



The International Business Alliance
for Corporate Ocean Responsibility

WORLD OCEAN COUNCIL

SUSTAINABLE OCEAN SUMMIT

22-24 April 2013, Washington, D.C.

CONFERENCE REPORT

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SOS 2013 Executive Summary

The Sustainable Ocean Summit (SOS) 2013, held in Washington D.C. in April 2013, was an unprecedented gathering of the ocean business community and catalyzed the growing interest among ocean businesses for increased leadership, collaboration and business value in addressing shared ocean environmental challenges.

SOS 2013 was organized by the World Ocean Council (WOC) - the only international business leadership alliance on corporate ocean responsibility. The WOC's second SOS was convened to further advance leadership and collaboration among the diverse ocean business community in addressing marine environment and sustainability challenges.

Following up on the inaugural SOS (Belfast, Northern Ireland, UK, June, 2010) the SOS 2013 addressed priorities for cross-sectoral industry leadership and collaboration in ocean sustainability. SOS 2013 sessions were designed to provide the state of the knowledge on these issues, including topic overviews, case studies and examples of best practices. SOS 2013 advanced the development and implementation of solutions by providing input to WOC priority setting, programs and projects.

SOS 2013 brought together more than 230 participants and a wide range of industries involved in the use of marine space and resources, including shipping, oil and gas, fisheries, aquaculture, ports, mining, renewable energy, tourism, dredging, marine science/technology, maritime law, insurance, finance, and others. SOS 2013 participants consisted primarily of senior management responsible for environment and sustainability in companies and industry associations from a wide range of ocean industries. Other ocean stakeholders such as senior representatives of international organizations, government agencies, academic/research institutions and non-government organizations also participated.

While SOS 2013 was anchored by a series of technical issue sessions, the program was deliberately planned to gradually increase the diversity of participation, starting first with a session for the members of WOC. On the first day, a members meeting was held to discuss WOC membership, institutional development, governance, member committee and working group development, and internal and external communications.

This was followed by the workshop for the Ocean Business Community (OBC) on "Oceans 2050: Sustainable Ocean – Sustainable Business". The workshop was designed to focus on the key ocean sustainability drivers, existing trends, and preferred trends - and the constraints to meeting the preferred trends - that will likely emerge over the next several decades. OBC representatives brainstormed and refined ideas on short-term (1-3 years), medium-term (3-10 years) and long-term (10-40 years) actions for ocean sustainability, which also provides input to WOC strategic planning as moves forward.

The main SOS 2103 conference opened with an Ocean Executive Forum to discuss the outputs from the workshop on "Oceans 2050: Sustainable Ocean – Sustainable Business". Insights from senior ocean business leaders from a range of key industries were presented. This was followed by a facilitated question and answer session from to explore ocean industry views on collaboration and leadership in addressing ocean challenges facing the business community.

The majority of SOS 2013 was focused around a series of theme session on key topics of importance to WOC Members and ocean industries more broadly:

- Sound and the Marine Environment
- Port Waste Reception Facilities and Responsible Cargo Management
- Financing Innovation and Technology for Ocean Sustainability
- Bio Fouling and Invasive Species
- Ocean Policy and Ocean Industries in International Waters
- Smart Ocean/Smart Industries: Industry Data Collection for Ocean, Weather and Climate
- Marine Spatial Planning
- Marine Ecosystem Services and Blue Carbon
- The Arctic: Challenges and Opportunities for Responsible Industries
- Sea Level Rise: Port and Coastal Infrastructure Adaptation
- Financing Innovation and Technology for Ocean Sustainability

The themed sessions were open to all SOS 2013 registered attendees. Session organizers and speakers presented material in the topics and distilled the theme into key challenges and clear actions for WOC and the OBC moving forward.

U.S. Navy Admiral Jonathan White, Oceanographer of the Navy, gave the keynote dinner presentation on *“Charting a Course to a Safe, Secure and Sustainable Ocean”*.

A special session of SOS 2013 was created to provide an Ocean Industry Forum for the Global Ocean Commission (GOC). The GOC is a high level international group formed for 18 months to develop politically and technically feasible recommendations to address four key issues facing the high seas including: overfishing; large-scale loss of habitat and biodiversity; the lack of effective management and enforcement; and deficiencies in high seas governance.

Combining the outcomes from the Oceans 2050 and the themed sessions and taking into consideration the presentations and discussions at the Ocean Executive Forum and the Global Ocean Commission Industry Forum, SOS 2013 culminated in a closing plenary session entitled, *“Ocean Industry Leadership: Charting The Course Ahead.”* During this session, selected WOC delegates provided a review of the issues and priorities that emerged during the conference. These were among the SOS 2013 participants, with a view towards shaping the WOC work program in the years to come.

SOS 2013 - INTRODUCTION

More than 230 business leaders from a range of ocean industries participated in the second World Ocean Council (WOC) Sustainable Ocean Summit (SOS 2103) on 22-24 April, 2013 in Washington, D.C. Participants included representatives from shipping, shipbuilding, cruise tourism, oil and gas, fisheries, aquaculture, mining, offshore renewable energy, maritime law, marine science and technology and others. The event also included representatives of government agencies, non-governmental organizations and international organizations.

SOS 2013 participants gathered around the conference theme of "*Oceans 2050 — The Ocean Business Community and Sustainable Seas*". The global, inter-connected ocean is under increasing pressure from a growing human use of the ocean that is expanding in diversity, scale, intensity and geographic extent. The ocean business community is faced with the dual challenge of needing to continue both undertaking activities critical to the global economy and maintaining the social license to access and use the ocean.

The WOC and SOS 2013 are advancing the efforts of ocean industries to address this challenge through a collaborative, long term industry framework to advance both responsible use and sustainable seas. With the advent of the World Ocean Council there is now an international, multi-industry organization focused on ocean sustainability and the responsible use of ocean space and resources. This provides the basis from which to develop ocean business community planning for responsible use and sustainable seas over the next several decades, i.e. "*Oceans 2050*".

Goals of SOS 2013

- To bring together senior representatives from a wide range of industries dependent on ocean space and resources.
- To develop cross-sectoral business leadership and collaboration in advancing Corporate Ocean Responsibility.
- To identify ocean sustainability priorities and develop programs for solutions to address the challenges and reduce the risks to ocean industry operations.

Results of SOS 2013

Immediate outputs include:

- Developing and advancing WOC cross-sectoral industry working groups focused on identifying and implementing solutions to priority issues that are the focus of SOS sessions.
- Strengthening and expanding the involvement of companies in the WOC's unique global, cross-sectoral leadership alliance for ocean sustainability.
- Fostering and facilitating the exchange of information and ideas among sustainability leaders from a diverse range of ocean industries.

Longer term outcomes include:

- Determining ocean sustainability priorities for the period through to 2050, and the roadmap and programs needed to address them.

- Expanding the unique WOC international, multi-sectoral ocean business community of senior industry representatives providing leadership on ocean stewardship.
- Improving cross-sectoral leadership and collaboration in addressing Corporate Ocean Responsibility to 2050 and beyond

PRE-SOS 2013 - OCEANS 2050 WORKSHOP

Background

With the advent of the WOC there is now an international, multi-industry organization focused on the responsible use of the ocean that provides the base from which to develop the Ocean Business Community (OBC) Vision for the future of the ocean to the middle of this century – “Oceans 2050”. Kicked off at SOS 2013, the Oceans 2050 process will work with leadership companies from a range of ocean industries to identify the trends, plans, constraints and opportunities for the future use of ocean space and resources and develop a collective OBC Vision of how the ocean will continue to be responsibly used in the coming four decades and what actions will be necessary by industry over this time frame to deliver on this vision. The Oceans 2050 Workshop provided the beginnings of a long-term framework for action on sustainability by industry. Approximately 80 members of the OBC participated, both WOC Members and other interested ocean industry representatives.

The World Bank

The Oceans 2050 Workshop included an opening presentation by Mr. Angus Friday, World Bank Ocean Representative, who described the work of the World Bank on oceans and ocean sustainability, and the recently launched “Global Partnership on Oceans” (GPO), which includes WOC as one of its Partners. He noted that ocean sustainability challenges are urgent and that there is a critical need and opportunity for the private sector to take action. He highlighted the fact that the mission of the World Bank intersects well with the WOC mission and that partnering with companies to form an investment council is a priority for the World Bank.

Lloyd’s Register “Global Marine Trends 2030”

To set the stage for the Oceans 2050 workshop, Ginger Garte of Lloyd’s Register (LR) presented key findings from the LR report “Global Marine Trends 2030”, a wide-ranging report with insight into major maritime economic areas. Key aspects of the 2030 scenarios developed in the report include a world in which: China owns a quarter of the merchant fleet, almost half of offshore oil is taken from the deepest waters, and there are 100 times as many offshore wind platforms. The report noted that the tanker fleet is growing the slowest of all the major ship-types and the number of container ships with a capacity that exceed 7,600 twenty-foot equivalent unit (teu) is growing three times faster than those below that threshold.

The Global Marine Trends 2030 team used three scenarios to model the future. These scenarios, using three key drivers – population growth, economic development and demand for resources – describe what maritime trade, sea power and the offshore energy sectors could look like in 2030.

The three scenarios are:

- *Status Quo* – The world will continue its current growth momentum with some booms and busts over the next twenty years.
- *Global Commons* – A shift to concern over resource limitation and environmental degradation will see a desire for a more sustainable world being developed and fairness in wealth distribution. Governments will find common ground and accelerated economic growth, within a framework of sustainable development, which will follow.
- *Competing Nations* – States act in their own national interest. There will be little effort to forge agreement amongst governments for sustainable development and international norms. This is a self-interest and zero-sum world, with a likely rise in protectionism and slower economic growth.

The report also included disruptive factors that could radically alter the likelihood of the scenario results. But, barring cataclysmic change, the China factor will be the big story in 2030 with China, consuming three times the amount of oil as today, 60% of the world's coal and continuing to grow as the marketplace for maritime trade. The United States will, however, be the biggest consumer of natural gas and will remain the pre-eminent military power on the oceans will remain.

Oceans 2050 Workshop Outputs

The workshop participants broke into small groups for facilitated discussions to develop a list of key drivers, existing trends, preferred trends and constraints to these ocean future trends, as well as the short-term, medium-term and long-term actions that should be undertaken by the WOC.

A summary of the outputs from the breakout groups included identification of:

Key Drivers

- Population growth and demographic change.
- Technology, especially data and information systems.
- People, society, politics.
- Consumption.
- Scarcity (minerals, non-renewables).
- Food security and supply.

Existing Trends

- More information.
- Resource limitations.
- Role of new players (e.g. indigenous populations, new or developing nations).
- Decisions made in the absence of scientific data and fact.
- Public initiatives due to emotions.
- Academia and government leading without technology.
- Regionally gathered data.
- Changes in ocean acidification and temperature.
- Overconsumption.
- Emerging middle class and growing population.
- Increasing resource demand per capita and changes in food distribution globally.

Preferred Trends

- Sustainability of population growth.
- Long term planning (decadal) for sustainable development and environment management.
- Better access and use of data for planning and management.
- Consistency of global regulation.
- Sustainable prosperity created by coordinated, proactive industry efforts.
- Research to support data gaps.
- Common platform to share and address concerns and develop shared perspectives.
- Public/private partnerships to address shared ocean priorities.

Short Term (1-3 year) Priorities for WOC Action

- Advance standard data collection methods for ocean industries.
- Build relationships within similar programs.
- Complete a Needs Assessment: what data are needed for industry to do their job.
- Identify common interest areas and common benchmarks within WOC.
- Ensure transparency in data standards and how data is shared.
- Built trust within the OBC and beyond for enhanced collaboration.
- Engage a larger and more diverse group of companies in the WOC.
- Document the marine protected areas supported or promoted by industry on a regional basis.

Medium Term (3-10 year) Priorities for WOC Action

- Increase data collection to determine industry impacts and sustainability.
- Develop technologies to support data collection.
- Establish best practices system, removing the propriety data, etc.
- Help industry create its own destiny by working with ocean stakeholders up front and providing a unified voice for the Ocean Business Community.
- Assist the Ocean Business Community to ensure it has core competencies and skills to address sustainability challenges.

Long Term (10-50 year) Priorities for WOC Action

- Develop trust and communications among the components of the diverse Ocean Business Community.
- Develop trust between the Ocean Business Community and other ocean stakeholders.

SUSTAINABLE OCEAN SUMMIT 2013

SOS 2013 - OCEAN EXECUTIVE FORUM

A Panel of CEOs, VPs and Senior Executives from the Ocean Business Community (OBC) discussed the outputs from the “*Oceans 2050: Sustainable Ocean – Sustainable Business*” workshop and the role of cross-sectoral industry leadership and collaboration in addressing “Corporate Ocean Responsibility”.

Ocean Executive Forum Panel:

- Steve Carmel, Senior Vice President, Maersk Line Limited [WOC Member] (shipping)
- Clint Plummer, VP Development, Deepwater Wind (offshore renewable energy)
- Gary Isaksen, Manager, Global Ocean Science & Policy, ExxonMobil [WOC Member] (oil and gas)
- Robert Orr, CEO, Cuna del Mar (aquaculture)
- Mikael Thinghuus, CEO, Royal Greenland [WOC Member] (fisheries)
- Dawn Wright, Chief Scientist, ESRI and Dan Zimble, Solutions Engineer, ESRI [WOC Member] (science/technology)

Moderator: Paul Holthus, CEO, WOC

Summary of Panel Perspectives

- The importance of the SOS 2013 is to show that the companies involved in the WOC and the event are trying to come to a common understanding about ocean leadership and sustainable ocean use.
- Leadership companies want to be the best stewards possible, within the challenge of operating with changing risk/uncertainty and a changing environment.
- One of the main missions of the WOC Members is to foster partnerships and collaboration through data production, use, sharing and leveraging membership to form partnerships with other members.
- Leadership companies are very concerned about the environment, but also food security, and ensuring that ocean food production, e.g. from aquaculture, is environmentally sustainable.
- The movement to install environmentally and financially sustainable fish farms 10, 15 miles offshore will likely bring aquaculture more in contact with other industries, and WOC can help foster productive discussions where we might come in conflict.
- Offshore wind is now much more cost effective, and becoming a viable option for more areas, e.g. the US Northeast which means offshore wind is coming into areas where it’s never been done, so offshore wind needs to understand what uses are already going on in the ocean.
- Companies want to survive for the next 200 years, and that only happens if they address business and environmental sustainability within an ocean that is becoming more crowded with other industries.
- As things change and Arctic becomes ice-free, companies operating in northern latitudes need to work with other industries to provide for countries such as Greenland and explore the potential benefits to working with other companies and industries.

Questions and Discussion

SOS 2013 participant questions for the Ocean Executive Panel focused on a range of issues, including:

- How is your industry changing and is it taking a long-term view of its presence in the ocean and is it taking into account other industries?
- What is the conflict and collaboration in the ocean and what might that collaboration look like?

- What can we expect in coming regulatory frameworks and how will this affect sustainable use of the oceans?
- What does success look like and how can the ocean business community measure success?

The Ocean Executive Panel members' responses to these questions, and the interchange amongst themselves, included the following key points:

- With 9 billion people and increasing standards of living, humankind will depend more and more on the ocean for energy, wild caught fish, farmed fish, and maritime transport.
- Industry is better off working together and then approaching government together regarding regulation. There is competition between existing uses but it doesn't have to be conflict. The availability of data helps us determine where there is and isn't conflicts.
- Getting everyone around the table and looking at a map combined with geospatial information can be a big part of developing solutions.
- With a substantially growing middle class demanding more food and protein, there are major concerns about where that food going to come from and how it can be generated in an environmentally sustainable manner.
- A big portion of fish live in the north, and most people live in south. In the future there will be a major transfer of fish from the north to the south.
- Shipping is adapting to changes and reducing its footprint in general, e.g. the carbon footprint, sulfur footprint, discharges, etc.
- Ocean policy developments often refer to a "science-based approach," but science takes a long time via peer review, etc., with the risk that government may produce regulations that do not actually address the real issue.
- The pace of science is moving faster and is also driven by societal needs and scientists need to get it out to policy and policymakers.
- Industry would appreciate a more coordinated approach to regulation, in contrast to the tendency for different levels of government to develop different standards for the same issue.
- The WOC is a network of all sectors which is focused on taking action in regards to solving ocean problems and success is a measurable progress in addressing these problems in a more efficient, effective and timely manner than would be achieved without multi-industry leadership and collaboration.

Overall, discussion reflected that, in order to improve ocean sustainability, the various ocean communities (industry, science/research, NGOs, government, etc.) need to work together on a common ocean agenda. The panel reaffirmed that SOS 2013 was not just a conference to talk about these needs and challenges, but a working meeting to focus on these issues and get input on the WOC work plan.

In closing this inaugural SOS 2013 panel of ocean executives, the WOC CEO asked WOC Members and non-WOC industry participants to provide their input throughout the rest of the conference on how to best keep working together with and through the WOC. Non-ocean business community participants were asked to bring their perspective to the business oriented focus of SOS 2013 during the remainder of the conference.

SOS 2013 - SESSIONS AND THEMES

Sound and the Marine Environment

Session Terms of Reference Questions

- What are the needs and opportunities for cross-sectoral ocean industry leadership, innovation and synergies in addressing anthropogenic sound in the marine environment through a common R&D platform?
- What are best practices in research and implementation?
- How can such a program best complement existing efforts on ocean sound and marine life and engage industries that generate sound but have been less involved to-date?

Session Chairs

Brandon Southall, Southall Environmental Associates
John Young, CSA Ocean Sciences Inc.

Speakers

Brandon Southall, President, Southall Environmental Associates
- What We Know About Marine Sound and What We Need to Know

John Young, Director, Marine Sound, CSA Ocean Sciences, Inc.
- Why the Marine Sound Issue is Important to the Future of Your Ocean Business

Roger Gentry, Special Advisor, Sound and Marine Life, Oil and Gas Producers Association (OGP)
- Highlights of the Joint Industry Program (JIP) on Sound and Marine Life

Jason Gedamke, Director, Ocean Acoustics Program, National Marine Fisheries Service, U.S. NOAA
- NOAA's Ocean Acoustics Program and Partnerships with IMO on Vessel-Quieting

Kathy Vigness-Raposa, Senior Scientist, Marine Acoustics
- Discovery of Sound in the Sea (DOSITS): Communicating Science to Educators, the Public, and Policymakers

Moderator

David Hedgeland, Sound & Marine Life Technical Authority, BP

Session Summary

- **DOMINANT TOPICS:** The potential environmental effects of sound in the marine environment are an increasing important part of addressing ocean sustainability and industry operations.
- **KEY CHALLENGES:** Formation of action-driven WOC Marine Sound Working Group that is cognizant and collaborative with existing monitoring, research and education initiatives.
- **CLEAR ACTIONS:** Formalize membership in the WOC Marine Sound Working Group and conduct follow-up conference call to agree on working group objectives and 1-2 short- to medium-term projects.

Principal Themes

The discussion centered on strategies and priorities to best address the marine sound issue and to optimize value to ocean industries of collaborating to address marine sound. The WOC Marine Sound Working Group is in its formative stages and the implications of this issue for ocean businesses need to be identified. There is a need to identify when and where there are effects from sound (e.g. stress, behavioral changes, communications interference, decompression sickness, marine mammal strandings, etc.) and to identify the scale of the problem. The participants identified three potential goals of the WOC Marine Sound Working Group: 1) Serve as an information and education source about the issue, 2) Facilitate partnerships across industries to address the issue, and 3) Identify concrete actions that industry can take to tackle the issue. The take away message identified the value of collaborating on the issue through: the value of lessons learned, the value of collaborative research, the value of mapping and need for real data to validate models, and the value of outreach and education. The importance of collaborating cannot be overemphasized. Industry cannot avoid addressing the issue of marine sound. The WOC should move forward with ensuring there is an active, international, multi-industry working group on marine sound.

Port Waste Reception Facilities and Responsible Cargo Management

Session Terms of Reference Questions

- How can port users collaborate internationally to ensure that adequate, economically viable port waste reception facilities are available worldwide?
- What do diverse port users need to do to implement industry responsibilities (e.g. re marine debris) and contribute to cleaner ports?
- How can ocean industries collaborate to ensure that cargo is classified and managed appropriately, ports facilities are developed to address industry needs and obligations (e.g. adequate waste reception facilities) and managed to address safety and sustainability?

Session Chairs

Holly Bamford, NOAA

Ginger Garte, Lloyd's Register North America

Speakers

Gudrun Janssens, Policy Advisor, Public Waste Agency of Flanders (OVAM)

- International Conventions and Regulations Regarding Ship Generated Waste and Reception Facilities

Ben Davies, Manager, Materials Stewardship, International Council on Mining and Metals (ICMM)

- Responsible Cargo Management and Port Waste Reception: Mining Industry Perspective

Captain David Condino, MARPOL Compliance Programs, Facility Safety Branch, U.S. Coast Guard

- Environmentally Sound Management of Ship's Waste and Adequate Port Reception Facilities:
Implementing MARPOL Regulations and the U.S. Regulatory Approach

Peter Van den Dries, Technical Manager, Environment, Antwerp Port Authority

- Port Perspective on Providing Port Reception Facilities for Ship-Generated Waste and Cargo Residues

Robert Griffiths, Director of Technical and Regulatory Affairs, Design and Engineering, Cruise Lines International Association (CLIA)

- Cruise Line Industry Perspective on Port Reception Facilities for Ship-Generated Waste

Summary

- **DOMINANT TOPICS:** The importance of global Best Port Management Standards, port development solutions tailored to core port users, using historical ship data by port and by ship type/segment to allow different best management practices (BMP) and addressing the needs of customers/users that does not lead port reception facilities (PRF) to overdevelop their port infrastructure or meet an inappropriate BMP.
- **KEY CHALLENGES:** PRF adequacy is not simply defined by shoreside facilities but should include dialogue with shipboard users. Due to cradle-to-grave responsibilities, ship type/segment must also consider how waste is managed and disposed upon reaching the vendor. PRF enforcement needs to consider whether there are a set of global standards that are uniform, adequate, timely and competitively priced.
- **CLEAR ACTIONS:** The WOC Port Reception Facilities Working Group should be strengthened with additional member involvement and begin its work.

Principal Themes

PRF adequacy is an ongoing global priority for a wide range of ocean industries. “Adequate” facilities will meet the needs of the ship, do not provide mariners with disincentives to use PRF, contribute to the improvement of the marine environment and allow for the disposal of ships’ waste in an environmentally-friendly and economically viable manner. This is the responsibility not only of the ship but also the port and terminal operators. Developing PRF standards is difficult given the differences among ports. Cooperation and environmentally sound waste treatment are very important in setting up a functioning program that is responsive to industry and environmental requirements. To improve success rate, a competitive cost recovery system and an effective monitoring system are essential. Environmentally sound behavior by industry is important to ship owners. There are web-based systems that provide a full picture of waste flows and accurate and detailed data on delivery of waste and can be used by all ports. There are specific issues for some sectors, such as bulk mineral carriers and cruise ships that need special solutions due to special cargo wastes, very short turn-around times and lack of direct path from one port to another. Ports in developing countries need assistance to create effective PRF programs. Reporting, compliance and enforcement are issues that WOC could provide assistance in addressing. In particular, the WOC PRF Working Group could help examine the discrepancy between the needs of ports, users and a system that could identify different ship types to match to adequacy.

Financing Innovation and Technology for Ocean Sustainability

Session Terms of Reference Questions

- What are the opportunities for investment in marine technology, information and communications, sensors and other innovations to help industries address sustainability?
- How can ocean industries collaborate to foster investment in innovation and technology?
- What are the barriers, lessons and opportunities in relation to commercializing important opportunities in innovation and technology for ocean sustainability?

Session Chair

Gary Dinn, Vice President, Technology Development, PanGeo SubSea

Innovation and Technology Panel

Rolando Morillo, Senior Analyst, Rockefeller Ocean Strategy

Mark Spalding, Executive Director, The Ocean Foundation

Mark Hall, President, Kongsberg Oil & Gas Technologies

Allen Barbieri, CEO, Biosynthetic Technologies

Session Summary

- **DOMINANT TOPICS:** Better understanding of the financing of technology and innovation to address ocean sustainability needs and opportunities will help the ocean business community better tackle these issues.
- **KEY CHALLENGES:** Technology and innovation developments are often pursued on a fairly narrow, sectoral basis that miss the opportunities for cross-sectoral synergies, economies of scale and co-financing.
- **CLEAR ACTIONS:** The WOC could assist to develop multi-industry collaboration to develop cross-sectoral priorities for technology and innovation solutions to shared ocean sustainability challenges.

Bio Fouling and Invasive Species

Session Terms of Reference Questions

- How can diverse ocean industries collaborate to understand and address the shared problem of biofouling and the introduction of invasive species?
- What opportunities exist with science, government and industry to create a common research and development platform on the causes, prevention and removal of biofouling?
- What are the proposed and new regulations regarding the potential importation and spread of non-indigenous marine species ('marine pests') and can a pan-industry platform be developed to minimize business risks of failing to receive biosecurity clearance?

Session Chairs

John Bickham, Principal Scientist, Battelle Memorial Institute

Speakers

Boud Van Rompay, CEO, Hydrex

- Biofouling: What the Science and Data Tell Us About Solutions

Carolyn Junemann, Environmental Protection Specialist, Office of Environment, Maritime Administration, U.S. Department of Transport
- A Federal Agency Looking for Hull Biofouling Solutions

Richard Everett, Environmental Protection Specialist, Environmental Standards Division, U.S. Coast Guard
- Developments in International Biofouling Management Guidance: A Regulator's Perspective

Ryan Albert, Environmental Scientist, Water Permits Division, U.S. Environmental Protection Agency
- Biofouling Management Approach in the Vessel General Permit

Summary

- **DOMINANT TOPICS:** The risks to the marine environment from biofouling are as serious as ballast water issues and there is a much broader range of ocean industries that are involved in biofouling.
- **KEY CHALLENGES:** There is a need to develop a non-toxic protection from biofouling that can be cost effectively maintained at regular intervals.
- **CLEAR ACTIONS:** The WOC should help develop global, multi-industry collaboration on developing solutions to biofouling and help ensure that regulatory efforts are informed of and based on the new technical possibilities that are emerging.

Principal Themes

There is a need to balance risk reduction from biofouling and economic impact, which should be accomplished through hull coatings, cathodic protection and underwater ship husbandry. Science and the associated data show that hard coatings on vessels, platforms and other infrastructure can have benefits over soft toxic coatings. Potentially effective approaches include using the right coating and reclaiming the cleaned materials. Coatings that are highly toxic and contaminate the environment do not control the introduction and spread of invasive species. Once a determination is made that elimination of non-indigenous invasive species is a priority, reduction or elimination of biofouling can occur by using hard non-toxic coatings, cleaning microfouling slime before macrofouling occurs and cleaning ships, platforms and other infrastructure before it is moved. Advancements of in-water hull cleaning include the introduction of remotely operated vehicles (ROVs). WOC provides a good forum to develop and advance a global, proactive, multi-industry approach to addressing biofouling and avoiding the spread of invasive species.

Ocean Policy and Ocean Industries in International Waters

Session Terms of Reference Questions

- How will business be affected by current and upcoming developments in maritime regulation and policies, e.g. U.N. General Assembly, the Law of the Sea, the Convention on Biological Diversity, IMO and regional bodies and conventions?
- How can WOC play a useful role in bringing together responsible ocean industry and regulators?
- How can ocean industries ensure proposed governance changes allow for continued responsible use in the high seas/deep seabed, i.e. the Areas Beyond National Jurisdiction (ABNJ)?

Session Chairs

Peter Hinchcliffe, Secretary General, International Chamber of Shipping
Baptiste Weijburg, Attorney, Holman Fenwick Willan LLP

Speakers

Vladimír Jareš, Deputy Director, U.N. Division for Law of the Sea and Ocean Affairs
- Ocean Governance and Policy Developments at the United Nations

Renée Sauvé, Director, Global Marine and Northern Affairs, Fisheries and Oceans, Canada
- The Global Marine Agenda: Oceans Governance and International Policy Developments and What They Mean for Users

Apar Sidhu, Deputy Director, Office of Ocean and Polar Affairs, U.S. Department of State
- The U.N. World Ocean Assessment and Ocean Industries

Industry Discussion Panel

Alice Penfold, Sustainability Manager, Sanford Fisheries

Vinay Patwardhan, General Manager, Group Tanker Operations and Director, Group Planning & Development, TCC Steamship Co Hong Kong

Robert van de Ketterij, Manager, Knowledge Development, IHC Merwede

Don Pickering, CEO, OneOcean

Justin Manley, Senior Director, Business Development, Teledyne Benthos

Summary

- **DOMINANT TOPICS:** Industry is working within the ocean regulatory framework but needs to be confident that governments will consult with stakeholders. Regulators needed to be mindful that solutions suggested by industry would likely be the most cost effective.
- **KEY CHALLENGES:** The ocean business community should take a proactive role in relations with regulators as it would be much more effective than waiting and reacting to regulatory action.
- **CLEAR ACTIONS:** A WOC working group on ocean policy, especially in relation to international areas, will help bring regulated industries together for mutual benefit and to ensure that the information and needs of responsible industry operators are recognized by governments and balanced with those of other stakeholders.

Principal Themes

The United Nations Convention on the Law of the Sea (UNCLOS) is about the balance of rights, obligations and interests and includes a jurisdictional framework for ocean policy and governance, which is very important to industry. The international community as a whole agrees on a goal that the ocean needs to be used sustainably but disagreement exists on what this means more specifically and how it can be achieved. In international ocean policy, there is a general trend away from institution building and onward to implementation and away from sectoral efforts to more integrated approaches - all with an increase in momentum and urgency. This is driven by several questions: Do we need common standards for all sectoral activity with respect to impact assessment? Do we need multi-sector protected areas and how could they function? Do we need benefits sharing for resource and how would that function? What instrument will we use or develop to balance the sustainable ecosystem goals? To address these questions, better connections between different sectors should be developed with new tools specifically to address ecosystem objectives. Engaging and sharing the business community experience and expertise is critical to success for ocean policy and governance, especially in international waters. Recognizing that sector-by-sector management of human activity in the ocean has proven inefficient and unsuccessful and made more difficult by the lack of understanding of the baseline condition, the UN has launched an effort to develop a World Ocean Assessment (WOA) by 2014 with

updates every 5 years. Industry is encouraged to contribute data, resources, expertise and its unique capabilities, but can also learn from other industry sectors. Government regulators need to be mindful that the industry driven solutions will be the most cost-effective. Industry needs to be more proactive in engaging with decision makers. Over-regulation, duplicated regulation, and the absence of regulation are key issues and WOC should bring together industries and politicians to foster collaboration in addressing these needs.

Smart Ocean/Smart Industries: Industry Data Collection for Ocean, Weather and Climate

Session Terms of Reference Questions

- What are the common interests of ocean Industries in collaborating to improve science and forecasts that support safe, efficient and environmentally sound ocean use?
- What is needed to scale up the number and kinds of vessels and platforms collecting robust, standardized ocean, weather and climate data and to improve the sharing of data?
- How can software solutions save time and resources for ocean Industries, facilitate the sharing of ocean data and assist industry in solving challenges of safe and sustainable ocean operations?

Session Chairs

Eskild Lund Sorensen, Environmental Specialist, Corporate HSE, Maersk Drilling, A.P. Moeller-Maersk
Craig McLean, Deputy Assistant Administrator, U.S. NOAA

Speakers

Kalle Kägi, Co-founder, Marinexplore [WOC]

- Results of a Survey Regarding Ocean Data Collection and Sharing

Eric Lindstrom, Physical Oceanography Program Scientist, U.S. NASA; Co-Chair, UNESCO-IOC Global Ocean Observing System (GOOS)

- International Ocean Observations, Data Management Programs and Voluntary Observations

Rainer Sternfeld, CEO and Founder, Marinexplore [WOC]

- Real Products from Real Voluntary Data

Dawn Wright, Chief Scientist, ESRI and Dan Zimble, Solutions Engineer, ESRI [WOC]

- An Arctic Story Map + Operations Dashboard with GeoEvent Tracking

Industry Data Collection, Consolidation and Sharing Panel

Jacques Mine, Head of Service, Exploration and Production, TOTAL [WOC]

- Environmental Baseline and Monitoring Around Oil and Gas Offshore Sites

Peter Moore, Stakeholder Liaison, Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS) and Josh Kohut, Assistant Professor, Marine and Coastal Sciences, Rutgers State University of New Jersey

- Data Collection from Fishing Vessels

Kyle Vanderlugt, Director, Program Development, Liquid Robotics [WOC]

- Science and Technology of Data Collection

Paul Cooper, Vice President, Caris USA [WOC]

- Crowdsourcing Bathymetry from Industry Vessels

Rich Pruitt, Associate Vice President, Safety & Environmental Stewardship, Royal Caribbean Cruises

- Cruise Line Experience as Ships Of Opportunity and Partnering with Science

Ian Voparil, Shell [WOC]; for IPIECA, the global oil and gas industry association for environmental and social issues

- Industry Programs to Assemble Ocean Information/Knowledge: Marine Geospatial Bibliography

David Vousden, Regional Director, Agulhas and Somali Current Large Marine Ecosystems Project (ASCLME)

- Regional Partnerships with Industry for Data Collection: Western Indian Ocean Alliance

Summary

Principal Themes

Industry data and government data should be shared to improve general understanding of the oceans and create more opportunities for collaboration. Industry already has a wide variety of data collection efforts and equipment, e.g. experimental equipment on ships that are using an increasing number of more powerful sensors that allow companies to share with each other. With these data, ocean industry helps to address sustainability challenges and create overall efficiency improvements. Sharing of industry data beyond industry partners is limited by revealing data time stamps and coordinate knowledge, competitors using or interested in the same marine space, the asset value of data, the high costs of storing and sharing data and the lack of a simple tool to share data. Another limiting factor is the lack of acceptance of industry data into government repositories. Industry may collaborate more freely and quickly if they are provided with simple and low-maintenance equipment, the data transfer was managed beyond the business operations, and there was a way to turn off the ship identification mechanism. Some governments have established goals that include partnering with industry to measure “essential ocean variables” that will help articulate the benefits of ocean observing, describe science that will arise from these improvements and create a standardized platform interfaces. Crowdsourcing data analysis is a cost effective way to increase engagement and develop creative new technologies.

Marine Spatial Planning

Session Terms of Reference Questions

- How can ocean industries take a proactive role in marine spatial planning (MSP)?
- How can ocean industries ensure they are informed and engaged in a coordinated, constructive manner and what is needed to make sure that MSP reflects the needs and opportunities of industry involvement?
- What are best practices in research and implementation?

Session Chairs

Leslie-Ann McGee, Director, Ocean and Coastal Solutions, Battelle Memorial Institute

Jay Walmsley, Senior Environmental Analyst, Golder Associates

Speakers

Ian Voparil, Business Lead Venture Support Integration for Deepwater, Shell

Sally Yozell, Policy Director, U.S. NOAA

Sandra Whitehouse, Senior Advisor for Government Affairs, Ocean Conservancy

Moderator

Carl Nettleton, Founder and President, Open Oceans Global

Summary

- **DOMINANT TOPICS:** There is a need for the ocean business community to become more involved in MSP in a constructive and systematic way.
- **KEY CHALLENGES:** Industry needs a better understanding of the “rules of engagement in MSP” and the scope of MSP.
- **CLEAR ACTIONS:** WOC could assist in developing understanding of the linkages between industry and MSP by having WOC Members provide information on the regulatory process they engage in.

Principal Themes

The business community needs to be more constructively and systematically involved in MSP. Businesses should take a proactive step in learning about what MSP is and what their industry stands to potentially gain or lose from its implementation. Industry is worried that MSP will create more regulatory hurdles and would prefer to see a long-term energy policy plan before making changes themselves. Government suggests that by partnering more with industry and increased communication and education on the topic will lead to a more efficient process than currently exists. Industry already has many regulatory and permitting hurdles which are cumbersome and, as a result, view MSP cautiously. If MSP could be a tool to streamline regulatory processes like permitting, industry would be more likely to support efforts to move MSP forward. More and better communication between industry and government in the form of partnerships is crucial to this. In some countries, the marine policy and overall societal goals for ocean industries were set before the industry developed. This is not true in the U.S., for instance, and leads to concern over how to retrofit an existing industry into a new planning context, i.e. MSP. To help with this situation, performance metrics of MSP should be agreed to up front by industry, government and other stakeholders and then measure the change in time it takes the government to complete the permitting reviews under the new system.

Participant Workshop Results

The session workshop small groups discussed the proactive roles that industry can take by using the MSP tool and to develop SMART goals (specific, measurable, attainable, relevant and time-bound) and how WOC can help, with the following main conclusions:

- MSP proponents and stakeholders should develop a list of MSP guideline templates for all sectors within one year.
- Industry should seek mechanisms and forums to proactively engage in MSP goal-setting.
- Industry sectors should take a leadership role in establishing MSP in areas where they have no specific self-interest.
- WOC should assist industry to develop a list of questions and concerns about MSP and provide to regulators to be addressed up front.

- MSP proponents and stakeholders should identify specific areas of communication and coordination between agencies that need improvement for the permitting and licensing process.
- WOC should produce an industry roadmap of the regulatory process by asking WOC Members to contribute information on the process they navigate.
- WOC should assume the role of collector and disseminator of information about MSP opportunities for industry.
- WOC Members can help mediate the process by supplying information to WOC to create a repository of information.
- WOC should sponsor annual events and workshops on MSP to help assemble a consolidated broad industry perspective of objectives for advancing MSP.
- WOC should help the MSP "community" meet industry and improve communications and understanding.
- WOC help collate examples of the benefits of MSP through case studies.

Marine Ecosystem Services and Blue Carbon

Session Terms of Reference Questions

- What do industries need to understand about ecosystem management during marine operations and how do you measure changes in ecosystem services?
- What is the potential role for major ocean industries in Blue Carbon and restoration of ocean ecosystems?
- What are the roles and incentives for industry to maintain or enhance marine ecosystems, especially as they are being affected by climate change?

Session Chairs

John Ridley, Managing Director, Ocean Nourishment
Anissa Lawrence, Director, TierraMar

Speakers

Brian Murray, Director for Economic Analysis, Nicholas Institute, Duke University
- Blue Carbon: Biophysical Potential and Economic Incentives

Stephanie Roe, Land Use and Climate Consultant, Climate Focus
- REDD+ and Blue Carbon: On-the Ground Perspectives and Corporate Involvement

Steve Emmett-Mattox, Senior Director, Strategic Planning and Programs, Restore America's Estuaries
- Applying Blue Carbon Tools to Marine Ecosystem Restoration

Summary

- **DOMINANT TOPICS:** Blue carbon and the role of coastal ecosystems in carbon storage and sequestration are critical issues.
- **KEY CHALLENGES:** There is a need to build a value proposition for business and for WOC regarding coastal ecosystems' role in carbon storage and sequestration and explore how the ocean business community can engage in and show leadership in this.
- **CLEAR ACTIONS:** WOC should explore establishing a working group focused on exploring the business value proposition related to coastal ecosystem carbon storage and sequestration.

Principle Themes

Blue carbon describes the carbon stored in coastal and marine ecosystems generally in mangroves, tidal salt marshes and sea grasses. These habitats and the ecosystem services they provide are under huge pressure and are threatened. In addition to coastal and marine blue carbon, there is also a need to expand the baseline, protection and accounting for open ocean blue carbon and the biological “pump” of carbon between the ocean and the atmosphere, which is larger in the open ocean. The conversion of blue carbon to other uses has significant social and economic costs that are increasingly relevant to the private sector. Managing risk in supply chains, finance and investment standards (i.e. the Equator Principles) and building host country good will are reasons to protect blue carbon areas. The private sector can get involved in securing future blue carbon presence by addressing the root causes and responses, evaluating market opportunities and catalyzing the agenda for markets through partnerships or policy. There is a lot of overlap between the interests of the ocean community and those that are working on advancing climate policy. However, the value proposition for blue carbon and its relation to a verified carbon standard has not been well articulated. Establishing a WOC working group on the topic could be a good way to engage and build partnerships with industry and will provide industry with an opportunity to lead on this issue. In order to understand and advance the role of the blue carbon on the ecosystem services in the ocean, WOC should help bring together industry, science and the potential of the marine ecosystem market . While science is driving policy and non-governmental organizations, industry is not yet engaged due to the lack of clear business value and proposition regarding blue carbon and ecosystem services. Industry involvement will drive activity on this issue, however WOC may want to take a watching brief until further progress is made within the blue carbon science and policy space to determine whether a working group should be established.

The Arctic: Challenges and Opportunities for Responsible Industries

Session Terms of Reference Questions

- How can the responsible, sustainable development of the Arctic area and resources be ensured and enhanced through cross-sectoral industry leadership and coordination?
- What are the priorities for industry leadership and coordination on Arctic use, sustainability and development?
- What structure and process will best assist leadership companies in the Arctic in developing business collaboration and engaging with governments, the Arctic Council and other stakeholders?

Session Chairs

Hans Christian Krarup, Denmark Country Director, Golder Associates

Tim Lunel, Support & Development Director, International Tankers Owners Pollution Federation

Speakers

Captain Jon Spaner, Director, Emerging Policy, U.S. Coast Guard

- Risk and Increased Economic Activity in the Arctic

Tim Lunel, Director, Support & Development Director, ITOPF [WOC]

- Government-Industry Collaboration Models That Could be Applied to the Arctic

Renée Sauv , Director, Global Marine and Northern Affairs, Fisheries and Oceans, Canada

- Arctic Council Policy Developments and Sustainable Development

John Farrell, Executive Director, U.S. Arctic Research Commission

- Research, the Business Community and Sustainable, Responsible Use of the Arctic

Joel Clement, Director, Office of Policy Analysis, U.S. Department of Interior,

- Sustainable Development of the Arctic: The U.S. Perspective

Summary

- **DOMINANT TOPICS:** The need for greater collaboration between industry and government on addressing responsible industry use of Arctic space and resources and the urgent need for action.
- **KEY CHALLENGES:** Given that the Arctic is so important now to so many different industry sectors, with a lot of disparate strands of effort, there is a challenge to bringing these together for the common benefit of the responsible Arctic business community.
- **KEY ACTIONS:** The WOC Arctic Working Group should move forward with developing its Terms of Reference and priorities as a matter of urgency.

Principal Themes

In the process of developing an Arctic strategy for the next 10 years, there are complex, controversial issues, e.g. aboriginal communities, resource extraction and climate change. Operational challenges for industry include extreme weather, vast distances, remote areas and limited infrastructure. Socio-economic challenges include rapid social, economic, and environmental change, multiple agencies and mandates that are sometimes in conflict, and a stewardship strategy that is often project-by-project or sector-based. The Arctic Council is an intergovernmental forum that includes indigenous organizations which operates six working groups that cover a range of interests. The Arctic Council is actively

developing policy and legally binding agreements (i.e. search and rescue, oil spill preparedness and response, etc.) and strengthening organizational capabilities. Themes include responsible Arctic resource development, safe Arctic shipping and sustainable circumpolar communities. An Arctic Council circumpolar business forum is being explored as a means to address socioeconomic progress and may include virtual business platforms for communication, circumpolar expos/trade shows to discuss topics and an exchange of regional information. To handle increased expectations of the Arctic users in science, infrastructure and cultural issues, the Arctic community needs to adopt and embrace integrated approaches, provide leadership, strengthen key partnerships, improve stakeholder processes and coordinate and streamline processes and permitting. Opportunities for industry include proactive, positive engagement, improvement on data sharing, innovative collaboration tools and feedback for international best practices, which are priorities that have emerged from the WOC Arctic Business Leadership Council workshop in 2012.

Sea Level Rise: Port and Coastal Infrastructure Adaptation

Session Terms of Reference Questions

- How are ports and coastal infrastructure around the world going to adapt to sea level rise (SLR)?
- What is the state of knowledge and best practice in SLR adaptation planning?
- How can ocean industries collaborate among themselves, and with other stakeholders, to advance this process to ensure ports are able to adapt to coming changes?

Session Chairs

John Englander, Author

Kathryn Wightman-Beaven, Director, Global Corporate Responsibility, DP World

Speakers

John Englander, Author, High Tide on Main Street: Rising Sea Level and the Coming Coastal Crisis

- Sea Level Rise: Facts and Myths

Kathryn Wightman-Beaven, Director, Global Corporate Responsibility, DP World

- Sea Level Rise and Coastal Communities: The Human Cost and Community Impact

Austin Becker, Stanford University, lead author, Climate Change Impacts on International Seaports

- Port Perceptions of Sea Level Rise: An Overview

Christopher Zeppie, Director, Office of Environmental and Energy Programs, Port Authority of New York and New Jersey

- Adapting to Climate Change at the Port Authority of NY & NJ

Henri Boulet, Executive Director, LA 1 Coalition

- Critical Coastal Energy Infrastructure Adaptation

Steve Raaymakers, Director, EcoStrategic Consultants [WOC]

- Lessons from Emerging Markets/Developing Countries: Timor Leste, PNG and Elsewhere

Captain Joe Bouchard (ret.), former Commander, Norfolk Naval Station

- Naval Station Norfolk: The Experience with Accelerated Sea Level Rise

Kelly Burks-Copes, Environmental Laboratory, U.S. Army Engineer Research and Development Center

- Army Corps of Engineers Case Study: Quantifying Sea Level Rise and Storm Hazard Risks

Summary

- **DOMINANT TOPICS:** Understanding how sea level rise will impact ports, coastal and military infrastructure is a critical issue for ocean industries, governments and society.
- **KEY CHALLENGES:** The need to extend the planning horizon to recognize the life span of coastal facilities in relation to sea level rise is essential to addressing this issue.
- **CLEAR ACTIONS:** Ocean industries need to collaborate to better understand the implications of sea level rise and expand awareness and advocate long-term planning. WOC should work with ocean industries, including the important insurance and re-insurance industry, in developing a global, multi-sectoral approach to the challenge of SLR

Principal Themes

The rate of Sea level rise (SLR) varies throughout the world and depends on the geography and topography in the area, as well as many other variables. While the normal planning cycle for ports and coastal infrastructure is 3-5 years, sea level is changing on a longer scale, with SLR forecasts on the low spectrum of what may occur. While port authorities can evaluate infrastructure responses to SLR, how people respond is not so predictable nor are the cost estimates and the amount of displacement that may occur. The impact on the business community and what role they can play should be carefully considered. Specifically, ports are critical, complex and constrained by location, e.g. deep water, protected harbors and access to transportation corridors. Ports are exposed to threats of increased tropical storms, SLR and inland flooding from extreme precipitation. Survey results indicate port authorities are not well informed about climate change adaptation, have a gap in port planning timelines and climate change predictions and will have difficulties with SLR of more than 2 meters. Many forms of SLR adaptation should be considered by ports including barriers, planned flooding and retreat. However, even with the extensive institutional frameworks to contend with adaptation, there is a disconnect between the policy framework, the regulatory regime and what is occurring on the ground. However, industry may be able to more quickly respond to higher SLR predictions due to the interest maintaining operations and achieving a return on investment.

Global Ocean Commission - Ocean Industry Forum

Speakers

José María Figueres, former President, Costa Rica; Global Ocean Commissioner

Trevor Manuel, Cabinet Member, South Africa; Global Ocean Commissioner

Summary and Principle Themes

SOS 2103 included a special plenary session to foster and facilitate industry input to the recently launched Global Ocean Commission (GOC), which brings together international leaders to analyze the main challenges and threats to the high seas, recommend solutions for addressing them, and provide recommendations to the U.N.

The GOC mission is to raise the profile of collective responsibility of the ocean and ensure that ocean governance has rules that are clearly understood and complied with. The GOC wants to work in a way that will have broadest agreement of those involved. Because the global ocean is the part of the world effectively outside of nationalities, governance efforts should embrace the largest cross-section of society possible. The GOC is not looking to generate more science, but rather, to use the science to ensure ocean sustainability. The GOC objective is to formulate politically and technically feasible short-, medium- and long-term recommendations to address four key issues facing the high seas: overfishing, large-scale loss of habitat and biodiversity, the lack of effective management and enforcement and deficiencies in high seas governance. GOC efforts will be 80% on building a group of constituents who are willing to address the actionable recommendations with only 20% of the effort will be spent developing the recommendations.

The SOS 2013 session on the GOC Ocean Industry Forum provided the opportunity for the GOC to outline its plans and present the need and opportunity for the GOC to seek input from the WOC and ocean industries on the GOC recommendations as they are developed in 2013 and 2014.

SOS 2013 CLOSING SESSION - Ocean Industry Leadership: Charting the Course Ahead

A diverse group of ocean stakeholder representatives were asked to informally survey participants during the conference for their thoughts on the important messages and themes from SOS 2013.

These messages and themes were presented at the closing session, followed by an open forum discussion of participants, with the following points coming out of the presentations and discussion:

WOC, SOS and Collaboration across the sectors

- The SOS provides a unique, high energy opportunity to develop collaboration across sectors and meet new people.
- By working together the diverse ocean business community can be much stronger and more effective in tackling sustainability challenges.
- There are many areas and opportunities to collaborate, e.g. in developing common understanding, in generating new knowledge, in data sharing, etc.
- The challenge is to be creative and take advantage of this and to engage other companies that are facing similar issues.
- The SOS is helping WOC advance the development of important, high quality working groups on key issues and it will be important to capitalize on the momentum that has been generated.
- All sectors to work together to better understand the challenges and drivers across the sectors and engage in developing best practices.
- There needs to be a similar language to facilitate communication among sectors on shared issues.
- The case studies in the SOS were invaluable as they showed a cross section of different industries working together from different backgrounds.

Engaging other stakeholders

- Increasing the efforts of industry to work with regulators is a key to success.
- There are also important opportunities for industry to partner with academia.
- A common understanding of “sustainability” and measuring progress towards this is important.
- It is important for industry to clarify its support and involvement in an ecosystem-based approach to the management of the ocean.
- Other ocean stakeholders are interested and willing to engage with industry.
- WOC efforts to bring them together with the ocean business community at SOS to make connections and become informed and inspired about industry efforts to address are very important.

Role of science

- Science informs business, regulations and decision-making, with a particularly crucial need to understand current status and trends in ocean issues.
- You don't know what you don't know and since much about the ocean remains to be discovered, hopefully industry can contribute to, and benefit from, increased efforts to documents the ocean.
- Science and industry need to work to address the lack of understanding of the ecosystem based approach and its application to the ocean.

- Science could engage more with industry, respond more to industry needs and provide more practical solutions-oriented knowledge.
- Science and industry should collaborate to gather data on the oceans and increase the level of data transparency and data sharing.

Role of WOC

- WOC must continue its efforts to build the opportunity for collaboration, and shape and foster this.
- It is critical to expand the capacity of the WOC Secretariat to undertake its mission.
- Need to differentiate WOC and its role.
- The power of WOC is to translate data into knowledge leading to decisions that support decision making that works with responsible business operators.
- WOC should serve as facilitator, working with government agencies and NGOs to inform research institutions about the needs for applied science that results in practical solutions for industry and regulators.
- There is a serious lack of leadership in managing human activity in the oceans and WOC can provide this leadership by developing the collaboration of good people in good companies.