

Stakeholder Perceptions of Current Planning, Assessment and Science Initiatives in Canada's Beaufort Sea

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ABSTRACT. Over the past 30 years, the Beaufort Sea has been the site of many regional studies and planning efforts. Currently, three major initiatives are underway: the Integrated Regional Impact Study, which focuses on science; the Integrated Ocean Management Plan; and the Beaufort Regional Environmental Assessment. Despite the mounting pressures for offshore energy development in the region, little attention has been given to whether these initiatives facilitate a more coordinated and informed approach to planning, assessment, and decision making for such development. We examined stakeholder perceptions of the existing initiatives to ascertain whether and how they enable horizontal and vertical integration and how effectively they facilitate marine resource planning and decision making. The results show that three essentials of a more coordinated regional approach to planning for marine resources and offshore development are horizontal integration between management bodies, vertical integration from the strategic level and regional scale to the operational level and project scale, and an overarching vision for regional planning and development in the Beaufort Sea.

Key words: Beaufort Sea, environmental assessment, offshore oil and gas, integrated regional impact study, integrated ocean management plan, Beaufort Regional Environmental Assessment

RÉSUMÉ. Ces 30 dernières années, la mer de Beaufort a fait l'objet de nombreuses études régionales et de nombreux efforts de planification régionaux. En ce moment, trois grandes initiatives sont en cours : l'étude intégrée d'impact régional, qui est axée sur la science; le plan intégré de gestion de l'océan; et l'Évaluation environnementale régionale de Beaufort. Même si les pressions exercées en vue de la mise en valeur énergétique au large de cette région se font de plus en plus grandes, peu d'attention a été accordée à la possibilité de déterminer si ces initiatives facilitent une approche plus coordonnée et informée en matière de planification, d'évaluation et de prise de décisions relativement à une telle mise en valeur. Nous avons examiné les perceptions des diverses parties prenantes afin d'établir si et comment elles donnent lieu à l'intégration verticale et horizontale, et dans quelle mesure elles favorisent la planification des ressources de la mer et la prise de décisions à leur sujet. Selon les résultats, une approche régionale plus coordonnée en matière de planification des ressources de la mer et de mise en valeur au large comporte trois éléments essentiels, soit : l'intégration horizontale des organismes de gestion; l'intégration verticale, du niveau stratégique et de l'échelle régionale jusqu'au niveau opérationnel et à l'échelle du projet; et une vision déterminante en matière de planification régionale et de mise en valeur de la mer de Beaufort.

Mots clés : mer de Beaufort, évaluation environnementale, pétrole et gaz au large, étude intégrée d'impact régional, plan intégré de gestion de l'océan, Évaluation environnementale régionale de Beaufort

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INTRODUCTION

Planning for and managing the impacts of offshore energy development require a more integrative and anticipatory framework than project- and sector-specific environmental impact assessment (Crowder and Norse, 2008; deReynier et al., 2010; Katsanevakis et al., 2011; Fidler and Noble, 2012). This is particularly the case in Canada's western Arctic Beaufort Sea (see IGC, 2004; BSSrPA, 2008), which is characterized by competing interests in hydrocarbon development, traditional use, and marine conservation (see Fast et al., 2005; Cobb et al., 2008). How Canada plans for and manages the impacts of energy development on its Arctic marine

environment will have important domestic and international implications. The Beaufort Sea may be considered a testing ground for Canada's overall preparedness to manage the impacts of major offshore energy development and a signal to the rest of the world of Canadian interest in the long-term sustainability of Arctic marine resources.

However, Canada currently lacks an overarching vision and an integrated planning and assessment framework for development in the western Arctic (see Doelle et al., 2012; Fidler and Noble, 2012). Decisions about offshore development occur largely on a project-by-project basis (Voutier et al., 2008). There have been many regional studies and planning initiatives in Canada's western Arctic over the past

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30 years (see BSSrPA, 2008; CAPP, 2009). Currently, the largest and most significant of these are the Integrated Regional Impact Study (IRIS), focused on science; the Integrated Ocean Management Plan (IOMP); and the Beaufort Regional Environmental Assessment (BREA). Each initiative has a distinct structure and purpose and may offer tangible benefits to support more informed decision making about future Arctic development. However, there has been limited attention to whether and how these programs enable horizontal and vertical integration or facilitate a more coordinated and informed approach to planning, assessment, and decision making for sustainable offshore development.

This paper examines stakeholder perceptions of the challenges and opportunities related to current marine planning, assessment, and science initiatives in Canada's western Arctic. It is not a comparative evaluation, since each initiative was established for a different purpose: our intent is to examine whether and how these initiatives effectively facilitate marine resource planning, assessment, and decision making in light of mounting pressures for offshore energy development.

BEAUFORT SEA LARGE OCEAN MANAGEMENT AREA

The Beaufort Sea large ocean management area, one of five priority areas identified by the Canadian government for integrated ocean management, covers over one million km², encompassing the marine portion of the Inuvialuit Settlement Region (Fig. 1) (Cobb et al., 2008). The area contains the Tarium Niryutait Marine Protected Area and is rich in biological diversity, including benthic fauna, birds, marine and anadromous fish (e.g., Arctic cod, Arctic char, salmon), terrestrial mammals (e.g., caribou, Arctic fox, lynx, Arctic hare), and marine mammals (e.g., bowhead whales, beluga whales, ringed seal, walrus, polar bear) (Cobb et al., 2008). The marine resources of the Beaufort Sea provide sustenance and have been part of Inuvialuit fishing and hunting practices for centuries.

The Beaufort Sea is also rich in hydrocarbon resources (Harrison, 2006; INAC, 2011) and has been subject to cycles of offshore activity for more than 40 years. Prior to 2007, areas open for licensing were restricted to the continental shelf in waters less than 100 m deep, and extensive research has been conducted on the nearshore region. Over the past five years, however, licenses have been issued for exploration in the deep offshore, generating new questions about Canada's preparedness for drilling in frontier regions (Porta and Bankes, 2011; Elvin and Fraser, 2012). Tension regarding the administration of offshore oil and gas is particularly evident in the Beaufort area, where challenges of development are intensified by safety issues, including controversial relief well regulations, risk vs. benefit debates for those who inhabit the region (see Porta and Bankes, 2011), and concern regarding long-term ecological impacts and climate change (see Prowse et al., 2009; Burkett, 2011).

The Inuvialuit Final Agreement (1984), a negotiated agreement between the Inuvialuit of Canada's western Arctic and the Government of Canada, provides a framework for the co-management of land and marine resources in the Inuvialuit Settlement Region; however, the federal government retains jurisdiction over and authority to manage Canada's western Arctic offshore marine environment, including the offshore region of the Inuvialuit Settlement Region. The National Energy Board (NEB) and Aboriginal Affairs and Northern Development Canada (AANDC) have independent, but complementary roles in the Beaufort Sea: the NEB authorizes drilling, while AANDC administers industry rights for oil and gas exploration. Fisheries and Oceans Canada (DFO) manages development authorizations under the Fisheries Act (1985), and the Canadian Environmental Assessment Act (CEAA, 2012) applies to projects whenever a federal authority has a decision-making responsibility.

Current Planning, Assessment and Science Initiatives

The IOMP emerged within the context of Canada's Oceans Strategy, released in 2002 to facilitate implementation of the Oceans Act (1996). The IOMP, which identifies the DFO as the coordinator and facilitator for ocean management, is intended to balance ecological conservation with sustainable development through a multi-stakeholder process. With partners from Aboriginal, territorial and federal governments, northern residents, environmental non-government organizations, and private interests, the IOMP aims to guide development planning in a manner that reflects the goals and values of those who occupy and have interests in coastal, island, and ocean areas. It builds on the work of previous initiatives, including Inuvialuit Community Conservation Plans, the Beaufort Sea Strategic Regional Plan of Action, and the Beaufort Sea Integrated Management Planning Initiative (BSP, 2009). The IOMP has facilitated an ecological assessment of the area and developed a regional plan to support inter-departmental and inter-governmental ocean governance processes, but the remaining and perhaps most challenging steps are to implement the plan and monitor and evaluate its outcomes.

BREA is a multi-stakeholder regional assessment initiative that emerged partly in response to a request from the Inuvialuit Game Council (2004) to the federal Minister of Environment for a regional assessment of offshore oil and gas resource development in the Beaufort Sea (see Voutier et al., 2008). In 2008, the Beaufort Sea Strategic Regional Plan of Action (BSSrPA, 2008) identified the need for a coordinated and strategic approach to environmental assessment in the region. The federal response was BREA—a four-year, \$21.8M CDN research project led by AANDC and designed to collect data on specific issues related to offshore oil and gas development. Its goals are to ensure that governments, Inuvialuit, and industry are better prepared for offshore oil and gas development by identifying and filling gaps in environmental baseline data

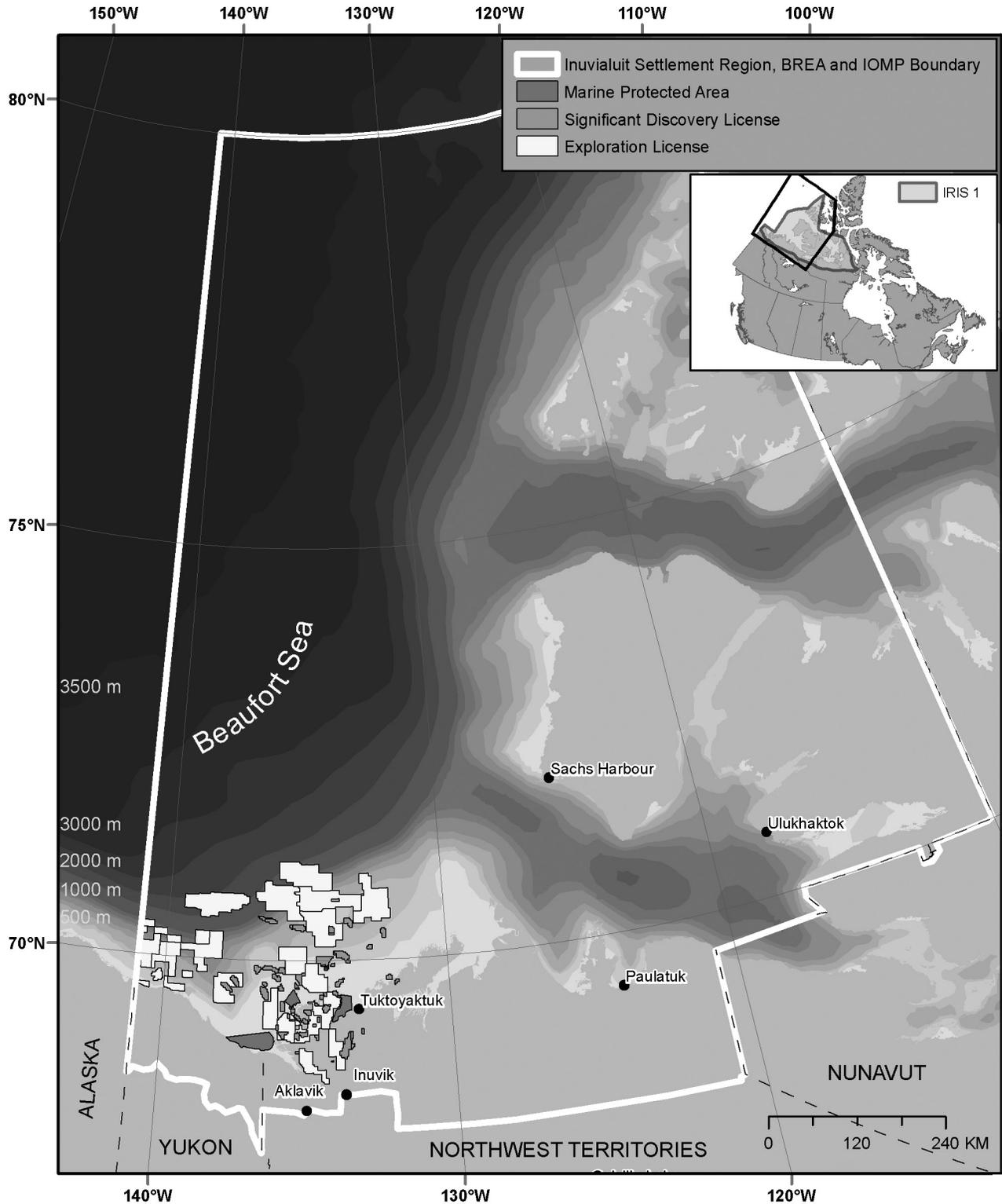


FIG. 1. Inuvialuit Settlement Region of Canada's western Arctic. Map developed by Michael St. Louis, University of Saskatchewan.

related to offshore activities and the marine environment and to support efficient regulatory decision making by providing information to all stakeholders for project-specific assessments.

IRIS is a science-based program focused on the impacts of climate change in the Arctic. It is led by ArcticNet, a

federal Network of Centres of Excellence program. The goal of IRIS is to integrate results from ArcticNet science programs to produce regional reports on the implications of climate change for the Arctic. IRIS 1 (one of four IRIS-designated areas) encompasses the western and central Arctic, including the Inuvialuit Settlement Region and

the Kitikmeot region of Nunavut. IRIS is intended to contribute the knowledge needed to formulate policies and adaptation strategies for the Canadian coastal Arctic by providing information and recommendations related to climate change impacts on physical and socioeconomic environments to regional policy and decision makers.

STUDY METHODS

We examined the three initiatives by reviewing research reports and policy and planning documents and by conducting semi-structured interviews. In addition to international journal literature, data sources included conference proceedings, government documents, industry reports, websites, and regional planning documents (BSP, 2009; ArcticNet, 2010; NOGRF, 2010; Geoffrey and Gauthier, 2011; IRIS 1 Team, 2011; IPY, 2012). We reviewed documents to identify the objectives of each initiative, as well as its procedural components, which included stakeholder participation, coordination with other initiatives, and vertical integration to influence decision making at lower levels such as project-based impact assessment.

We contacted 76 potential interviewees, of whom 50 agreed to participate. Interviews averaged 90 minutes in length. Interviews with the Inuvialuit co-management boards and northern governments were conducted in person in Inuvik, Northwest Territories, and the remaining interviews were conducted by telephone. Interview participants were selected because of their involvement in or knowledge of one or more of the three initiatives, as well as their involvement in planning, regulation, or decision making for offshore oil and gas activities in the Beaufort Sea.

The 50 participants included 11 from various Inuvialuit co-management boards and agencies and the Joint Secretariat; two from the Inuvialuit Settlement Region Municipal Government; three from the Gwich'in Chiefs and Gwich'in Resource Board; six from the oil and gas industry; four from the Government of the Northwest Territories (the Water Board, Industry Tourism and Investment, and the Department of Executive); 13 from federal government agencies (Aboriginal Affairs and Northern Development Canada, the Canadian Environmental Assessment Agency, Fisheries and Oceans Canada, the National Energy Board, and Natural Resources Canada); five private consultants; two members of environmental non-government organizations; and four researchers from academic and other energy interest groups working in the region.

Participants were asked a series of semi-structured questions that explored 1) the background, purpose, and intent of each initiative, 2) emerging benefits, opportunities, challenges and limitations of each initiative, and 3) coordination and communication efforts between initiatives. Interview results were organized, coded thematically, and analyzed using QSR NVivo® v. 9 software, which is designed to classify and manage qualitative information. Participants who

did not want their comments attributed to their department or whose personal identity might be compromised are referred to in the results only by the broader organization with which they are affiliated.

RESULTS

Integrated Ocean Management Plan

Benefits and Opportunities: The IOMP's collaborative, multi-stakeholder arrangement was the most notable benefit reported by participants. Focused on specific ocean management challenges, the IOMP was seen as providing an access point for government agencies, Aboriginal peoples, industry, and other interested partners that wish to share information and discuss values and goals for ocean resource use and management. The participatory framework that facilitated the IOMP played an important role in its endorsement in 2010. One federal government participant noted:

The reality across the Beaufort Sea region is that political, economic, and cultural contexts are extremely diverse, and the biggest opportunity is that the collaborative partnership formed could be advantageously transferred to forward other initiatives.

IOMP participants identified its comprehensive scope as a strength because it links management issues across marine and coastal ecosystems and addresses uses of the marine environment and related impacts at a regional scale. One Joint Secretariat participant described this approach to managing impacts at a level above an individual resource sector as the IOMP's most significant feature. A number of participants commented positively on the opportunity to examine stressors, such as the impacts of climate change (e.g., retreating sea ice, which provides opportunity for entry of invasive species and range extensions of fish in Beaufort Sea populations), and enter into scenario and cumulative impact discussions before development proceeds. This anticipatory nature of the IOMP, providing an opportunity to prevent harmful exploitation and unintended impacts, together with its long-term prospect with no end date, were acknowledged as both benefits and opportunities by one DFO participant. An environmental non-government organization participant added that:

While some parties [members of IOMP] worried that they did not know where the Plan would lead, in terms of planning decisions or the need for regulatory reform, to do nothing was not an option, and the Plan enabled decision making to occur with the best possible information, knowing that data will be revisited and consequently that management could be adapted in response to changing conditions.

The high-level goals set by the IOMP allow individual agencies to develop tools and methods, such as marine protected areas and marine spatial planning, that they need to reach their operational objectives. Thus the IOMP is seen as enabling a multi-level planning process. Participants noted that the broad-based framework for protecting and understanding the marine environment provides an opportunity for certain instruments like marine spatial planning and marine protected areas to be accomplished under the IOMP.

Limitations and Challenges: Implementation and enforcement were two related and significant concerns identified by participants. Impetus is hard to achieve with broad-based initiatives, one Inuvialuit board member explained, as the IOMP is “cumbersome and unfocused” and tries to tackle too many issues. Participants from industry and government and Inuvialuit noted the challenges of applying concepts that were neither clearly defined nor easily definable, like “health of the oceans” and “sustainability,” to a planning framework. Although most participants described the IOMP as a valuable planning exercise and beneficial in principle, they also viewed it as deficient in practical implementation. The absence of legislation to support planning and to accomplish IOMP goals was seen as a significant hindrance. As explained by one Joint Secretariat participant:

None of the legislative instruments, the Fisheries Act, Oceans Act and IFA [Inuvialuit Final Agreement], are strong enough, or pertinent to sustain the health and well-being of the Beaufort Sea...This is a capacity glitch of [the] DFO, which has a strong coordination role under the Oceans Act but no mandate to lead or impose other member agencies to perform their roles and implement the Plan.

According to an industry participant, the challenge with IOMP implementation was the absence of overarching governance in the region: he noted that while the plan aimed to create a comprehensive approach, it was “impeded by the silo effect it sought to overcome.” The IOMP is a means to bring everyone together, explained one territorial government participant, but it “does not change what each member is doing with regard to research in the region.” Industry voiced concern that a non-binding plan could further complicate planning and development in the region: “People say put the information out there—it will help, but from a regulatory perspective it may create tension” (for example, if a map were produced that identified as sensitive an area already open to oil and gas leasing).

A second concern was the lack of funding and capacity. One Joint Secretariat participant identified the lack of funding for IOMP implementation, and for tools that would attach to the IOMP (e.g., marine protected area establishment), as a “total failure of government.” Several participants involved with the IOMP’s working groups maintained that without legislative backing, it is difficult to acquire the funding required to fulfill the IOMP’s objectives. Funding

restrictions were also said to inhibit the capacity of IOMP members to be involved. A Joint Secretariat participant explained that their involvement, through the participation as chair of the council and steering committee, was not as meaningful as it could be largely because of capacity issues and not having the resources to perform background research. The participant went on to add:

It is the same people doing the work, and there is [a] limited constituency, and at the regional level it is fairly small organizations trying to accomplish big things without sufficient funding resources. Community involvement on behalf of the Inuvialuit, for instance, with six communities, stresses community resources. IOMP may engage participants with a specialty in traditional knowledge, and if it is the same people you are asking questions to over time, then the quality of input diminishes.

A federal government regulator added that a common problem encountered with all regional planning exercises is that concerns and solutions are identified but resources are rarely available for implementation.

Finally, interviews revealed industry’s skepticism about the ability of the IOMP to deliver any tangible benefits in the near future; participants had no expectation that this initiative can give direct support to oil and gas planning, impact assessment, and decision making. Participants who believe in the potential of the IOMP suspected that the oil and gas industry’s concern was a result of the perception that it could impact their bottom line by compromising access and affecting the certainty of licensing approvals, leading to restrictive operating conditions. However, these views were not expressed by the industry. Instead, one industry participant stated:

DFO is not our key regulator and the initiative is not legally binding, instead being policy based; therefore, while the knowledge of resources and habitats is improving, there is currently no clear indication as to how the exercise will influence oil and gas decision making in a positive, effective way. If it were an integrated forum where resource managers bought into it, sure there could be benefits as it draws people together, but in practice other departments haven’t bought in and it is seen as a DFO initiative.

Another industry participant said that there needed to be more buy-in from federal departments for the IOMP to influence oil and gas decision making effectively, and resource managers, namely Environment Canada, DFO, and AANDC, “need to collaborate in a more meaningful manner.” Overall, interview results showed that without a functional governance framework, decisions championed in the IOMP could contradict or create tension with established management structures.

Beaufort Regional Environmental Assessment

Benefits and Opportunities: Industry attributed BREA's success to its support of offshore activity without delving into high-level governance issues. BREA facilitates discussions relevant to the regulatory process, explained one industry participant, and will help AANDC execute its duties concerning offshore development in a more effective way. Consistent with BREA's intent, one federal government regulator maintained that:

In an era of fiscal constraints, particularly towards science, BREA has allowed [AANDC] to gather information vital to future oil and gas decision making. It will make information readily available in an understandable format usable by all parties and stakeholders at technical and community levels.

A territorial government participant noted that BREA was the “first real money” the federal government has put toward assessing data gaps in the last 20 years, which represents a considerable commitment toward the Beaufort region and pending hydrocarbon development. An Inuvialuit Regional Corporation participant similarly noted that BREA represented an investment in the Beaufort Sea that would result in new science and data that will better inform management decisions. A private consultant explained that “BREA will inevitably support development in the region” because it “will fill knowledge gaps in the offshore that if not filled could stop projects from going ahead,” such as current gaps in knowledge about deepwater fish.

Interviewees from industry, Inuvialuit boards and agencies, and federal regulators all identified making scientific and socioeconomic data more accessible as a primary goal of BREA. Participants noted that addressing data gaps and providing regional baseline data would produce time and cost savings to all parties involved in the environmental assessment process for an energy project. From the Joint Secretariat perspective, for example, there was optimism that BREA would help streamline project evaluations by addressing up front issues such as waste management that occur in every individual project environmental assessment. It was explained that the regional approach adopted by BREA was intended to identify features that could be dealt with once, on a regional basis, thus providing an acceptable baseline that others could refer to. The unique characteristics of each project environment could then be addressed in more detailed project-specific assessments. The process could be more efficient, explained one federal regulator, if proponents “[did] not have to repeatedly address concerns about regional species distribution.” Several Inuvialuit participants reported that addressing certain issues on a regional scale and having agencies and stakeholders agree on evaluations of potential impacts could ease the burden placed on communities during individual project application and assessment processes. As one participant explained, “people realized that it is expensive and

time consuming and puts a lot of pressure on communities for consultation if every time you do something you need to go through an entire environmental assessment review.” An AANDC participant further added:

If we can overlap that project-specific environmental assessment on the regional environmental assessment conditions then we are taking some of the onus off the proponent and putting it back on the responsible authority to describe our understanding of the environment. By overlaying it you have a risk analysis, based on the regional picture. Then, when evaluating project-specific environmental assessment, you are evaluating it more critically. The regional environmental assessment can provide that basic regional template.

Interview results overall indicated several common issues that could be addressed for the entire Beaufort Sea. As one industry participant explained, “If BREA generated information that had buy-in from all parties, companies could supplement the process with detailed studies guided and informed by regional data, as opposed to regenerating information repeatedly,” as is currently done. Community consultations would be included in the process. Collectively, participants reported the value of having discussions in the absence of project applications, since this would mean “that people are thinking ahead in terms of what they will need to have in place and be prepared for.”

Finally, BREA's framework, which is founded on stakeholder involvement through industry support and Aboriginal leadership, was identified by industry as a process in which the Inuvialuit “are very much engaged participants, with a degree of ownership.” One territorial government participant noted that the research that industry, individual government departments, and international organizations conduct makes the region a complicated and active science environment, and that “the forum arrangement set up by AANDC allows for participants to share information and coordinate activities.” According to an AANDC participant, BREA brought stakeholders together to address issues not easily dealt with in the regulatory setting (such as preparedness for oil and gas development, including emergency response) and to build a knowledge base in communities through consultations and workshops. A Natural Resources Canada participant explained that the multi-stakeholder element of BREA is “a beneficial approach to distinguish whether identified science gaps are true science gaps in terms of making more informed decisions, prioritizing research to address the intent, and supporting front line environmental assessment decision making.”

Limitations and Challenges: Many participants expressed frustration with how BREA unfolded, noting that the purpose of BREA was well founded, but that the objectives have since changed. Several Inuvialuit participants noted that BREA was “not to be a funding pot for other programs” but that many “satellite research programs

are latching on to BREa funds” and diminishing its intent as a regional environmental assessment. Some territorial government and Joint Secretariat participants noted that BREa’s shift in focus from the regional and strategic environmental assessment process that Inuvialuit had originally requested to a series of regional baseline studies was a political move by the federal government to control and reinforce its role in the offshore arena. Several Inuvialuit participants expressed frustration that BREa changed course because decisions were made at a higher level. For example, a Joint Secretariat participant said that BREa was getting “hijacked”: because of government funding cuts elsewhere, other government departments are becoming reliant on BREa funds. One federal regulator explained:

It is a complicated and cumbersome process...having too many people’s opinions and trying to do things by consensus. Delayed decisions have therefore frustrated the Inuvialuit, who see the initiative being driven by science departments that see an opportunity to get funding to do research, and bulldozing through the process with little respect for northern needs.

BREa terminology also presented challenges, as people were critical that BREa is not actually an “environmental assessment.” One industry proponent noted that “people constantly query what is being assessed.” The participant went on to explain that the Inuvialuit wanted baseline data to go toward an assessment: “It is vital to keep the environmental assessment component because without it, the initiative would lack a goal.” However, a federal government participant suggested that AANDC, doubting its own capacity to perform a regional assessment, intentionally changed the focus from regional assessment to science synthesis.

A related concern was BREa’s scope and methods. One National Energy Board participant explained that challenges related to scoping influenced BREa’s direction, because at the onset of BREa the inability to reach consensus on how to move forward was complicated by many factors, including land-claim and sovereignty issues. This meant that the “only way to design the project so that it could deliver results was to scope it tightly around science” and therefore a lot of weight was given to a “bottom-up” approach to scoping BREa, versus having a prescribed list of issues to address (National Energy Board participant). However, a Natural Resources Canada participant explained that the regional issues identified through community consultation were relatively modest compared to the large technical proposals submitted and subsequently funded under BREa. This experience highlights the challenge of developing a program with clear objectives at the management level and doing so in a manner that enables flexibility and inclusion of interests and affected parties. The result, noted one Inuvialuit participant, was that “attention to community effects is on the weak side.”

Other methodological limitations noted by interviewees included a BREa timeframe that was deemed too

restrictive, and funding that was insufficient to fill the science gaps identified. A Joint Secretariat participant described BREa as a “tactical plan that is short term, where a strategic long-term plan is needed.” The participant explained that BREa was intended to address a significant gap in the Beaufort Sea, the lack of a cumulative effects framework, but given the four-year time frame and the limited budget allocated to developing such a framework, “it is unlikely a suitable framework will result.” A Natural Resources Canada participant criticized BREa for focusing on collection of baseline data on current conditions only rather than undertaking a much broader, scenario-based assessment of future conditions in the region to aid in planning and decision making.

Finally, implementation was a major concern of the majority of participants. For example, a Joint Secretariat participant noted:

BREa will put information out there, but it is not coordinating the efficiency of how information will be used...it is the age-old question whether the design of the program will result in usable data. How BREa will facilitate, feed, or front-load the specific environmental assessment approvals for development plans and applications remains unknown.

One DFO regulator participant said that even when BREa is completed, data mining may still be required to locate pertinent information for specific development decisions, adding that there “needs to be a tool to manage information and a person designated responsible for the tool.” This notion of BREa as a “one-off” exercise was identified by most participants as something that could jeopardize any progress achieved through the initiative itself. An industry participant stressed that “government needs to not only sign on to data so that it does not need to be revisited during each environmental assessment, but ensure information is updated and carried forward to enable environmental assessment studies to be plugged into a regional assessment.” One Canadian Environmental Assessment Agency participant expressed concern that scientists may be “blindly conducting science without context,” and in the end BREa would be little more than a data gathering exercise rather than an analytical process intended to support decisions about offshore development.

Integrated Regional Impact Study

Benefits and Opportunities: IRIS is focused on repackaging and synthesizing information already generated by research projects from a number of disciplines into a more accessible format. Science investment in the Beaufort Sea region is quite rich in terms of programming from the International Polar Year, and IRIS builds on those programs by offering scenarios for climate change in order to assist development proponents and decision makers. Participants recognized that the value of the initiative comes from

its attention to climate change scenarios, an area of science particularly critical in the Arctic, where climate change impacts and the progressive loss of sea ice bring unpredictability to oil and gas operations. Participants reported that addressing information gaps through collaborative research initiatives of academia and the oil and gas industry has generated information that will benefit policy makers, regulators, industry, northern residents and other stakeholders. As Pyc and Fortier (2011:9) explained, “because of the collaboration, much of this information not only informs risk-based assessment and responsible operations, but also contributes to the general scientific knowledge of this remote, extreme and important Arctic environment.” Participants knowledgeable about IRIS reported the practical value of synthesizing existing data, as opposed to undertaking an exercise that does not guarantee tangible results.

Limitations and Challenges: A major challenge relates to IRIS’s structure and the lack of clarity about its provisions and output. One ArcticNet IRIS participant explained:

The structure has been a contentious topic because there has not been a clear vision or direction of the IRIS format and how to conduct the study, making it a discombobulated process. This challenge emerged with previous IRISes in the eastern Arctic where no one knows what the IRIS is and how it should be produced...it will be somewhat organically generated integrated regional impacts, based on funded projects in the region.

The IRIS 1 boundary crosses Nunavut and the Inuvialuit Settlement Region. A participant from the Inuvialuit Regional Corporation was unsure how IRIS 1 would support policy and decision making if results, based on ecosystem boundaries versus administrative boundaries, are politically incompatible. Several Inuvialuit Regional Corporation and Joint Secretariat participants noted that IRIS’s “community-based science was weak, and the initial communication strategy to involve communities was poor.” A DFO regulator identified the need for ArcticNet and its studies to engage northern regulators, stating that IRIS “knows the communities are important, but misses the people who actually make the decisions.” Many northern participants viewed the academic foundation of ArcticNet with cynicism. One regulator stated that results are reported “largely in the south, not in the North, nor to regulators in the North,” as evidenced by previous ArcticNet undertakings in the eastern Arctic.

DISCUSSION

Three key issues emerged as essential to the efficacy of current IOMP, BREA, and IRIS initiatives in supporting a more coordinated, regional approach to marine resource planning and management related to pressing offshore development. These include horizontal integration between management bodies, vertical integration from the strategic

level and regional scale to the operational level and project scale, and establishing an overarching vision for regional planning and development in the Beaufort Sea.

Horizontal Integration

If planning, assessment, and science initiatives such as the IOMP, BREA, and IRIS are expected to provide direction and guidance for ocean activities, contribute to a better understanding of regional environmental effects, and meet agreed-upon management objectives, both independently and collectively, improved horizontal integration is required. For instance, when considering the design and implementation of regional programs, Noble and Harriman (2008) argue that “greater attention must be paid to horizontal linkages between strategies... and reporting systems.” Crowder and Norse (2008) explain that the current sector-based approach has resulted in fragmentation and spatial and temporal mismatches in governance of the marine ecosystem. Murawski (2007) further maintains that what limits the ability to advance our understanding of factors influencing ecosystems is not always the science, but often the will of political systems to make decisions in controversial and uncertain circumstances.

The multijurisdictional context in which the IOMP and BREA operate is characterized by a large multi-stakeholder process with two separate federal authorities trying to assert their respective planning and management mandates. Our research participants were sceptical that IOMP endorsement by federal departments could be equated with actual support, owing in part to what Jessen (2011) describes as “federal silos” that impede agency cooperation. Lane (2008:860) says that fragmentation of environmental responsibilities among government departments makes it difficult to manage resources “in a way that recognizes their inter-dependence with the wider human–ecological system, or to manage them in concert with other departments.” Regulatory authorities remain responsible for implementing management policies and measures within their established mandates. Yet management initiatives cannot successfully operate without a strong institutional framework that establishes cooperation between departments and stakeholders and sets appropriate timelines, without respect to potentially conflicting agendas. Bellamy (2007), cited in Lockwood et al. (2009), refers to the need to balance co-operation and competition arising from organizational self-interest as a key challenge to regional natural resource management.

Our results in Canada’s western Arctic revealed possessiveness among federal departments and the need for greater cooperation and communication of initiatives by high-level secretariats. This result reflects the view of Keogh et al. (2006) that stronger leadership is required to bring efforts into a coordinated program to achieve meaningful results at a strategic level. The initiatives examined in this paper all started with good intentions to bring clarity to process and understanding and to address regionally

important issues. While the three initiatives complement each other, our results show that without clear and transparent horizontal linkages, it would be difficult to achieve a functional system of governance to support improved development planning, assessment, and decision making in the Beaufort Sea.

Vertical Integration

The results suggest some progress toward managing resources on a broader regional scale and at a more strategic scale, but also reveal an overarching concern as to whether higher-level planning initiatives can actually influence lower-level development decisions. Much of the work undertaken by the IOMP, BREAA, and IRIS addresses issues that are directly relevant to lower-level decision making, such as project impact assessment. The challenge for all three initiatives is to determine how the data and knowledge generated can best be translated and used to actually influence lower-level decision making. None of the three initiatives was envisioned to support project-level assessment directly, but rather to provide background information so that those making assessments and determining the significance of impacts would have data available upon which to base such decisions. It is assumed that the data and information generated will be useful to such assessment and decision-making processes, but there are no clear mechanisms to ensure either the use or the usefulness of these data.

The transformative nature in which these three Arctic initiatives have emerged has allowed for flexibility in planning and scoping. This flexibility and holistic approach have generated mixed responses, in particular for the IOMP, since critics question how such lofty goals as having a pristine environment and healthy fish stocks can be translated into usable decision support criteria for reviewing and evaluating the merits of individual project development applications. If there is no concerted influence downstream, where decisions and actions are taken about physical development in the offshore, then the role of such higher-level efforts may be trivial. While there is the potential for strategic initiatives to support lower-level decision making, the critical information required at the project level needs to be identified and a mechanism created for collating the data collected and translating these data into a usable format for project assessments (Noble, 2004). At the same time, the rationale for and process of integration between high-level policies and on-the-ground data collection and decision making need to be clear to all stakeholders (Katsanevakis et al., 2011).

Guiding Vision

Whilst current initiatives in the Beaufort Sea have advanced past the mindset in which “tunnel vision” decision making is acceptable (see Murawski, 2007), there is still no overarching and agreed-upon vision to either guide or

bridge the range of existing marine planning and management efforts. Johnson et al. (2011:483) describe the importance of setting desired outcomes as part of a future vision of regional planning and development, as well as management strategies that protect those outcomes, in order “to improve context and understanding of the kinds of development that can be supported, where it can be supported within a region and when.” Johnson et al. (2011:482) also maintain that the public’s role in a regional visioning exercise is critical to “establish the link between what society wants for a given region and the management approaches and development strategies that will be designed to achieve them.” At the international level, the UNESCO report *Visions for a Sea Change* (Ehler and Douvère, 2007) similarly emphasizes the need for a clear strategic direction for what is to be achieved within an ocean management area to complement bottom-up stakeholder involvement and interests, to strengthen the vertical integration between national policy guidance and targets and their regional delivery, and to facilitate horizontal integration across economic sectors or agencies of government.

We suggest that such a vision for Canada’s western Arctic would offer corresponding guidance mechanisms to help resolve overlap and the disjointed nature of current marine planning and management initiatives and to aid subsequent decision making through an integrated framework. However, without a policy component to address regulatory and planning deficiencies in the region, layering and overlap appear inevitable (see Jessen, 2011)—especially given that a different institution administers each initiative. Our results indicate agreement in recognizing that strategic planning is important in the Beaufort Sea (see also Ketilson, 2011); however, much opposition to developing an Arctic vision remains, as well as cynicism toward translating a strategic vision into operational terms. Three reasons are identified: first, regional strategic approaches to planning and assessment in the context of ocean management are still not well defined, and effective implementation strategies have not been developed; second, successful implementation would require restructuring of current management institutions; and third, there is concern that additional planning efforts would result in yet another bureaucratic layer to a decision-making environment already seen as cumbersome.

These views reflect what Murawski (2007) refers to in the context of ecosystem-based management as myths; that is, principles propagated to maintain the status quo among sectoral interests. Murawski maintains that such resistance is due to the perception that the benefits and objectives of a regional vision are not as well defined as they are for an individual sector. The unknown nature of measures necessary to meet regional ocean management goals can therefore result in resistance to its adoption and thus to the creation of a more effective basis for marine spatial management.

Murawski’s (2007) view, however, is not without some opposition. Arkema et al. (2006), for example, report that when translated from academic literature to practice, the

objectives of regional and strategic planning and management initiatives often miss critical ecological and human factors emphasized in the literature, and planners and managers often lack a clear approach or tool set for implementing such overarching planning and management programs (see also Noble et al., 2012). Similarly, with no articulated vision of what Canada is trying to achieve in Arctic Ocean management, participants view the lack of integration among current initiatives as contributing to layering, and a major constraint toward achieving a more cohesive regional planning framework.

CONCLUSION

This paper set out to examine how stakeholders perceive the challenges and opportunities of current marine planning, assessment, and science initiatives in Canada's western Arctic and to determine whether and how these initiatives effectively facilitate marine resource planning, assessment, and decision making in light of mounting pressures for offshore energy development. It is necessary to further our scientific understanding of the Arctic environment; however, there is also need for a framework that moves beyond data collection to inform the creation and analysis of future development scenarios so that potential cumulative effects, regional impact mitigation, and monitoring needs can effectively direct decision making about offshore energy development. This task is beyond the collective abilities of current offshore planning, assessment, and science initiatives in the Beaufort Sea. Currently, the IOMP, BREA, and IRIS operate without a regional framework for effective integration, and the potential for duplication, inefficiencies, and even contradiction abounds.

There is need for a more integrative and strategic planning and assessment framework in the Beaufort Sea—a framework to coordinate current initiatives, combine data for planning and assessment, and set strategic priorities for future management, development, and conservation of the region. In our view, this goal may be achieved, at least in part, through regional strategic environmental assessment: a framework for assessing the potential environmental effects of alternative strategic initiatives, policies, plans, or programs for a region in order to inform the preparation of a development strategy and associated environmental management framework (see CCME, 2009). The need for such an approach is particularly urgent given expanding interests in offshore development (Callow, 2012), combined with recent changes to the Canadian Environmental Assessment Act that significantly reduce the timelines for assessment and restrict the scope of federal assessment applications (see Gibson, 2012). Although various models of regional strategic environmental assessment have begun to emerge in offshore jurisdictions internationally (see Fidler and Noble, 2012), the concept remains untested in Canada's western Arctic.

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