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Dimensions of transboundary legal coherence needed to foster ecosystem-based governance in the Arctic

Froukje Maria Platjouw[a,b]

[a] University of Oslo, Faculty of Law, Scandinavian Institute of Maritime Law, Karl Johans Gate 47, NO-0164, Oslo, Norway
[b] Norwegian Institute for Water Research (NIVA), Section for Water and Society, Gaustadalléen 21, NO-0349, Oslo, Norway

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ABSTRACT

The Arctic is a complex geographical area to govern sustainably due to strong geopolitical and socio-economic interests, high ecological vulnerability and importance, and significant legal and institutional fragmentation. Intensifying human pressures in this area necessitate an ecosystem-based and adaptive governance approach, an approach that enables managing socio-ecological resilience in the Arctic. As the Arctic is a large geographic area crossing multiple national jurisdictions and maritime zones, including high seas areas, regionally coordinated and coherent governance approaches would be desirable. This paper assesses the status quo for ecosystem-based governance (EBG) in the Arctic, suggests a focus on three core components of EBG, and proposes three forms of legal coherence to foster these core components. The paper concludes with examining what role the Arctic Council plays and could play to strengthen EBG in the Arctic.

1. Introduction

The Arctic is a geographic region of global importance and interest. Climate change and melting ice provides for increased opportunities of economic exploitation. Without a legal system effectively designed for ecosystem-based governance (EBG) that could ensure the maintenance of the ecosystem's integrity, a multitude of aspects and factors can be used to deviate from an ecologically sustainable development path in the Arctic. This raises questions about how to ascertain the integrity of the Arctic ecosystem while human activities are intensifying and both Arctic and non-Arctic states are showing an increasing interest in this geographic region.

Various legal incentives already exist that promote or require the application of EBG approaches to marine ecosystems. Despite these legal incentives and requirements, applying regionally coordinated EBG approaches to the Arctic proves difficult. This is mainly related to the differences among Arctic states in terms of governance regimes, geopolitical interests, institutional frameworks, geographic and demographic conditions, to name but a few. Despite these differences, human use of the Arctic marine ecosystem affects its overall resilience and future possibilities to sustainable use. After all, the Arctic is a shared, transboundary ecosystem which requires a certain degree of coordination and harmonization between Arctic states' governance approaches.

This paper sheds light on the role of law to foster EBG in the Arctic. EBG is a very comprehensive concept. Three core components will however be focused on in particular. These three components, holistic, integrative and adaptive governance, could be fostered through certain dimensions of legal coherence. This paper suggests that there is an important role for law in fostering EBG in the Arctic. Yet this requires a pragmatic and gradual approach. By gradually developing coherent legal frameworks for single activities with an impact on the Arctic, such as aquaculture or deep seabed mining, or for tools such as marine protected areas or marine spatial planning, transboundary EBG could be fostered. Such a pragmatic and gradual approach will move us further in the right direction.

The paper firstly provides a background to EBG in the Arctic by presenting several complexities of varying nature that generally complicate transboundary governance arrangements in the Arctic. Secondly, the concept of EBG will be shortly discussed and three components of EBG will be suggested worthy of further legal investigation. As legal coherence is suggested to have significant potential to facilitate transboundary EBG, the third part of the paper proposes three dimensions of legal coherence that connect to and foster holistic, integrative, and adaptive EBG. The final section clarifies the role, and shortcomings, of the Arctic Council in fostering EBG further.

2. Background - complexities in the Arctic

Before discussing EBG and the role of legal coherence more thoroughly, a background needs to be provided clarifying why

E-mail address: fmp@niva.no.

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operationalizing transboundary EBG might be generally difficult in the Arctic. In short, this is related to a range of complexities in the Arctic, including ecological vulnerability; socio-economic opportunities; geo-political interests; and legal and institutional fragmentation. This will be further elaborated on in this section.

The Arctic is a unique ecosystem and of high importance to the Earth's social-ecological system due to its interconnectedness to other ecosystems around the globe.[1] For instance, the reflectivity of Arctic ice and snow plays a central role in the Earth's climate system.[2] The Arctic is also characterized by a high level of biodiversity. Approximately 5000 animal species, 2000 types of algae, and an unknown number of ecologically critical microbes can be found in the Arctic.[3] The Arctic Resilience Report 2016 emphasized that this multitude of life-forms is highly valuable to the Arctic and beyond. For these, and other, reasons, sustainable governance of the Arctic is imperative.

The Arctic is however a challenging ecological area to govern sustainably. This is partly due to its inherently diverse, variable, and dynamic nature. Ecosystem components are constantly changing, making it sometimes difficult to assess between large natural fluctuations and changes due to human activities. The Arctic marine environment also experiences a variety of stressors and pressures from cumulative changes.[4] Climate change is the most significant stressor.[5] The Arctic climate is warming rapidly. Impacts including thinning and reduced extent of sea ice, which in turn have significant implications for Arctic wildlife and human populations on the region, have already been documented.[6] Other key stressors include pollution (transported primarily from sources outside the Arctic), as well as increased economic activities such as shipping, oil and gas development, commercial fishing and tourism.[7] These stressors – both individually and in combination – have the potential to affect both Arctic ecosystems and the communities that depend on them.[8] Ongoing changes in the Arctic have raised major concerns about the possibility of tipping points and regime shifts.[9] Against this background, the need for EBG in the Arctic has been considered crucial.[10]

2.1. Fragmentation and multilevel governance in the Arctic

In addition to its highly dynamic nature, the Arctic is also a difficult area to govern sustainably because of the complex and fragmentary legal and institutional framework applicable to Arctic governance. The Arctic, here being referred to as the territory lying north of the Arctic Circle, is a relatively large geographic area, crossing various jurisdictional boundaries and maritime zones. Eight countries have sovereign rights and are considered Arctic nations. These are the five that border the Arctic Ocean: Canada, Denmark (via Greenland), Norway, Russia and the United States – as well as three countries whose territory lies partially north of the Arctic Circle: Finland, Iceland and Sweden. The Arctic marine area is thus governed by "quite many authorities, international and regional organizations as well as intergovernmental fora/partnerships with different mandates to regulate human activities and environmental matters in the Arctic".[11]

In more depth, the Arctic Ocean, the ocean surrounding the North Pole, is subject to a range of governance regimes.[12] The 1982 United Nations Convention on the Law of the Sea (LOSC)[13] applies to the entire Arctic and is in force for all Arctic coastal states except the United States, which accepts the relevant provisions of LOSC as customary international law. Based upon the LOSC, the Arctic coastal states are entitled to an exclusive economic zone of 200 nautical miles adjacent to their coastline.[14] Several related legal regimes, such as the 1973–78 Convention for the Prevention of Pollution from Ships,[15] the 2014 International Code for Safety of Ships operating in polar waters (Polar Code), and the 1995 United Nations Fish Stocks Agreement,[16] are fully applicable to the Arctic. The Convention on the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention), which focuses on pollution, is applicable to a significant segment of the Arctic Ocean.[17] Also of importance is the Convention on Biological Diversity (CBD),[18] which applies to areas of the Arctic within national jurisdiction. In addition to these, various other legal instruments do apply to the Arctic or have implications to Arctic governance.[19] Koivurova and Molenaar (2009) describe the governance regime applicable

[1] National Research Council (2015), *Arctic Matters: The Global Connection to Changes in the Arctic*. Washington: The National Academies Press. https://doi.org/10.17226/21717.

[2] Arctic Council (2016). *Arctic Resilience Report,* M. Carson and G. Peterson (eds). Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm. http://www.arctic-council.org/arr. p.3.

[3] Christian Prip (2018), A global treaty on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction: threat or opportunity for Arctic Ocean governance? The blog of the K.G. Jebsen Centre for the Law of the Sea, 17.11.2018.

[4] CAFF (2017), *State of the Arctic Marine Biodiversity Report*. Conservation of Arctic Flora and Fauna International Secretariat, p.5.

[5] Arctic Council (2016). *Arctic Resilience Report,* M. Carson and G. Peterson (eds). Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm. http://www.arctic-council.org/arr. p.xiii

[6] CAFF (2013), *Arctic Biodiversity Assessment. Status and trends in Arctic biodiversity*. Conservation of Arctic Flora and Fauna, Akureyri. p.12–13.

[7] A Stepien, Timo Koivurova and P Kankaanpää (eds.) (2016), *Changing Arctic and the European Union,* Leiden-Boston: Brill/Nijhoff 2016.

[8] CAFF (2017), *State of the Arctic Marine Biodiversity Report*. Conservation of Arctic Flora and Fauna International Secretariat, p.24–26; Joan Nymand Larsen and Gail Fondahl, eds. (2014), Arctic Human Development Report. Regional Processes and Global Challenges, TemaNord, 2014:567 (Copenhagen, Denmark: Nordic Council of Ministers, 2014).

[9] Arctic Council (2016), *Arctic Resilience Report,* M. Carson and G. Peterson (eds). Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm. http://www.arctic-council.org/arr. p.xii.

[10] Arctic Council (2013), *Ecosystem-based management in the Arctic*, Report submitted to Senior Arctic Officials by the Expert Group on Ecosystem-Based Management, May 2013, p.9.

[11] Ellen Margrethe Basse, 'Transnational Ecosystem-based Norms covering the Danish/Greenlandic Arctic Marine Area', in Bettina Lemann Kristiansen, Katerina Mitkidis, Louise Munkholm, Lauren Neumann and Cécile Pelaudeix (eds.) *Transnationalisation and Legal Actors: Legitimacy in Question* (Routledge 2019 forthcoming). Paul Arthur Berkman and Oran R Young (2009), 'Governance and Environmental Change in the Arctic Ocean', 324 *Science* 339–340.

[12] Timo Koivurova, Erik J Molenaar, *International Governance and Regulation of the Marine Arctic: Overview and Gap Analysis* (World Wildlife Fund International Arctic Programme, Oslo, 2009).

[13] United Nations Convention on the Law of the Sea (Opened for signature on 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3.

[14] In certain circumstances, coastal states may also submit requests to a so-called 'outer continental shelf' based upon Article 76 LOSC. So far, only Russia and Norway have made such submissions in relation to their outer continental shelves that lie within the Arctic marine area. Koivurova and Molenaar (n.12) p.18.

[15] International Convention for the Prevention of Pollution from Ships (MARPOL 1973), as modified by the Protocol of 1978 (MARPOL 73/78) (Opened for signature 2 November 1973, entered into force 12 October 1983) 1340 UNTS 61.

[16] United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (adopted 4 August 1995, entered into force 11 December 2001) 2167 UNTS 88.

[17] OSPAR Convention for the Protection of the marine Environment of the North-East Atlantic (Opened for signature 22 September 1992, entered into force 25 March 1998) 2354 UNTS 67.

[18] The Convention on Biological Diversity (adopted 22 May 1992, entered into force 29 December 1993)1760 UNTS 79.

[19] Koivurova and Molenaar 2009 (n12).

to the Arctic as fragmentary and incoherent. They also argue that these regimes insufficiently ensure the conservation and sustainable use of marine biodiversity beyond national jurisdiction. To address regulatory gaps, and due to a changing Arctic and increased opportunities for human activities in the Arctic Ocean, the General Assembly to the United Nations launched negotiations in December 2017 on a global and legally binding instrument for the conservation and sustainable use of marine biodiversity beyond national jurisdiction under LOSC.[20]

In addition to the body of international law and regional agreements that applies to the Arctic, major geographical areas also fall within the national jurisdiction of the Arctic coastal states. Within these areas, national legislation fully applies. Overall, Arctic governance is thus regulated by a complex body of international conventions, regional agreements as well as national legal systems. As a result, aspects of conservation and sustainable use of the Arctic ecosystem and its resources are regulated at a range of governance scales and in a wide number of legal instruments.

Currently, there is an increasing interest in the Arctic and the emerging possibilities for intensified human activities such as hydrocarbon exploitation, shipping, fisheries, tourism, and mining, to name but a few. Both Arctic states as well as various non-Arctic states have formulated well-developed Arctic policies and some of these have also obtained observer status in the Arctic Council, including Japan, China, India and Korea. The EU applied for the observer status in 2013, however until now the application has been rejected. One of the reasons for this rejection is the EU's Seal Ban Regulation, which affects the Inuit population in the Arctic significantly.[21] Notwithstanding this rejection, several EU states are rather active in the Arctic either as member or observer to the Arctic Council. EU states that have been granted the observer status include France, Spain, Germany, the Netherlands, Italy, Poland, and the UK. The Arctic is thus a geographic area of interest to many states.

The complexities outlined above underscore the need for an EBG approach to the Arctic. The Arctic ecosystem's ecological importance as well as its vulnerability and sensitivity to anthropogenic stressors, in combination with the political interest in intensifying human activities, necessitate the implementation of an EBG approach to the Arctic ensure a sustainable pathway to future resource management in this region.[22] The following section explores the concept of EBG further.

3. Ecosystem-based governance and its core components

EBG, as introduced under the CBD and promoted by many international and regional instruments, is a governance approach that requires multi-level, polycentric and participatory governance structures to ensure the maintenance of ecosystem integrity and its functioning, while sustainably using the ecosystem's services and enjoying its benefits. The understanding of the need for a more EBG approach started from the 1980s onwards and had been set in motion through the recognition that traditional approaches to resource management, which had been mainly sectoral based, were inadequate to meet the challenges ahead.[23] Even though plenty of laws had existed to protect individual natural resources, such as water, air, soils, animals, threatened and endangered species, and particular areas including forests, rangelands, wetlands, and wilderness areas, ecological conditions still deteriorated worldwide.[24]

The concept of EBG has no formal, universally agreed upon, definition.[25] Rather, the concept has evolved and interpreted differently by the various environmental institutions and in the context of various environmental regimes.[26] The core of EBG has however been well summarised in a report by the United Nations General Assembly in the context of marine ecosystems. According to this report, governance approaches need to, among others:

(a) Emphasise conservation of ecosystem structures and their functioning and key processes in order to maintain ecosystem goods and services;
(b) Be applied within geographically specific areas based on ecological criteria;
(c) Emphasise the interactions between human activities and the ecosystem and among the components of the ecosystem and among ecosystems;
(e) Strive to balance diverse societal objectives;
(i) Use integrated decision-making processes and management related to multiple activities and sectors;
(k) Assess the cumulative impacts of multiple human activities on marine ecosystems;
(m) Seek the appropriate balance between, and integration of, conservation and sustainable use of marine biological diversity.[27]

In the context of the CBD, the ecosystem approach has been defined more specifically in line with the objectives of the Convention. In 2000, the Conference of the Parties to the CBD adopted Decision V/6 with the following definition of the ecosystem approach:

> "The ecosystem approach is a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way".[28]

Parties to the CBD have emphasized that the ecosystem approach could be considered as a framework for the implementation of the objectives of the CBD. These are the conservation of biological diversity, the sustainable use of ecosystem services for human purposes, and fair and equitable sharing of the benefits from the use of genetic resources.[29]

The development towards EBG is a remarkable shift since it aims to combine the conservation of the structure and functioning of ecosystems with efforts to meet social needs and the sustainable use of ecosystem services for human purposes. It remains unclear, however, how the objectives can be focused on simultaneously or with equal priority in concrete cases. Despite efforts to develop the concept of EBG more in

[20] United Nations General Assembly, Resolution 69/292, 'Development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction' (6 July 2015) A/RES/69/292.

[21] Kamrul Hossain (2015), 'EU Engagement in the Arctic: Do the Policy Responses from the Arctic States Recognise the EU as a Legitimate Stakeholder?', 6(2) *Arctic Review on Law and Politics* 2015, pp. 89–110. p.90.

[22] Arctic Council (2016). *Arctic Resilience Report,* M. Carson and G. Peterson (eds). Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm. http://www.arctic-council.org/arr.

[23] Sue Kidd, Andy Plater and Chris Frid (eds), *The Ecosystem Approach to Marine Planning and Management* (Earthscan 2011) 1.

[24] Michel Van Eeten and Emery Roe, *Ecology, Engineering and Management: Reconciling ecosystem rehabilitation and service reliability* (Oxford University Press 2002) 21.

[25] Froukje Maria Platjouw, *Environmental law and the ecosystem approach* (Routledge 2016), p. 28-42.

[26] Froukje Maria Platjouw, *Environmental law and the ecosystem approach* (Routledge 2016), p. 28–42.

[27] UNGA, Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its seventh Meeting (17 July 2006) A/61/156, paragraph 6.

[28] CBD, Conference of the Parties 5 Decision V/6 'Ecosystem Approach' (22 June 2000) UNEP/CBD/COP/5/23.

[29] CBD, Conference of the Parties 4, 'Report of the Workshop on the Ecosystem Approach' (20 March 1998) UNEP/CBD/COP/4/Inf.9. See also, CBD, Expert Meeting on the Ecosystem Approach, 'Review of the principles of the ecosystem approach and suggestions for refinement: a framework for discussion' (3 July 2003) UNEP/CBD/EM-EA/1/3, paragraph 47.

the context of the CBD, there have come some questions with regards to its feasibility and criticism from those who find it too vague and undetermined.[30]

The lack of consensus on the precise understanding of EBG is probably due to the fact that the concept leaves room for quite different interpretations, ranging from an anthropocentric perspective to an ecocentric perspective.[31] Similar as under the concept of sustainable development, different aspects of EBG may be prioritised over other aspects. This ambiguity within the concept, and its lack of specific legal obligations that might follow from it, may impede the concept's effectiveness in terms of halting the degradation of marine ecosystems.

For sure, even though the objective of maintaining ecosystem integrity is important, at the same time, an ecosystem may be used for the fulfilment of various purposes, aquaculture, transport, hunting, mining, energy production, recreation, and so forth. How exactly to reconcile the two objectives of both sustainable use and the conservation of a healthy level of production and provision of ecosystem services for the future, is one of the major challenges of EBG. Human use of ecosystems affects the structure and functioning of ecosystems, which for their part may affect human well-being and socio-economic development.[32] Marine ecosystems, being extremely valuable for our well-being and economic development, are now under growing pressure due to overexploitation and unsustainable use.[33] An appropriate balancing of the objectives is therefore imperative; however the practical application is difficult.

Despite the practical challenges, from a legal perspective, Arctic states are expected to apply EBG approaches. Indeed, such approaches are being promoted through different multilateral environmental agreements which most of the Arctic states have ratified. The most important instrument is the LOSC, as discussed above. In the context of the LOSC, the UN General Assembly established an annual meeting: The United Nations Informal Consultation Process on Oceans and the law of the Sea (UNICPOLOS). In 2006, the informal consultations produced a set of "Agreed Consensual Elements" on ecosystem approaches and the oceans.[34] The LOSC also explicitly endorses adaptive governance through Article 201 which specifies that data acquired through scientific research conducted under Article 200 should be used to form the basis for the rules and standards under Part XII. In this sense, the LOSC affirms that scientific understanding is the primary basis for the development of the law.[35] Furthermore, the UNGA also encouraged states to apply ecosystem-based governance approaches to the oceans in several resolutions.[36] Other legal instruments that promote the use of EBG in the marine environment includes the 1992 CBD[37]; the FAO Compliance Agreement[38]; and the United Nations Fish Stocks Agreement.[39] All these legal instruments have some different geographical scope though. The CBD, for instance, only applies to areas within national jurisdiction. The OSPAR Convention that promotes the conservation of ecosystems and biodiversity, is only applicable to a part of the Arctic.

EBG approaches have also been encouraged through non-legally binding agreements, including Agenda21[40], the Johannesburg Plan of Implementation.[41] EBG is moreover recognised to be crucial in the context of the Sustainable Development Goals, particularly SDG 14, which aims to '[c]onserve and sustainably use the oceans, seas and marine resources for sustainable development'.[42]

3.1. A focus on three core components of EBG

Taking into consideration the practical challenges of applying EBG in general and in the Artic in particular, these legal and policy incentives call for a further discussion on how to move forward and to attain further progress despite these challenges. This section suggests a focus on three core components of EBG in particular; holistic, integrative, and adaptive governance. Various dimensions of legal coherence could potentially foster these core components of EBG, and in that regard the role of law in facilitating EBG in the Arctic could be strengthened. The following figure distinguishes these components of EBG (see Fig. 1).

Holistic, integrative and adaptive governance will be further discussed in the section on legal coherence. Here only short descriptions of the terms will be provided.

3.3.1. Holistic EBG

Holistic governance is crucial as most marine ecosystems cross several administrative and jurisdictional boundaries. Holistic governance involves a focus on the ecological boundaries of ecosystem, rather than jurisdictional or administrative boundaries. This requires

[30] Volkmar Hartje, Axel Klaphake and Rainer Schliep, 'The International Debate on the Ecosystem Approach: Diffusion of a Codification Effort', in H Korn, R Schliep and J Stadler (eds), *Report of the International Workshop on the 'Further Development of the Ecosystem Approach'* (BFN Federal Agency for Nature Conservation, Skripten 78, 2003) 31.

[31] Volkmar Hartje, Axel Klaphake and Rainer Schliep, 'The International Debate on the Ecosystem Approach: Diffusion of a Codification Effort', in H Korn, R Schliep and J Stadler (eds), *Report of the International Workshop on the 'Further Development of the Ecosystem Approach'* (BFN Federal Agency for Nature Conservation, Skripten 78, 2003) 31. 12. An eco-centric approach recognises ecosystems and the biosphere, i.e. the "land", as ultimate beneficiaries towards which we should be responsible. See Peter Miller, 'Approaches to ecological integrity: divergence, convergence and implementation', in P Crabbé and others (eds), *Implementing Ecological Integrity: Restoring Regional and Global Environmental and Human Health* (Kluwer International Law 2000) 60. See also, Vito de Lucia, 'Competing Narratives and Complex Genealogies: The Ecosystem Approach in International Environmental Law', 27 (1) Journal of environmental law 2014, pp.91–117.

[32] UNGA, Oceans and the Law of the Sea (9 March 2006) A/61/63, paragraph 114.

[33] UNGA, Oceans and the Law of the Sea (9 March 2006) A/61/63, paragraph 115.

[34] Alf Håkon Hoel (2010), 'Integrated Oceans Management in the Arctic: Norway and Beyond', 1(2) *Arctic Review* 2010.

[35] Elizabeth Kirk (2015), 'Science and the international regulation of marine pollution', in Donald Rothwell, Alex G Oude Elferink, Karen Scott and Tim Stephens (eds.), *The Oxford Handbook of the Law of the Sea*, Oxford University Press 2015, p.522.

[36] See for example United Nations General Assembly, Resolution 69/62 on Oceans and the Law of the Sea (18 August 2004) A/59/62/add.1; United Nations General Assembly, Resolution 61/63 on Oceans and the Law of the Sea (9 March 2006) A/61/63; United Nations General Assembly, Resolution 61/222 on Oceans and the Law of the Sea (20 December 2006) A/RES/61/222; United Nations General Assembly, Resolution 62/215 on Oceans and the Law of the Sea (22 December 2007) A/RES/62/215; United Nations General Assembly, Resolution 63/111 on Oceans and the Law of the Sea (12 February 2009) A/RES/63/111.

[37] The Convention on Biological Diversity (adopted 22 May 1992, entered into force 29 December 1993)1760 UNTS 79; Platjouw 2016 (n22).

[38] UN Food and Agriculture Organization, 'Code of Conduct for Responsible Fisheries' (31 October 1995) FAO Doc. 95/20/Rev/1.

[39] United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish stocks and Highly Migratory Fish Stocks (adopted 4 August 1995, entered into force 11 December 2001) 2167 UNTS 88.

[40] United Nations Conference on Environment and Development (UNCED), *Agenda 21: Programme of Action for Sustainable Development* (1992) A/Conf.151/26.

[41] United Nations World Summit on Sustainable Development, 'Johannesburg Plan of Implementation' (September 2002) A/Conf. 199/20.

[42] Arctic Council (2018), 'Memorandum to Senior Arctic Officials; Sustainable Development Goals, Arctic Biodiversity', Arctic Council SAO Plenary meeting March 2018.

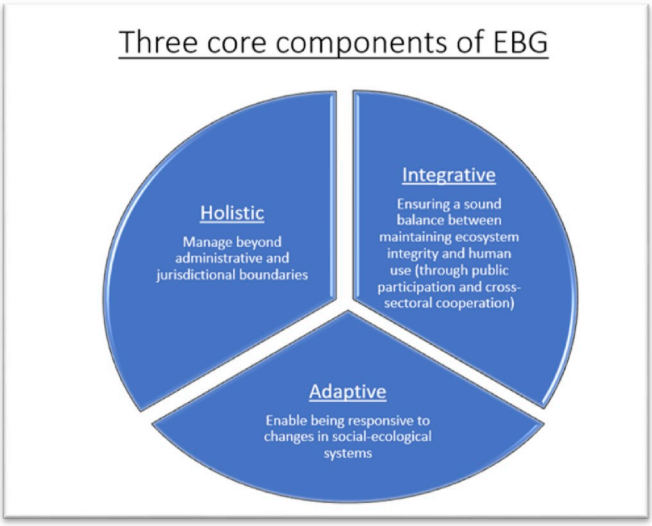

Fig. 1. Three core components of ecosystem-based governance.

cooperation and coordination between different sectors, administrative authorities, and states; and a degree of legal coherence to facilitate this holistic approach.[43]

3.3.2. Integrative governance

Integrative governance is important for EBG since it seeks an appropriate balance between, and integration of, conservation and sustainable use of marine biological diversity. This requires weighing and balancing of diverging values and interests to be carried out at multiple governance levels by a range of decision-making authorities and policy makers. To facilitate this, public participation is important as well as sound cross-sectoral coordination. From a legal perspective, there is a need for increased legal coherence in mechanisms and practices across sectors and jurisdictions for weighing and balancing assessments where ecosystem values and considerations are involved.

3.3.3. Adaptive governance

Adaptive EBG is crucial. The Secretariat of the Convention on Biological Diversity emphasized that "[t]he ecosystem approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning. Ecosystem processes are often non-linear, and the outcome of such processes often show time lags. The result is discontinuities, leading to surprise and uncertainty".[44] EBG thus needs to be adaptive in order to respond to such uncertainties and contain elements of 'learning by doing' or research feedback.[45] Adaptive governance could be legally designed for in different manners. This will be further discussed below. Of importance though is that states sharing a particular marine ecosystem, or collaborating on particular activities or mechanisms, have a coherent legal approach towards the use and application of adaptive governance.

4. Legal coherence to foster ecosystem-based governance

The three core components of EBG can be strengthened or facilitated by law and legal coherence. Particularly in transboundary marine ecosystems, such as the Arctic, legal coherence could in fact play an important role to compensate for very diverse governance approaches across Arctic states. To illustrate, in the context of marine protected areas, one of the Working Groups of the Arctic Council, PAME, aims at developing a Framework for a Pan-Arctic Network of Marine Protected Areas.[46] One of the challenges, as identified by the Working Group, is the variety in governance regimes across Arctic states.[47] For sure, states may have very different regulatory approaches and legal criteria for both the designation of marine protected areas as well as the management of these areas. Yet fostering EBG in this area requires a certain degree of legal coherence in terms of compatible rules and criteria for the designation and adaptive management of marine protected areas.

Besides this example, legal coherence could in general facilitate more holistic, integrative and adaptive EBG to the Arctic. Before discussing the dimensions of legal coherence needed to foster EBG, the next section will first shed some more light on the concept of legal coherence.

4.1. Legal coherence

Law is coherent when it 'hangs or fits together, if its parts are mutually supportive, if it is intelligible'.[48] A legal system is also coherent when it 'just makes sense'.[49] The concept of coherence has been extensively discussed in particular by several well-known jurisprudential writers such as Dworkin,[50] Raz,[51] MacCormick,[52] and Balkin.[53] They all more or less support the following understanding:

> "The idea that the law is a seamless web, that it is holistic, that precedents have a gravitational force throughout the law, that argument by analogy has an especial significance in law, and the principle that all are equal under the law, provide strong *prima facie* support for a coherence theory of law."[54]

Coherence is considered to be a desirable feature of law. Kress, for example, points out how it simply seems 'desirable – or necessary – in a theory because what is coherent is intelligible and forms a rational,

[43] Froukje Maria Platjouw (2016), *Environmental law and the ecosystem approach – Maintaining ecological integrity through consistency in law*, Routledge 2016.

[44] CBD-COP, Conference of the Parties 5 Decision V/6 'Ecosystem Approach' 2000, (22 June 2000) UNEP/CBD/COP/5/23.

[45] CBD-COP, Conference of the Parties 5 Decision V/6 'Ecosystem Approach' 2000, (22 June 2000). UNEP/CBD/COP/5/23 (CBD V/6 2000).

[46] Protection of the Arctic marine environment (PAME), Arctic Council, 'Framework for a Pan-Arctic Network of Marine Protected Area', 2015, available at: < https://oaarchive.arctic-council.org/bitstream/handle/11374/417/MPA_final_web.pdf?sequence=1&isAllowed=y > .

[47] Protection of the Arctic marine environment (PAME), Arctic Council, 'Framework for a Pan-Arctic Network of Marine Protected Area', 2015, available at: < https://oaarchive.arctic-council.org/bitstream/handle/11374/417/MPA_final_web.pdf?sequence=1&isAllowed=y > , p. 19.

[48] Ken Kress, 'Coherence', in Dennis Patterson (ed), *A Companion to Philosophy of Law and Legal Theory* (2nd edn, Wiley-Blackwell 2010) 533.

[49] Neil MacCormick, 'Natural Law and the Separation of Law and Morals', in RP George (ed), *Natural Law Theory: Modern Essays* (Oxford University Press 1994) 235 and 238.

[50] In particular Dworkin, *Law's Empire* (Harvard University Press 1986), where Dworkin described the role of coherence in his theory of law as integrity, has been an influential piece of work for further coherence theories in law.

[51] Joseph P Raz, 'The relevance of Coherence', in Joseph Raz, *Ethics in the Public Domain: Essays in the Morality of Law and Politics* (Clarendon Press 1995). Raz has taken the view that the more unified the set of principles underlying court decisions and legislative acts which make up the law, the more coherent the law is (pp.274–275).

[52] MacCormick 1994 (n 853). Like Raz, MacCormick appears to share the view of coherence in terms of unity of principle in a legal system; with the former contending that the coherence of a set of legal norms consists in their being related to either in being the realization of some common value or values, or by fulfilling some common principle or principles.

[53] See Jack M Balkin, 'Understanding Legal Understanding: The Legal Subject and the Problems of Legal Coherence' (1993) 103 Yale Law Journal 105.

[54] Christian Franklin, *Consistency in EC External Relations Law* (PhD Dissertation, University of Bergen 2010)127.

understandable unity rather than a patchwork quilt'.[55] Similarly, Raz claims that "coherence conveys a specific good, the value of which is undeniable. What is incoherent is unintelligible, because it is self-contradictory, fragmented, disjointed. What is coherent is intelligible, makes sense, is well-expressed, with all the bits hanging together".[56] The main idea behind coherent law is that its norms make sense in relation to one another.[57] According to Kress, coherence implies that the various fragments hang or fit together, that they are mutually supportive, and that they flow from or express a single unified viewpoint. He argues that coherence has seven important properties: consistency, completeness, comprehensiveness, unity, monism, articulateness, and justified.[58] According to Kress, the core of coherence is *monism* and *unity/internal relations*.

Monism means that the policies flow from a single principle or viewpoint. It aims to avoid or resolve all conflicts by confining the diverging policies to one fundamental principle from which all sub principles follow. In case of the Arctic, the unified viewpoint could, for example, be to maintain or strengthen Arctic resilience and the appreciation that pressures and stressors affect both Artic resilience and future opportunities for the intensification of human activities. The challenge in the Arctic is to a large extent the complex network of conventions, laws and other legal and policy instruments with varying viewpoints, principles and priorities. Also the multi-level governance architecture enhances this complexity. Political willingness, and strong leadership, among Arctic states is necessary to agree on labelling the maintenance of Arctic resilience as an overarching unified viewpoint.

With consensus on the overarching unifying viewpoint, conflict between sub principles or viewpoints appears to be allowed though. Methods like reflective equilibrium,[59] weighing and balancing, and general equilibrium[60] resolve competition and conflicts between the sub principles, thus achieving substantial or complete coherence and consistency. In the weighing procedures, some master principle or norm may explain why sub-principles and counter-principles are balanced as they are, why each has the weight (in context) it does (and what justifies the particular weighing mechanisms employed). The master principle thus provides a normatively intelligible explanation and articulation of methods and principles for resolving conflicts among principles. Such a master principle, in combination with the resolution device, serves as the monistic principle.[61] In a less strict version of monism, resolution of concrete cases is accomplished via reflective equilibrium, weighing and balancing, and general equilibrium, but without recourse to any articulated master principle. Nevertheless, the principles, norms and conflict resolution devices must reflect a single, unified normative vision. Unity, as the second core concept of coherence concerns more the internal architecture among the principles. Generally, the stronger forms of monism and unity give rise to stronger versions of coherence. While some degree of monism or unity is a necessary property for coherence, the other properties have been identified as only enhancing coherence. The more of these properties are present, together with monism or unity, the more coherent a system is.

Consistency, for example, as a property of coherence means that the principles and propositions of different policy sectors are logically consistent. Consistency requires an absence of contradictions within a set of, for example, two or more propositions, principles or sentences. While coherence is thus when a bunch of rules all make sense in accordance with some overriding explanatory/justificatory principle, consistency is where no rules contradict one another. Within coherence then you may have rules which contradict one another but make sense in relation to the governing principle. Contrarily, whereas a body of rules may be entirely consistent, they can also make absolutely no sense.[62] Consistency may not always therefore be said to lead to coherence, and two propositions may be deemed consistent yet incoherent accordingly.[63]

Legal coherence is important for EBG in transboundary marine ecosystems. While aiming at full legal coherence in the Arctic is a highly unrealistic ambition, certain forms of legal coherence could significantly foster the implementation of EBG in the Arctic. These forms of legal coherence are therefore worth investigating further. The following sections describe three dimensions of legal coherence that are deemed necessary to foster holistic, integrative and adaptive EBG.

4.2. Fostering holistic EBG through legal coherence

Holistic EBG requires managing beyond administrative and jurisdictional boundaries. Fragmented structures of environmental law and governance do not fit well with the nature of ecosystems as complex adaptive systems. Ecosystems need to be regulated as a whole, rather than splitting up the ecosystem into different jurisdictional zones and having in place different regulatory regimes for these various zones. This is not an easy task. As recognised by Borg,

> "Applicable regimes appear to promote two diametrically opposed management concepts. Whilst regulation and enforcement can be most effective if they are specialized and tailor made for the particular species and zones involved, the need of an ecosystem approach requires horizontal regulation that cuts across species, maritime zones, legal systems and political interests"[64]

Fragmented structures of environmental law do thus not fit very well with the need for more holistic EBG approaches that cut across legal systems and maritime zones. In this regard, legal coherence is of importance especially in geographical areas where several regulatory and/or governance arrangements overlap,[65] such as in the Arctic. Fostering holistic EBG requires legal coherence among objectives, principles, rules, terminology and definitions used across legal acts,

[55] Ken Kress, 'Coherence', in Dennis Patterson (ed), *A Companion to Philosophy of Law and Legal Theory* (2nd edn, Wiley-Blackwell 2010) 536.

[56] Joseph P Raz, 'The relevance of Coherence', in Joseph Raz, *Ethics in the Public Domain: Essays in the Morality of Law and Politics* (Clarendon Press 1995) 264.

[57] Jeremy Waldron, 'The Rule of Law and the Importance of Procedure' (2010) Public Law & Legal Theory Research Paper Series Working Papers No. 10–73, 35–36.

[58] Jeremy Waldron, 'The Rule of Law and the Importance of Procedure' (2010) Public Law & Legal Theory Research Paper Series Working Papers No. 10–73, 35–36..

[59] The most famous coherence methodology in modern normative theory is the technique of reflective equilibrium developed by Rawls to resolve conflicts about ethics and justice. See John Rawls, *A Theory of Justice* (Harvard University Press 1971).

[60] General equilibrium is a route to coherence when things fit together even when individual elements are warring (Dworkin). Dworkin's conception of coherence was a version of Rawls mature methods of reflective equilibrium, emphasising the requirement that the underlying principles must be consistently applied in justifying surface rules and reaching concrete judicial decisions. See Dworkin, *Law's Empire* (Harvard University Press 1986).

[61] Ken Kress, 'Coherence', in Dennis Patterson (ed), *A Companion to Philosophy of Law and Legal Theory* (2nd edn, Wiley-Blackwell 2010).

[62] Andrei Marmor, *Interpretation and Legal Theory* (Oxford University Press 1992).

[63] Christian Franklin, *Consistency in EC External Relations Law* (PhD Dissertation, University of Bergen 2010)134.

[64] Simone Borg, *Conservation on the High Seas. Harmonizing International Regimes for the Sustainable Use of Living Resources* (Edward Elgar Publishing 2012) 278–279.

[65] Niko Soininen and Froukje Maria Platjouw (2019), 'Resilience and Adaptive Capacity of Aquatic Environmental Law in the EU – an Evaluation and Comparison of the WFD, MSFD and the MSPD', in David Langlet and Rosemary Rayfuse, *Ecosystem Approaches to Ocean Planning and Governance: Experiences from Europe and Beyond* (Brill 2019) pp.17–79; Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach – Maintaining ecological integrity through consistency in law* (Routledge 2016).

frameworks and even jurisdictions.

To illustrate, legal frameworks regulating aquaculture activities in different parts of the Arctic could employ similar terminology and concepts in order to facilitate cross-boundary coordination and ecosystem approaches. Similar terminology should be used to refer to the same concepts and vague terms should be understood in similar manners. Variations in terminology such as 'environmentally justifiable' and 'environmentally defensible' may be confusing and are undesirable in environmental law. The use and meaning of the concept 'sustainable' in the context of aquaculture should be coherent across jurisdictions taking into account scientific knowledge on the Arctic ecosystem's resilience and adaptive capacity. If in one legal framework the term 'sustainably' is used in an economic sense, while in another Artic states' legal framework the term refers to ecological sustainable aquaculture, this might lead to inconsistent and fragmented approaches to aquaculture in the Arctic, and might as such impede holistic governance.

Similarly, certain human activities could be better harmonized in order to ensure that these activities are subject to similar rules and restrictions, and that certain value-laden concepts and environmental principles, such as 'sustainability' or the precautionary principle, have coherent implications and understandings for operators and investors irrespective of where in the Arctic the activity is planned for.

The Arctic region is far too large and complex to regulate coherently as a whole. For that reason, legal coherence should primarily be pursued in the regulation of specific human activities, such as aquaculture, deep seabed mining, or petroleum exploration, or in the context of certain tools and mechanisms important for EBG, such as marine protected areas, marine spatial planning, or environmental impact assessments. Coherent objectives, principles, rules, terminology and definitions used across legal acts, legal frameworks and Artic states' jurisdictions will significantly facilitate coordination and transboundary holistic EBG in the Arctic (see Fig. 2).

4.3. Fostering integrative EBG through legal coherence

EBG aims at a fair balancing of both the sustainable use of marine ecosystems as well as the maintenance of their integrity, in order to ensure their long-term resilience and productivity. To attain these aims, integrative governance is necessary encompassing cross-sectoral coordination and public participation. When environmental law and governance is very fragmented, this might not always be easy though. Fragmentation of environmental law affects the aim of cross-sectoral cooperation and coordination. When the administrative sectors comply with different legal instruments that contain different and perhaps even conflicting purposes, it may be difficult to ensure an appropriate balancing between diverging objectives. This may be even intensified when the different legal acts provide wide discretionary powers to decision-makers within the various sectors. Different approaches, mechanisms and traditions with regard to the weighing and balancing of divergent values may practically render cross-sectoral cooperation unrealisable. As a result, a satisfactory balancing on an aggregate level between the use of marine ecosystems for human purposes and the maintenance of ecosystem integrity may not be ensured.

In order to ensure that ecosystem values are not assessed and integrated in a partial and fragmented manner, these decision-making principles and methodologies need to be coherent across sectors and jurisdictions. Thus, there is a need for legal coherence in the manner of valuation and integration of ecosystem values and considerations when making decisions. One of the challenges in environmental governance is the appropriate valuation of ecosystem services (either qualitatively, quantitatively or monetary) and the integration of these values into decision-making procedures. Discretion in the legal system and the absence of concrete rules on this valuation and integration task may entail that ecosystem values are being appreciated in an arbitrary manner depending on the particular sector responsible for the decision. Different sectors may have different priorities and traditions, and the law itself may remain silent on which interests to be prioritised. The fragmentation of environmental law and governance, in combination with the challenges embedded in weighing and balancing of highly divergent values, often complicates integrative EBG.

Integrated governance is also crucial for EBG due to the complexity of ecosystems as complex adaptive systems. Knowledge related to their functioning and to the effects of anthropogenic and natural stressors, is imperative for sound decision-making. For that reason, decision-making processes should be participatory involving many different authorities and communities. The fair integration of different objectives, such as the maintenance of ecosystem integrity and sustainable use, is only possible when employing such participatory decision-making processes.

To further foster integrative EBG, legal coherence is thus desirable to ensure that public authorities across sectors and jurisdictions apply a coherent set of decision-making principles, mechanisms, and methodologies for the weighing and balancing of different, and often conflicting, values and interests. Moreover, to ensure that these weighing and balancing assessments and trade-offs are being made on a comprehensive knowledge base, public participation is important to bring forth all relevant viewpoints and interests that will be put on the scales. Legal coherence could facilitate more harmonized weighing and balancing procedures, and as such contribute to achieving the goal of EBG to ensure both sustainable use as well as the maintenance of ecosystem integrity more systematically (see Fig. 3).

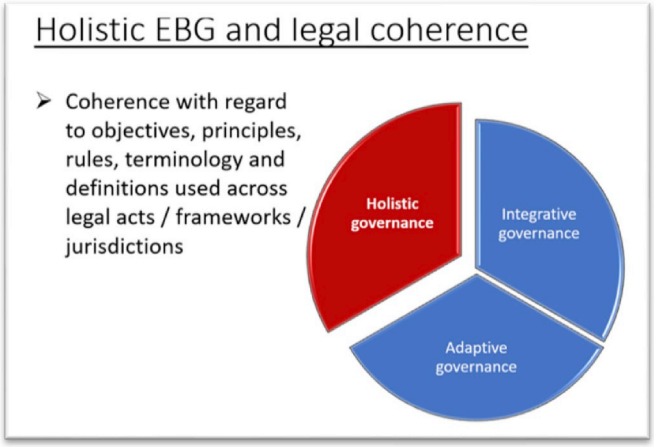

Fig. 2. Fostering holistic ecosystem-based governance through legal coherence.

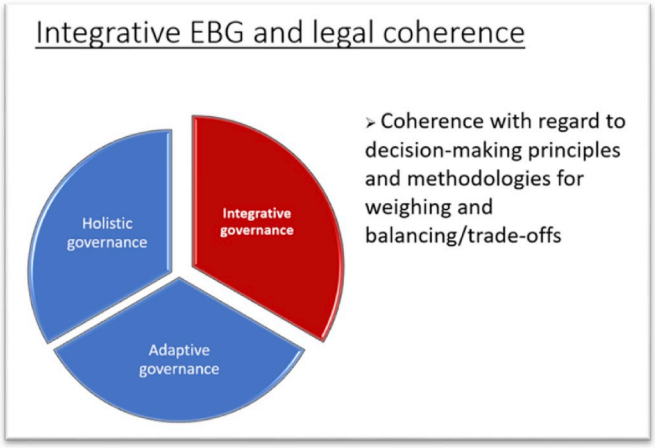

Fig. 3. Fostering integrative ecosystem-based governance through legal coherence.

4.4. Fostering adaptive EBG through legal coherence

The level of scientific uncertainty related to the functioning of the Arctic ecosystem, the cascading effects of human-induced and natural changes, and the rapidity of change necessitate cautiousness and adaptivity in decision-making processes on the Arctic. In contradiction with more 'traditional' decision-making processes which are usually characterized by finality of decisions, adaptive governance requires the continual monitoring and reviewing of past decisions, policies, and plans. In practice, adaptive governance might involve the application of management tools that deal with social-ecological dynamism and uncertainty. In practice, adaptive governance might involve the application of management tools that deal with social-ecological dynamism and uncertainty. For example, as Robin Craig explains, "adaptive management is a structured decision-making process, through which an environmental manager proceeds through cycles of 'set-up' phases and 'iterative' phases".[66] These phases will, amongst others, consist of engagement with stakeholders, and the development of management goals and actions, and monitoring plans, as well as feedback processes and possible adjustments of these goals or actions.[67] Adaptive governance is mostly appropriate when the system is ecologically complex; faces change combined with a degree of uncertainty; and when the system is approaching a potential threshold or regime shift as evidenced by increasing conflict over resources (e.g. litigation), or by increasing scarcity, or else.[68]

As a starting point, there is no clear answer to how law should be designed to facilitate adaptive governance.[69] In the literature, several forms of adaptive governance and legal designs have been distinguished. The most common form of adaptive governance is a form where one relies on historical data to produce rigorous models about how an ecosystem functions, use those models to identify a single best-practice for management, and implement that practice. Monitoring is then used to observe whether results diverge from predictions from the model and use those divergences to update the model and the management system.[70]

Some countries then design for adaptive governance through so-called programmatic approaches.[71] This means that cyclical and evolving plans and programs are used as tools for attaining environmental goals, such as the water quality objectives of the EU Water Framework Directive.[72] The essence of this approach is that environmental goals, defined as environmental quality objectives, are achieved within a certain period of time through the implementation of cyclical or evolving plans or programs.[73] Adaptivity is enhanced through the programmatic approach as it allows room for flexibility, which can be used to cope with socio-economic and environmental development, and development in the state of knowledge.[74]

Adaptive governance does not always require a specific regulatory design though. In fact, adaptive governance has been used, or at least attempted, within many existing legal frameworks not intentionally designed for its adoption. States may encourage adaptive governance through designing laws and regulations with vaguely defined objectives and incorporating a considerable degree of discretion for decision-making authorities. So, adaptive governance is not necessarily incompatible with current legislation because many legal mandates have a level of vagueness that allows adaptive management to be an option.[75]

Vagueness can be caused by inaccurate wording as well as administrative discretion under a statutory provision. Environmental legislation often contains ambiguous terms and principles which leave room for different interpretations and applications. In addition, environmental legislation also regularly provides public decision-makers with a widely formulated competence to weigh and balance various interests and values when applying law. The distinction between these two forms of vagueness may not be very clear in environmental law, as ambiguous terms and principles often implicitly also require a weighing and balancing of different interests and values.[76]

This form of adaptive governance is often considered a compromised version of adaptive governance, in which objectives are loosely defined, monitoring protocols are vague, and management actions triggered by monitoring thresholds are not clearly detailed. This lack of specificities allows agencies and other public authorities to skip essential parts of the structured and iterative learning process of adaptive governance, and increase their discretion and flexibility within decision-making embedded in political controversies, financial restrictions, or scientific uncertainties.[77]

To ensure an ecologically sustainable pathway and the overall resilience of the Arctic ecosystem, adaptive governance is crucial. Yet adaptive governance could be fostered through different legal designs, often with different implications for those involved. In a transboundary marine ecosystem such as the Arctic, it could be desirable to aim at a degree of coherence in the design for adaptive governance. To illustrate, the above mentioned 'pan-Arctic network of marine protected areas' could be subject to coherent mechanisms for review and adjustments in management schemes. Coherence in terms of time frames,

[66] Robin Kundis Craig (2019), 'Fostering adaptive marine aquaculture through Procedural innovation in marine spatial planning', *Marine Policy* - Special issue (forthcoming in 2019), p.5.

[67] Robin Kundis Craig (2019), 'Fostering adaptive marine aquaculture through Procedural innovation in marine spatial planning', *Marine Policy* - Special issue (forthcoming in 2019), p.5.

[68] Robin Kundis Craig (2019), 'Fostering adaptive marine aquaculture through Procedural innovation in marine spatial planning', *Marine Policy* - Special issue (forthcoming in 2019), p.5.. See also Miguel F Frohlich, Chris Jacobson, Pedro Fidelman, and Timothy F Smith (2018), 'The relationship between adaptive management of social-ecological systems and law: a systematic review', 23(2) *Ecology and Society* 2018, p. 4.

[69] Niko Soininen and Froukje Maria Platjouw (2019), 'Resilience and Adaptive Capacity of Aquatic Environmental Law in the EU – an Evaluation and Comparison of the WFD, MSFD and the MSPD', in David Langlet and Rosemary Rayfuse, *Ecosystem Approaches to Ocean Planning and Governance: Experiences from Europe and Beyond* (Brill 2019) pp.17–79; Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach – Maintaining ecological integrity through consistency in law* (Routledge 2016).

[70] Eric Biber (2013), 'Adaptive Management and the Future of Environmental Law' 46(4) Akron Law Review 2013, p 934. See also Bernd Siebenhüner (2002), 'How do scientific assessments learn? Part 1. Conceptual framework and case study of the IPCC', 5(5) *Environmental Science & Policy* 2002, pp. 411–20; Arctic Council (2016). *Arctic Resilience Report,* M. Carson and G. Peterson (eds). Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm. http://www.arctic-council.org/arr Arctic resilience report 2016, p.156.

[71] Frank Groothuijse and Rosa Uylenburg, 'Everything according to plan? Achieving environmental quality standards by a programmatic approach', in Marjan Peeters and Rosa Uylenburg (eds), *EU Environmental Legislation – Legal* (*footnote continued*)
Perspectives on Regulatory Strategies *(Edward Elgar Publishing 2014)*.

[72] Council Directive 2000/60/EC of 22 December 2000 establishing a framework for Community. action in the field of water policy [2002] OJ L 327/22.

[73] Lorenzo Squintani and Heleen van Rijswick (2016), 'Improving Legal Certainty and Adaptability in the programmatic Approach', 28 Journal of Environmental Law 443, 444.

[74] Lorenzo Squintani and Heleen van Rijswick (2016), 'Improving Legal Certainty and Adaptability in the programmatic Approach', 28 Journal of Environmental Law 443, 444.

[75] Miguel F Frohlich, Chris Jacobson, Pedro Fidelman, and Timothy F Smith (2018), 'The relationship between adaptive management of social-ecological systems and law: a systematic review', 23(2) *Ecology and Society* 2018, p.8.

[76] Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach – Maintaining ecological integrity through consistency in law* (Routledge 2016).

[77] Miguel F Frohlich, Chris Jacobson, Pedro Fidelman, and Timothy F Smith (2018), 'The relationship between adaptive management of social-ecological systems and law: a systematic review', 23(2) *Ecology and Society* 2018, p. 6.

indicators, requirements for public participation, to name but a few. The frequency of adaptation and adjustments and the legal conditions related to these processes could be much better aligned and harmonized. Not only could this foster adaptive EBG, it will also be important in terms of ensuring transparency and predictability, and more generally the rule of law in the Artic. Values such as predictability and legal certainty are sometimes difficult to reconcile with the concept of adaptive governance and the need for flexibility.[78] Coherence in the design for adaptive governance in the context of certain activities or EBG tools across jurisdictions could contribute to legal certainty and predictability and strengthen adaptive EBG in the Arctic (see Fig. 4).

This section has identified three dimensions of legal coherence that could foster holistic, integrative and adaptive EBG in the Arctic. The next, and final, section, will shed some light on the role of the Artic Council, to understand better at which scale initiatives towards increased legal coherence could be taken.

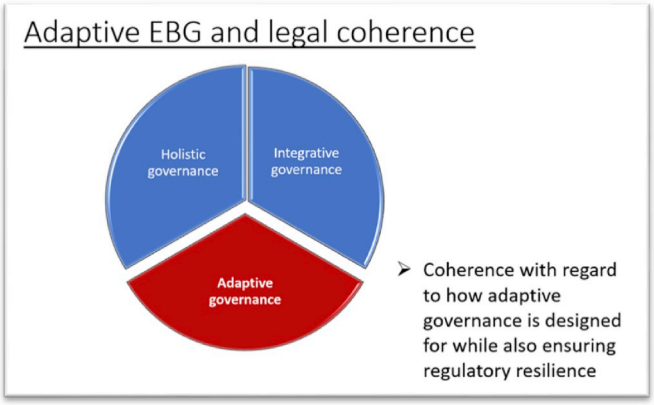

Fig. 4. Fostering adaptive ecosystem-based governance through legal coherence.

5. A role for the Arctic Council?

At the institutional level, the Arctic Council has been working on Arctic ocean management and ecosystem-based governance. The Arctic Council is an important intergovernmental regional forum promoting cooperation, coordination and interaction among the Arctic States, in particular on issues of sustainable development and environmental protection in the Arctic.[79] The Arctic Council consists of eight Arctic States members as well as six organizations with Permanent Participant status representing Arctic indigenous peoples. The work of the Arctic Council is primarily carried out in six Working Groups, including Arctic Contaminants Action Program (ACAP), the Arctic Monitoring and Assessment Program (AMAP), and the working groups on the Conservation on Arctic Flora and Fauna (CAFF), and the Protection of the Arctic Marine Environment (PAME).

EBG has been an important objective that the Arctic Council has encouraged actively. The Arctic Council has, for instance, adopted an EBG approach to ocean management as an overarching principle and approach of the Arctic states in its first Arctic Marine Strategic Plan in 2004. EBG has further become a foundation of the AC's work on ocean management and 'an important principle of the Arctic States'.[80] On May 12, 2011, the Arctic Council Ministers decided through the Nuuk Declaration to 'establish an expert group on Arctic ecosystem-based management for the Arctic Environment".[81] The Expert Group proposed a definition as well as nine principles for ecosystem-based management in the Arctic,[82] which to a large extent are compatible with the Malawi principles as developed under the CBD.[83] The Expert Group also endorsed adaptive governance as one of the principles for EBM and stated that "[s]uccessful EBM efforts are flexible, adaptive, and rely on feedback from monitoring and research because ecosystems and human activities are dynamic, the Arctic is undergoing rapid changes, and our understanding of these systems is constantly evolving".[84]

Despite the drive of the Arctic Council to support EBG, the necessary institutional capacity to implement this might be currently lacking. In 2015, a Task Force on Arctic Marine Cooperation was created to strengthen regional governance of the Arctic. The task force was requested "to assess future needs for a regional seas program or other mechanism" for the Arctic. The resulting 2017 report highlighted that due to the unprecedented rate of change in the Arctic Ocean, Arctic states would likely need "additional new institutional capacity" to tackle the challenges that would result. In May 2017, the Arctic Council Ministers "recognise [d] the increasing need for regional cooperation to promote the conservation and sustainable use of the Arctic marine environment" and gave the task force a new mandate: to present "terms of reference for a possible new subsidiary body, and recommendations for complementary enhancements to existing Arctic Council mechanisms, for consideration by Ministers in 2019."[85] It is uncertain whether the task force will be able to deliver on its mandate.[86]

There might in fact be more fundamental challenges that stand in the way of strengthening regional governance in the Arctic, at least with regard to EBG. In an effort to assess EBG practices in the Arctic, Norway initiated a project during its chairmanship of the Arctic Council in 2007–2009.,[87,88] The project, entitled 'The Best Practices in Ecosystems Based Oceans Management Project (BePOMAr) was developed as a series of case studies from seven out of eight member states to the Arctic Council. The seven cases – Canada, Denmark/Greenland, Finland, Iceland, Norway, Russia and USA – showed that the Arctic countries all pursue policy goals encompassing EBG. Hoel (2010) observes that the countries are very different however in terms of scales, decision-making structures, and levels of ambition.

To illustrate, the marine environment of the Arctic is divergent, and the properties of ecosystems are therefore very different. Moreover, regions of the Arctic vary with regard to types and levels of economic

[78] Miguel F Frohlich, Chris Jacobson, Pedro Fidelman, and Timothy F Smith (2018), 'The relationship between adaptive management of social-ecological systems and law: a systematic review', 23(2) *Ecology and Society* 2018, p. 4.

[79] 'The Arctic Council – A backgrounder', https://arctic-council.org/index.php/en/about-us website AC, visited 20.01.2018.

[80] Arctic Council (2015), *Arctic Marine Strategic Plan 2015–2025 - Protecting Marine and Coastal Ecosystems in a Changing Arctic,* PAME International Secretariat, Akureyri, Iceland. To illustrate, in the Actions for Arctic Biodiversity 2013–2021, CAFF recommended to "advance and advocate ecosystem-based management efforts in the Arctic as a framework for cooperation, planning and development." CAFF. 2015. *Actions for Arctic Biodiversity, 2013–2021: Implementing the recommendations of the Arctic Biodiversity Assessment.* Conservation of Arctic Flora and Fauna, Akureyri, Iceland.

[81] Arctic Council (2013), *Ecosystem-Based Management in the Arctic*, Report submitted to Senior Arctic Officials, Arctic Council, Tromsø, Norway.

[82] Arctic Council (2013), *Ecosystem-Based Management in the Arctic*, Report submitted to Senior Arctic Officials, Arctic Council, Tromsø, Norway.

[83] CBD, Conference of the Parties 4, 'Report of the Workshop on the Ecosystem Approach' (20 March 1998) UNEP/CBD/COP/4/Inf.9.

[84] Arctic Council (2013), *Ecosystem-Based Management in the Arctic*, Report submitted to Senior Arctic Officials, Arctic Council, Tromsø, Norway.

[85] David Balton, 'Will the Task Force on Arctic Marine Cooperation deliver?', 1 October 2018, available at https://arcticwwf.org/newsroom/the-circle/arctic-biodiversity/will-the-task-force-on-arctic-marine-cooperation-deliver/.

[86] Vito De Lucia, Christian Prip, Kristine Dalaker Kraabel and Raul Primicerio (2018), 'Arctic Marine Biodiversity in the High Seas between Regional and Global Governance', 9(1) *Arctic Review on Law and Politics* 2018, pp. 264–266.

[87] Alf Håkon Hoel (2010), 'Integrated Oceans Management in the Arctic: Norway and Beyond', 1(2) *Arctic review on law and politics*, p. 186-206.

[88] Alf Håkon Hoel (2010), 'Integrated Oceans Management in the Arctic: Norway and Beyond', 1(2) *Arctic review on law and politics*, p. 200.

activity. While the economic activities in some regions of the Arctic are mostly of a subsistence nature, in others they are commercial and large-scale. Finally, the governance systems of the various countries are not the same, providing for different ways of approaching oceans governance in general, and the challenge of ecosystem-based oceans governance in particular. The project demonstrated therefore that current practices among the Arctic states were very divergent and difficult to compare.[89] In general though, the Arctic states expressed their interest in increased cooperation and collaboration for the sustainable governance and protection of the Arctic.[90]

Overall, it could probably be argued that notwithstanding the legal and policy incentives for EBG in the Arctic and the Arctic Councils' efforts to encourage states to apply EBG (including adaptive governance) approaches in the Arctic, a coherent regional approach to the Arctic is currently lacking. Implementation is therefore mainly an internal task for the Arctic littoral states within their areas under national jurisdiction, and a common responsibility in the areas beyond national jurisdiction. Arctic states should strengthen bilateral or multilateral collaborations fostering legal coherence in their frameworks regulating important human activities in the Arctic, or with regard to important EBG tools such as MSP or MPA. Due to the range of complexities as outlined above in section 2, the process towards EBG in the Arctic can only be a gradual and pragmatic one, characterized by fostering transboundary legal coherence in the areas of major impact on Arctic resilience.

6. Conclusion

The Arctic is a complex geographical area to govern sustainably due to strong geopolitical and socio-economic interests, high ecological vulnerability and importance, and significant legal and institutional fragmentation. Intensifying human pressures in this area necessitate an ecosystem-based and adaptive governance approach, an approach that enables managing socio-ecological resilience in the Arctic. As the Arctic is a large geographic area crossing multiple national jurisdictions and maritime zones, including high seas areas, regionally coordinated and coherent governance approaches would be desirable. This paper assessed the status quo for EBG in the Arctic, and suggested a focus on three core components of EBG; holistic, integrative and adaptive governance. Despite the absence of a coordinated EBG approach to the Arctic and significant differences amongst Arctic states, legal and policy incentives persist. To move forward, this paper proposed three forms of legal coherence to foster EBG' core components. The Arctic Council appears to only have a limited role in further incentivizing transboundary EBG. For that reason, further action primarily needs to be taken at a national level through bilateral and multilateral collaboration efforts gradually working towards coherent legal frameworks facilitating the implementation of transboundary EBG in the Arctic.

[89] Alf Håkon Hoel (2010), 'Integrated Oceans Management in the Arctic: Norway and Beyond', 1(2) *Arctic review on law and politics*, p.200–201.

[90] The Arctic states often emphasized the need for increased collaboration and coordination under their chairmanship of the Arctic Council. See further, https://arctic-council.org/index.php/en/.