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ADVANCING REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT IN CANADA'S WESTERN ARCTIC: IMPLEMENTATION OPPORTUNITIES AND CHALLENGES

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The absence of Regional Strategic Environmental Assessment (R-SEA) in Canada's western Arctic has raised many questions concerning the country's preparedness for offshore Arctic energy development, given the constraints of project assessments in addressing long-term cumulative impacts of energy development on the marine environment and local communities. There has been much interest in R-SEA in recent years, and a growing body of research on the benefits of strategic approaches to environmental assessment, but relatively little attention has been given to implementation. This paper examines key opportunities for and challenges to the implementation of R-SEA in Canada's western Arctic. Results reinforce concerns that the current approach to environmental assessment in Canada's western Arctic is insufficient to address expanding offshore energy development. However, results also indicate several challenges to be addressed to advance R-SEA in the offshore environment including governance, stakeholder resistance to a futures-based approach, the timing of implementation, managing the diversity of expectations about R-SEA, and the nature and scope of alternatives assessment.

Keywords: Regional strategic environmental assessment; Beaufort Sea; offshore energy; Arctic; resource development.

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Introduction

Oil and gas exploration licenses continue to be let in the deep offshore of Canada's western Arctic, resulting in new questions around Canada's preparedness for drilling in frontier regions (Elvin and Fraser, 2012). Tension regarding the planning and management of offshore energy development is particularly evident in the hydrocarbon rich Beaufort Sea, where challenges over energy development are intensified by controversial relief well regulation; risk and benefit debates for those who inhabit the region (see Porta and Bankes, 2011); concern regarding long-term impacts on an ecologically sensitive marine environment (Burkett, 2011); and the uncertainties of Arctic climate change (Prowse *et al.*, 2009). This culmination of conditions, along with the current project-driven regulatory environment, has generated considerable discussion on the need for regional strategic environmental assessment (R-SEA) (see Doelle *et al.*, 2012; Noble *et al.*, 2013; WWF, 2005).

The Canadian Council of Ministers of the Environment (CCME) (2009) defines R-SEA as a "process designed to systematically assess the potential environmental effects, including cumulative effects, of alternative strategic initiatives, policies, plans or programs (PPPs) for a particular region." The overall objective of R-SEA is to inform the preparation of a development strategy and environmental management framework for a region (CCME, 2009) and, in doing so, identify strategies and priorities for future management and development while enhancing the efficacy of project-level environmental assessment (EA) (see Harriman Gunn and Noble, 2009). The interest in regionally-based, strategic approaches to EA stems from the limited capacity of project-based EA to address cumulative effects (Elvin, and Fraser, 2012; Gunn and Noble, 2011), the desire for Aboriginal groups to be more involved in development planning (see Porta and Bankes, 2011), and the recognised need to ensure that development decisions are set within a broader environmental planning and management framework (CCME, 2009). In some offshore jurisdictions, such as Norway's Barents Sea, Atlantic Canada, and United Kingdom, such higher-level approaches to assessment are beginning to emerge in practice (Fidler and Noble, 2012; Hasle *et al.*, 2009). Fidler and Noble (2012) report on several potential and realized benefits from international experiences with R-SEA offshore, including improvements in the efficacy and efficiency of project-based assessments, identifying ecologically sensitive marine areas where development should not take place, strengthening opportunities for cumulative effects assessment, and minimizing environmental and safety disasters (see also Doelle *et al.*, 2012).

The absence of R-SEA in the western Arctic has raised concerns about Canada's preparedness for offshore energy development (see Doelle *et al.*, 2012;

Elvin, and Fraser, 2012; Porta and Bankes, 2011; Arctic Council, 2009). These concerns are exacerbated by the uncertainties associated with Arctic climate change and due to a number of recent high-profile incidents, such as the 2010 Gulf of Mexico Deep Water Horizon oil spill, that elevated global awareness of the risks of offshore energy development. Notwithstanding several regional planning, baseline collection and science-based marine initiatives ongoing in Canada's western Arctic (e.g., Integrated Oceans Management Plan, Beaufort Regional Environmental Assessment, Integrated Regional Impact Study), and recognition at the local (e.g., IGC, 2004), national (e.g., CCME, 2009) and international levels (e.g., Arctic Council, 2009) of the importance of R-SEA, there remains no framework of R-SEA in the Beaufort Sea and whether and how such a framework can or should be implemented remains unaddressed. Research by Ketilson (2011) and Noble *et al.* (2013), for example, revealed scepticism around R-SEA in Canada's Beaufort Sea, describing it as "uncharted territory" with many questions of whether and how it can deliver benefits and influence decision-making. Part of the problem is that the majority of attention on the subject has been on the need for and benefits of such a framework (see Bina, 2007) rather than on implementation issues to advance R-SEA from a novel concept to a practical planning, assessment and decision support process.

The purpose of this paper is to examine key opportunities for and challenges to the implementation of R-SEA in the Beaufort Sea of Canada's western Arctic. The current Beaufort Sea planning, assessment and decision-making environment is examined against the normative model and expectations of R-SEA. Current support for R-SEA implementation for offshore planning and management is explored and areas of disagreement amongst stakeholders identified. The intent is not to propose another layer of legislation to what is perceived by some as an already complex regulatory offshore environment (see Callow, 2012), but to provide a foundation for advancing R-SEA from concept to practice. In the following sections the conceptual basis for R-SEA is introduced and the current state of EA in the Beaufort Sea discussed. Results report on the overall readiness for R-SEA implementation in the Beaufort Sea and the needs and interests of key actors. The paper concludes with a discussion of the implications of applying R-SEA and foreseeable challenges to implementation.

Regional Strategic Environmental Assessment

Canada is recognised internationally as a pioneer in strategic environmental assessment (SEA) (see Sadler, 2005); but the application of formal SEA in Canada

Table 1. Potential benefits of R-SEA.

- Facilitates the development of improved PPPs and strategic initiatives
- Provides a more regional focus for development and decision-making
- Ensures that cumulative effects assessment is captured at the appropriate tier and scale
- Contributes to regional sustainability goals
- Enables and encourages data sharing from regional and project impact monitoring programs
- Facilitates state-of-the-region environmental monitoring and reporting
- Saves time and resources by providing a means to streamline subsequent project EA
- Establishes goals, thresholds, or maximum allowable limits against which to conduct project-based performance and impact assessment

Source: CCME (2009); Harriman *et al.*, (2009).

is restricted to federal matters under a federal Cabinet Directive (see Noble, 2009). In 2008, the CCME, a forum of federal, provincial and territorial governments, commissioned a research programme to develop a more regionalised framework for SEA in an attempt to extend SEA beyond the federal Cabinet Directive and to facilitate a more regional-based, planning approach to impact assessment. The intent was to develop a framework to guide the development of PPPs and strategic initiatives above the project tier, influencing regional development programs and project specific actions and decisions (see Table 1).

Developed by Harriman Gunn and Noble (2009), R-SEA was founded on SEA principles (see Vicente and Partidário, 2006; Partidário, 1996) as a means to ensure that planning and assessment for a region supports the most desired outcomes rather than the most likely ones. The goal was to advance a more regionally based EA and planning approach to address environmental and social issues at the strategic tier of decision-making (Harriman Gunn and Noble, 2009). The focus of R-SEA is on informing the development or evaluation of alternative scenarios or PPPs for a region and then assessing those alternatives based on their potential for cumulative effects and in consideration of social, economic, environmental and planning goals (CCME, 2009). Amongst its defining features are its regional scope, strategic nature, and consideration of cumulative effects (Noble and Harriman, 2009). Its methodological approach is founded on the integration of existing knowledge, experience, and theory drawn from strategic (Vicente and Partidário, 2006; Noble and Storey, 2001; Partidário, 2000), cumulative (Noble, 2008; Dubé, 2003; Bonnell and Storey, 2000) and regional EA (Noble and Harriman, 2008). As a framework for regional application, it is intended to be context sensitive and "tailor-made to the kind of decisions at stake and the nature of the decision-making processes in place" (Partidário and Clark, 2000).

R-SEA Framework

The R-SEA framework and guiding principles are described in detail by Harriman Gunn and Noble (2009) and the CCME (2009). R-SEA consists of three interrelated phases: a pre-assessment phase, an impact assessment and evaluation phase and a post-assessment phase, each with corresponding stages (see Fig. 1). The pre-assessment involves developing a reference framework, scoping key issues, and identifying drivers and patterns of change in the region and how they have influenced valued ecosystems components (VECs). This requires identifying the main issues and concerns in the region along with the core principles that will be used to guide the assessment process. Tiering opportunities with regional initiatives and EA are also identified, as are necessary partners and partnerships, and terms of reference for the R-SEA developed. Scoping serves to establish VECs, temporal and spatial boundaries for the assessment, and sets management targets, objectives or thresholds against which future conditions and alternative scenarios of cumulative change can be assessed.

The impact assessment phase focuses on developing alternative options or scenarios of development and conservation for the region, and an assessment of the potential effects on, threats to, or changes in the state of VECs under each scenario. Cumulative effects and condition changes under each scenario are identified, and the significance of those changes and effects relative to current or past baseline conditions, thresholds, or desirable levels of change examined. More than one strategic alternative may be the outcome, and the iterative nature of the process may require re-assessing alternatives based on consideration of mitigation and management needs. The objective is to establish a preferred or satisficing PPP direction.

The post-assessment phase involves making plans to mitigate or compensate for potentially unavoidable impacts associated with the identified PPP, and developing

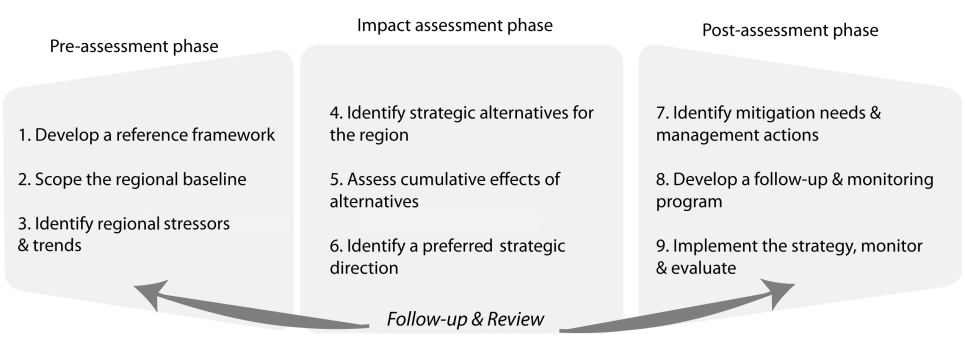


Fig. 1. Methodological framework for R-SEA.

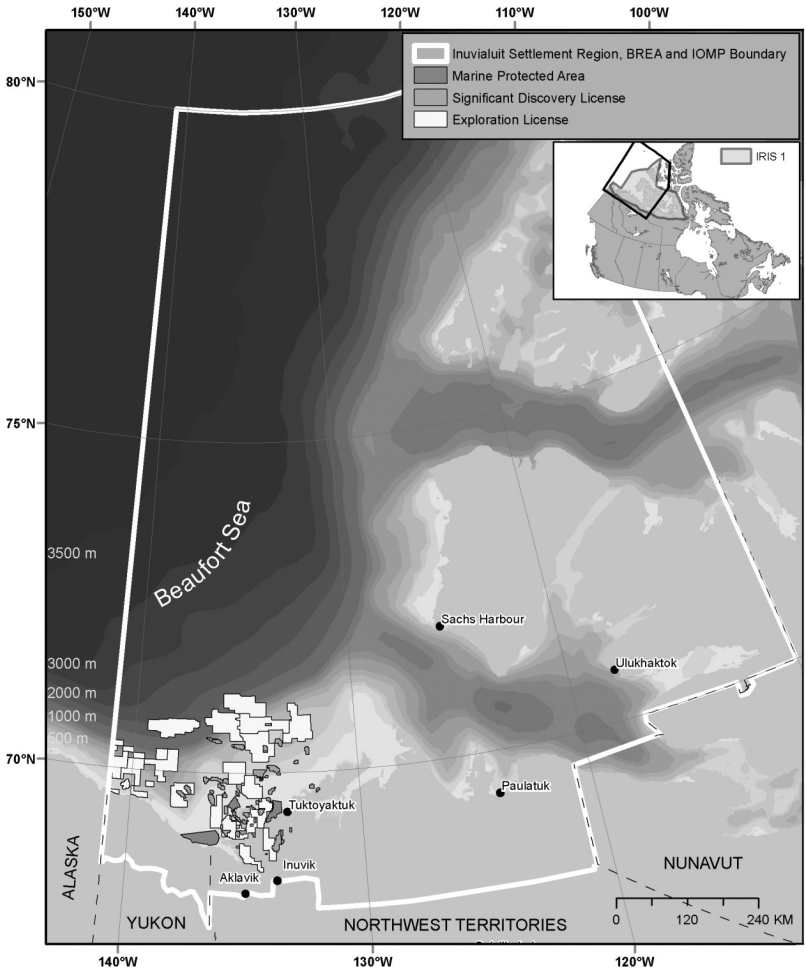
a follow-up and monitoring program for effects monitoring, goals achievement or performance evaluation, feedback on management effectiveness, and communication. This stage of the process is essential because PPPs are often formulated under uncertainty and their effectiveness is often sensitive to broader social and economic conditions (see CCME, 2009; Cherp *et al.*, 2007). Finally, in order to facilitate implementation and ensure that PPP strategies are put into action, there is a need to prescribe roles and resources for implementation and on-going monitoring; undertake a formal public review process of the proposed strategy, and establish a regular review period to revisit the PPP, evaluate its efficacy and adjust accordingly.

Research Methods

Beaufort sea

The Beaufort Sea Large Ocean Management Area covers over one million km^2, encompassing the marine portion of the Inuvialuit Settlement Region (Fig. 2), and has been identified as one of five priority areas for integrated ocean management by the Government of Canada (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 (Callow, 2012; INAC, 2010; Harrison, 2006). Prior to 2007, the majority of hydrocarbon exploration and development was restricted to the continental shelf and nearshore region. In recent years exploration licenses have been let in the deep offshore, raising concern about industry and government preparedness for drilling in frontier regions (Porta and Bankes, 2011).

Under the 1984 *Inuvialuit Final Agreement*, a negotiated agreement between the Inuvialuit of Canada's Northwest Territories and the Government of Canada to establish the Inuvialuit Settlement Region, the Inuvialuit ceded their rights in the offshore areas; however, they still provide input regarding offshore oil and gas development decisions on federal lands in their settlement region and maintain a role and interest in offshore governance. The *Inuvialuit Final Agreement* provides a framework for co-management in the Inuvialuit Settlement Region between the Inuvialuit and the federal government. However, for all intents and purposes, the



Source: Map developed by Michael St. Louis, University of Saskatchewan.

Fig. 2. Inuvialuit Settlement Region of Canada's western Arctic.

Government of Canada retains ownership and authority to manage the offshore resources of the Beaufort Sea. The National Energy Board and Aboriginal Affairs and Northern Development Canada (AANDC) have independent but complementary roles in energy exploration and development in the Beaufort Sea: the National Energy Board authorises drilling, while AANDC administers rights to oil exploration. Fisheries and Oceans Canada manages development authorizations under the *Fisheries Act* (1985), and the *Canadian Environmental Assessment Act* (2012) applies to projects whenever a federal authority has a decision-making responsibility.

Project-based EA is the primary tool for planning for, assessing, and managing the impacts of offshore energy development. Challenges to EA and regulation for offshore oil and gas in the Beaufort Sea have been documented by Noble *et al.* (2013) and others (Doelle *et al.*, 2012; Ketilson, 2011; Voutier *et al.*, 2008; Erlandson and Sloan, 2001), and include the narrow scope of EA and limited reach beyond the individual development project, uncertainty and efficiency of the process, the potential for duplication of efforts in project assessment, and the lack of capacity to implement EA and regulatory programs. These limitations, combined with recent legislative and regulatory reforms to EA (Canadian Environmental Assessment Act, 2012) in Canada at the federal level that further limit the scope of EA application, including the exemption of small projects (e.g., exploration), and set maximum 24-month time frames for the review of large projects (e.g., offshore development), have generated considerable interest in regional and strategic approaches to offshore planning and assessment in the western Arctic. Notwithstanding current, independent programmes in the western Arctic focused on marine planning (e.g., Integrated Oceans Management Plan (IOMP)), baseline studies (e.g., Beaufort Regional Environmental Assessment (BREA)), and scientific understanding of climate change (e.g., Integrated Regional Impact Studies (IRIS)), there is no integrative planning and impact assessment framework to support PPP development and decisions about marine resource use, particularly with regard to deep offshore energy. What R-SEA is and what it should deliver in the western Arctic is "still far from consolidated" (Ketilson, 2011: 2); R-SEA remains largely untested and the capacity for implementation is unknown.

Data collection and analysis

Data collection was based on semi-structured interviews with Inuvialuit co-management boards and agencies and the Joint Secretariat ($n = 11$); the Inuvialuit Settlement Region Municipal Government ($n = 2$); the Gwich'in Chiefs and Gwich'in Resource Board ($n = 3$); the oil and gas industry ($n = 6$); the Government of the Northwest Territories, specifically the Water Board, Industry Tourism and Investment, and the Department of Executive ($n = 4$); the Federal Government, comprised of Aboriginal Affairs and Northern Development Canada, the Canadian Environmental Assessment Agency, Fisheries and Oceans Canada, the National Energy Board, and Natural Resources Canada ($n = 13$); private consultants ($n = 5$); environmental non-government organisations ($n = 2$); and academics and other energy interest groups ($n = 4$) researching or working in the region. Interviews with Inuvialuit and northern governments were conducted in-person in Inuvik, Northwest Territories. The remainder occurred over the

telephone. Interview participants were selected based on their experience in and knowledge of offshore oil and gas development, planning and decision-making in the Beaufort Sea.

Participants were asked a series of semi-structured questions exploring: (i) existing challenges and opportunities with the current approach to and provisions for offshore oil and gas impact assessment, planning, management and decision-making in the Beaufort Sea; and (ii) critical factors, issues and concerns to be addressed through R-SEA in the Beaufort Sea, including participant views on stakeholder roles and the responsible authorities to lead and manage R-SEA. Interview results were organised using the CCME R-SEA framework described above as a general guide, coded thematically and analysed using QSR NVivo© v.9 to classify and manage qualitative information.

Results

Results are presented below based on each of the three broad phases of R-SEA: pre-assessment, assessment and post-assessment. In cases where participants did not want their comments attributed to their department, they are referenced by the broader organisation with which they are affiliated.

Pre-assessment phase

There was a diversity of expectations on an appropriate reference framework for R-SEA, specifically what R-SEA should deliver in the Beaufort Sea. For industry, an expectation of R-SEA was to deliver greater certainty through predictability and consistency in the regulatory process. "Being able to have clear guidance on the where's and when's allows for more effective planning," explained one industry proponent. A federal government participant explained that R-SEA should be designed to "expedite the EA permitting stage by addressing problems early, and proactively solving them, rather than the current approach that is focused on mitigating negative impacts." Inuvialuit, environmental non-governmental organisation, and some government participants advocated for R-SEA as an early assessment tool that could potentially restrict development activity if the results from a preliminary analysis were unfavourable, either in terms of environmental sensitivities or data gaps. As one environmental non-governmental organisation participant explained, the current approach under EA is "how can we; with R-SEA it is 'should we." The majority of Inuvialuit participants said that R-SEA should be a front-end assessment of conditions, when preparing leases and putting areas up

for auction and tenure, to guide whether and how areas are opened for future development.

There was agreement amongst participants regarding enforceability and responsibility for R-SEA. Most said that R-SEA should be regulated so that it is enforceable and provides certainty in planning and decision-making. However, one environmental non-governmental organisation participant explained that greater certainty meant different things to different stakeholders: for some, certainty through R-SEA means greater support for establishing marine conservation areas; for industry certainty means that project approvals are expedited; for the Inuvialuit it means that their right to access and benefit from marine resources is protected.

There was also agreement that responsibility for R-SEA implementation should be shared between the federal government and Inuvialuit, with strong industry involvement. An environmental consultant noted that creating a new body for R-SEA "would add to the perception of regulatory complexity…thus it would be better to expand and support [an existing] regulatory body through better funding, staff and technical support." A federal government participant maintained that the only way for R-SEA to be successful is through a process founded on stakeholder involvement so that "all interested and affected parties have a meaningful place at the table to influence decision-making and identify potentially conflicting values and ensuring such issues are addressed in the scoping stage." An 'industry-led' initiative was proposed by many industry and private consultant participants, with one participate explaining that "industry has financial resources so a partnership is ideal, and an umbrella partnership with industry, federal government and Inuvialuit could eliminate the 'us and them' mentality that currently exists." Such an umbrella partnership with industry was viewed with scepticism by other participants, including Inuvialuit. According to an Inuvialuit participant, the Inuvialuit view R-SEA as a means to "long term empowerment contributing increased confidence in decision-making, versus the current landscape which is plagued with contempt at the regional level as to how decisions are made at the federal level."

Participants deemed it necessary that R-SEA incorporate existing initiatives in the Beaufort Sea, namely IOMP, BREA and IRIS, and build upon already identified data and knowledge gaps, and address sociocultural and economic impacts. Most Inuvialuit participants recognised the need to "scope-in" onshore sociocultural and economic values in R-SEA for offshore development as a priority issue; industry, government and environmental non-governmental organisation alike supported this need. The difficulty, one Inuvialuit participant explained, is that legislation does not address socioeconomic impacts the same way it does biophysical, and offshore activities have shown very little socioeconomic benefit for

the Inuvialuit. When industries seek access to resources onshore they are required under the *Inuvialuit Final Agreement* to negotiate benefit agreements. Although industry is not legally required to do so offshore, some companies have voluntarily struck benefit agreements. For example, one industry participant explained that "the Inuvialuit wish to have offshore plans tailored to them as long-term development; we [industry proponent] feel this is reasonable to respect and have entered into agreements with the IRC [Inuvialuit Regional Corporation]." However, this particular company's opinion was not widely supported; other industry interviewees were opposed to reaching voluntary agreements with the Inuvialuit for offshore development, noting that regulatory framework does not require such actions.

A final issue raised concerned baseline data. Results indicated disagreement, particularly amongst those consultants involved in offshore EA practice, as to the amount and adequacy of existing baseline data. Some participants said that there is a large amount of existing information, but that there are still significant data gaps that need to be addressed. One environmental consultant noted that "EAs conducted offshore in the 80s were nearshore, primarily scientific, focused on oil spill response, and the regulatory regime was quite different then," thus highlighting the need for new data to adequately assess proposed drilling in the deep offshore. In contrast, another environmental consultant stressed that the necessary data is available, but it is not effectively managed. The participant explained "there is a tremendous amount of information that isn't being as used as effectively as it could be. R-SEA would not involve ascertaining new data, rather taking existing information and formatting it into a vehicle more readily accessible and understandable."

Impact assessment phase

The use of alternatives assessment in R-SEA, and identifying a "preferred" PPP direction, was an issue of considerable debate. The academic literature identifies alternatives as fundamental to R-SEA (see Gunn and Noble, 2009; Duinker and Greig, 2007), but there was dissent as to the usefulness of, and approach to, alternatives for R-SEA in the Beaufort Sea — specifically scenario-based approaches. There was no support for or against the use of alternatives assessment based on participant affiliation. For example, one industry participant explained that strategic planning is useful with scenarios, noting that it "doesn't have to be detailed per se, but can offer direction of how much development to permit and at what frequency." Similarly, an environmental consultant referred to the Norwegian and American regulatory regime, where cumulative impacts are examined

before licensing, adding that in Canada, the practice has been to view each licensing call as a standalone exercise, and "we need to formalize the process, and look at the potential cumulative effects of licenses." A Fisheries and Oceans Canada regulator also saw the value in scenarios and explained: "if R-SEA could tell me where development needs to stop in terms of effects, that is the answer I need."

Others disagreed as to the usefulness and applicability of alternatives based assessment and the use of scenarios. Some participants noted that identifying strategic alternatives or ways to proceed, for instance scenario planning, staged development, or restrictions toward permitting quotas, is not necessary in the Beaufort Sea given the lack of current development activity. The "pace of development will occur naturally," an environmental consultant participant expressed, "and will be determined, in part, by infrastructure capacity." Some industry participants were also sceptical, and concerned that entertaining alternative scenarios of development and conservation, including the scenario of 'no development', would not support their economic bottom line. For example, one industry participant explained that:

> "Industry is opposed to preferred scenarios because *whose* preferred scenario? Preferred scenario as an oil proponent is access to *my* resources. The Inuvialuit's preferred scenario is they get benefits with minimal impact. How does a preferred scenario unite industry, Inuvialuit and government? Preferred scenarios are polarizing, and latching onto a preferred development can end up killing a project."

An environmental non-governmental organisation participant added fodder to industry's unease, noting: "it's entirely possible that you could have policy on energy and environment side that could restrict the ability to develop resources."

When PPPs and strategic options are developed through R-SEA, results reveal the importance of accommodating the preferences and priorities of stakeholders. Ensuring that risk and benefit debates take place, for instance, was posed by an Inuvialuit participant as an important issue in prioritizing regional PPPs and development strategies: "are there economic benefits for the Inuvialuit if development activities proceed, if so is it worth the trade-off for potential disruption of the ecosystem if there was an oil spill?" Results also showed that industry goals require careful consideration so that R-SEA does not automatically foreclose development opportunities. One participant from territorial government explained that "industry pay huge sums for rights and without industry there is no economic development and without a regulatory environment that supports industry then we fail to support a main element of Canada's Northern Strategy, economic

development." It is important when identifying a strategic alternative for offshore development that there is the potential to deliver favorable results for industry. An industry participant explained that sequencing development through a strategic planning process should be viewed in a positive fashion in that data could support more, as opposed to fewer wells.

A final issue was assessing cumulative effects. Some participants saw the potential to address cumulative effects through R-SEA, and the uncertainty that characterises the cumulative effects assessment of alternative futures as a positive attribute of R-SEA; others viewed the lack of concreteness around regional cumulative effects as a negative feature of R-SEA. An industry participant explained that "there are so many approaches to assessing cumulative effects that it is confusing, and less than useful, even harmful to industry if the assessment isn't carried out effectively with clearly established boundaries, funding and expertise." Consistent with the CCME's (2009) view of R-SEA, some participants emphasised that long-term assessment horizons are characterised by vast uncertainties about change and external drivers and can lead to corresponding uncertainty about what effects are most likely to occur in the future. Those in favour of R-SEA for cumulative effects assessment maintained that it must be stakeholder-based and a participatory process. An industry participant added that "regional scale, with multi-stakeholder participation, holds potential for cumulative effects assessment – a staple to success." Participants also identified various elements that required attention when approaching cumulative effects through R-SEA, including regional baseline data and the importance of considering the complexity of the cumulative effects issues and pathways in marine environments.

Post-assessment phase

Follow-up and monitoring emerged as a key issue in the post-assessment phase, specifically regarding R-SEA's added value to management and decision-making. An Inuvialuit participant explained the value that could come from understanding the outcomes of decision-making through follow-up, not only as it pertains to R-SEA, but also by applying performance evaluation results to implementation targets of the *Inuvialuit Final Agreement*: "follow-up monitoring would be beneficial to offer land claim beneficiaries some tangible data on the effectiveness of mitigation and management actions." A significant shortcoming identified under current EA in the Beaufort Sea was the lack of follow-up and monitoring; as one industry participant explained, "regulatory agencies do not monitor very well — they don't look at it from a larger regional perspective and it doesn't go back into a planning process." A Joint Secretariat participant agreed, noting that monitoring is

"more for the purposes of meeting regulatory requirements than fulfilling a practical purpose." Congruence in monitoring methods and data collection emerged as important to R-SEA, with industry's project-specific monitoring efforts able to provide a valuable contribution to the monitoring of VECs. Consistent with the CCME (2009) it is necessary to ensure monitoring and data are quality controlled, transferable and comparable. Failure to achieve congruence may lead to problems in comparing monitoring results. As an environmental non-governmental organisation participant explained: "if you allow proponents to form their own monitoring plan you get a mishmash of data with different methodologies that makes obtaining a coherent picture challenging. Make sure the monitoring plan is well defined for the proponent so the data received is comparable and can be used to inform a regional picture."

Finally, participants identified the need for an adaptive approach to implementation. An industry participant expanded on the need for flexible and adaptable implementation:

> "Dealing with so many uncertainties we need to reserve flexibility to adjust as development unfolds. R-SEA model might be the best thing in the world, but it could be useless in affecting change if it cannot accommodate public opinion and values. When dealing with so many uncertainties with regard to how the offshore will develop, it must be modifiable."

An environmental non-governmental organisation participant added that it must demonstrate that the views of the affected public are taken seriously and integrated, where possible, in the final design of the strategic alternative, and "it has to be a living document informed by public opinion, so that the outcomes are reflected by inputs." The importance of implementing R-SEA as an iterative and adaptive process was deemed as core to R-SEA's success, particularly when it comes to VECs and having "a system built in for ensuring VECs are validated regularly, as values change over time."

Discussion: Advancing R-SEA in the Beaufort Sea

There are several issues and challenges that need to be addressed to advance R-SEA in the Beaufort Sea; yet there appears to be a foundation from which to move forward. The goal of this paper was to identify key issues and gaps that may pose challenges or opportunities for R-SEA implementation in the Beaufort Sea. What follows are a number observations concerning R-SEA implementation. Although based on Canada's western Arctic, the lessons and observations are relevant to other national and international offshore jurisdictions.

Diversity of expectations

Diversity in expectations of what R-SEA is expected to address and deliver in the Beaufort Sea is a challenge to its development and implementation, particularly when attempting to establish a reference framework. Though most expectations of what R-SEA should accomplish in the Beaufort Sea were consistent with what R-SEA can potentially deliver (see CCME, 2009), results reinforce the work of Noble *et al.* (2013), Ketilson (2011) and Vicenté and Partidário (2006) who respectively observed that R-SEA's role, particularly in energy sector PPP development and assessment, is neither well developed nor understood, and hence the nature of R-SEA remains unclear to many.

Part of the challenge may be attributed to the flexibility of R-SEA as an approach to planning and assessment. Although some have argued that structure and consistency is core to strategic approaches (Fischer, 2003), others like Partidário (2000), Nilsson and Dalkmann (2001), Fischer (2005), and the CCME (2009) maintain that SEA-based initiatives must be flexible to regional and local context. In the Beaufort Sea, flexibility proved to be a desirable characteristic of R-SEA; however, a challenge associated with flexibility was the establishment of clear purpose and scope for R-SEA and reaching agreement on the specific questions and problems to be addressed. Failure to agree on the scope of R-SEA early on in the process poses a major impediment to its adoption, implementation and ultimate effectiveness.

Poor understanding of, or disregard for, context can lead to simplified judgments about resource systems, and consequently failures in management efforts (Bina, 2008). To ensure that R-SEA can emerge as an accepted and worthwhile part of planning and decision-making processes, constraints and intent need to be agreed upon at the outset and made clear to all interested parties (see Dalal-Clayton and Sadler, 2005). This is currently not the case in the Beaufort Sea. The diversity of expectations reinforce Dalal-Clayton and Sadler's (2005) findings that R-SEA needs to be better understood if it is to be welcomed into decision-making for resource planning and development. However, notwithstanding the variety of opinions on what R-SEA should do in the Beaufort Sea, there was consensus that something needs to be done and that the current project-based approach is not sufficient.

Scepticism and resistance about a futures-based approach

Notwithstanding increasing calls for R-SEA in the Beaufort Sea, there remains scepticism and resistance, albeit by the minority, that R-SEA will not be a fair process for all stakeholders and certain procedural benefits, such as establishing regional targets and thresholds, may have adverse impacts for industry. Resistance

to R-SEA implementation was rooted in one of the most fundamental components of R-SEA, that of examining alternative futures (see CCME, 2009; Jones *et al.*, 2005) and selecting a strategic course of action. Particular scepticism emerged regarding the need for scenario planning given the lack of current offshore energy activity in the region; suggesting limited understanding of the purpose of R-SEA and the role of scenarios in planning and assessment. This was not surprising. Duinker and Greig (2007) report that, although most appropriate to the task of planning for and assessing the impacts of future development, scenario-based approaches are significantly underutilised and promoted in EA practice. Scenario-based approaches are about examining "what may happen," "what is most likely to happen," and "what would we prefer to happen" concerning the development and outcomes of development in a particular region (see Rubin and Kaivo-oja, 1999). In a region characterised by much uncertainty concerning the future impacts of offshore development, as noted by interview participants, scenario-based analysis is ideally suited for grappling with such uncertainties and a shift away "from trying to estimate what is most likely to occur toward questions of what are the consequences and most appropriate responses under different circumstances" (Duinker and Greig, 2007: 209). Interestingly, the consideration of strategic alternatives early in decision-making, before irreversible development decisions are taken, was an opportunity and potential benefit of R-SEA that most Inuvialuit participants supported. However, among those who accepted the need for scenario use and evaluation in the Beaufort, there were many different opinions on what scenarios should be considered and what they would be willing to accept — ranging from seismic free areas to energy policy on renewable versus non-renewable energy futures.

Understanding stakeholder resistance and scepticism

Resistance and scepticism regarding alternative assessments and scenario based approaches may be a result of the perceived risk of being locked into a PPP that is seen as "less than desirable" for any individual interest. This was a particular concern raised by industry; however, more attention is needed to understanding stakeholder resistance to address the root cause of this perception. Such scepticism could stem from fear of legislation of R-SEA outputs, or the lack of flexibility for industry to plan for and control its future as it has had the liberty to do to date in the Beaufort. The level of disdain regarding the current regulatory system by industry participants is not improving. Erlandson (2009) argues that the problem with northern regulatory systems is not that they are complex, but that they don't work in relation to the business cycle for oil and gas development. Erlandson

(2009: 419) further reports that operators in the petroleum sector "can't count on standards of administrative law such as consistency, predictability and timeliness that are taken for granted elsewhere," and their perceptions of risk have risen over the last 10 years. Such stark findings illustrate deeply rooted public policy problems that have been well documented by others (see Abele, 2009; McCrank, 2008), which have lead in part to cynicism on behalf of industry on the government's ability to effectively and efficiently manage the offshore. In this way, industry seemed skeptical not of change per se, but rather the government's capacity to effectively carry out and implement an R-SEA.

Vicente and Partidário (2006) argue that such perceptions are influenced by individual cultural and social contexts, including past experience, and that understanding the root of the problem and the different perceptions of a problem lie at the core of SEA activities. Ultimately, however, if no PPP direction is identified, then R-SEA is no more than a data collection exercise with little value added to development assessing and decision-making (see CAPP, 2009) and, arguably, no different than past efforts in the Beaufort region. If there is a lack of commitment to identifying and charting a course in the western Arctic through R-SEA, then perhaps R-SEA is not the right tool. On the other hand, if there is a lack of commitment from certain stakeholders, as is the case in the Beaufort, then perhaps there is a need for better education regarding R-SEA. This could be accomplished through, for example, empirical case study learning from other offshore jurisdictions to demonstrate that R-SEA does not arrive at polarising decisions, nor is it a command and control type process (see Knol, 2010; Hasle *et al.*, 2009). Instead, it is a means of integrating environmental and broader sustainability considerations in regional PPPs. There is a need to bring forward evidence from case applications that R-SEA can achieve its objectives without adding significant delays to regulatory and decision-making processes. Nevertheless, if industry is fundamentally opposed to R-SEA this will pose a significant challenge to implementation. This is particularly the case given the current national political climate that is driving energy investment as a result of Prime Minister Harper's commitment for Canada to be an energy superpower (see Hester, 2007), and the relaxing of federal environmental assessment laws and regulations to promote more rapid exploration, development and approval processes (see Gibson, 2012).

Good governance

R-SEA can help advance good regional governance for resource planning and assessment, as intended by the CCME (2009), but there was concern by some

participants that R-SEA would simply be another layer of government. Scott (2008) maintains that SEA's contribution to good governance has been made without examination of the tensions inherent within good governance discourse, and that the SEA-good governance nexus is more an objective than a reality. In other words, R-SEA can help advance good governance, but its success in doing so is largely dependent on the extent to which stakeholders are engaged and able to participate in and influence decision-making. This kind of circumspect thinking emerged in the results, as some participants saw R-SEA adding another layer of bureaucracy with no guaranteed benefits. For some Inuvialuit participants, there was concern that R-SEA could be a process dictated at the federal level, eroding decision-making power and influence within the Inuvialuit Settlement Region. This perceived risk of loss of control was exacerbated by concerns over the possibility of industry leading R-SEA initiatives, and playing a key role in the environmental management of the region. Despite these concerns, there was broad agreement that government should play a lead role in R-SEA through a multi-stakeholder approach.

The OECD (2006: 46) reports that "SEA supports *good governance* by: encouraging stakeholder participation…[and] Increasing transparency and accountability' as well as 'clarifying institutional responsibilities."' In doing so, there is an opportunity for R-SEA to identify capacity needs and legislative and policy gaps to support effective environmental and socioeconomic PPP development and implementation. The increased transparency and understanding afforded by SEA at the regional level can be a potential catalyst for increased efforts at joined-up government through "increas[ing] pressures to overcome bureaucratic fragmentation and jurisdictional conflict", according to Stinchcombe and Gibson (2001: 354) in Scott (2008). The Inuvialuit have been active participants in multi-stakeholder government processes to improve and prepare for offshore development for decades (see CAPP, 2009). In this way, existing multi-stakeholder initiatives such as the IOMP, BREA and IRIS may help set a foundation or establish pre-conditions for R-SEA success. As laudable as these initiatives have been, however, ubiquitous governance challenges prevail (see Erlandson, 2009), which from the Inuvialuit perspective comes from the "requirements of legislation and institutions, mainly federal, that are layered on top of those of the Inuvialuit Settlement Region, and which were not designed to be coordinated with each other" – or even complimentary (Cournoyea, 2009: 391). Fundamental governance and coordination challenges such as these may be addressed in part through R-SEA; however, given their legislative depth they will likely continue to challenge offshore planning and management efforts and be a significant challenge to R-SEA implementation.

Social impacts

Results support Norman's (2005) findings that the well-being of coastal communities should be paramount in marine resource development, and there is a need for R-SEA to focus on the onshore socioeconomic implications of offshore development. The scale and pace of future hydrocarbon development are more than a matter of deposits and reserves, and will be determined by a variety of factors including supportive infrastructure and technology, a stable political and public policy environment, and a skilled workforce (Fenge, 2009). R-SEA offshore must therefore accommodate onshore socio-economic PPP issues associated with energy development, such as community development (e.g., influx of workers), if it is to reflect broader regional sustainable development goals and objectives.

Porta and Bankes (2011) echo the concern that many Inuvialuit participants raised regarding risks and benefits: "of all the players involved in an Arctic offshore oil and gas program, Inuit communities bear the greatest risk, and with the current system benefits are not proportionate to these risks." Oil and gas investments can have significant positive local, and in the case of major projects, regional and national economic impacts; however, extractive industry investments can also give rise to a range of negative effects (Wagner and Armstrong, 2010). The potential negative effects of resource extraction proved to be a major concern for participants, especially the Inuvialuit.

R-SEA can also be a critical tool in engaging those potentially affected by development. As evidenced by local Aboriginal engagement in setting mitigation standards for the Labrador Shelf SEA, Atlantic Canada (see Fidler and Noble, 2012), even at the strategic tier local communities can influence decision outcomes. Land claim settlements have empowered Inuit communities to document traditional ecological knowledge and apply it to land and marine use planning. Traditional knowledge along side scientific studies can help fill gaps such that, for example, biologically and culturally significant marine areas are identified for priority protection. In this way R-SEA can play an important role in supporting the objectives of the Inuvialuit Final Agreement (see IFA, 1984).

Benefit plans emerged as a contentious topic; the seabed where offshore drilling occurs is Crown land but unlike for onshore arrangements industry is not legally obliged in the offshore to establish impact and benefit agreements. Porta and Bankes (2011) maintain that the absence of a legal trigger to negotiate benefit agreements for offshore production fails to balance the risks and benefits of those operations for local communities. There is an opportunity for R-SEA to integrate socioeconomic considerations early in the planning of offshore oil and gas systems

(CCME, 2009), and, R-SEA could potentially integrate benefit agreements into the assessment process and offer decision makers and local interests a better understanding of the broader development planning cycle. This could enable an evaluation of how such agreements contribute to the region and maximise economic benefits, prior to specific project-based negotiations, and whether they support regional goals and R-SEA objectives. The roles of these two potentially complementary processes, R-SEA and negotiated benefit agreements, in contributing toward more informed decision-making requires further examination. To date, the focus on research on benefit agreements in relation to environmental management has focused exclusively on project-level EA, namely in the mineral sector (see Noble and Fidler, 2011), and suggest that such agreements have emerged, in part, due to the inadequacies of project-based assessments in addressing cumulative effects, socioeconomic impacts and follow-up (Galbraith *et al.*, 2007). It may well be the case that such agreements need to remain outside the scope of R-SEA, but in the context of impact management and Arctic offshore planning the current system requires reform (Doelle *et al.*, 2012). Cournoyea (2009: 392) argues that while the Inuvialuit are adaptable people, it is the federal government's responsibility to invest in public services such as health, and social services, concluding that "if the only investment in capacity is in reaction to development after the fact, it will come too late."

Post-assessment and implementation

Overall participants had much more to say, and raised many more concerns, regarding the pre-assessment and assessment phases of R-SEA than they did about implementation and post-implementation evaluation of the PPPs that emerge from R-SEA. Although the lack of follow-up and monitoring under EA (see Morrison-Saunders and Arts, 2004; Arts *et al.*, 2001) was raised by study participants, relatively little comment was made regarding what comes after R-SEA, when a PPP or course of action is identified. This is not surprising, as Gachechiladze *et al.* (2009) report that most SEA research and practice has focused almost exclusively on pre-decision stages, in particular the development and application of SEA systems and methodological frameworks, with limited attention to the post decision follow-up stage. With limited attention to monitoring for undesirable effects during the PPP's implementation, it will prove difficult to draw conclusions on planning assumptions and apply these to subsequent assessments (see Cherp *et al.*, 2007).

This lack of consideration to post implementation is concerning given the noted uncertainties associated with development in the offshore region, particularly those

associated with climate change. Changes in landfast ice patterns may have significant effects on offshore access and managing the risks to infrastructure due to melting permafrost (see Voutier *et al.*, 2008). Arguably, R-SEA does provide a framework for integrating climate change considerations into PPPs (see OECD, 2009); however, such emerging and external factors must be considered in R-SEA from the outset with follow-up programs post-implementation designed to inform the need for changes in previously formulated strategies (see Cherp *et al.*, 2007).

Part of the challenge, however, is that the necessary supporting institutional environments to ensure that a PPP or strategy can succeed, or that management actions are in place in order for a preferred strategy to be considered viable, remains underdeveloped both in the academic literature (Gachechiladze *et al.*, 2009) and in practice. Problematic in this regard, and consistent with Noble (2003), is that R-SEA output and decision outcomes are to a significant extent a function of the input and quality of the R-SEA process. If institutional arrangements to support the implementation of R-SEA output have not been considered during the entire R-SEA process, efforts performed in the pre-assessment and assessment phase could prove futile. The result is an R-SEA process that resembles no more than a visioning and data collection exercise but with no implementation or links to decision-making. Shannon (1998) maintains that institutional arrangements are just as important as the scientific and technical aspects of understanding and conducting assessments, as they establish a template for patterns of relationships and administrative mechanisms to manage effects. Although partnerships exist in the Beaufort Sea through various multi stakeholder programs and initiatives, no research on the network of institutional arrangements has been conducted to establish whether existing arrangement can support R-SEA implementation. There is a documented need to better understand the ways in which institutional arrangements affect the advancement and implementation of R-SEA. Even the most well intended strategies are of little value if they are not put into action (CCME, 2009).

Conclusion

Large-scale offshore hydrocarbon development is looming in the Canadian Beaufort Sea, but there is no R-SEA framework to help plan for future energy development, establish a long-term regional vision, or to assess and effectively manage potential cumulative effects. A majority of stakeholders have advocated for R-SEA in the Beaufort (e.g., IGC, 2004; Arctic Council, 2009), and there is optimism that a foundation exists through the application of the CCME R-SEA model to guide and advance offshore planning and assessment to enable more

informed regional development decisions in support of sustainability. This paper set out to identify key opportunities for and challenges to the implementation of R-SEA in the Beaufort Sea, and in doing so examined support for its implementation and identified areas of stakeholder disagreement. Although acute implementation challenges were identified, such as issues of governance and the nature and scope of alternatives assessment, findings reveal particular challenges to the current project EA approach and show that R-SEA offers a much needed framework to begin addressing stakeholder concerns about future offshore development in the region. The CCME framework provides a starting point to advance R-SEA in Canada's western Arctic and ensure that offshore development in the region reflects the intended and desirable outcomes of stakeholders, as opposed to the most likely ones.

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