine Strategy Framework Directive to protect more effectively the marine environment across Europe. The Directive was adopted in June 2008. The aim is to achieve "Good Environmental Status" (GES) of the EU's maritime waters by 2020. It is the first EU legislative instrument related to the protection of marine biodiversity.

Subsequently the Council of Europe published a document in September 2009 under the title "A New Vision of the Oceans" in which the Council's stance towards implementation of the European Maritime Policy is laid out.

Following the adoption of the Directive regional committees initiated steps to revise their maritime policy strategies.

- the Council of the Baltic Sea States in June 1999
- the Project on Integrated Maritime Policy in the Mediterranean in 2011
- the Black Sea Commission in 2011



On May 13, 2013, the European Commission adopted an Action Plan for a Maritime Strategy in the Atlantic area "to revitalize the marine and maritime economy in Europe's Atlantic Ocean region". The Action Plan follows from the Atlantic Strategy the Commission adopted in 2011. It aims to show how the EU's Atlantic member states, their regions and the Commission can help create sustainable growth in coastal regions and drive forward the Blue Economy which has the potential to create 7 million jobs in Europe by 2020. At the same time, the "environmental and ecological stability of Europe's largest and most important eco-system needs to be safeguarded for future generations".

With its motto "delivering smart, sustainable and inclusive growth" the Plan's scope deviates considerably from previously established marine protection initiatives whose objectives were more purpose focused. It is striking to note that current tendencies are to consider a much wider spectrum of variables when considering initiatives related to marine environmental protection.



R. Andreas Kraemer

### CREATING A EUROPEAN OCEAN ALLIANCE (EOA)

At the 3rd and final conference of the EU-US Conference Series "Sustainable Oceans: Reconciling Economic Use and Protection" (2011-2013) one of the focal points of the discussions was the establishment of a European Ocean Alliance (EOA). Such an Alliance – possibly supported by a European Ocean Foundation (EOF) – could provide a medium-term, possibly permanent, inclusive and flexible platform for dialogue among experts, office-holders including legislators, stakeholders, and representatives of public and private interests on all aspects relating to the seas and oceans. It could advance and integrate the concerns of protecting, managing, and sustainably using marine resources into the definition and implementation of all relevant policies and actions.

Such an alliance would build on the EU-US Conference Series on Sustainable Oceans and the preceding EU-US Dialogue "Cooperation Across the Atlantic for Marine Governance Integration (Calamar)"; it would raise awareness and educate the public on the consequences of careless human behavior, and it should develop options and recommendations for EU policy and action. The proposed EOA could continue and build on international dialogues within the EU and among EU Member States, between the US and Europe (EU and its Member States) with a focus but not exclusively on the wider Atlantic, the Arctic oceans and the seas in the region, and among the EU and all its partners around all of the world's seas and oceans. This cooperation will enhance the continuity, coherence and effectiveness of policies, notably of policies within Europe (the EU and its Member States), between the EU's internal (or "domestic") and external policies, and among

the policies of the EU, its positions in international organizations concerned with marine governance.

A European Ocean Alliance could further provide a neutral space for dialogue and an intellectual framework for coordinating policies and actions as they affect the human use of various oceans and seas as "nested ecosystems", which in turn impact physical processes such as currents, temperature or salinity gradients, or the overturning circulation or biological systems such as the food web or populations of migratory species. The field of activities should be broad and include emerging issues such as the prevention and removal of marine litter, sea-bed mining, marine or ocean renewable energies, geo-engineering, or marine genetic resources, the consequences of global warming, sea-level rise, and ocean acidification. The knowledge about good and best practice in ecosystem-based marine resource management, about the connection between the marine environment, land-based societies, and land-ocean-atmosphere interaction will support the building of a larger, stronger, better resourced and organized "constituency" for the oceans and seas, and the living, renewable resources in them.

A future cooperation between the EOA and the US Joint Ocean Commission Initiative (JOCI) could lead to an influential transatlantic ocean partnership that could bring further countries and international ocean stakeholders on board in order to push ocean conservation policies on a global scale.

### FIRST WORK ITEMS

On this basis, options and recommendations for EU policy and action are to be developed, and EU institutions, primarily but not exclusively DG Mare of the European Commission, can be advised.



Following a workshop on ocean governance held at the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Germany, in March 2013, and subject to the results of the Cascais Conference in June 2013, the following examples of policy issues might be a useful starting point for the substantive work of the EOF/EOA:

- Develop a framework for the creation of a system of "marine protected areas" or "managed marine areas";
- Review the sustainability of ocean policies, including marine spatial planning within marine areas under EU jurisdiction;
- Facilitate the transfer of scientific knowledge in coastal and ocean research and technology development – including from socio-economic sciences and the humanities – to developing countries;
- Summarize and address specific future challenges, such as the fair use of genetic marine resources (in the context of international agreements on access to these resources and the sharing of benefits), or the origins, pathways, fate and damage caused by micro-plastics in the marine environment and the food chain (with repercussions for human nutrition);
- Review of the implementation of the EU's Common Fisheries Policy after the recent reforms.

#### PARTICIPATION AND MEMBERSHIP

The number of members or participants of the EOA should be small enough for effective and constructive dialogue, and yet broad and diverse enough to represent the various interests and uses of its members in all their diversity.



David Rockefeller, Jr.

All the Member States with long coastlines, large sea areas under jurisdiction, strong sea-faring histories and marine "identities", or strong interests in marine and maritime activities should be represented, including but not limited to France, Germany, Greece, Portugal, Spain, and the United Kingdom. All the important stakeholders (interested in the



David E. Johnson

economic use of marine and maritime resources), communities of ocean-dependent or coastal communities, and representatives of public interests (such as conservation, pollution prevention, animal welfare, food safety and consumer protection, or public health) should be represented or have good access to the EOF/EOA.

The work of the EOF/EOA should also build on the findings and the advice of the relevant scientific disciplines. The scientific community can be included in the Alliance through membership or a wider circle of advisers. Marine research is currently dominated by the natural and engineering sciences; in the EOF/EOA a strong role should be given to socio-economic sciences and the humanities.

#### PATRONAGE

Highest-level political support or patronage is necessary and should come ideally from

- a) the country where the EOF and EOA are located,
- b) representatives of other EU Member States, and
- c) EU institutions, including the European Parliament.

A joint patronage of 2 or 3 highest-level personalities would be desirable. Patronage need not be identified with any particular country, but rather with the general interest of the EU and world's seas and oceans.

#### LOCATION

Depending on sources of financial support, in-kind support (including from the European Commission and/or national governmental or non-governmental organizations), the EOF and EOA might have their seat and secretariat in a European (port) city with strong connections to the oceans, such as Hamburg, or Lisbon/Cascais.



In addition, the EOA should hold regular meetings in Brussels, and the EOF should ideally have a permanent presence there, so as to facilitate liaison with EU institutions and participation in all EU policies that concern the oceans. Meetings in other EU locations, representing the different regions of the EU, would also be desirable

#### ESTABLISHMENT AND SUPPORT

In order to avoid delays in making the EOF/EOA operational, an established bona-fide non-profit organization might be asked to support the legal founding (from incorporation and obtaining recognition of non-profit status, to operation support in the set-up and initial work program). At the beginning, the EOA would thus be a program of an existing non-profit organization, but with the intention to subsequently establish the EOF with its own legal personality, capital stock, and funding.

Primary financial support needs to come from private, primarily philanthropic sources to ensure the independence and resilience of the EOF/EOA also in times of possible political conflict. Significant support will have to be found (and pledged) before the establishment of the EOF/EOA can move forward. In the European context, the EOF/EOA will require some funding from public (governmental) sources also, since a financial model based on philanthropy alone could reduce the influence and legitimacy of the EOA in the eyes of some stakeholders and (governmental) decision-makers. Some support – financial and/or in-kind – would be expected from the host country.

"Public Faces" or "Ocean Ambassadors" supporting the work of the EOF/EOA would be eligible. It will need well-known and recognizable personalities to represent and speak "on behalf of the

oceans". However, there are currently no obvious such personalities with high standing across Europe as a whole, so a (small) group of such personalities may have to be formed for communication to the publics (in their languages), expert communities, and policy-makers.

#### TIMELINE

Subject to further discussion, agreement, and funding, the following might be a realistic timeline for next steps and further action.

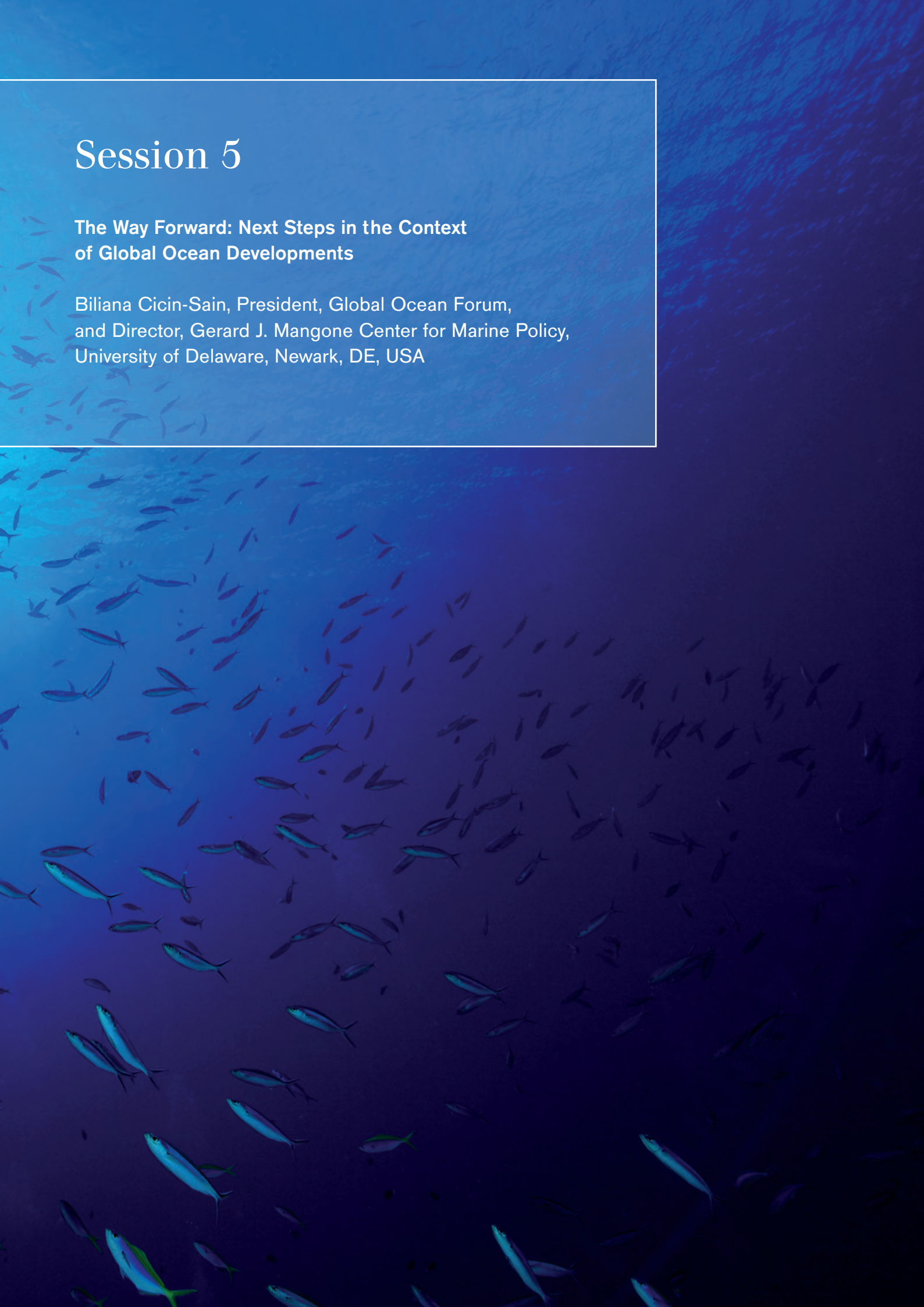
1. Identify and agree on (initial) members and participants in the process leading to the establishment of the EOF/EOA, and agreeing on an (initial) agenda with goals and objectives;
2. Fundraising that obtains funds and pledges to cover the cost of, say, the first 18 to 24 months;
3. Convening a (series of) preparatory round table (meetings), to be supported by one or more participating institutions: January to April 2014;
4. Legal incorporation (currently considered for Portugal and Germany): February to April 2014;
5. Formal launch of the EOA at the next European Maritime Day in May 2014;
6. Develop first comprehensive and coherent set of policy options and recommendations, as the EOA's contribution to a future "European Ocean Policy", to be submitted to the European Parliament, Council and Commission.



# Session 5

## **The Way Forward: Next Steps in the Context of Global Ocean Developments**

Biliana Cicin-Sain, President, Global Ocean Forum,  
and Director, Gerard J. Mangone Center for Marine Policy,  
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Biliana Cicin-Sain

## THE WAY FORWARD: NEXT STEPS IN THE CONTEXT OF GLOBAL OCEAN DEVELOPMENTS

### INTRODUCTION

This short paper reviews important developments at the global level relevant to the achievement of ecosystem-based, integrated governance of oceans and coasts (EBM/ICM) at global, regional, and national levels for the benefit of coastal peoples around the world, with an emphasis on the Rio+20 processes and the implementation of Rio+20 outcomes.

### PERSPECTIVE: RIO+20 AND ITS AFTERMATH

Oceans took center stage in international negotiations on sustainable development in 2012, especially in the context of the United Nations Conference on Sustainable Development (Rio+20). A number of important initiatives, as well, were taken in 2012 to advance action on oceans at the global level, including the Global Partnership on Oceans, led by the World Bank, the UN Secretary General's Oceans Compact, the Sustainable Ocean Initiative led by the government of Japan, the French MPA agency, and the Secretariat of the Convention on Biological Diversity, and the GEF/FAO Program on Areas Beyond National Jurisdiction (ABNJ). The year 2012 also saw important initiatives by individual nations to advance central concepts related to "Green Growth from the Sea" and to the "Blue Economy" by the Republic of Korea and the People's Republic of China, respectively.

#### The Rio+20 summit had three major purposes:

1) To secure renewed political commitment for sustainable development. For oceans, the achievement on this purpose can be rated as excellent

given the great mobilization on the part of countries, civil society, and others that took place in the Rio+20 process, ensuring a central place for oceans in the Rio+20 outcome document.

2) To assess progress on implementation gaps in meeting previously agreed commitments. For oceans the outcome here was also good, since major assessments and reports on implementation progress (and lack thereof) on international ocean goals established in the 1992 and 2002 earth summits were mobilized and discussed extensively in the Rio+20 deliberations.

3) To address new and emerging challenges, with a special focus on: Green economy in the context of sustainable development and poverty eradication. There was considerable discussion of the green economy in the context of oceans, with the Pacific Island nations, for example, emphasizing that for island states "the green economy is the blue economy."

While the overall assessment of a national delegate at Rio+20 (from Switzerland) that, "We made progress but missed the historic opportunity," is correct, for oceans the main story is the great attention that oceans received in the Rio+20 process and at Rio+20 itself. In the Rio+20 outcome document, *The Future We Want*, oceans are treated in 20 paragraphs, receiving central attention. A major accomplishment of the Rio+20 process is that oceans and their role in planetary survival and human well-being are now firmly established on the global agenda.

In the Rio+20 outcome document there was considerable reinforcement of existing ocean goals from 1992 and 2002, as well as the setting forth of new goals, such as reducing marine debris in



the oceans by 2025; independent review of Regional Fishery Management Organizations to increase transparency and accountability; improvement of market access, including for small-scale, artisanal, women, indigenous, and local fishworkers; and a commitment for a decision by the UNGA on the development of an instrument for the conservation and sustainable use of marine biological diversity in Areas Beyond National Jurisdiction (ABNJ).

Implementation of the Rio+20 ocean commitments, as well as continuing implementation of the global prescriptions on oceans from 1992 and 2002, will require concerted action by national governments, the UN system, civil society, academia, and industry. There must be continuous watch of and participation in the various fora that will be addressing Rio+20 implementation, especially the UN General Assembly. The many voluntary commitments made on oceans, coasts, and small island developing States (SIDS), need to be implemented in concert and synergy with one another to achieve maximum impact. Nations such as the People's Republic of China and the Republic of Korea, which are leading the way on the implementation of the green economy in the context of oceans need to be supported and thanked. And there must be insistence that capacity building in integrated ocean governance, a major priority of the 1992 and 2002 earth summits, must now take center stage to enable national and local ocean leaders around the world to lead the way to a low-carbon economy and society.

#### **Rio+20 Implementation**

The evolving picture on Rio+20 implementation depicted here is based on several meetings held, respectively, by the Global Ocean Forum (in



November 2012) and by the UN Division of Economic and Social Affairs (UNDESA) (in April 2013) to examine the implementation of the oceans sections of the Rio+20 outcome document, and on participation in UN processes related to Rio+20 implementation and to areas beyond national jurisdiction.

#### **UNGA Developments**

Although much thought, deliberation, and effort went into the lead up to the Rio+20 Conference in 2012, it has now become evident that this was only the beginning of an ongoing process to devise the path for sustainable development into the future. Oceans are faring badly in this process as well as in the parallel process of developing the post-2015 development agenda. The ocean community must mobilize anew to promote the ocean issues.

In parallel with the development of a set of SDGs is a process aimed at outlining the post-2015 development agenda, which will define the future development framework that will succeed the UN Millennium Development Goals (MDGs). As with





the SDG process, the post-2015 development process is composed of a number of separate parts, including the UN Secretary-General's High-level Panel of Eminent Persons on the Post-2015 Development Agenda. This panel assembles representatives from civil society, private sector, academia and local and national governments and will publish its report with its vision and recommendations on a global development agenda beyond 2015 in May 2013. Sets of thematic consultations have also taken place supporting the articulation of development priorities of various stakeholders at the national and regional levels. The post-2015 process is also supported by a UN System Task Team, providing substantive input, including through the recent publication of a report on the elements of a renewed global partnership for development, as well as specific issue-area briefs. Another interesting element of the post-2015 process is the Sustainable Development Solutions Network (SDSN), which is an independent network of researchers tasked with working with stakeholders to develop solutions in critical areas of sustainable development.

Regarding the extent to which civil society organizations may provide input to the process, it should be noted that, in contrast to the Rio+20 process, opportunities for participation by civil society in the UNGA-centered processes are quite limited. As well, in contrast to the prominent role oceans played in the discussions during the Rio+20 process and in the Rio+20 outcome, oceans have not factored significantly into the deliberations on SDGs and the post-2015 development agenda thus far. Despite support from some coastal states and small island nations and the organization of an expert group meeting on oceans by UNDESA,

the essential role of oceans in supporting not only the environmental pillar, but the social and economic pillars of sustainable development seems to have been forgotten by many.

As a key participant in the SDG development process, Paula Caballero (Colombia) notes (in a note to the Expert Group Meeting on Oceans in April 2013): The post 2015 agenda must focus on poverty eradication as a priority, and it must be "people-centered." Unfortunately, for many, the focus on "people" still translates into a perspective that excludes the natural resource base and in fact, often seems to pit people against what is broadly referred to as "the environment"..... There have been failures in articulating to a broader audience the centrality of functional, healthy, resilient oceans to human development. The definition of the new development agenda will be a complex process. The ocean community needs to position itself early on, and to work diligently on all fronts over the coming years. It is vitally important that oceans are not marginalized from the new development agenda.



# “constant advocacy” on ocean is needed

The bottom line is that oceans are not faring well in this process, and that remobilization of governments and civil society must happen again, “constant advocacy” on oceans is needed.

## **Rio+20 Implementation: Action by International Agencies and Member States**

Discussion of Rio+20 implementation related to oceans took place at two expert group meetings convened, respectively, by the Global Ocean Forum, and UNDESA. The implementation activities discussed at these meetings represent encouraging news: There is considerable action taking place on the part of States and of international agencies and NGOs to implement the various parts of the oceans package emanating from Rio+20. However, the emphasis is on the implementation of sector-based initiatives (e.g., pollution, marine tourism, shipping, etc.), with less emphasis being given to the cross-sectoral aspects of ecosystem-based integrated governance. This represents a recurrent problem and relates to the fact that no single UN agency has responsibility for the integrated governance of oceans.



## **Management of Areas Beyond National Jurisdiction (ABNJ)**

As is well known, marine areas beyond national jurisdiction (ABNJ), comprise 64% of the oceans and represent the world's last remaining commons. At the heart of the debate on ABNJ among nations is the issue of what kind of regime and what kind of governing principles will be put into place to govern this area and how will this be done. After six years of very conflictual UN negotiations on areas beyond national jurisdiction, the Rio+20 outcome document called for a UNGA decision on development of an instrument for ABNJ by the end of 2014. There is strong support for beginning formal negotiations on an UNCLOS implementing agreement on ABNJ (especially on the part of G77 and of the EU), with a number of countries generally against (e.g., US, Canada, Japan, Norway, Iceland). Two UN workshops were convened in May 2013 (May 2-3, and May 6-7) to explore two major aspects related to marine biodiversity beyond national jurisdiction: 1) the management of marine genetic resources and questions of access and benefit sharing, and 2) area-based management tools. On marine genetic resources, it is clear that much uncertainty still exists in knowledge in this area, especially about determining value in the long chain of events (and actors) that are involved between an initial take of a genetic sample in the ABNJ and possible eventual development of a product useful to society (most likely spanning a period of 10-15 years). The industry has not been involved in these deliberations and it would be useful to involve the industry from the several developed countries that engage in this business to better understand marine biotechnology processes, as well as to determine how capacity on these processes can be built in developing countries.





"Flip Flop Fish", a Skeleton Sea Project

On area-based management tools, this debate has been largely shaped by the environmental interests and for many it essentially means marine protected areas. This is a somewhat narrow meaning and a broader interpretation should be encouraged—following the example of ocean area-based management in areas within national jurisdiction, area-based management should be construed as multiple-use regional ocean planning and eventually management.

#### WHAT NEED TO BE DONE IN THE NEXT PHASE?

##### Actions at the Global Level

1. Promote active engagement of the oceans community in the Rio+20 implementation process and in the Post-2015 processes.
  - Oceans are now firmly on the political global agenda, but this must be constantly maintained, rekindled, and advanced.
  - There must be coordinated engagement of the ocean community in the Post-Rio and Post-2015 processes, especially in the development of a Sustainable Goal on Oceans and Coasts
2. Maintain the high-level political attention on ocean and coastal issues achieved at the Rio+20 Conference
  - Develop a roadmap for achieving Rio+20 commitments with the input of ocean stakeholders from all sectors and backgrounds, in countries around the world
  - Bring together the various Rio+20 voluntary initiatives on oceans to achieve synergy and maximum impact
  - Feature Rio+20 implementation at the sixth Global Ocean Conference (2014) to keep this issue high on the agenda of decision-makers
  - Support the Third International Conference for Small Island Developing States in 2014 and assist the SIDS in developing integrated ocean governance approaches that insure benefits to SIDS countries from the exploitation of resources in their Exclusive Economic Zones
3. Support New Global Initiatives (including the Global Partnership for Oceans and the UN Oceans Compact)
  - Advance the Blue Economy approach, working especially with countries such as China, Korea, and SIDS countries which have embraced the concept and are working on its implementation
  - Promote coordination among management efforts and initiatives in the implementation of the Rio+20 commitments
  - Promote a strategic approach to capacity development as an essential element of post-Rio+20 implementation
  - Provide avenues and platforms for improving the knowledge base related to integrated ocean governance
  - Facilitate dialogue among the regions with respect to ocean governance to identify effective policy approaches in need of further support
4. Track Progress on the Achievement of Major Ocean-Related Goals Emanating from UNCED, WSSD, and Rio+20
  - Undertake systematic and unbiased review of progress on major global goals and commitments related to oceans, coasts, and small island developing States (SIDS) from UNCED, WSSD, and Rio+20. Periodic systematic assessments of progress achieved (or lack thereof) will be conducted every five years with the input of ocean leaders from around the world. This should be coordinated with efforts to track



Cascais, Portugal

- on-the ground ocean conditions (such as through the World Marine Assessment, the Ocean Health Index, ocean indicators related to an SDG on oceans (as proposed by Visbeck)).
- Analysis and exchange of best practices in implementing integrated ocean governance, including by managers and high-level decision-makers
- Identify key gaps in implementation and a roadmap for assisting nations in filling gaps

#### 5. Strengthen Capacity for Ecosystem-Based Management of ABNJ

- Operationalize a twofold strategy:
  - 1) to assist nations at the global level to achieve agreement on the application of ecosystem-based integrated approaches to ABNJ governance,
  - 2) to work with regional entities (RFMOs, Regional Seas, LMEs) to experiment with area-based management approaches in different regions
- Organize cross-sectoral policy dialogues:
  - 1) to link global and regional processes on ABNJ, and 2) to learn lessons among regions on what ecosystem-based approaches may most usefully be applied in various regions
- Strengthen the capability of decision-makers, especially from developing countries, to manage activities in ABNJ and to participate in global and regional processes related to ABNJ
- Improve and broaden public understanding of the ecosystem threats and services related to ABNJ, particularly by high-level decision-makers.

#### Actions at the National Level

At the national level, national ocean leaders need support to scale up successful national and sub-

national efforts in EBM/ICM to include larger portions of the coast and ocean.

- Strengthen integrated institutions and ocean and coastal decision-making processes, including through the enactment of ocean and coastal laws
- Develop the capacity of decision-makers and managers to address challenges facing marine resources and coastal communities in a long-term, integrated manner and to equitably benefit from their marine resources
- Develop a global strategy for “ocean readiness,” mobilizing expertise and partnerships to ensure that national governments and institutions have the skills, knowledge, and capacity to develop Blue Economy frameworks, and to address major ocean-related challenges
- Enhance capacity development on the inter-related issues of ocean and coastal management, climate change, and biodiversity, especially among high-level leaders, among the next generation of leaders through investment in university programs, and among local community leaders
- Foster the development of multi-stakeholder ocean fora at the national level around the world to facilitate inclusive, cross-sectoral policy dialogue and improved policy development and implementation at the national level
- Promote multi-stakeholder input into the development of national ocean policies
- Improve capacity to conduct national reporting on the status of ocean resources and management and to contribute to the achievement of global commitments and the development of multilateral ocean policies





#### **Actions at the Regional Level**

At the regional level, there is a need to accelerate the development and implementation of EBM/ICM in regional and transboundary areas, including the Regional Seas, Large Marine Ecosystems, and RFMOs, encouraging the adoption of regional protocols on EBM/ICM to guide action at regional and national levels.

- Articulate and improve understanding of major ocean-related concerns, challenges, and priorities in different ocean regions around the world
- Identify best practices, success stories, and lessons learned from various regional experiences

- Promote improved information-sharing and dialogue among global and regional policy processes
- Promote regional interconnections among Regional Seas, RFMOs and LMEs to move toward EBM/ICM at the regional level

#### **At All Levels: Promote Understanding and Action on Ocean and Climate Issues**

- Improve understanding of ocean and climate issues by policymakers, managers, and the general public
- Support coastal nations, especially developing countries and SIDS, in bringing ocean and coastal issues into the UN Framework Convention on Climate Change negotiations
- Launch an ocean and climate information service providing a web-based platform for access to critical information on issues related to climate change and the ocean, including sea-level rise, coastal adaptation, ocean warming, ocean acidification, and mitigation using the ocean.

#### **CONCLUDING COMMENT**

As we move forward, although the ocean issues are facing difficulty in the post-2015 development agenda, a united ocean community can move forward with a sense of confidence and renewed purpose: We have a detailed set of global prescriptions on oceans from 1992, 2002, and 2012; we know what has/has not worked; we have a high level of political support; we have mobilized very large coalitions that will continue to work hard in advancing oceans at global, regional, and national levels.

Manuel Pinto de Abreu



# Statements\*

1. Background – Where do we stand?
2. Ocean Services – What is the value of the oceans?
3. Challenges, ideas and recommendations –  
What do we want to achieve?

\* Excerpts from speakers' abstracts, speeches and presentations, as well as from minutes taken by  
**Dr. Wilfried Rickels**, Kiel Institute for the World Economy, Kiel;  
**Dr. Kirsten Schäfer**, formerly GEOMAR Helmholtz Centre for Ocean Research;  
**Dr. Nancy Smith**, Future Ocean Marine Sciences, Christian-Albrechts-University, Kiel;  
**Dr. Emanuel Söding**, Cluster of Excellence Future Ocean, Christian-Albrechts-University, Kiel;  
and **Tim Salomon**, Bucerius Law School, Hamburg





## Background – Where do we stand?

**CALLUM ROBERTS, UNIVERSITY OF YORK, YORK, UK:**

We are the drivers of the current change. Population growth is rising exponentially. We now have 7 billion people and will have 9 billion in another 20-30 years, with the possibility of 11 billion, if better family planning is not introduced around the world. The population growth is driving increasing resource use. What that means is that the world around us is changing faster and faster and we have to adapt, to change the way we think about the management of the world's resources, if we want to survive. This will be the **biggest transition in human history**.

Unfortunately, we behave like we did thousand years ago. We are thinking of the world as being a place to exploit. A place of unlimited resources where we are managing the environment in a way that was ingrained in our thinking several hundred years ago. In the 17th century, Hugo Clotifus (a Dutch philosopher) put together the principles of freedom of the seas. Today we continue to think of the ocean resources as we please. Again, unfortunately that is no longer possible as we have a **capacity that has an enormous influence on marine resources outside national jurisdiction**. Beyond national jurisdiction refers to areas greater than 200 nautical miles offshore, which makes up half of the planet. 45% of the world area is ocean that is beyond national sovereignty. These regions are becoming particularly overexploited in a way we could have not imagined even 20 years ago. The speed of the transformation has been extraordinary. Unfortunately, the speed of political change and

thinking about ocean governance has been much slower. We are confronting the **possibility of the complete global extinction of many species** that have been around for much longer than we have. The leatherback turtle for example, which has an evolutionary history of 100 million years, is now on the brink of extinction as a result of exploitation in the High Seas. There are many others that are feigning in a similar manner. We therefore have a duty to ourselves to quickly change the way that we manage the oceans; if we don't, we will fail future generations. **Choices that we make today or decisions that we do not take, have a legacy that will essentially influence humans for the next 5–10 thousand years at least.**

**TONY D. J. HAYMET, SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CA, USA:**

The **human foot print** leaves a massive negative impact on the coastal system which – among others – is shown by the example of the ocean acidification on oyster growth in corrosive waters off the West Coast of North America. There are now **sound economic arguments** for preserving the ocean. Ocean acidification, a consequence of the oceans being overloaded with carbon dioxide from human fossil fuel use, has been shown by a group of researchers to hamper the development of larval oysters at a hatchery on the Oregon coast. After years of suspicion, this is measured proof that acidification has real, damaging effects on commercial fisheries and that they are happening not 100 years from now but right now.



Sadly we have only begun to list the abuses to which we subject the ocean. For some fisheries, like Atlantic Bluefin Tuna, we remove far too many fishes from the ocean each year. We replace them with endless hectares of **floating plastic pollution**, broken down by wave action to the size of a finger-nail but no smaller. About 30% of the CO<sub>2</sub> we have emitted in the last 150 years has dissolved in the ocean, and if we continue on this path, organisms that secrete calcium carbonate shells will soon struggle to do so and eventually dissolve. Since whatever we do cannot quickly be undone, we need to calculate the total cost of our thoughtlessness now.

**KARL FALKENBERG, DG ENVIRONMENT,  
EU COMMISSION, BRUSSELS, BELGIUM:**

There is still a low level of awareness with respect to human impacts on ocean health. This is even worse in the context of ongoing population growth. Already today a significant fraction of the world's population relies on ocean services for its basic living needs and this fraction will be increasing. In that sense a **better coordination of maritime policies and a shifting from the national to the regional and global level** are needed. But we should not look at the sea alone; we also need to understand what is happening on land, because the **oceans are affected by what is happening on land**.

**MOJIB LATIF, GEOMAR HELMHOLTZ CENTRE FOR  
OCEAN RESEARCH KIEL, GERMANY:**

The process of protecting the global environment is **stuck in a dead end**. How can we get out of it? There is much to do, especially if you think on a global scale. The last meetings on climate change did not come out with anything binding – only with

sentences like 'we seriously consider'. If we do not cut CO<sub>2</sub> emissions soon, acidification may ruin marine ecosystems followed by a clash of civilizations. The industrialized countries must take the first steps and begin to act immediately, for example, on the problem of 'grey' emissions, i.e. emissions from industrial production outsourced to developing countries or emerging markets. We have **completely failed to reach the goals formulated in Rio 1992**.

**HARTMUT GRASSL, MAX-PLANCK-INSTITUTE FOR  
METEOROLOGY, HAMBURG, GERMANY:**

Basic changes in the oceans are caused by higher CO<sub>2</sub> levels like sea level rise, ocean acidification or methane leaking from the sea floor. Looking back in earth's history, a 1°C temperature rise leads to a 20 cm rise in sea level. The oceans take up about one third of anthropogenic greenhouse gas emissions. The consequences of rising Greenhouse Gas (GHG) emissions are fatal. Coral reefs face destruction due to climate change and ocean acidification, model runs show methane bubbling due to the warming of the sea floor. It boils down to this: we have to learn to pay for global commons.

**MICHAEL K. ORBACH, DUKE UNIVERSITY,  
BEAUFORT, NC, USA:**

largely uninhabitable due to rising sea levels. The trend of people moving to cities and to the coasts is clear. 20 of the world's 30 mega cities – over 8 million metropolitan population – are in low-lying coastal areas. These cities and billions of hectares of 'natural' habitats are and will be affected by sea level rise. Therefore we will have to **'reinvent' our coasts**. Sea-level rise will occur; we cannot stop the rise that will occur between now and 2100, but





we can adapt to it. Even if humankind significantly reduces its input to greenhouse gases over the next century, one to two meters of sea level rise will still occur in this time frame. The coasts will be moving and people will move with them. **We will not be able to defend all coasts**; we have to decide which to abandon, when and how. We need immediate planning for these challenges, but we are facing a lack of law and policy tools for this task.

**H.S.H. PRINCE ALBERT II OF MONACO\*:**

Maritime issues impact far beyond local or regional matters as they determine the planet's principal stability. Not just biological stability of course, but climatic, economic and strategic stability as well. This needs constant repetition because we are

Pushpam Kumar

currently faced with **dangers of a new dimension**: Pollution – land-based or marine – is weakening the ecosystems, threatening species and compromising the future of entire regions. Overfishing is slowly emptying the seas of their inhabitants, disrupting biological cycles and jeopardizing the future of humanity, whilst our food requirements are ever-increasing. The exploitation of off-shore fossil resources, especially oil, is generating new threats to certain particularly **vulnerable regions** such as the Arctic. Finally, and most importantly, there is the growth in man-made greenhouse gas emissions with consequences for the climate and the atmosphere, as well as for the oceans, whose acidification has already reached unprecedented levels in the history of the Earth and is endangering several aspects of underwater life. In addition to the concerns identified above, there is another problem threatening the oceans: **insufficient governance** which is inadequate in the face of these new dangers.

**PAUL HOLTHUS, WORLD OCEAN COUNCIL, HONOLULU, HAWAII, USA:**

In discussing "Good Governance for Sustainable Marine Development" it is critical to have a **clear understanding of the status and trends in economic use of marine space and resources** – as well as the potential new kinds and areas of responsible use. Achieving a balance between 'blue' growth, jobs, and a healthy marine environment will largely be based on addressing the opportunities and challenges facing the diverse, extensive set of existing ocean activities. Success in improving ocean governance and sustainable marine development requires **coordinated leadership and collaboration** by the diverse, international



\* Excerpt from the Prince's speech on the occasion of the 3rd conference in Cascais, Portugal; the full speech can be found at [www.draeger-stiftung.de](http://www.draeger-stiftung.de), EU-U.S. conference series 'Sustainable Oceans', 3rd conference

# The ecological success stories remain stubbornly few

ocean business community which comprises shipping, energy, mining, fisheries and aquaculture, and more.

**JEFF ARDRON, IASS, POTSDAM, GERMANY**

Over the past 40 years or so, there have been established about a dozen broad-scale multi-lateral agreements, plus several more sub-agreements, as well as regional seas agreements and a couple dozen fisheries agreements to address the sustainable use of resources and/or conservation of biodiversity in Areas Beyond National Jurisdiction (ABNJ) – the 'high seas'. **This plethora of agreements** spans the continuum of hard to soft law, ranging from the UN Convention on the Law of the Sea through to voluntary codes of conduct.

Through these, some policy progress has been made, and some gaps have been (or are being) addressed, albeit rather slowly. Nevertheless, **the ecological success stories remain stubbornly few**. Most indicators show the condition of global marine biodiversity is worsening, suggesting the need for improvement of existing international

arrangements, and perhaps the need for new ones..?

On the **positive side**, in response to UN General Assembly resolutions, some bottom fisheries closures have been established. The International Seabed Authority has begun to consider biodiversity protection in management plans for deep seabed mining. The London Convention and Protocol is currently considering an amendment to address marine geoengineering activities, including ocean fertilization. Furthermore, the scientific knowledge necessary to better protect ABNJ is growing through the Convention on Biological Diversity's process to describe ecologically or biologically significant areas. **On the other hand**, progress towards multi-sectoral Marine Protected Areas (MPAs), as called for in international commitments, has been very slow, and revised targets are unlikely to be met in ABNJ. Similarly limited progress has been made toward cumulative impact assessments. Varying, often low, levels of transparency, accountability, and compliance reporting make it difficult to assess how well existing measures are being met. In the **absence of a global agreement to protect biodiversity in ABNJ**, existing arrangements will have to play a stronger role. Greater involvement should be considered for agreements with long-established track records, particularly CITES and the World Heritage Convention.

**VLADIMIR V. GOLITSYN, INTERNATIONAL TRIBUNAL FOR THE LAW OF THE SEA, HAMBURG, GERMANY**

The 1982 United Nations Convention on the Law of the Sea ('UNCLOS' or 'the Convention') is **one of the most complex international treaties** that have ever been negotiated. While the Convention







reaffirmed many provisions of customary international law codified in the 1958 Geneva Conventions its main achievement was progressive development of international law. While the Convention represents the best effort on the part of the international community of states to address regulatory issues that existed at the time of the conclusion of the Convention, it **cannot be viewed as resolving all the ocean governance issues**. UNCLOS should be viewed as a **solid framework foundation** for international governance of maritime activities, which is



an ongoing lawmaking process; as a platform on which new emerging issues relating to the international governance of activities in the oceans are to be addressed, gaps closed and deficiencies, if discovered, to be corrected.

**DORIS KÖNIG, BUCERIUS LAW SCHOOL, HAMBURG, GERMANY**

Even three years after the blow-out of the Deepwater Horizon, there is **no global legally binding**

**agreement concerning the safety of offshore oil and gas extraction activities** and the prevention, reduction or control of marine pollution therefrom. In the European Union, the harmonization of rules and standards on the safety of offshore installations and their implementation is under way. In October 2011, the European Commission submitted a proposal for a regulation on safety of offshore oil and gas prospection, exploration and production activities. According to this draft, Member States have to assess the safety and environmental performance as well as the technical and financial capacity of the operators. Operators are obliged to use best available technology, follow best environmental practices and remove disused or abandoned installations. The Member States have to establish **competent authorities for supervision, inspection and investigation** to ensure compliance by operators and impose appropriate penalties in case of violations.

**DAVID MILIBAND\*, GLOBAL OCEAN COMMISSION, LONDON, UK**

As Foreign Secretary I saw the difficulties of global governance, and weakness of the multilateral system. The oceans are a prime example of this. The UN Convention on the Law of the Sea (**UNCLOS**) set a benchmark for ocean governance, but in the high seas **its spirit is honored more in breach than observance**, as technological and economic change has outstripped the institutional mechanisms for protecting the common weal. The founding idea of the Global Ocean Commission (GOC) is that the gap between ocean expertise and political clout needs to be bridged. We are not going to add to the scientific knowledge about the oceans. But we can try to

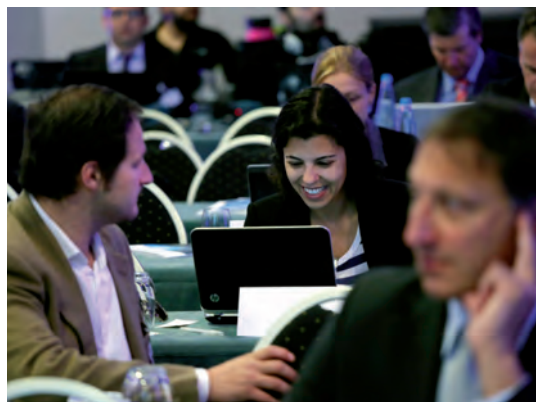
\* Excerpt from his speech on the occasion of the 3rd conference in Cascais, Portugal; the full speech can be found at [www.draeger-stiftung.de](http://www.draeger-stiftung.de), EU-U.S. conference series 'Sustainable Oceans', 3rd conference



turn the increasing evidence of ocean degradation into a political issue higher up the global agenda.

The **rules and incentives** for exploitation of the high seas are – **in the main** – too weak to serve the interests of current or future generations. **“Rules”**: We are concerned that key rules on fishing are set on the high seas by governments acting through Regional Fisheries Management Organizations (RFMOs), but they only bind those countries that are members of these bodies. They are focused on fishing for specific high value species, not the overall resource, and marked by resource allocation decisions rather than conservation imperatives. Since the rules do not apply to any countries that are not members of RFMOs, the result is illegal and unregulated fishing which is rife, as policing is almost nonexistent. **“Incentives”**: We are concerned that the economic incentives, for example through subsidies, are actually stacked for exploitation of high sea resources, not conservation. And the refusal to address issues like bottom trawling are crippling to the ecosystem. **“In the main”**: It is important not to knock everything. For example there is some evidence that the new EU fisheries policy is a step forward in science-led policy making. The International Sea-Bed Authority, does have comprehensive rules in place for regulating seabed mining. However, the seabed legally has been separated from the water column, which to me is a good example of how **high seas governance is disjointed and patchy**.

**ROBERT B. GAGOSIAN, CONSORTIUM FOR OCEAN LEADERSHIP, WASHINGTON, D.C., USA**  
US national ocean policy as announced by President Obama in 2009 is emphasizing **ocean stewardship**.



A strong focus is lying on the role of science, changes in ocean productivity, opening of the Arctic system, sea-level rise forecasting and adaptation, observing system requirements and others. A strong coastal and marine spatial planning is needed to protect the marine environment.

**SALLY YOZELL, NOAA, WASHINGTON, D.C., USA**  
Sustainable **‘blue’ growth** is not a luxury, but it is the future. A healthy ocean is necessary for a healthy economy. Coastal areas are responsible for about 50% of the global GDP. The US has been developing a national ocean policy since 2010. As many of us have seen, the U.S. **waters are becoming increasingly crowded** with traditional uses, such as shipping, fishing, and oil and gas development. At the same time, we need to support emerging uses that will benefit the U.S. such as renewable energy and aquaculture. All of these uses, whether traditional or emerging, will require that we undertake a **comprehensive science based approach to managing them versus the existing sector-by-sector approach** currently





being executed in most of the U.S. waters. There have been many examples from other parts of the world where countries realized the need to balance the many sectors of ocean uses with the need to preserve and sustain the ecosystems that support these uses. Much like the many countries of the European Union, states like Rhode Island, Massachusetts, Oregon, and Texas believe that a forward looking planning process will help both their state economies as well as their need to preserve the habitats and natural resources that contribute to a healthy ecosystem. Through implementation of the National Ocean Policy supported by a regionally driven marine planning process that is inclusive of all levels of government, business, industry and other stakeholders, we will be able to better deter-

David Miliband

mine how the ocean, coasts, and Great Lakes can be more sustainably used and protected, now and for future generations. The comprehensive planning efforts of the US government are showing initial results, e.g. the moving of shipping lanes on Stellwagen Bank to protect whales.

#### ACHIM STEINER, UNEP, NAIROBI, KENYA:

The assessment of the ocean involves the assessment of ecosystem services. This assessment requires a broad framework which captures the various interrelations between ecosystems including their degree of biodiversity with society and therefore human well-being. These interrelations are influenced by **external drivers** (e.g. climate change), **direct drivers** (e.g. land use, pollution) and **indirect drivers** (e.g. technology). Moreover, the political decision making and the overall governance approach has to be included also. Existing indicators and accounting schemes miss the inclusion of such ecosystem services. Neither GDP measures nor growth accounting does put any value to those services today.

#### JEAN PAUL RODRIGUE, HOFSTRA UNIVERSITY, HEMPSTEAD, NY, USA

Oceans are important commercial vectors supporting maritime transportation and global trade. Maritime transportation can be considered a fairly sustainable system since it is characterized by a high level of energy efficiency (energy per unit of cargo moved) and able to push economies of scale beyond anything possible for other modes. There is no effective form of modal substitution possible than maritime shipping for global trade. However, the **massive wave of globalization visible in maritime shipping** and the commercial use of the



# monitoring, control, surveillance

oceans is turning attention to sustainability challenges. The world's container ports are a carbon copy of global trade. Today shipping could be above the sustainable range with a massive impact on coastal ecology due to dredging, deepening, terminals, inland facilities and the shipping itself. Slow steaming, the answer to over capacity and high fuel prices, is a double-edged sword because there are more inventory along the supply chain. Nevertheless maritime shipping companies are opting for slow steaming for cost cutting purposes, but using the environmental agenda to further justify them. **Slow steaming** practices have become the new normal to which users must adapt to. Climate change is an issue that may add to the sustainability of maritime transport, particularly in terms of a more stringent

regulatory framework. Yet, since maritime transportation only accounts for 2.3% of greenhouse gas emissions attributed to fossil fuel consumption, the industry is a low priority target.

**JAMIE SWEETING, ROYAL CARRIBBEAN  
CRUISES LTD, MIAMI, FL, USA**

Cruise industry wants to move beyond dialog to actions. Unlike transport shipping, the **cruise ship industry** often does not have a good reputation. Eco tourism seems only to work on small scale. Challenges to the cruise industry are big, e.g. minimizing the environmental footprint by waste management systems and the reduction of CO<sub>2</sub> emissions. Recycling rates are up to 90% in the U.S. and the Caribbean, but e.g. in the Mediterranean







Elliott A. Norse

that is not possible due to local policies; waste sent on shore is sent to dumps instead of being recycled. Royal Caribbean (RC) focuses on energy saving, lower sulfur fuels, gas turbines. The greenhouse gas footprint should be reduced by a third by 2020 based on 2005 numbers. RC also invests on educating passengers onboard, e.g. they have an oceanographic atmospheric lab onboard a cruise ship which produces scientific data. Environmental officers on each vessel are responsible for implementing environmental regulations on the ships. Their role is not to check the machinery, but to check whether the regulations are followed and the system is working. Food waste is often still discharged into the water if legal, but in many vessels also treated.

**JOCHEN DEERBERG, DEERBERG-SYSTEMS,  
OLDENBURG, GERMANY**

Solid and liquid **waste management** is one part in the Deerberg-Multi-Purpose-Waste-Management-System (MPWMS®). Incineration systems reduce the amount of daily waste from a 5,000-passenger cruise ship from 70,000 kg (volume 124 m<sup>3</sup>) to 300 kg (volume 2m<sup>3</sup>) per day. Currently cruise ships handle waste much more efficiently than any other system on shore. A lot of the garbage in the sea is not from shipping, it is from shore side. Today the shipping industry is very green. 1-2% of the investments in a new ship go into waste treatment systems (solid and liquid waste). Public awareness is growing. Since the 1960s the shipping industry has set very high standards in treating waste. Driving forces are IMO local rules and regulations, cruise industry standards and competition. Forerunner in technology is the cruise industry. As a consequence, **100 million tons of waste are no longer dumped in the sea.**

**PETER HINCHLIFFE OBE, ISF & ICS, LONDON, UK**

The governance system (UNCLOS, IMO, etc.) for the regulation of international shipping is by and large effective although that is not to say that

improvements in governance could not be made. UNCLOS works, but other global regulation depends on ratification and implementation by member states. Regulation of international shipping is necessary in order to ensure long-term investment, and – recognizing the 25-year life of a ship – stable and well implemented regulations are essential.

It would not be in the best interest of the global society to fundamentally change the current system. Most environmental impacts of shipping are already regulated or awaiting entry into force after sufficient ratifications. Shipping carries 90% of world goods by volume. Unfortunately the good and improving safety record of shipping is not widely recognized by society where shipping has no real image.



John B. Richardson

**ELLIOTT A. NORSE, MARINE CONSERVATION  
INSTITUTE, SEATTLE, WA, USA**

Here are some of the **environmental consequences of a failure to further regulate the shipping industry** from an outsider's view:

- Organism transport in ballast water and on ship hulls,
- noise disturbing communication and food finding of marine animals,
- road kill of whales on shipping lanes,
- discharge of nutrients, particulates, carbon dioxide, etc.

Industry safety standards have been improved during recent years, and it is the industry's dream that shipping would, despite growth due to globalization, have an even lower impact on the environments than before. Issue of flagging is a problem. So is location: Because some vessels are exempt from regulations, it is not clear where they are. **All non-military vessels should be required to reveal their positions via AIS or similar, tamper-proof, real-time monitored tracking systems.**



## Ocean Services – What is the value of the oceans?

**PAUL SNELGROVE, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, ST. JOHN'S, NL, CANADA**

Why would we want to place value on the ocean? We commonly value land. We established private property rights on land, which has helped in advancing conservation on land. So could privatizing the oceans in some way help protect them? Privatization requires caution. We must protect areas for all people who value nature as well. Environmental responsibility must be a part of such a strategy. Do not sell, rather issue a concession on coasts that can be revoked. Something must happen to make policy makers change the way they act, taking into account the psychology of decision making.

We have emphasized the need to evaluate and conserve marine diversity. According to the **Census of Marine Life program**, scientists identify four to five new species every day. The number of fish species has been investigated and documented relatively thoroughly (Fish base project), but knowledge is lacking for many other species. Perhaps as little as 9% of marine species are known. To make the most of what we have, we must standardize and integrate our knowledge. The threats to marine biodiversity are numerous, e.g. fisheries, chemical pollutants, exotic species invasion and climate change. MPAs cover only 1.2% of the oceans. More MPAs must be established, but international law still cannot effectively address MPAs on the high seas. We must call for **better protection of biodiversity** by protecting species hotspots,

habitats, spawning grounds, subsets of populations, and source populations in all life stages of species.

**ACHIM STEINER, UNEP, NAIROBI, KENYA**

For several ecosystem services values can be assigned like coral reefs or fisheries. The value can be assigned in monetary terms but also in terms of how many people depend on the ocean for food or work. Also the ocean's value for tourism can be assigned. Furthermore there are several fossil and mineral resources on and below the seabed available, which have not been fully discovered yet, but which can in general be assessed. Nevertheless, there remain services which are more difficult to assess like the heat capacity of the ocean or its role as a carbon sink in the global carbon cycle. Moreover, there might be an additional value of the ocean if these carbon sink services



Maria de Assunção Oliveira Cristas





Mark Spalding

are enhanced by e.g. iron fertilization or alkalinity management. Those enhancement activities, however, would require taking into account in turn their potentially damaging influence on ecosystem services, e.g. through accelerated ocean acidification in case of iron fertilization or reduced ocean acidification in case of alkalinity management.

**TONY D. J. HAYMET, SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CA, USA**

Understanding the economic value of the oceans requires a **complete paradigm shift**. That value has been assessed until recently primarily in terms of what resources can be extracted from them. Thanks to recent research efforts, we see how that is inadequate. We should strive to make tangible the economic value of the oceans as they are in their present state. As scientists, part of our job today is to create an ocean meta-inventory: how it moves, how thermal energy is distributed within it, what its chemical characteristics are, what conditions are most conducive to sustainable fisheries,

and what its capacity is for storing and yielding petrological resources. Its storage of thermal energy is itself a monetizable resource that buffers us from catastrophic consequences of climate change; its fisheries are more rightly thought of when even its microbes are included as "crops" with economic significance; its seafloor parcels can be valued as terrestrial real estate is. The capacity of each "lot" to support biodiversity is among the most important price-setting variables. We have to be aware that the oceans are **home to the broadest ecological diversity on Earth**. Every sugar-cubed size of ocean bottom sediment contains about a million microbial cells. These cells can reveal new chemical structures to provide medical treatments for current diseases.

**PUSHPAM KUMAR, UNEP, NAIROBI, KENYA**

There is no doubt about the **importance of pricing the oceans**, for example with regard to **coral reefs and fisheries**. Although pricing coral reefs looks difficult at first sight, it can be done when focusing on their relevance for human beings. UNEP priced the value at around \$172 billion per annum in a rough proximate. These numbers include the fact that 500 million people are dependent on the reefs. It also has to be underlined that the threshold of irreversibility is met for coral reef damages. Concerning fisheries, about one billion human beings rely on fish as their main or sole source of animal protein, but half of wild marine fisheries are fully exploited, a further quarter is already over-exploited. Estimated annual incomes from this sector of some \$80 – 100 billion are at risk, as are some 27 million jobs. Studies on the loss of mangroves which are



important for food, as raw material and for recreation, show a decline of mangroves all over the world. By 2050 the loss of mangroves will be priced at around \$6.6 billion. Pricing is essential for the conduction of a cost benefit analysis, which forms part of conventional decision making and it helps to make nature's value visible. **Incentives have to be**

**changed by way of taxes, charges and subsidy reform** in order to make pricing an effective tool for decision making and for the way ahead.

**LARRY MCKINNEY, HARTE RESEARCH INSTITUTE FOR GULF OF MEXICO STUDIES, CORPUS CHRISTI, TX, USA**

The Gulf of Mexico Large Marine Ecosystem includes a complex network of submerged banks on the continental shelf of the USA, Mexico and Cuba. These banks ring the world's ninth largest body of water and are connected by the Gulf Stream. These banks are vital to sustaining biodiversity and fisheries that are economically significant, both commercially and recreationally. For the value of the area we can give some numbers: 1.4 billion pounds of seafood are harvested per year; Katrina lead to 1,836 people dead, and \$81 billion property damage. Insurance companies put the protection of endangered structures in the coastal areas on their agendas. We need a **report card for the oceans** bringing ocean services into focus.

**DORIS KÖNIG, BUCERIUS LAW SCHOOL, HAMBURG, GERMANY**

We only know about a tiny fraction of marine life and there is far too little information about technologies for sustainable use of the seas. This makes it difficult to establish the sensible international rules we so urgently need. And even where painstakingly compiled international marine agreements do exist, they are often not implemented by states because their own interests conflict with such agreements or simply because they lack the necessary capacities. Furthermore, the political assessment and legislative protection of the oceans are highly complex processes because it is **hard to define the actual worth of the oceans in concrete figures**.

**TONY D. J. HAYMET, SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CA, USA**

**Fisheries are a good example for measurable monetary losses.** Look at the oyster industry in Oregon which is affected by ocean acidification. The loss is worth about \$278 million – small compared to the fossil fuel industry, but that industry is everything to the people who rely on that fishery and a source of great pleasure to the consumers it serves. Moreover, the acidification brought on by the past 150 years of fossil fuel use will require more than 1,000 years to reverse. The good news is that some marine protected areas have been proved to be effective. Fishermen in Baja California, Mexico decided more than a decade ago to **create a marine reserve and make themselves the enforcers of its boundaries**. The region they protect is now one of the biologically richest places in Mexico. And a single hectare of preserved Mexican



Tony D. J. Haymet

mangrove forest is worth \$37,500 per year based on the biodiversity it supports, according to research published in the Proceedings of the National Academy of Sciences.

Meanwhile colleagues in Australia have estimated that a single reef shark generates in its lifetime \$2 million in tourist dollars to the economy of the Pacific island nation of Palau, an amount considerably greater than it would yield dead as food.



Aldo Chircop

This value exceeds even the bizarrely high return shark finners derive from slicing off a few triangular pieces of cartilage before returning a crippled shark to the ocean to die a slow painful death.

**It seems that we have failed to convince our governments to preserve the ocean for "moral" reasons.** But now the economic reasons are plain enough, and as we see since the global financial crisis, governments do still react to financial drivers.





Iris Menn



Paul F. Nemitz

**PAUL SNELGROVE, MEMORIAL UNIVERSITY OF  
NEWFOUNDLAND, ST. JOHN'S, NL, CANADA**

Ocean services to humans include climate regulation, disturbance regulation (flood control, storm protection), food supply, nutrient cycles, genetic resources, recreation, etc. The value of ecosystems becomes obvious when compared to manmade structures that provide similar services (wetlands and their manmade replacements). The value of ecosystem components (single species, benthic activity, biodiversity) is not easy to evaluate, and scientists suspect loss of one component may also lead to loss of others.

Oceans may be **valued via risks**. Insurance industries routinely evaluate loss and identify the value of that loss. After the Gulf of Mexico oil spill losses were assessed. But this assessment illustrated that it is difficult to differentiate between short-term values (tourism) and long-term values (fisheries). The shipping industry easily valuate risk when we invest in ocean transport.

Isabella Lövin





## Challenges, ideas and recommendations – What do we want to achieve?

**DIETRICH SEELE, FEDERAL MINISTRY OF TRANSPORT, BUILDING AND URBAN DEVELOPMENT, BERLIN, GERMANY**

**Sustaining the oceans is a bit like saving the world.** Mankind has to consider that only ecologically intact oceans can be a source of food and living space. The geographical scope of maritime policy has to be wide. All states including land-locked countries need to be involved. It is not possible for mankind to cope with all global challenges without involving the oceans. All seas have to be taken into account when doing spatial planning. Borders and rules of ecological systems and social systems have to be considered.

On 20 July 2011 the Federal Government of Germany has adopted the "Maritime Development Plan. Strategy for an integrated German Maritime Policy" ([www.bmvbs.meerespolitik.de](http://www.bmvbs.meerespolitik.de)). Its overall aim is a **holistic approach**, and it urges all involved parties to take integrative action and to interact for the purpose of creating favorable conditions for the protection of the seas, the sustainable use of the seas and the preservation of Germany's industrial competitiveness as a location for technology, production and logistics. The interdependencies between the advancing globalization, the increasing use of biotic and abiotic marine resources, the pollution of the marine environment and climate change require a policy approach that establishes a balance between economy, ecology and social

issues. The essential principles of such a policy are **integration, interaction and innovation**.

In the interest of marine environmental protection, maritime security, maritime surveillance and maritime observation, linked-up efforts with European neighbours are also important. What is more, a holistic approach to maritime policy also pursues a global approach, since neither winds, emissions and currents nor marine creatures or ships stop at national borders. **The Federal Government of Germany is therefore lobbying for an international architecture of integrated maritime policy.**

**FRANK SCHWEIKERT, ALDEBARAN MARINE RESEARCH AND BROADCAST, HAMBURG, GERMANY**

Faced with the enormous challenges of climate change and a growing world population, current law and policy structures are not sufficient to undertake the politically necessary steps for the conservation of our world ocean resources and environments. We are faced with the dilemma that we cannot respond in an efficient and effective manner to apply our excellent knowledge and experience in ocean science and technology to our policy and management challenges. There is an urgent need to **pool our visions and capabilities** for protection of the oceans. We will need to coordinate as quickly as possible at all levels – national, European and global – for the sustainable development, use and protection of the ocean. At all of these levels we need the cooperation of a broad range of stakeholders,



participating in joint governance of the oceans as the common heritage of mankind. A **German Marine Foundation and a European Ocean Foundation** could be important regional links in such an initiative, bridging the gap between the individual nation states and broader international interests.

**ERIC C. SCHWAAB, NOAA,  
WASHINGTON, DC, USA**

An effective management regime for conservation and sustainable use of marine resources must build on **key foundational elements**. First, it is critical that we proceed with a **greater understanding of the habitat and ecosystem contexts** in which decisions regarding the use of individual biological components are made. We must understand and incorporate information about the challenges habitats and ecosystems face, and what that means for management decisions both spatially and temporally. Secondly, all effective governance must strive for a **shared scientific understanding** as a basis for planning and action. Third, **management frameworks** and approaches, with clear, shared goals and strategies, are also required. Finally, **management implementation** must be supported by operational compliance mechanisms, including appropriate



Petra Pissulla

responses to non-compliance as well as assistance with meeting obligations. Compliance mechanisms must have the capacity to improve behavior. For example, regional fishery management organizations (RFMOs) are tasked with coordinating science and management for shared resources in complex ecological and political environments. However, the management objectives of RFMOs cannot be effective unless all of these components align and organizations adopt monitoring, control, and surveillance measures, review members' adherence to the rules, and consider the impacts of non-member fishing activities and other factors.

**HAITZE SIEMERS, DG MARE, EU COMMISSION,  
BRUSSELS, BELGIUM**

The sea has to be seen as a resource. The maritime economy is growing; population is growing. We need blue growth for the economy. Maritime sectors produce 3-5% of the global GDP and show growth rates of 10% or more. By developing concepts for a sustainable ocean we must face the rules of Mare



Anne-François de Saint-Salvy

Liberum. **We need a coherent and integrated approach with growth in coastal regions that is green and innovative.** There should be a sea basin strategy (Baltic, Mediterranean, and Atlantic) and a joint and coherent management for the oceans. Stakeholders must be involved and new technologies should be developed on the basis of sustainability. It may turn out as a problem that sustainability labels have become popular. A precise and efficient assessment of these labels will be necessary.

**PAUL SNELGROVE, MEMORIAL UNIVERSITY OF  
NEWFOUNDLAND, ST. JOHN'S, NL, CANADA**

Today GDP is the most commonly used index to demonstrate monetary value. What other indices can we think of? Who could popularize them? Who is concerned about what? Politicians think on time frames of election cycles, and no politician is elected to represent the oceans. Sustainability is less attractive than short-term profit. Most people take little notice of ocean ecology.

**RAINER FROESE, GEOMAR HELMHOLTZ CENTRE  
FOR OCEAN RESEARCH KIEL, GERMANY**

**After global warming, overfishing is the second largest environmental challenge that the oceans are facing today.** About 40% of the global fish catch is processed to fish meal and used as animal feed or fertilizer – instead of being used as high quality low price protein for human consumption. We need to finally **implement the concept of maximum sustainable yield (MSY)** in fisheries, instead of just talking about it, for three decades now. The MSY concept aims for good catches



Peter Schlosser

(higher than today) from large fish stocks (much higher than today) at lower cost (because there will be more fish in the water). The concept considers species interactions. The difficulty of how to provide stock assessment data for all species can be solved by using proxies (catch data and resilience). Other than global warming, overfishing can be fixed within a few years' time, given political will, including **stop of subsidies**. Rio +20 (Article 168) provides an excellent base for fixing fisheries. The EU fisheries policy reform of 2013 has taken a large step in this direction, however, we now need to see change in the water.

**TIAGO PITTA E CUNHA, COUNSELOR TO THE PRESIDENT, LISBON, PORTUGAL**

If 'blue' growth is a summary of economic activities related to the ocean, we have to **turn this blue growth into blue smart growth** to enlighten sustainability. Today human generated capital leads to environmental loss. We have not decoupled human economic growth from natural degradation. Blue growth as economic growth should take into account impacts on the ecosystem. We should make it work through international cooperation on a solid policy ground. The problem is that **hardly anybody cares, if we lose biodiversity**. Therefore we need a widely accepted concept for sustainable blue growth. And we need better public attention for what we want to protect.

**DAVID E. JOHNSON, SEASCAPE CONSULTANTS LTD, ROMSEY, HAMPSHIRE, UK**

The ocean does not respect national boundaries. Securing blue growth is essential; it means collaboration, compromise, consensus and partnerships, working towards a 'collective arrangement'.



Joshua S. Reichert, Matthew King

A long-term approach is needed – certainty in an age of uncertainty. Good science, careful monitoring and accurate assessment and valuation must underpin policy. Measures need to be implemented and the implementation needs to be checked:

**applying the management cycle plus monitoring, control and surveillance.** Also, the right management scale has to be adopted, i.e. smaller scale coastal initiatives, larger scale offshore initiatives. And in order to achieve better marine spatial planning, decision makers should focus on ecologically or biologically significant areas as identified by the Convention on Biological Diversity (CBD).

**Up to now scientific advice does not lead to good practice.** Tools to secure blue growth need to be developed and implemented; there is a need for transition funds. A good example for establishing such a process is the establishment of the International Seabed Authority 35 years ago. A clear scheme should be developed to enable blue growth, bringing marine stakeholders (e.g. IWC, IMO, OSPAR) on board to **develop governance principles** for Maritime Spatial Planning, biosafety and other aspects of blue growth. There is a need to measure and manage impacts which leads to a call for regulation and effective monitoring.

**MANUEL PINTO DE ABREU, SECRETARY OF STATE FOR THE SEA, LISBON, PORTUGAL**

One aspect for securing blue growth is overcoming the difficulties in explaining the concept to fishermen. There must be open discussions between fishermen, government, academia and NGOs. They must understand why they may only fish one third of last year's harvest of sardines. We need a knowledge-based approach to the exploitation and preservation of the oceans and marine resources.





Hans Corell

**The race to the ocean, the last race for the nations on earth, is underway.** The need for more and new natural resources prompted such race. A new legal framework has to be created which departs from a scientific and environmentally oriented set of major principles to promoting the ocean exploration and exploitation under a new map of sovereignties and jurisdictions. The move to internationalization is important. The New Era of Discoveries is **creating an ocean of new opportunities for blue growth**. Marine Spatial Planning is a major tool for the sustainable use of the ocean.

**HAITZE SIEMERS, DG MARE, EU COMMISSION, BRUSSELS, BELGIUM**

There must be a race to the top for maximum sustainability. We should go aggressively for high goals. **Today's concepts are too soft.** We know

enough about finite resources and biota, we know enough about sustainability. We need the political will to implement sustainable blue growth. Nations need the capability to develop ocean sustainability. A concept for the high seas is needed, we have to continue the reform of the fishery management process, protect habitats and increase MPAs.

**HANS J. PETERS, GEORGE MASON UNIVERSITY, WASHINGTON, D.C., USA**

There is a big gap between commitments and implementation in environmental challenges (e.g., climate change, biodiversity). Up to now 34 countries have not ratified the Kyoto protocol. There is a 'balkanization' approach (too many rules) on ocean management in the debate: Too much talk, too little action. We have plans and initiatives but we do not get very far. **All measures necessary to protect the oceans could be financed with the introduction of an internationally valid "Sea Tax"** which would be payable by anyone making use of the oceans.

**PAUL F. NEMITZ, EU COMMISSION, BRUSSELS, BELGIUM**

**Four maritime sectors are relevant to European policy on the sustainable use of ocean resources.** The first sector is renewable energy with floating installations for offshore wind parks. The second sector is blue biotechnology with ocean resources for food, health products, cosmetics and the demand of protecting biodiversity. The third sector covers the deep-sea Atlantic resources, where the EU has a global view and sees its responsibility for the development and implementation of sustainable technologies. The last sector deals with the short-distance maritime transports with the EU being the world market leader and showing high effort



# integration,

## interaction, innovation

technology development. **For the Arctic four main challenges** have to be taken into consideration: working windmills at  $-40^{\circ}\text{C}$ , the use of the Arctic sun, risks of extreme conditions and the need for a stable situation to develop the northern sea route.

**HARTMUT GRASSL, MAX-PLANCK-INSTITUTE FOR METEOROLOGY, HAMBURG, GERMANY**

Physical changes in the ocean will influence the marine habitat. The basic changes due to mean global warming at the surface will be – firstly – a warming of the world ocean down to the bottom of the sea, continuing over many centuries even after a successful climate policy that would be keeping mean surface warming below  $2^{\circ}\text{C}$  ( a goal set by the UNFCCC parties), and – secondly – **an accelerated sea level rise during at least the coming several centuries**. Two of the key questions in this context for us scientists are: Will larger parts of the Greenland or the West-Antarctic ice sheet disappear in the coming centuries, even if the  $2^{\circ}\text{C}$  goal is met in the 21st century? How much of the huge methane hydrate reservoirs in the cold ocean bottom and slopes will turn into gas and escape into the atmosphere? Given these physical changes marine ecosystems will change. Observed and projected impacts on the ocean habitat will damage warm water corals, shift fish stocks and reduce or eliminate sea ice ecosystems.

**MARK J. SPALDING, THE OCEAN FOUNDATION, WASHINGTON, D.C., USA**

The implications of sea level rise and associated storm surges are loss of coastal infrastructure, dislocation and damage to human settlements. For the governance path for Sustainable Marine Development a common phrase in business is that



Doris König

there is “never time to do it right, always time to do it over.” We have already reached the point where we must say “we have done it over so many times, we would save money and time by doing it right” for the coast and thus rebuild and relocate for resilience.

**Rebuilding for resilience** refers to the fact that current law makes it hard to consider future super storms when rebuilding, and it is important that good governance require such actions as raising buildings, recreating natural buffers, and building boardwalks in ways that are less vulnerable.

**Relocating for resilience** means that we have to accept that in some places there may be no way to rebuild with strength and safety in mind—in those places, the front row of human development may have to become the natural buffers we recreate, to preserve the human communities behind them.

**MICHAEL K. ORBACH, DUKE UNIVERSITY, BEAUFORT, CA, USA**

**Four major challenges can be identified:** 1) Not making the situation worse by developing more low-lying shoreline; 2) Moving people and major





infrastructure ,upland and inland'; 3) Making provision for the movement of ,natural infrastructure' such as wetland, marshes, lowland forests and mangroves; and 4) Dealing with abandoned, inundated infrastructure. Discussing these challenges could frame an opportunity to ,reinvent' the coastline in a sustainable fashion.

**PETER M. HERZIG, GEOMAR HELMHOLTZ CENTRE FOR OCEAN RESEARCH KIEL, GERMANY**

By 2050 about 9.5 billion people will inhabit the planet. The oceans will be in the focus to meet their demands. Ocean mineral resources are mineral sands, cobalt crusts, manganese nodules, diamonds, and massive sulfide deposits. Ocean mining currently takes place in coastal areas. Today these resources are difficult to mine (cobalt crusts) or their mining will cause severe environmental impacts (harvesting manganese nodules will cause a desert storm in the deep sea). But large-scale marine mining will take place in the near future. To prepare for that environmental monitoring is essential, **MPAs have to be extended and controlled.**

**MARTIN VISBECK, GEOMAR HELMHOLTZ CENTRE FOR OCEAN RESEARCH KIEL, GERMANY**

What do we want the oceans to look like in the future? And what do we mean by ocean sustainability? We should **draft some concrete sustainability goals**, timelines, milestones, institutional design, ideas for governance and the coalition of regions. **Sharing of good practices** is important. We should think about the value of a north-south dialogue. And everyone should clarify whether he wants to engage. We have to think about how we can reward people who spend their time on these issues. We should ask the UN and its agencies to

explain to us what they will do about 'Living with the oceans'.

**LAURENCE MEE, SCOTTISH MARINE INSTITUTE, OBAN, ARGYLL, UK**

We are increasingly moving to larger scale social-ecological systems in a globalised world but haven't yet learned to operate in them or govern them. In the face of high levels of **uncertainty – including uncertainty over cause-effect relationships** and the extent of issues such as climate change, acidification and species shifts - we must exercise precaution, not only through the creation of protected areas but also by targeting activities that are known to be unsustainable or particularly destructive (there are plenty of examples). **Current demands on the ocean are unprecedented;** we have insufficient firm scientific evidence for definitive planning but adaptive management is a useful (but not flawless) way to move forwards. Adaptive management and the Ecosystem Approach require society (stakeholders, governments, etc) to set goals based on a vision for the future and this is particularly difficult with **low levels of marine environmental literacy.** Pilot scale developments based on 'learning by doing' will only work if there are feedback mechanisms and transparency with verifiable information.

**ERIC SCHWAAB, NOAA, WASHINGTON, D.C., USA**

Effective ocean management requires first and foremost a better understanding of the ocean. Science is an essential foundation for better ocean management. Based on **sound science** we can develop clear shared goals and a **shared management framework.** That management framework requires both implementation and monitoring



Callum Roberts

strategies and depends on better coordination among existing institutions. Implementation must be supported by strong compliance mechanisms, and some members may need assistance to achieve compliance. A monitoring strategy is needed to measure progress and to evaluate the effectiveness of management strategies. With respect to shared management frameworks some examples include the eight existing regional fishery management councils around the US and the sister sanctuary agreement between the US and France for the purpose of protecting endangered humpback whales.

**WENDY WATSON-WRIGHT, IOC/UNESCO,  
PARIS, FRANCE**

There is, indeed, still limited understanding of the ocean, particularly when it comes to society's impact on it. **We have only one ocean which is finite and whose resources are limited.** Against this lack of understanding, the deterioration of the ocean is ongoing. The impacts of climate change

on the Arctic Ocean is especially foreboding, where melting is continuously accelerating and ice-free summers look set to become the norm in the near future. On the positive side, the **Global Ocean Observing System (GOOS) is providing accurate descriptions** of the present state of the ocean and allowing forecasts of climate change in order to promote planning for adaptation. The **Rio+20 process** was an important step for improving ocean and coastal management, and we hope that ocean governance will be reinforced through further promising initiatives such as a proposed UN Global Sustainable Development Goals (SDGs) for the Ocean, the Global Ocean Commission and the IOC's Post Rio strategy for Transfer of Marine Technology. In addition, the role of Marine Spatial Planning should be addressed and it should be explored whether the MSP approach could be translated to the global ocean. There are already **no less than 576 bilateral and multilateral agreements regulating this special international space, but none of these is sufficient in scope to address the main challenges we face in sustaining our ocean.** It is essential that we face the overarching challenges, and for this **we need powerful global initiatives.**

**CHRISTINA DE ASSUNÇÃO OLIVEIRA CRISTAS,  
MINISTRY OF AGRICULTURE, SEA, ENVIRONMENT  
AND SPATIAL PLANNING, LISBON, PORTUGAL**

Raise the public awareness: the Atlantic Strategy of the EU is an implementation mechanism and involves the dialogue with the public. The Atlantic forum is built on this strategy, but it cannot be successful, if we are leaving out one of the pillars which are the social, the economic and the environmental pillar.





**ED HILL, UNIVERSITY OF SOUTHAMPTON,  
SOUTHAMPTON, UK**

With regard to ocean observations **trust and visibility** are two sides of the same coin. However, most of the observing systems are outside areas of national jurisdiction and just maintained by the scientific community. Thus it is important to convince the countries to buy in: we have to find mechanisms to synthesize the data to make them more available and usable (e.g. most of the data is used for seasonal forecasts).



Rupert Howes, Dierk Peters

**VLADIMIR V. GOLITSYN , INTERNATIONAL TRIBUNAL  
FOR THE LAW OF THE SEA, HAMBURG, GERMANY**

The adoption of UNCLOS is a **significant breakthrough in the development of international law**. It is not only a codification of existing law, but also development of new laws. UNCLOS is a framework instrument. The draft of UNCLOS was not developed to provide answers to all questions. There are

also two implementing documents adopted after UNCLOS. This was necessary for the further development of UNCLOS. International governance is for all and should be implemented by all. One crucial question refers to the balance between the use of marine resources and the freedom of the high seas. UNCLOS provides a **binding dispute settlement mechanism**: Individual states should respect and comply with UNCLOS to protect marine resources for common concern. If a state does not comply, then other countries could bring this state to the International Court of Justice. There is no exception to the mandatory dispute settlement of UNCLOS. **It is surprising that so far the mechanism has not been used.** Having the US as a member of UNCLOS might make the dispute settlement regime more useful.

**KRISTINA M. GJERDE, KONSTANCIN-CHYLICE,  
POLAND (CURRENTLY CAMBRIDGE, MA, USA)**

We do have sufficient legal tools to address most ocean resource problems within national jurisdiction, however, there is **no effective tool to do the job in the high seas and seabed Area Beyond National Jurisdiction**. The provisions of UNCLOS are not sufficient. We need to 1) cultivate a sense of shared responsibility, 2) condition access to those who agree to play by the rules, and 3) enable effective enforcement – the three elements defined by Elinor Ostrom as prerequisites for effectively managing a commons.

The question is how? In the Rio+20 document, principles defining this notion of shared responsibility are set forth in paragraph 158 (precaution, ecosystem approaches, biodiversity conservation), but these need to be accompanied by a specific mandate for Marine Protected Areas and other

area-based conservation measures and the **modernization of regional (and sectoral) oceans management bodies**. To address conditional access it will be necessary to strengthen procedures for environmental impact assessments, including cumulative impacts and ensure measures are adopted to prevent significant adverse impacts. Stepped up efforts are also needed to ensure existing obligations are more effectively implemented. Much can be done by strengthening transatlantic cooperation but mutual support for a new global agreement under UNCLOS is needed to enable effective conservation and sustainable use of ocean resources beyond national jurisdiction. Such an agreement can incorporate, among other things, the Rio+20 ocean principles, conservation tools such as MPAs and EIAs, criteria for regional reform, and support for improved cooperation in monitoring surveillance and enforcement.

**DORIS KÖNIG, BUCERIUS LAW SCHOOL, HAMBURG, GERMANY**

We need to **implement and enforce stricter regulations on the safety of offshore oil and gas extraction activities in the EU** in order to close legal gaps. The first is about prescriptive and enforcement jurisdiction under UNCLOS (specifically Art. 208 and 214). On the regional level, only four of 14 regional seas conventions are supplemented by a protocol/annex dealing with pollution from offshore activities (Kuwait, Barcelona, Helsinki and OSPAR). The EU is about to come up with new legislation. There are **more than 1000 oil and gas platforms in EU waters**, mostly in the North Sea, but there are also increasing offshore activities in the Mediterranean and the Black Sea. In Oct 2011,



the European Commission proposed a “Regulation on Safety of Offshore Oil and Gas Prospection, Exploration and Production Activities which applies to all marine areas under Member States’ jurisdiction, and which makes licensing dependent on proven technical and financial capacities of the operator to cover potential damages, including environmental damages.

**Lessons to be learned:** 1) coastal states seem to be best equipped to implement and enforce global and/or regional rules and standards, but some skepticism seems appropriate with regard to the implementation by international bodies; 2) rules and standards should be clear and precise enough to be implemented and enforced; 3) in the common interest of the international community, states are obliged to fulfill their implementation and enforcement duties; 4) best practice guidance; 5) duties to cooperate with other states, share information and report to an international treaty body or IGO on what has been done; 6) compliance regime; 7) capacity-building for developing countries; 8) obligatory dispute settlement.





# dangers of a new dimension



Karl Falkenberg

**MICHAEL K. ORBACH, DUKE UNIVERSITY,  
BEAUFORT, NC, USA**

Currently we are facing a lack of regulation. People (society) have a significant potential to negatively affect the ocean. Irrespective of this potential for impacts, **the ocean is a black hole of policy and regulation on planet earth, compared to the land and even the atmosphere** (e.g., every airplane is registered and monitored while we do not know which trawler is fishing where). This lack of monitoring is certainly not explained by limited technological ability, but by **limited political will and limited capabilities** to apply those technologies in certain regions of the world. Consequently, in addition to a shift in policy, more resources are necessary. For that purpose, a **World Ocean Public Trust** could be initiated intended to support the world public trust resources of the ocean, in particular in areas beyond national jurisdiction (ABNJ). A World Ocean Public Trust would reflect the Common Heritage of Humankind principle and should be implemented

through international, authoritative bodies. Furthermore, a **World Ocean Public Trust** should be a cooperative initiative with UN and regional and national bodies. We need to call for a **policy enclosure of the World Oceans**: No human activity should be allowed in, or affecting, the Area Beyond National Jurisdiction without a policy and permitting procedure overseen by an authoritative international organization, in cooperation with regional, national and private sector organizations.

**H.S.H. PRINCE ALBERT II OF MONACO\***

Insufficient governance is inadequate in the face of the new dangers for our oceans. Our international system is struggling to take environmental issues into consideration. Extending beyond borders, driven by an extremely long time frame which does not respond to short-term interventions, and above all requiring global action, environmental protection often remains the blind spot of our political systems. Our civilization is in fact essentially maritime-oriented, whether it comes to transport, energy or food. And it will become increasingly so over the next few decades. That is why the governance we need to build, efficiently and as quickly as possible, has to be designed, developed and trialed in **close and permanent cooperation with these economic players**. Their capacity to meet the population's needs is matched by their ability to invent new solutions for the challenges ahead. **Innovation by the private sector** is, in this respect, a necessity that should be given everyone's support. And one of the responsibilities of public authorities is to encourage blue growth at every level, through economic measures, public commissions, education and training, and above all by supporting research, which plays an irreplaceable role here.

\* Excerpt from the Prince's speech on the occasion of the 3rd conference in Cascais, Portugal; the full speech can be found at [www.draeger-stiftung.de](http://www.draeger-stiftung.de), EU-US conference series 'Sustainable Oceans', 3rd conference

**PAUL HOLTHUS, WORLD OCEAN COUNCIL,  
HONOLULU, HAWAII, USA**

Adequate protection and management of the seas will not be achieved without including the business community – the **economic players need to be involved**, but do not repeat the mistake of neglecting the ocean industries that are driving economic development; companies care about the oceans in these industries and are interested in dealing with the impacts and effects on oceans by shipping, fishing, mining and other activities in order to contribute to sustainable development. For this we need to focus on science, we need to improve the science on ocean observation and monitoring, and we have to **link science with business drivers and business values** and with marine protection and conservation.

A **European Ocean Alliance** would be an opportunity to engage with the business community; bring together leadership companies across the Atlantic in a transatlantic effort, and make sure that we engage in blue growth and a sound marine environment.

**ELLIOTT A. NORSE, MARINE CONSERVATION  
INSTITUTE, SEATTLE, WA, USA**

Since the shipping industry is one of the major global players, it should consider **seven changes for maritime transportation** that would be good both for "ecology and economy," a "double win" that allows for the shipping industry to continue being profitable while helping to save our oceans:



1. End the practice of **ballast water** discharge, which moves species from one place to another disrupting ecosystems.
2. Dramatically reduce **underwater noise**: The sounds of ships on the high seas could be especially damaging to blue whales, which rely on hearing to find mates in the vastness of the sea.
3. Become an ardent champion for the **protection of the Arctic**: The Arctic Ocean is currently going from "a positive ocean to an industrialized ocean".



Shippers need to minimize impact. What they do when the ice melts will decide the ocean's health.

4. **Lower shipping's biological footprint**: Ships are now larger and more automated than ever and are colliding with whales and other endangered wildlife. There are places with a large concentration of these endangered species that are easy to avoid. Some bodies of water, including the Panama Canal, have good policies that other places should adopt.

5. Use the shipping industry's importance and authority **to establish more strong marine protected areas**: The industry could use its vast resources to create areas around the world where wildlife could be protected from ships interfering with their habitats, their ecological real estate. These areas would also help sustain human life.

6. **Integrity and accountability in flagging**: The shipping industry needs to stop nations from engaging in "a race to the bottom." Flags of convenience have unfairly been used by certain shipping interests to reduce operating costs over interests who want more accountability.

7. An **electronic/audio ID system**: Some ships are not required to have VME or AIS identification systems that tell other ships where they are. This, and speeds that are too high, results in more crowded ocean spaces and, sometimes, needless collisions of economic and ecological systems.

**U. RASHID SUMAILA , THE UNIVERSITY OF BRITISH  
COLUMBIA, VANCOUVER, BC, CANADA:**

There is no management of the global ocean without managing the High Seas; the global ocean is connected – and there is therefore only one ocean in fact. Fish do not respect national boundaries. High Seas management is crucial to the sustainability of the global ocean because the High Seas'





fish stocks have low productivity and long life spans. Since there are only few High Seas fishing nations, and since much high and deep sea fishing is unprofitable (subsidies are 25% vs. 10% profit per landed value of deep sea bottom trawlers), what could be done to prevent problems caused by a weak high seas legal regime spilling over to other parts of the ocean?

Since a first bold suggestion that was presented at the first Global Ocean Commission Meeting in Cape Town, i.e. close down the High Seas to fishing in order to stop wasting ecological and economic resources, was highly contested by colleagues, here is a second suggestion: if you think that a complete closure is impossible, start by closing the High Seas to fishing, and then open

little windows or pockets of areas in the oceans to fishing to help both the ecology and economics of High Seas fishing.

**MATTHEW KING, DG MARE, EU COMMISSION, BRUSSELS, BELGIUM**

The European Union has looked very closely at the U.S. The discussion with U.S. and Canadian researchers has started. We are beginning to 'crack the nut'. Trouble in the Gulf of Mexico literally washes ashore in the European Union. The goal is to find out what we can do together. **The U.S. and the European Union have already established an Atlantic marine research workgroup and an Arctic research workgroup.** It is now time to convert ideas into plans: The 'green' side or the

Vladimir V. Golitsyn



# rules & incentives for resilience

sustainability of a 'blue economy' raises its head concerning, for instance, 'blue' biotechnology and mining in the seabed. There is a need to constantly examine this issue. There is at the moment not enough research, more data is needed, and we have to enhance ocean literacy and social awareness. Related to this issue is the question of how to use the data of the member states which should



be available to everyone. An **intergenerational compact for the oceans** does not exist though this would be necessary for a 'blue economy', mining in the seabed and issues regarding genetic resources. One other challenge is the regulatory gap regarding Marine Protected Areas on the High Seas. **Cooperation between the European Union and the U.S. is potentially powerful here.**

**JOHN B. RICHARDSON, GMF, BRUSSELS, BELGIUM**  
The two American Commissions provided the ideas to launch both U.S. and EU on a path towards an **Integrated Maritime Policy (IMP)**, with arguably

more success in Europe. What role could a similar body play currently for the EU? The job is now done in conceptual terms, so the role should be different. It should concentrate on rallying political support for the ocean agenda. There is still silo thinking inside the European Commission, but even more so in Member States. In addition, Member States are more and more inclined to go national. Build on the Commission's Atlantic strategy to **create an EU/U.S. Commission** to examine what the two could do together in the North Atlantic to achieve blue growth and **feed this into the Transatlantic Trade and Investment Partnership (TTIP) negotiations**. The subject matter would remain how to create a governance framework for economic activity at the same time as returning the marine environment to a state of health. **Questions to be answered** in this respect are: Who would be members of this EU/U.S. Commission? How would it be staffed? Who would provide the resources? Would a new foundation be an option? How would existing organisations fit in?

**TONY D. J. HAYMET, SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CA, USA**

In the course of establishing Marine Protected Areas, Canada and Australia went through processes where huge mistakes were involved and from which we have to learn. I fully endorse that U.S.-Canada-EU dialogue is the right place to start, but we need to involve China and India and of course others to save the global ocean.

**ROBERT B. GAGOSIAN, CONSORTIUM FOR OCEAN LEADERSHIP, WASHINGTON, D.C., USA**

The **Global Ocean Observing System** can be used as a model for transatlantic cooperation. Many





countries in Europe have been partnering on this concept and the U.S. has launched a major initiative (the Ocean Observatories Initiative) in the area of ocean observing. This major ocean observing system network will significantly improve the rate and scale of ocean data collection. Its worldwide networked observatories will focus on global, regional and coastal science and prediction questions.

The network will provide platforms to support new kinds of instruments and autonomous vehicles from moored to free floating instruments, to robotic vehicles and cabled observatories on the bottom of the ocean that have nodes to which instruments can be attached. This new technology is now allowing us to observe the ocean in real time 24 hours a day, seven days a week. Clearly this capability will be very helpful also in earth quake and tsunami warning.

**DAVID E. JOHNSON, SEASCAPE CONSULTANTS LTD, ROMSEY, HAMPSHIRE, UK**

Within national and local regimes, it is argued that coastal communities have a vested interest to sustainably manage 'their' local resources. Examples suggest this is possible where there is an economic incentive and/or where those involved respect collectively imposed thresholds. **Self-policing** of this nature can provide robust protection of assets and marginalize those unwilling to comply. **Capacity building initiatives** in the developing world are often keen to promote such ideas as 'win-win' solutions.

Classic surveillance and enforcement regimes at a national level, ensuring compliance with permits and licenses, usually impose a **series of checks and audits** on offshore operators. The effective-



Karin Lochte

ness of such regimes depends on both the system in place, which itself will often have been subject to political compromises, and the integrity of those charged with policing. Consideration should be given to balancing 'carrot and stick'. For example, incentives for sustainable operators can include the promise of fewer inspections. This is exemplified by the Port of Rotterdam's Green Award. **Penalties include fines, confiscation of equipment and adverse publicity.** More explicit valuing of marine ecosystem goods and services will help justify resources spent on policing their sustainable use.

**Regional cooperation** between national competent authorities is another way of sharing knowledge and creating efficiency. Multi-lateral agreements seek to encourage compliance, through setting up specific mechanisms, including implementation reporting, monitoring and information sharing. This is highlighted by the **counter-pollution work of the Bonn Agreement**. Cooperation is also needed further offshore both between competent authorities and between industry and competent

# the human footprint



Biliana Cicin-Sain

authorities. This is particularly the case in Areas Beyond National Jurisdiction, a 3D space remote from terrestrial monitoring stations. **Black listing offenders** can serve as a significant deterrent. Examples as can be exemplified by actions of the North East Atlantic Fisheries Commission. In all cases **new technology** is set to play its part, often shining a light on what is not visible, either because an activity is too far away or taking place underwater. Investing in the right technology from the outset is essential, as is the capability to collect, process and assess data. Examples are drawn from the UK Marine Management Organisation, the European Maritime Safety Agency and INTERPOL.

## JACQUELINE ALDER, UNEP, NAIROBI, KENYA

Many member state representatives and other interested stakeholders are noting the increase in the number of initiatives and asking **what is the difference**. Perhaps we should better ask the question – how are they similar and how can we harness the resources to **focus on a few key interventions** so

that in five or 10 years we can measure a change. Perhaps one way to do this would be to look at a set of criteria:

- a) Financing: Is financing available or easy to get for addressing the problem?
- b) Private sector engagement: How much are they already involved in addressing the problem?
- c) Civil society engagement: Has civil society over all engaged in the issue?
- d) UN agency coherence: Are UN agencies already working on the issue or will they have to be mobilized?
- e) Social benefit: If the issue is addressed, who in society benefits?
- f) Regional Delivery: Are there regional platforms for supporting member states and other stakeholders to take action?
- g) Green economy potential: Could a green economy help to facilitate more effective and sustainable action to address the issue long-term?
- h) Governance: Are there governance mechanisms such as regional conventions and protocols available?







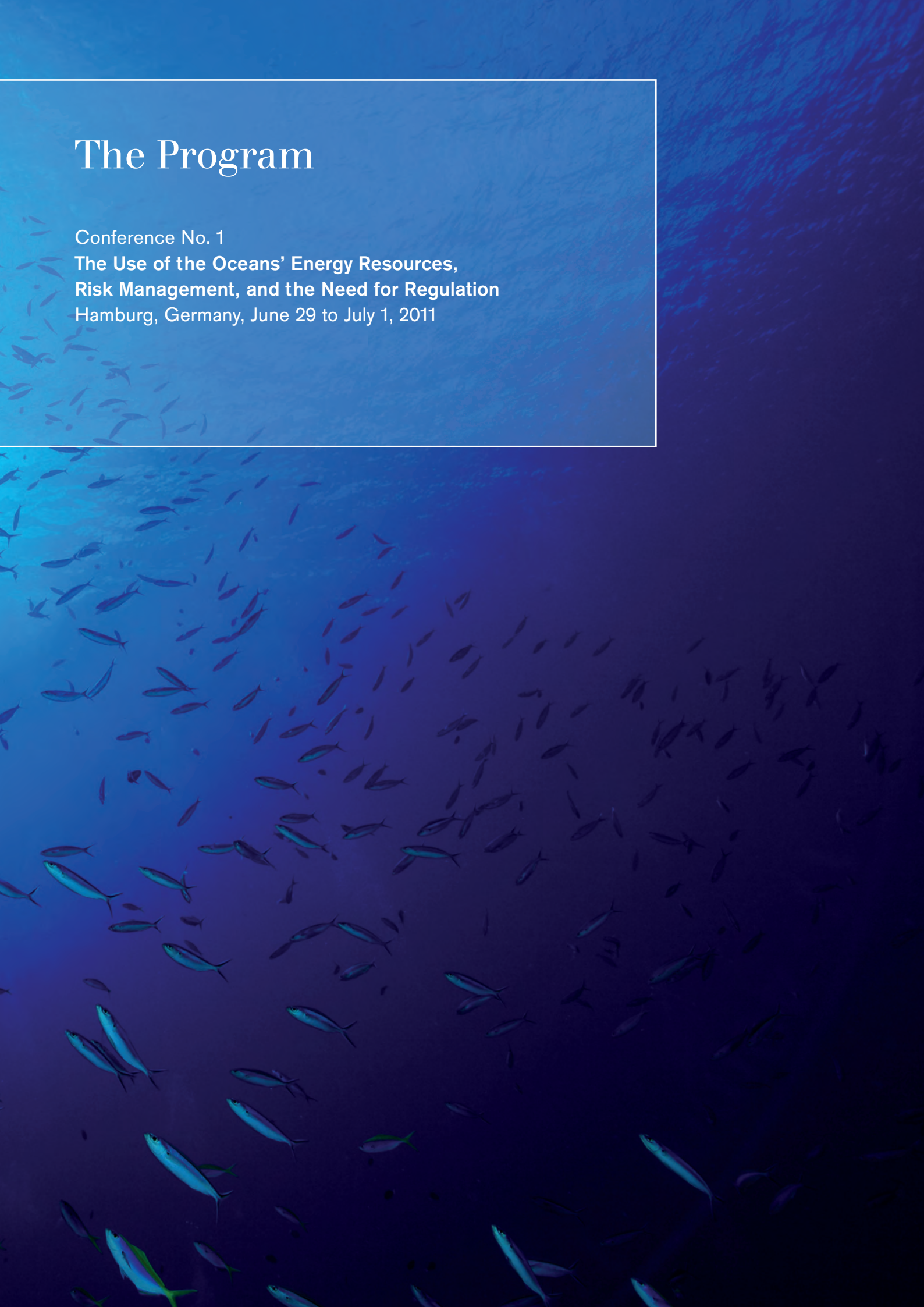


# The Program

Conference No. 1

**The Use of the Oceans' Energy Resources,  
Risk Management, and the Need for Regulation**

Hamburg, Germany, June 29 to July 1, 2011







### WEDNESDAY, JUNE 29, 2011

**Reception and Dinner at the Invitation of  
Deerberg-Systems, Oldenburg, Germany**

**Elbpanorama**

**Dinner Speech**

**Dr. Wendy Watson-Wright**

Assistant Director General and Executive Secretary,  
Intergovernmental Oceanographic Commission  
UNESCO, Paris, France

**GLOBAL GOVERNANCE OF THE CHANGING  
OCEANS: RISK TOLERANCE AND THE SCIENCE  
POLICY GAP**

**Professor Peter Schlosser**

Associate Director and Director of Research,  
The Earth Institute, Columbia University,  
New York, NY, USA

**Words of Greeting**

**Dr. Dorothee Stapelfeldt**

Second Mayor and Senator for Science  
and Research of the Free and Hanseatic  
City of Hamburg, Germany

**Achim Steiner (video message)**

Executive Director, United Nations Environment  
Programme (UNEP), Nairobi, Kenya

**Session 1, Setting the Scene**

**PRICING THE OCEANS**

**Topics to be discussed:**

- The value of ocean ecosystems  
(barrier reefs, living resources, biodiversity)
- The value of known and supposed mineral  
resources in the oceans
- Economic gains and losses from exploitation
- Ecological and social costs of ecosystem  
damages (due to mining activities, oil spills,  
pollution)

### THURSDAY, JUNE 30, 2011

**Bucerius Law School**

**Welcome by the Organizers**

**Professor Dieter Feddersen**

Member of the Board, Dräger Foundation,  
Lübeck, Germany



## Keynote

### Dr. Pushpam Kumar

Chief, Ecosystem Services Economics Unit,  
Division of Environmental Policy  
Implementation (DEPI), United Nations  
Environment Programme (UNEP),  
Nairobi, Kenya

## Moderator

### Frank Schweikert

CEO, ALDEBARAN Marine Research & Broadcast,  
Hamburg, Germany

## Commentators

### Professor Tony D. J. Haymet

Director, Scripps Institution of Oceanography,  
UC San Diego; Vice Chancellor for Marine  
Science and Dean, UC San Diego Graduate  
School of Marine Science, San Diego, CA, USA

### Dr. Régis Kalaydjian

Project Manager, Marine Economics Unit,  
IFREMER – French Research Institute for  
the Exploitation of the Sea, Issy-les-Moulineaux  
Cedex, France

### Professor Martin Visbeck

Deputy Director,  
GEOMAR Helmholtz Centre  
for Ocean Research Kiel  
Head of Research Unit "Physical Oceanography",  
Leibniz Institute for Marine Sciences,  
Kiel, Germany

## Session 2

### MANAGING OFFSHORE ENERGY RESOURCES – RISKS AND OPPORTUNITIES

#### Topics to be discussed:

- What is sustainable use in terms of marine resources?
- Oil & gas exploration and production
- Alternative energies from the ocean
- Risk analysis and risk management; risks and opportunities of extreme technologies
- Maritime safety
- Crisis prevention mechanisms and crisis handling instruments in the U.S. and in Europe
- International cooperation
- What can we learn from each other?

## Moderator

### Brent Goff

Senior News Anchor, Deutsche Welle (DW),  
Berlin, Germany

## Panelists

### Dr. Udo Barckhausen

Private Lecturer, BGR (Federal Institute for  
Geosciences and Natural Resources),  
Hanover, Germany

### Dr. Quenton R. Dokken

President and CEO, Gulf of Mexico Foundation,  
Corpus Christi, TX, USA





Frank Schweikert

**Jan Pánek**

Head of Unit "Coal & Oil", European Commission,  
Directorate-General for Energy, Brussels, Belgium

**Dr. Michael Zettlitzer**

General Manager, Quality, Health, Safety  
and Environment, RWE Dea AG,  
Hamburg, Germany

**Session 3**

### MARINE GOVERNANCE OF ENERGY RESOURCES – LEGAL REGULATION & INSTITUTIONS

**Topics to be discussed:**

- Stewardship for oceans; who should be responsible for the oceans?
- Impact assessment and licensing of exploration and extraction
- Legal regulation, surveillance, criminalization of damages, penalization; are the present mechanisms and bodies sufficient?

**Moderator****The Honorable Dr. hon. mult. Hans Corell**

Ret. Ambassador; Former Under-Secretary-General  
for Legal Affairs and the Legal Counsel of the  
United Nations,  
Stockholm, Sweden

**Panelists****The Honorable Professor Vladimir V. Golitsyn**

Judge, International Tribunal for the Law of the Sea,  
Hamburg, Germany

**Vladimír Jareš**

Senior Legal Officer, Division of Ocean  
Affairs & the Law of the Sea (DOALOS),  
Office of Legal Affairs, United Nations;  
Deputy Secretary, Commission of the Limits  
of the Continental Shelf, New York, NY, USA

**Professor Doris König**

Public Law, European Union Law and  
International Law, Bucerius Law School;  
Chair, International Foundation for the  
Law of the Sea (IFLOS), Hamburg, Germany

**Session 4**

### FINANCING THE PROTECTION OF THE OCEANS

**Topics to be discussed:**

- The effects of human activities on marine resources and collateral damage
- What does it cost?
- Who pays the costs? Who bears the risks?
- Who benefits from exploiting the oceans' energy resources?
- How should benefits be allocated?
- Financing instruments

**Moderator****Sandra Cavalieri**

Coordinator, Arctic and Transatlantic Programmes,  
Ecologic Institute, Berlin, Germany

**Panelists****Dr. Susan K. Avery**

President and Director, Woods Hole  
Oceanographic Institution, Woods Hole, MA, USA

**Dr. Iris Menn**

Oceans and Biodiversity Campaigner,  
Greenpeace e.V., Hamburg, Germany

**Professor Hans J. Peters**

Adjunct Faculty Member, School of Public Policy,  
George Mason University; Former  
Lead Arranger and Chief Advisor,  
The World Bank Group,  
Washington, D.C., USA

**Reception and Dinner****Hauptzollamt Hafen Hamburg****Welcome****Paul F. Nemitz**

Head of Unit, Maritime Policy in the Atlantic,  
Arctic and Outermost Regions,  
European Commission, DG MARE,  
Brussels, Belgium

**Dinner Speech****Professor Nuno Lourenço**

R&D Coordinator, The Task Group for Maritime  
Affairs (EMAM), Paço de Arcos, Portugal

### THE PORTUGUESE MARITIME STRATEGY: A NEW ERA OF DISCOVERIES

**Frank Schweikert**

Director, ALDEBARAN Marine Research &  
Broadcast, Hamburg, Germany

### INTRODUCTION OF THE GERMAN OCEANS FOUNDATION

**Guests:**

‘Jugend musiziert’ (Youth plays music) –  
The Auerbach Quartett

**FRIDAY, JULY 1, 2011****Session 5**

### ARCTIC CHALLENGES: INTERNATIONAL COOPERATION IN THE USE OF ARCTIC RESOURCES

**Topics to be discussed:**

- The future of the Arctic Council
- Exploitation and perspectives for oil, gas and shipping in times of rapid climate change
- Mining the Arctic: costs and benefits for the indigenous peoples
- The protection of the Arctic marine environment
- Why Europe needs the Arctic – the development of an EU Arctic policy
- The business perspective

**Moderator****John B. Richardson**

Special Adviser on Maritime Affairs,  
FIPRA International, Brussels, Belgium

**Panelists****Dr. Terry Fenge**

Consultant on Arctic, Environmental and  
Aboriginal Affairs; Principal, Terry Fenge  
Consulting Incorporated, Ottawa, Canada

**Professor Karin Lochte**

Chair, German Marine Research Consortium  
(KDM); Director, Alfred Wegener Institute for Polar  
and Marine Research in the Helmholtz Association,  
Bremerhaven, Germany

**Professor Peter Schlosser**

Associate Director and Director of Research,  
The Earth Institute, Columbia University,  
New York, NY, USA

**Kirsten Ullbæk Selvig**

Director General, Ministry of Fisheries and  
Coastal Affairs, Oslo, Norway

**The Honorable Dr. Anton Vasiliev**

Ambassador at Large, Ministry of Foreign  
Affairs of the Russian Federation, Moscow, Russia

**Steffen Weber**

Co-Founder and Secretary General,  
EU-ARCTIC-Forum; Chief Adviser,  
Arctic Report, European Parliament,  
Brussels, Belgium





## Session 6

### TRANSATLANTIC COOPERATION IN OCEAN GOVERNANCE

#### Topics to be discussed:

- Who are the important players?
- Bringing the stakeholders on board
- Which role does Europe want to play?
- The U.S. Joint Ocean Commission Initiative – A model for a future European Ocean Commission?
- Potentials for transatlantic cooperation

#### Moderator

##### R. Andreas Kraemer

Director, Ecologic Institute, Berlin, Germany

#### Panelists

##### Laura S. Cantral

Senior Mediator and Program Director, Joint Ocean Commission Initiative, Meridian Institute, Washington, D.C., USA

##### Professor Biliana Cicin-Sain

Director, Gerard J. Mangone Center for Marine Policy; Professor of Marine Policy, University of Delaware's College of Earth, Ocean, and Environment; President, Global Oceans Forum, Newark, DE, USA

##### Paul Holthus

Executive Director, World Ocean Council, Honolulu, HI, USA

## Dr. Tiago Pitta e Cunha

Counselor for the Environment, Science and Maritime Affairs to the President of Portugal, Lisbon, Portugal

#### Closing Remarks

#### Moderator

##### Professor Dieter Feddersen

Member of the Board, Dräger Foundation, Lübeck, Germany

#### Speakers

##### Dr. Robert B. Gagosian

President and CEO, Consortium for Ocean Leadership, Washington, D.C., USA

### THE NEW U.S. OCEAN POLICY AND THE GLOBAL OCEAN OBSERVING SYSTEM – A MODEL FOR TRANSATLANTIC COOPERATION

##### Paul F. Nemitz

Head of Unit, Maritime Policy in the Atlantic, Arctic and Outermost Regions, DG MARE, European Commission, Brussels, Belgium

### EUROPE AS THE DRIVING FORCE BEHIND SUSTAINABLE AND SMART USE OF OCEAN RESOURCES

# The Program

Conference No. 2

**Developing a New International Architecture  
for Maritime Policy**

New York, NY, USA, July 11 to 13, 2012







### WEDNESDAY, JULY 11, 2012

**Faculty House at Columbia University**  
New York

**Reception and Opening Dinner**

**Welcome**

**Professor Peter Schlosser**  
Associate Director and Director of Research,  
The Earth Institute, Columbia University,  
New York, NY, USA

**Opening Keynotes**

**Professor Jeffrey D. Sachs**  
Director, The Earth Institute, Columbia University,  
New York, NY, USA  
(live video transmission)

**SUSTAINABLE OCEANS IN THE CONTEXT OF THE  
SUSTAINABLE DEVELOPMENT GOALS**

**Dr. Barry D. Gold**  
Program Director, Marine Conservation Initiative  
at the Gordon and Betty Moore Foundation,  
Palo Alto, CA, USA

**CHARTING A COURSE TO HEALTHY OCEANS  
AND COMMUNITIES**

### THURSDAY, JULY 12,, 2012

**Welcome**

**Professor Peter Schlosser**  
Associate Director and Director of Research,  
The Earth Institute, Columbia University,  
New York, NY, USA

**Petra Pissulla**  
Director, Dräger Foundation,  
Lübeck, Germany

**Opening**

**Dr. Yannick Beaudoin**  
Head of Marine Programme, UNEP/GRID-Arendal,  
Arendal, Norway

**THE ECONOMICS OF ECOSYSTEMS AND  
BIODIVERSITY (TEEB) FOR THE OCEANS:  
BUILDING UPON THE UNTAPPED OPPORTUNITIES  
OF A GREEN ECONOMY IN A BLUE WORLD**

## Session 1

### Moderator

#### Brent Goff

Main News Anchor, Deutsche Welle TV (DW),  
Berlin, Germany

- What repercussions do rising sea levels and ocean acidification have on food security, human health, and coastal populations?
- What effects does the pollution caused by shipping, drilling, and mining have on coastal waters and deep seas?
- Overfishing, damage to biodiversity

### VALUING THE OCEANS (I):

**What kind of “service” is provided by the oceans with respect to ecosystems, biodiversity, natural resources, climate, transportation, fishery and recreation?**

### Speakers

#### Professor Tony D. J. Haymet

Director, Scripps Institution of Oceanography,  
Vice Chancellor for Marine Sciences,  
University of California, San Diego, CA, USA

#### Dr. Larry McKinney

Executive Director, Harte Research Institute for  
Gulf of Mexico Studies, Texas A&M University,  
Corpus Christi, TX, USA

#### Professor Jean-Paul Rodrigue

Department of Global Studies and Geography,  
Hofstra University, New York, NY, USA

#### Professor Paul Snelgrove

Professor and Canada Research Chair in Boreal  
and Cold Oceans Systems,  
Memorial University of Newfoundland,  
St. John's, NL, Canada

#### Achim Steiner

Executive Director, UNEP; Under-Secretary-  
General of the United Nations, Nairobi, Kenya  
(video message)

### Speakers

#### Professor Hartmut Grassl

Former Director, Max Planck Institute  
for Meteorology, Hamburg, Germany

#### Professor Peter M. Herzig

Executive Director, GEOMAR Helmholtz Centre  
for Ocean Research, Kiel, Germany

#### Professor Michael K. Orbach

Professor of Marine Affairs and Policy,  
Duke University Marine Laboratory,  
Beaufort, NC, USA

#### Professor Paul Snelgrove

Professor and Canada Research Chair in Boreal  
and Cold Oceans Systems, Memorial University of  
Newfoundland, St. John's, NL, Canada

## Session 2

### Moderator

#### R. Andreas Kraemer

Director, Ecologic Institute, Berlin, Germany

### DEFINING “BLUE” GROWTH AND OCEAN SUSTAINABILITY

- Where do we stand and what do we need:  
An overarching holistic approach
- What kind of scientific and stakeholder  
information do we need for a useful,  
suitable and realistic assessment:  
Does an IPCC for the oceans make sense?

## Continuation Session 1

### VALUING THE OCEANS (II):

#### The destruction of marine habitat:

#### What would it cost mankind?

- Estimating the costs for industrialized  
countries and developing countries  
resulting from climate change and acidification  
of the oceans

### Speakers

#### Dr. Tiago Pitta e Cunha

Counselor for the Environment, Science and  
Maritime Affairs to the President of Portugal,  
Lisbon, Portugal

#### Christopher Mann

Senior Officer and Director, Campaign for  
Healthy Oceans, Pew Environment Group,  
Washington, D.C., USA





#### **Dietrich Seele**

Expert on Integrated Maritime Policy,  
Federal Ministry of Transport, Building and Urban  
Development, Berlin, Germany

#### **Haitze Siemers**

Head of Unit, Maritime Policy for the North Sea,  
Baltic Sea and landlocked countries, DG MARE,  
European Commission, Brussels, Belgium

### **Session 3**

#### **Moderator**

#### **R. Andreas Kraemer**

Director, Ecologic Institute, Berlin, Germany

#### **SECURING “BLUE” GROWTH:**

##### **HOW AND FOR WHOM?**

- How to strike a sound balance between political, economic and environmental interests?
- How to deal with growing competition over marine resources?
- How to secure a fair distribution of ocean resources?
- How to avoid the destruction of ocean habitats caused by trawling, drilling, etc?
- How to effectively protect sensitive marine areas?
- Bringing together competent authorities (European Biosafety Association EBSA)
- Ensuring an appropriate evidence base for marine spatial planning

#### **Speakers**

#### **Professor David E. Johnson**

Executive Secretary, OSPAR Commission,  
London, UK

#### **Professor Manuel Pinto de Abreu**

Secretary of State for the Sea,  
Ministry of Agriculture, Sea, the Environment  
and Spatial Planning, Lisbon, Portugal

#### **Professor Martin Visbeck**

Chair in Physical Oceanography,  
GEOMAR Helmholtz Centre for Ocean Research  
Kiel, Germany

#### **Sally Yozell**

Policy Director; Senior Advisor to the Under  
Secretary of Commerce for Ocean and  
Atmosphere, National Oceanic and  
Atmospheric Administration (NOAA),  
Washington, D.C., USA

#### **Reception and Dinner**

Hudson Hotel, New York

#### **Dinner Discussion**

#### **RIO +20: FRESH IMPETUS FOR THE PROTECTION OF THE OCEANS?**

#### **Professor Biliانا Cicin-Sain**

President, Global Ocean Forum;  
Director, Gerard J. Mangone Center for Marine  
Policy, School of Marine Science and Policy,  
College of Earth, Ocean and Environment,  
University of Delaware, Newark, DE, USA



#### **Brice Lalonde**

Assistant Secretary-General (United Nations);  
Executive Coordinator of UNCSD – Rio +20,  
New York, NY, USA

#### **Moderator**

##### **Laura S. Cantral**

Partner, Meridian Institute; Director,  
Joint Ocean Commission Initiative,  
Washington, D.C., USA

#### **Speakers**

##### **Jochen Deerberg**

Owner and CEO, Deerberg-Systems GmbH,  
Oldenburg, Germany

##### **Peter Hinchliffe OBE**

Secretary General, International Chamber  
of Shipping (ICS), International Shipping  
Federation (ISF), London, UK

##### **Dr. Elliott A. Norse**

President, Marine Conservation Institute,  
Bellevue, WA, USA

##### **Jamie Sweeting**

Vice President Environmental Stewardship and  
Global Chief Environmental Officer,  
Royal Caribbean Cruises Ltd., Miami, FL, USA

##### **Captain Andrew Winbow**

Assistant Secretary General and Director  
of Maritime Safety, International Maritime  
Organization (IMO), London, UK

## **FRIDAY, JULY 13, 2012**

### **Session 4**

#### **Moderator**

##### **John B. Richardson**

Special Adviser on Maritime Affairs,  
FIPRA International, Brussels, Belgium

#### **INTERNATIONAL SHIPPING INITIATIVES TOWARDS OCEAN SUSTAINABILITY AND SAFETY**

- Economic aspects
- Political aspects
- Environmental protection  
(also: ballast water, invading species)
- Dealing with the Arctic passages in times  
of global warming

### **Session 5**

#### **Moderator**

##### **Lisa Speer**

Director, International Oceans Program, Natural  
Resources Defense Council (NRDC),  
New York, NY, USA



## PROTECTING OCEAN LIFE: FISHING IN NATIONAL AND INTERNATIONAL WATERS

- How to regulate and control fishing quotas?
- How to deal with illegal, unreported and unregulated fishing (IUU)?
- Toxic fish due to plastic and hazardous waste: How to stop it?
- Damage from ghost fishing, acidification, climate change
- Examples of best practice

### Speakers

#### Dr. Anne Christine Brusendorff

General Secretary, International Council for the Exploration of the Sea (ICES),  
Copenhagen, Denmark

#### Dr. Rainer Froese

Senior Scientist, GEOMAR | Helmholtz Centre for Ocean Research Kiel; Christian-Albrechts University, Kiel, Germany

#### Rupert Howes

Chief Executive Officer, Marine Stewardship Council (MSC), London, UK

### Concluding Session:

#### Moderator

#### Professor Peter Schlosser

Director of Research, The Earth Institute, Columbia University, New York, NY, USA

## PAVING THE WAY FOR THE 3RD CONFERENCE

- What do we want to have achieved by the end of the conference series?
- Building networks for maritime surveillance: How to evaluate existing initiatives, how to trigger joint action?
- Bringing together actors from regional, national, international and sea basin levels
- Engaging politics, business, science, and NGOs in a joint "Blueprint for Good Governance towards Sustainable Use of the Seas"

### Speakers

#### Professor Mojib Latif

Head of Division, Ocean Circulation and Climate Dynamics; Head of Unit, Marine Meteorology, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany

#### Professor Hans J. Peters

Adjunct Faculty Member, School of Public Policy, George Mason University; Former Lead Arranger and Chief Advisor, Maritime Affairs, The World Bank Group, Washington, D.C., USA; President, Baltic Maritime Advisers, Hamburg, Germany

#### Admiral Anne-François de Saint Salvy

Former Maritime Prefect for the Atlantic, Brest, France

#### Dietrich Seele

Expert on Integrated Maritime Policy, Federal Ministry of Transport, Building and Urban Development, Berlin, Germany

## ENCOURAGING BEST PRACTICE: REWARD MECHANISMS FOR OCEAN SUSTAINABILITY

### Speakers

#### Paul Holthus

Executive Director, World Ocean Council, Honolulu, HI, USA

#### Professor Martin Visbeck

Chair in Physical Oceanography, GEOMAR Helmholtz Centre for Ocean Research Kiel; Christian-Albrechts University, Kiel, Germany

# The Program

Conference No. 3

**Good Governance for Sustainable Marine Development**

Cascais, Portugal, June 3 to 5, 2013







## MONDAY, JUNE 3, 2012

### Pousada de Cascais

Cidadela Historic Hotel, Cascais

**Reception and get-together at the invitation of the President of the Portuguese Republic, H.E. Anibal António Cavaco Silva**

### Presidential Residence

Cidadela de Cascais, Cascais

### Opening Dinner

Palácio Estoril Hotel

### Welcome

#### Professor Dieter Feddersen

Member of the Board, Dräger Foundation, Lübeck, Germany

### Dinner Speech

#### H.S.H. Prince Albert II of Monaco

President, Prince Albert II of Monaco Foundation, Monte Carlo, Monaco

**THE STATE OF OUR OCEANS – OPPORTUNITIES AND CHALLENGES FOR BALANCING THE ECONOMIC AND ECOLOGICAL HEALTH OF THE OCEANS**

## TUESDAY, JUNE 4, 2012

### Welcome

#### Petra Pissulla

Director, Dräger Foundation, Lübeck, Germany

#### Carlos Carreiras

Mayor of Cascais, Portugal

### FLASHBACK AND OUTLOOK:

- Sustainable Development Goals for the oceans one year after Rio+20: What has been achieved?
- Results from the 1st and 2nd conference on 'Sustainable Oceans'
- Where do we want to go from here?

### Speakers

#### Dr. Tiago Pitta e Cunha

Counselor for the Environment, Science & Maritime Affairs to the President of Portugal, Lisbon

#### Professor Peter Schlosser

Deputy Director & Director of Research, The Earth Institute, Columbia University, New York, NY, USA



Tiago Pitta e Cunha



The Föhr Reef – crocheted, Museum der Westküste, Island of Föhr

## Session 1

### MANAGING THE WORLD'S OCEANS

- The most important players – An overview of national & international organizations, government agencies, NGOs
- Transatlantic cooperation: working towards sustainable oceans
- What can be achieved by national and international strategies like the European Integrated Maritime Policy, the Atlantic Strategy of the EU Commission, the European Marine Strategy Framework Directive, Integrated Coastal Zone Management, or Regional Sea Conventions

## Speakers

### Jeff Ardron

Senior Fellow, Institute for Advanced Sustainability Studies (IASS), Potsdam, Germany

### Dr. Darius Campbell

Executive Secretary, OSPAR – Convention on the Protection of the Marine Environment of the North-East Atlantic, London, UK

### Jesper Loldrup

Head, Policy and Planning Unit, Office of the Secretary-General, International Maritime Organization (IMO), London, UK

### Professor Mike Orbach

Professor of Marine Affairs & Policy, Duke University Marine Laboratory, Beaufort, NC, USA

### Eric C. Schwaab

Acting Assistant Secretary for Conservation & Management, National Oceanic and Atmospheric Administration (NOAA), Washington, D.C., USA

### Dr. Stefan Micallef

Director, Marine Environment Division, International Maritime Organization (IMO), London, UK

### Dr. Wendy Watson-Wright

Assistant Director General & Executive Secretary, IOC/UNESCO, Paris, France

## Moderator

### R. Andreas Kraemer

Director & Chief Executive Officer, Ecologic Institute, Berlin, Germany





H.S.H. Prince Albert II of Monaco

### Session 1 (continued)

#### MANAGING THE WORLD'S OCEANS – SECURING 'BLUE' GROWTH, JOBS, AND A SOUND MARITIME ENVIRONMENT

- Problems, initiatives, results
- Potential for sustainable growth
- How to promote innovative areas
- Setting international standards for maritime technologies and the sustainable use of the ocean's resources
- Developing indicators for good ecological status of the oceans
- Management tools for global governance – what do we have, what do we need (MSP, MPA etc.)?

### Speakers

#### Professor Antje Boetius

Head of Research Group, Deep Sea Ecology & Technology, Alfred Wegener Institute, Helmholtz Centre for Polar & Marine Research, Bremerhaven, Germany; Max Planck Institute for Marine Microbiology, Bremen, Germany

#### Paul Holthus

Executive Director, World Ocean Council, Honolulu, HI, USA

#### Dr. Elliott A. Norse

Founder & Chief Scientist, Marine Conservation Institute, Seattle, WA, USA

#### Dr. Paulo A.L.D. Nunes

Head of the Marine Economics Research Program, The Mediterranean Science Commission – CIESM, Monte Carlo, Monaco

#### Professor U. Rashid Sumaila

Director, Fisheries Economics Research Unit, The University of British Columbia, Vancouver, BC, Canada

#### Professor Martin Visbeck

Chair in Physical Oceanography, GEOMAR | Helmholtz Centre for Ocean Research Kiel; Christian-Albrechts University, Kiel, Germany

### Moderator

#### Admiral Anne-François de Saint-Salvy

Project Director, Offshore Wind, EDF Energies Nouvelles, Paris, France

### Session 2

#### POLICING THE SEAS: HOW TO REGULATE THE USE OF THE OCEANS' RESOURCES?

- Surveillance mechanisms in open international waters and coastal zones
- Gaps in the law and gaps in applying the law
- How effective is the UN Convention on the Law of the Sea?
- Strengthening conflict resolution mechanisms
- How to introduce and impose sanctions?
- How to finance the protection of the seas?

**Speakers****Professor Aldo Chircop**

Schulich School of Law, Dalhousie University,  
Halifax, NS, Canada

**Kristina M. Gjerde**

Senior High Seas Advisor, Global Marine & Polar  
Program, International Union for Conservation of  
Nature (IUCN), Konstancin-Chylice, Poland

**The Hon. Professor Vladimir V. Golitsyn**

Judge; President, Seabed Disputes Chamber,  
International Tribunal for the Law of the Sea,  
Hamburg, Germany

**Professor David E. Johnson**

Director, Seascope Consultants Ltd, Romsey,  
Hampshire, UK

**Professor Doris König**

Dean, Bucerius Law School; Chair, International  
Foundation for the Law of the Sea (IFLOS),  
Hamburg, Germany

**Moderator****Isabella Lövin**

Member of the European Parliament,  
Brussels, Belgium

**Session 3**

**THE US NATIONAL OCEAN POLICY (NOP) AND  
THE JOINT OCEAN COMMISSION INITIATIVE  
(JOCI): A MODEL FOR EUROPE?**

**Speakers****Dr. Robert B. Gagosian**

President & Chief Executive Officer,  
Consortium for Ocean Leadership,  
Washington, D.C., USA

**Matthew King**

Head of Unit, Maritime Policy in the Atlantic,  
Arctic and Outermost Regions, DG Maritime  
Affairs and Fisheries, European Commission,  
Brussels, Belgium

**Dr. Joshua S. Reichert**

Executive Vice President, Director of Environmental  
Initiative, The PEW Charitable Trust,  
Washington D.C., USA

**Moderator****Dr. Robert B. Gagosian**

President & Chief Executive Officer,  
Consortium for Ocean Leadership,  
Washington, D.C., USA

**Reception and Dinner at the invitation  
of the Cascais Municipality**

**Restaurant Arriba**

Cascais

**Welcome****Miguel Pinto Luz**

Vice Mayor, Cascais, Portugal

**Dinner Speech****The Rt. Hon. David Miliband**

Member of Parliament for South Shields;  
Former Secretary of State for Foreign &  
Commonwealth Affairs; Co-Chair,  
Global Ocean Commission, London, UK

**ONE WORLD, ONE OCEAN –  
FIRST THOUGHTS FROM THE GLOBAL  
OCEAN COMMISSION**

**Moderator****Caspar Henderson**

Author & Journalist; Moderator, Oxford, UK





Darius Campbell

**WEDNESDAY, JUNE 5, 2012**

### Opening Debate

**FUNDAMENTAL CHALLENGES FOR OUR OCEANS  
TODAY AND IMPLICATIONS FOR HUMANKIND IN  
GENERAL AND FOR COASTAL STATES IN PARTICULAR**

### Speakers

**Professor Maria de Assunção Oliveira Cristas**  
Minister for Agriculture, Sea,  
Environment & Spatial Planning,  
Lisbon, Portugal

**Karl Falkenberg**  
Director-General, DG Environment,  
European Commission,  
Brussels, Belgium

**Mark J. Spalding**  
President, The Ocean Foundation,  
Washington, D.C., USA

### Moderator

**Caspar Henderson**  
Author & Journalist; Moderator,  
Oxford, UK

### Session 4

#### CREATING A EUROPEAN OCEAN ALLIANCE (EOA):

- Tasks, responsibilities, competences
- Supporters and participants
- Timeline

### Speakers

**Dr. Jörn Schmidt**  
Scientist, Department of Economics,  
GEOMAR Helmholtz Centre for Ocean  
Research Kiel  
Cluster of Excellence "The Future Ocean",  
Christian-Albrechts University, Kiel, Germany

**R. Andreas Kraemer**  
Director & Chief Executive Officer,  
Ecologic Institute, Berlin, Germany

**John B. Richardson**  
Senior Fellow, German Marshall Fund  
of the United States, Brussels, Belgium

**Dr. J. Luis Valdés Santurio**  
Head of Ocean Sciences, Intergovernmental  
Oceanographic Commission, UNESCO,  
Paris, France

### Moderator

**Professor Martin Visbeck**  
Chair in Physical Oceanography,  
GEOMAR Helmholtz Centre for Ocean  
Research Kiel; Christian-Albrechts University,  
Kiel, Germany



## Session 5

### THE WAY FORWARD – NEXT STEPS IN THE CONTEXT OF GLOBAL OCEAN DEVELOPMENTS

#### Speakers

##### **Dr. Jacqueline Alder**

Coordinator, Freshwater and Marine Ecosystem Branch, UNEP, Nairobi, Kenya

##### **Professor Biliana Cicin-Sain**

Director, Gerard J. Mangone Center for Marine Policy, College of Earth, Ocean, and Environment, University of Delaware; President, Global Ocean Forum, Newark, DE, USA

##### **Heike Imhoff**

Head of Division, Federal Ministry for the Environment, Nature Conservation & Nuclear Safety, Bonn, Germany

##### **Professor Laurence Mee**

Director, Scottish Association of Marine Science, Scottish Marine Institute, Oban, Argyll, UK

#### Moderator

##### **John B. Richardson**

Senior Fellow, German Marshall Fund of the United States, Brussels, Belgium

## Session 6

### STRENGTHENING THE TRANSATLANTIC DIALOG – STARTING COLLABORATION BETWEEN JOCI AND EOA

#### Speakers

##### **Dr. Susan K. Avery**

President & Director, Woods Hole Oceanographic Institution, Woods Hole, MA, USA

##### **Professor Tony D. J. Haymet**

Former Director, Scripps Institution of Oceanography; Former Vice Chancellor for Marine Sciences, University of California, San Diego, CA, USA

##### **Professor Ed Hill**

Executive Director, National Oceanography Centre (NOC), University of Southampton, UK

#### Moderator

##### **Dr. Robert B. Gagosian**

President & Chief Executive Officer, Consortium for Ocean Leadership, Washington, D.C., USA





## Concluding Session

### SETTING THE GOALS FOR 2020

#### Speakers

##### **Dr. Lahsen Ababouch**

Director, Fisheries and Aquaculture Policy and Economics Division, Fisheries and Aquaculture Department, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

##### **Professor Michael K. Orbach**

Professor of Marine Affairs & Policy, Duke University Marine Laboratory, Beaufort, NC, USA

##### **Xavier Pastor**

Vice President, Oceana Europe, Madrid, Spain

##### **Professor Manuel Pinto de Abreu**

Secretary of State for the Sea, Ministry of Agriculture, Sea, the Environment & Spatial Planning, Lisbon, Portugal

#### Moderator

##### **Dr. Barry D. Gold**

Program Director, Marine Conservation Initiative, Gordon & Betty Moore Foundation, Palo Alto, CA, USA

## Closing Remarks

### **Professor Callum Roberts**

Professor of Marine Conservation, Environment Department, University of York, UK

#### Farewell and Outlook

##### **Professor Martin Visbeck**

Chair in Physical Oceanography, GEOMAR Helmholtz Centre for Ocean Research Kiel; Christian-Albrechts University, Kiel, Germany

#### Closing Reception at the invitation of the

**LUSO-AMERICAN**  
FOUNDATION

Lisbon, Portugal



# List of Participants

## Oceans Conference I-III





## List of Participants

### A

#### **Dr. Lahsen Ababouch**

Director  
Fisheries and Aquaculture Policy  
and Economics Division  
Fisheries and Aquaculture Department Food  
and Agriculture Organization of the United Nations  
(FAO)  
Rome, Italy  
(Conference III)

#### **H.S.H. Prince Albert II of Monaco**

President  
Prince Albert II of Monaco Foundation  
Monte Carlo, Monaco  
(Conference III)

#### **Dr. Jacqueline Alder**

Coordinator  
Freshwater and Marine Ecosystem Branch  
UNEP  
Nairobi, Kenya  
(Conference III)

#### **Stefan Altevogt**

Senior Program Associate  
German Research Foundation  
DFG Office North America / New York  
New York, NY, USA  
(Conference II)

#### **Dr. Jeff Ardron**

Senior Fellow  
Institute for Advanced Sustainability Studies (IASS)  
Potsdam, Germany  
(Conference III)

#### **Takashi Arikawa**

Chief Manager  
Nippon Foundation  
Tokyo, Japan  
(Conference III)

#### **Professor Maria de Assunção**

**Oliveira Cristas**  
Minister for Agriculture, Sea, Environment & Spatial  
Planning  
Lisbon, Portugal  
(Conference III)

#### **Dr. Susan K. Avery**

President & Director  
Woods Hole Oceanographic Institution  
Woods Hole, MA, USA  
(Conference I & III)

#### **Dr. Bernard Avril**

Executive Officer  
IMBER International Project Office  
Institute of Marine Research  
Bergen, Norway  
(Conference III)

**Dr. Udo Barckhausen**

Private Lecturer  
Federal Institute for Geosciences and Natural  
Resources  
Hanover, Germany  
(Conference I)

**Professor Ulrich Bathmann**

Director  
The Leibniz Institute for Baltic Sea Research  
Warnemünde (IOW)  
Rostock, Germany  
(Conference III)

**Dr. Yannick Christian Beaudoin**

Head of Marine Division  
UNEP/GRID-Arendal  
Arendal, Norway  
(Conference II & III)

**B****Uta Bellion**

Director  
European Marine Programme  
Pew Environment Group  
The Pew Charitable Trusts  
Brussels, Belgium  
(Conference III)

**Anja Betker**

Research Assistant  
Environmental Governance  
Humboldt-University of Berlin  
Berlin, Germany  
(Conference III)

**Ulrike Bernitt**

Coordinator  
Kiel Earth Institute,  
GEOMAR Helmholtz Centre for Ocean Research  
Kiel, Germany  
(Conference I)

**Professor Antje Boetius**

Head of Research Group  
Deep Sea Ecology & Technology  
Alfred Wegener Institute  
Helmholtz Center for Polar & Marine Research  
Bremerhaven, Germany;  
Max Planck Institute for Marine Microbiology  
Bremen, Germany  
(Conference III)

**Dr. Anne Christine Brusendorff**

General Secretary  
International Council for the Exploration of the Sea  
(ICES)  
Copenhagen, Denmark  
(Conference II)

**Charles A. Buchanan, Jr.**

Vice President  
Luso-American Foundation  
Lisbon, Portugal  
(Conference III)

**Professor Richard Burroughs**

Adjunct Professor  
Coastal Science and Policy  
Yale School of the Environment  
New Haven, CT, USA  
(Conference II)

**C****Ana Teresa Caetano**

Science Officer  
DG Research and Innovation  
European Commission  
Brussels, Belgium  
(Conference III)

**Gonçalo Calado**

Project Developer  
Calouste Gulbenkian Foundation  
Lisbon, Portugal  
(Conference III)

**Dr. Darius Campbell**

Executive Secretary  
OSPAR – Convention on the  
Protection of the Marine Environment  
of the North-East Atlantic  
London, United Kingdom  
(Conference III)

**Laura S. Cantral**

Partner  
Meridian Institute  
Director  
Joint Ocean Commission Initiative  
Washington, D.C., USA  
(Conference I & II)

**Luís Capão**

Member of the Executive Board  
Cascais Municipality  
Cascais, Portugal  
(Conference III)





**Carlos Carreiras**

Mayor of Cascais  
Cascais, Portugal  
(Conference III)

**Sidónio Castel-Branco Paes**

Fisheries Policy Officer  
Oceans Group  
Liga para a Protecção da Natureza (LPN)  
Lisbon, Portugal  
(Conference III)

**Leopoldo Cavaleri Gerhardinger**

PhD Candidate  
Future Ocean Alliance  
Lisbon, Portugal  
(Conference III)

**Sandra Cavalieri**

Coordinator  
Arctic and Transatlantic Programmes  
Ecologic Institute  
Berlin, Germany  
(Conference I)

**Professor Aldo Chircop**

Schulich School of Law  
Dalhousie University  
Halifax, NS, Canada  
(Conference III)

**Claire Christian**

Director  
Antarctic and Southern Ocean Coalition  
Washington, D.C., USA  
(Conference II)

**Professor Biliana Cicin-Sain**

Director  
Gerard J. Mangone Center for Marine Policy  
College of Earth, Ocean, and Environment  
University of Delaware;  
President  
Global Ocean Forum  
Newark, DE, USA  
(Conference I, II & III)

**The Hon. Dr. hon. mult. Hans Corell**

Ret. Ambassador;  
Former Under-Secretary-General for Legal Affairs  
and the Legal Counsel of the United Nations,  
Stockholm, Sweden  
(Conference I)

**Bernardo Correa de Barros**

Deputy of Vice Mayor  
Cascais, Portugal  
(Conference III)

**María Cortés Puch**

Partner  
Sustainable Development  
Solutions Network  
Paris, France  
(Conference III)

**D**

**Hans-Peter Damian**

Marine Protection  
Federal Environment Agency  
Dessau, Germany  
(Conference I)



The Bucerius Law School

**Jochen Deerberg**

Owner and CEO  
Deerberg-Systems GmbH  
Oldenburg, Germany  
(Conference I & II)

**Professor Peter B. deMenocal**

Chair and Professor  
Department of Earth and Environmental Sciences  
Lamont-Doherty Earth Observatory of  
Columbia University  
Palisades, NY, USA  
(Conference II)

**Elke Demin**

GD German Desalination GmbH  
Spremlingen, Germany  
(Conference III)

**Uwe Döring**

Chairman  
Europa-Union Deutschland  
Landesverband Schleswig-Holstein e.V.  
Neumünster, Germany  
(Conference I)

**Dr. Quenton R. Dokken**

President and CEO  
Gulf of Mexico Foundation  
Corpus Christi, TX, USA  
(Conference I)

**Professor Rudolf Dolzer**

Former Director  
Institute for International Law  
University of Bonn  
Bonn, Germany  
(Conference II)

**Erik van Doorn**

Walther-Schücking-Institute for International Law  
Christian-Albrechts University  
Kiel, Germany  
(Conference III)

**E**

**Jens Eckhoff**

President  
German Offshore Wind Foundation  
Varel, Germany  
(Conference I)

**Dr. Werner Ekau**

Chair of Directors  
Member of the Governing Board  
International Ocean Institute (IOI)  
Bremen, Germany  
(Conference III)

**H.E. Helmut Elfenkämper**

Ambassador of the Federal Republic of Germany  
German Embassy Lisbon  
Lisbon, Portugal  
(Conference III)

**Eduardo Espirito Santo**

Junior International Research Analyst  
Rockefeller Financial  
New York, NY, USA  
(Conference II)

**Cmdr. (ret.) Klaus Eule**

Manager Business Unit  
Navy Vessels  
Deerberg Systems  
Oldenburg, Germany  
(Conference I)





## F

### **João Falcato**

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