

Building Bridges in Ocean Management: Public Perceptions of Ocean Sustainability in Nova Scotia

INTRODUCTION

The environmental, social and economic concerns that currently plague our oceans are numerous and complex. It is therefore recognized that the solutions to these concerns are not simple. As such, the past two decades have shown a slow, yet impactful, shift towards cross-sectoral collaboration and interdisciplinarity. These approaches provide a blending between the interfaces of science, policy, and the public, and emphasize the interdependencies among stakeholders.

With this shift, we also see a growing challenge of how information, particularly scientific information, is communicated and adopted by various parties. This is especially important in the current political climate in Canada and at this time of fiscal austerity. Given the extensive changes to many Canadian environmental policies and legislation, including the Fisheries Act, Navigable Waters Act, Canadian Environmental Assessment Act, questions are being raised as to how best encourage responsible ocean management.

SUSTAINABLE OCEANS 2013: BUILDING BRIDGES IN OCEAN MANAGEMENT CONFERENCE

As the next generation of ocean leaders, the Masters of Marine Management class of 2013 hosted the Sustainable Oceans conference at Dalhousie University (April 12-13). With the support of the Sobey Fund for Oceans, the conference created a platform for cross-sector dialogue between government and industry representatives, local citizens, scientists, non-profit organizations, and students (hereafter the public).

The aim of this conference was to develop a strong collaborative voice on ways to move forward on ocean sustainability. The conference included a keynote speaker, Sarika Cullis-Suzuki, a panel discussion, with a range of individuals from the public, and several student presentations. Most relevant to achieving the conference's aim, two unique fora were used to engage the public: (i) a dream wall, and (ii) a workshop to draft a blueprint for building bridges in ocean management.

The objective was to explore the public perceptions and address any misconceptions to provide a more informative perspective on ocean management. This issue of the Marine Affairs Policy Forum presents (i) a summary of the public's perception of ocean management drawing from the dreamwall and workshop insights, and (ii) a discussion of these perceptions within the broader literature.



Drawing from the literature, the guiding themes of the conference are introduced, followed by a summary of the dreamwall posts, workshop feedback and a synthesis of these outputs. The outputs are then discussed within the context of the broader literature. The article concludes with a short reflection piece on the process and insights gained from the feedback obtained.

CONFERENCE THEMATIC AREAS

In planning the focus of the conference, three thematic areas were identified as critical for a discussion by the public: responsible industry; stakeholder engagement; and, effective governance.

Responsible Industry: There is a continuous debate among the public regarding what defines a responsible industry. It is commonly referred to as corporate social responsibility, a greening industry, or a sustainable industry. Corporate social responsibility occurs when a company channels its profits or resources towards the social interest, and a greening industry refers to a reduction of operations, consumption, and pollution prevention in business activities, supplies and customers. However, a sustainable industry includes (and extends beyond) corporate social responsibility and a greening industry, as it involves a balance of social, economic and environmental factors. As a result, a sustainable industry is an important part of managing the oceans.

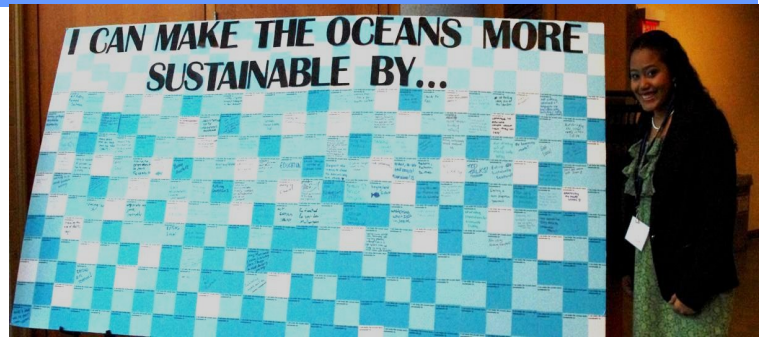
Stakeholder Engagement: The 1992 Earth Summit declared that the involvement of stakeholders (including farmers, women, the scientific and technological community, children and youth, indigenous peoples and their communities, workers and trade unions, business and industry, non-governmental organizations, and local authorities) are critical for sustainable development. If stakeholders are involved throughout the process, this instills a sense of ownership and agreement, which is likely to translate into collaborative management and improved compliance. Stakeholder engagement also improves the efficiency of the process, given that these individuals or groups often possess the knowledge, skills or resources needed to achieve desired outcomes. Overall, stakeholder engagement leads to greater equity, transparency, accountability, and, ultimately, sustainability.

Effective Governance: Governance may be defined as public and private interactions that are undertaken to resolve societal challenges and the institutions and principles which mediate those interactions. The value of a governance perspective rests in its capacity to provide a framework for understanding changing processes of governing. Generally, there are three models of governance: (i) hierarchical governance, characterized by state intervention and top-down control, (ii) self-governance, where various institutions can be created to enable people to co-operate over resources, and (iii) co-governance, consisting of collaboration and interplay among different actors, including government. While each model offers solutions to governance in ocean management, a combination of these may provide more creative and innovative solutions.

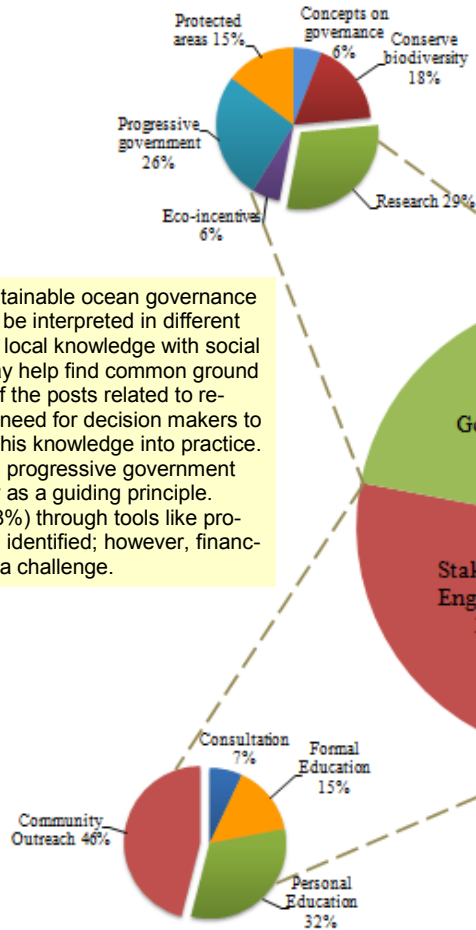


PUBLIC DREAM WALL

The dreamwall used the unfinished statement “I can make the oceans more sustainable by...” to capture the thoughts of the public on what they could do to make the oceans sustainable. Three weeks prior to the conference, the dreamwall was stationed at buildings around the Dalhousie University campus, including the Student Union Building, Kenneth C. Rowe Management Building, Life Sciences Centre, Killam Memorial Library, and Sir James Dunn Law Library. The responses highlighted many of the ocean management problems that currently exist, as well as areas that are in need of improvement. Over 80 dreamwall responses were then categorized into the three guiding themes of the conference.



SUMMARY OF DREAMWALL POSTS



Governance: Practicing sustainable ocean governance can be problematic as it can be interpreted in different ways. Blending traditional or local knowledge with social and scientific information may help find common ground for good governance. 29% of the posts related to research and emphasized the need for decision makers to be well informed *and* to put this knowledge into practice. 26% of the posts called for a progressive government that had ocean sustainability as a guiding principle. Biodiversity conservation (18%) through tools like protected areas (15%) was also identified; however, financing these initiatives remains a challenge.

Responsible Industry: The issues that were most frequently highlighted included: pollution (28%), sustainable seafood practices (23%), and consumer choice alternatives (20%). Posts on pollution stressed the importance of clean waterways that support healthy marine ecosystems. Sustainable seafood responses included both fisheries and aquaculture, and highlighted the need for better industry management practices that included transparent evaluation and monitoring of current aquaculture management plans. Posts referring to better consumer choices advocated the need for stakeholders to purchase environmentally sustainable seafood products (e.g. those labeled under the Marine Stewardship Council).

Stakeholder Engagement: The first step towards stakeholder engagement is educating individuals, groups, or organizations about ocean issues, their rights, and how certain outcomes from implemented management regimes or these ocean issues may affect them. This also extends to addressing biased public perceptions and misinformed stakeholders. As such, a number of posts referred to the importance of community outreach (46%), including social media and TED talks, personal education (32%), such as online websites or books, and formal education (15%), such as university lectures or seminars.

DREAMWALL INSIGHTS

Responsible Industry performance continues to be a large concern with the public. However, the degree to which environmental responsibility is integrated into standard performance requirements is uncertain. Comments from the dreamwall focused around increasing the number of waste management facilities, and improving the proper disposal of chemicals, general products and garbage. This also extended to minimizing aquaculture wastes, such as fish feces, and mitigating fuel pollution and lost gear in wild fisheries. As a result, the public is aware that environmental responsibility is a necessity for all industries.

Stakeholder consultation and public participation are tools for developing responsible industries. Canada has the longest coastline in the world, with vast and diverse ecosystems that support a number of activities directly contributing \$20 billion annually to the Canadian economy. As such, stakeholder engagement is a critical component of coastal and ocean management in Canada to ensure de-

velopment is done within a sustainable context, inclusive of the economy, society, and environment.

Effective ocean governance requires decision makers to be well informed on topics, such as tackling climate change, and monitoring invasive species. It also requires an understanding of how to support sustainable fishing and aquaculture production practices. Although there is a need for new research in specific areas, critical questions should be asked, such as: ‘how is current information being used?’, ‘who is contributing to this knowledge?’ and, perhaps most importantly, ‘who is benefiting from this information?’ The definition of sustainability is also problematic as this concept can be interpreted and extended in many ways depending on stakeholder mandates. For governance to be effective stakeholders should always ask themselves why these decisions are being made, who is making them, and will the outcomes deliver the long-term goals of sustainable development as defined by the 1987 Brundtland Report.

The workshop took place at the end of the two-day conference with the objective to facilitate an open discussion regarding the key points and issues highlighted by the keynote speaker, panel discussion, and student presentations. Student facilitators led four break-out groups (consisting of 8-10 people) to discuss what they considered to be the main barriers, opportunities and communication tools affecting sustainable ocean management. As there were quite a few discussion points identified for each of the categories, participants were asked to prioritize the top three. At the end of their 40 minutes, the groups returned to plenary to present and discuss their findings.

WORKSHOP SUMMARY

Main Barriers: Poor communication emerged as a key concern due to the lack of a vehicle for collaboration between silos of knowledge. Differences in the language used, inherent biases or perspectives, and agendas were also recognized as challenges for communication across the science-public-policy interface. The public identified the lack of political will to be the federal government as one of the main factors dividing this interface. The recent changes in policies, and the withdrawal of funding research and conservation programs reflects this political environment. As such, political leaders were urged to enforce and fund the implementation of sound policies that will improve sustainable ocean management.

An ineffective use of science was identified as a problematic barrier to implementing management regimes and conservation measures. Information and knowledge are very different concepts; therefore communicating science to decision makers remains a challenge. For example, while giving *information* to a decision maker may provide them with sufficient data to inform their decisions, this is under the assumption that the decision maker has the *knowledge* to understand this information or synthesize this information with other pieces of data. Most politicians are not scientists. As such, communication is important to address these barriers and ensure future management regimes and measures are based on the best scientific and technical knowledge.

Key Opportunities: The participants indicated cross-sectoral collaboration



as an important opportunity for ocean management. A cross-sectoral and interdisciplinary approach is able to fill the gaps between sectors, prevent overlap of work within sectors, and develop creative ways to address issues across sectors. An integrated approach at the federal level was recognized to be particularly important within the context of Canada's institutional and governance framework. This is due to the fact that this regulatory backdrop heavily influences any ocean conservation plans, strategies, and initiatives in the country. Finally, the benefits of a crisis response within the context of ocean sustainability were identified as oftentimes, there is heightened public motivation to address a particular issue following a crisis. It was recognized that this could then lead to public pressure on decision makers to implement policy changes.

Communication Tools: Media, including social media, TED talks, and documentaries, were at the forefront of workshop discussions. As such, educating the public and encouraging community outreach was labeled as a high priority, particularly in addressing an uninformed or misinformed public. Discussion platforms, such as conferences, speaker series, and workshops, were identified as communication media ideal for bringing the public together. Generating discussions and constructive debates around contentious issues were recognized as a critical part in moving towards solutions. Finally, ecotourism was briefly noted as a good tool for encouraging concern regarding the oceans, as well as educating the public using a hands-on strategy.

INTEGRATING THE DREAMWALL POSTS AND WORKSHOP FEEDBACK

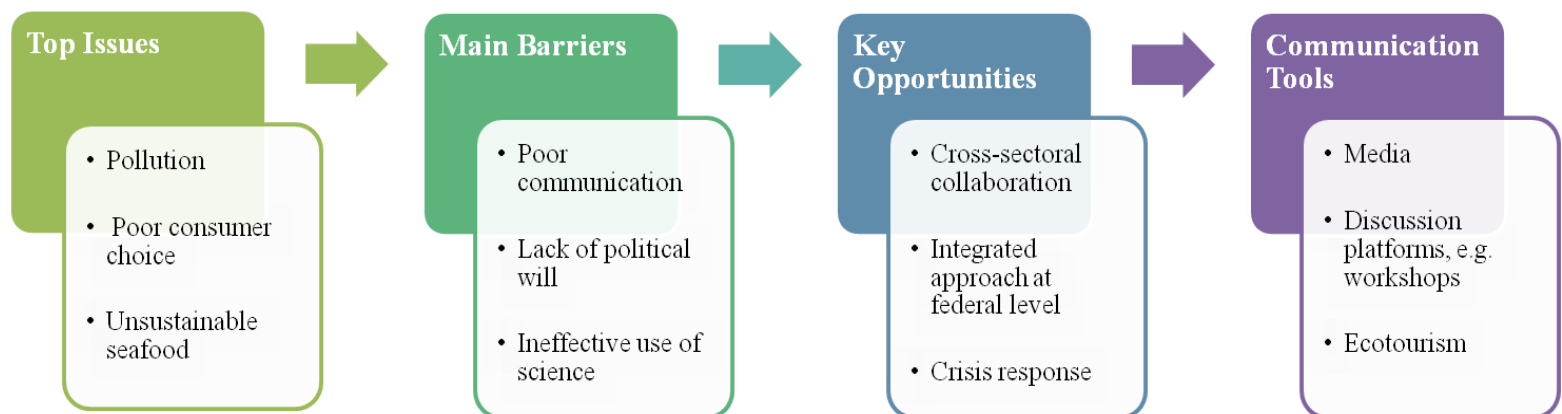


Figure 1. The top issues from the dreamwall posts and the main barriers, key opportunities and communication tools from the workshop.

As an example of how public perceptions can be used to build a blueprint for sustainable ocean management, Fig. 2 presents the top three industry/consumer issues, along with the main barriers, opportunities and communication tools. These issues were selected based on the majority of the dreamwall posts, where more than 50% of posts reflected a lack of responsible industry. This synthesis highlights the public's recognition that industry *and* consumers are equally accountable for maintaining ocean sustainability (i.e. market demand underpins industry services).

There are opportunities for both industry and government to strengthen collaboration, both within and across sectors and agen-

cies. A crisis may not seem to be the best management opportunity; however these events do bring different elements of the public together, which could potentially turn into a 'window of opportunity'. The media, traditionally defined as journalists (paper, T V and radio), now also encompasses social media and other non-traditional avenues which are being sought and used. As such, there are many more lenses from which a story may be told, depending on the perspective of the reporter, person on the street, or film maker. Discussion platforms then help to bring different perspectives together. This example of a synthesized approach may also help provide a conceptual baseline towards developing a "blueprint" for sustainable ocean management.

Waste Management Education

Renewable Energy Communication Sustainable Fisheries

PUBLIC PERCEPTIONS IN CONTEXT

The top issues emerged from the perception that responsible industry is lacking in Nova Scotia. The public perception of addressing marine pollution ranged from industry responsibilities (e.g. reducing the use of harmful chemical products) to personal responsibilities (e.g. reducing, reusing, and recycling). One potential explanation for this concern may be the state of the Halifax Harbour. In the past, untreated raw sewage had been directly discharged into the harbor (~1750s-1950s), while more recent problems have resulted from wastewater flooding damage in the Halifax waste facilities (e.g. 2006, 2007, 2009). As such, the Halifax Harbour Solutions Project (2000s) and other initiatives are currently being undertaken by government, academics, and non-governmental organizations. Other explanations included concerns regarding the pollution from the shipping industry, waste from the aquaculture industry, and lost gear from the fishing industry.

The public perception of consumer choice appears to be linked to seafood industry practices. Several responses suggested reducing the consumption of farmed salmon. While there are context-specific arguments against farmed salmon, this broad public assumption illustrates that poor choices in the marketplace can emerge as a result of either the absence of or overload of information. As such, it is important that information is disseminated into the public appropriately to ensure good consumer choices. Market approaches, such as the use of eco-labels, have begun to bring environmental issues to the forefront of consumerism. As a result, these approaches move towards eco-consumerism, harnessing the procurement power of consumers and creating change in the industry's practices and management. Eco-consumerism increases the environmental accountability of producers, and provides consumers with enough information to make responsible purchasing decisions. However, eco-consumerism must ensure its support of environmentally conscious actions (e.g. reduction of waste along the chain of custody), as well as integrate the best scientific and technical knowledge (e.g. credible eco-labels).

While the public identified many areas under consumer choice that should be improved, they failed to identify the issue of increased seafood intake worldwide. In 2011, the contribution of fish protein to diets across the world had reached a record of 17 kg per person, an alarming trend that continues to increase (FAO, 2011). This increasing demand has led to an increase in aquaculture production, which currently accounts for 50% of the global seafood production. Therefore, two important points arise from this issue (i) the problematic quantity of seafood intake, and (ii) the importance of aquaculture production for human consumption. In Nova Scotia, the latter point is a contentious one, potentially due to the Not in My Backyard (NIMBY) syndrome. This may be attributed to the negative impact that aquaculture has had in this province, including its use of illegal pesticides that have harmed the marine ecosystem, the competition that it introduces to local fisheries, and its poor aesthetics. However, it should be recognized that the Nova Scotia government is promoting aquaculture, and there are methods for making it sustainable (e.g. following, non-chemotherapeutant controls). As such, aquaculture advocates need to communicate the value of aquaculture, particularly for an increasing world population. Moving forward, advocates need to work with all individuals in the public to ensure aquaculture is conducted in the most sustainable manner possible.

Poor communication emerged as a major challenge that hinders the science-public-policy interface. As such, the development of a mechanism (or mechanisms) for cross-sectoral collaboration and communication was identified to fill gaps between sectors and address issues in the most efficient way possible. The debate between cross-sectoral and

sectoral approaches, or interdisciplinarity and disciplinarity, is one that is not argued in this study. Each offer a unique role in ocean sustainability, where interdisciplinarians fill gaps between disciplines and develop creative ways to address issues, while disciplinarians provide new information and innovative methods within their own disciplines. It is important to note these roles are mutually inclusive and are both necessary for moving ocean management forward.

The public identified crisis response as a key opportunity, but it may also serve as a rationale for why the state of the oceans is so poor. Rather than seeking proactive management measures, plans and strategies are usually implemented in reaction to a crisis (e.g. the 1992 Atlantic Northwest cod moratorium). Furthermore, a crisis may only generate public support and action immediately after it occurs. The issue-attention cycle (Downs, 1972) includes (i) the pre-problem stage (where the public is unaware of the problem), (ii) alarmed discovery and euphoric enthusiasm, (iii) realization of the consequences, (iv) gradual decline of intense public interest, and (v) the post-problem stage (where the public loses interest in the problem). As such, it is important to use the benefits of a pro-active crisis response in conjunction with social science models like the issue-attention cycle.

Using the media to promote ideas and discussion was one of the main communication tools raised by the public, particularly around the use of education and community outreach to address a misinformed public. For example, creating scientifically supported videos for the public, including fishermen, to increase awareness of the benefits of shark conservation can lead to a more accurately informed public and the potentially improved use of science, increased political will and better consumer choices. In addition, generating discussion and constructive debate platforms around contentious issues were identified as important tools for communication. For example, sustainable seafood consumption is an issue that in Nova Scotia needs a safe environment to be discussed, a place where both industries and stakeholders convey information about misinterpretations on the topic. While bringing the public together through these discussion platforms is a critical step towards building bridges in ocean management, these platforms need to be well facilitated to deliver useable outputs for furthering solutions.

It is beyond the scope of this article to discuss in detail specific components of what could constitute a "blueprint" for oceans sustainability, given the complexity of nuances, dynamics and underpinning drivers that influence public perceptions. However, a number of insights were gleaned from this process: (i) the public appeared eager to engage in discussions on sustainable ocean management, including the use of informal networking and initiatives built around common interests, and formal cross-sector discussion platforms underpinned by the goal in making the oceans more sustainable, (ii) this conference provided an occasion to strengthen the dialogue between different stakeholders, to collectively identify priority areas for moving forward on key issues, and (iii) the synthesis of information from these two fora provided an opportunity to provide insights on how these findings relate to the broader context. Moving forward, the *Blueprint for Building Bridges in Ocean Management* will require the use of these public perceptions to better understand how information is disseminated and used. "Ocean sustainability lies within each of our actions and personal choices." - Melissa Cano, August 2013



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