

Natural Marine Resource Management in a Changing Climate

On 13–14 June 2017, a workshop entitled “Natural Marine Resource Management in a Changing Climate” was held in Tromsø, hosted by the K.G. Jebsen Centre for the Law of the Sea (JCLOS) at the Faculty of Law at UiT The Arctic University of Norway, in collaboration with the Elisabeth Haub School of Law at Pace University, White Plains, New York. Two of the workshop’s presentations are being published simultaneously with this editorial, and a third was published earlier in this year’s volume (Vol 9, 2018) of *Arctic Review*.

The aim of the workshop was to re-examine management approaches of ocean and marine resources in light of global climate change by addressing the shortcomings of the legal and policy management systems of today and to discuss alternative models to and the further development of existing policies and processes. Over the past 50 years, humans have changed marine- and coastal ecosystems more rapidly and extensively than in any comparable period in human history to meet the growing need for aquatic ecosystem services crucial for sustaining economic and social development.¹ Climate change has added another layer of causes for change, which has made changes and their effects less predictable. This raises the question of the need to re-assess our policy goals for marine ecosystems and species, given the realities of the Anthropocene.² The Anthropocene concept in Earth system science indicates that the notion of environmental stability, a hallmark of much of the Holocene, is no longer valid. One example of this was given by one of the speakers at the workshop, Professor Robin Craig (University of Utah College of Law, United States), in relation to the management of living resources.³ In fisheries, climate change impacts not only impose new stresses on fisheries, such as changing temperatures, changing currents, and changing chemistry, but marine species’ responses are also undermining the very scientific assumptions that managers have used to set “sustainable” catch levels. Professor Robin Craig raised the question whether we may be at the point where we must choose between continued large-scale commercial marine fishing and leaving significant marine biodiversity to future generations.

It is not only policy goals that need to be re-assessed, the legal regime governing ocean issues is setting the premises for how we approach ocean management. As

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such it is imperative that we assess the ability of this regime to respond to changed conditions. The 1982 UN Convention of the Law of the Sea (LOSC) provides the jurisdictional framework within which all activity in the oceans and seas is carried out.⁴ The LOSC was codified under highly different circumstances than today, at a time when relatively stable environmental conditions contributed to a perception of enduring stability. Stability is still a key notion of today's international law. However, our changed reality leads to questions that the drafters of the LOSC could not have envisioned when negotiating its provisions during the 1970s and early 1980s. One of these provisions is whether the Law of the Sea is capable of responding to actual or expected human and environmental consequences of a changing climate to minimize harmful impacts, and whether Law of the Sea rules and principles are resistant to profound and continuous change in ocean systems. The Law of the Sea hence operates in the intersection between the need for stability and predictability and the need for it to adapt to and respond to changes and new challenges.

LOSC's ability to deal with the current challenges of sea level rise and maritime limits is one example of a new type of challenge for the law of the sea framework, a challenge not foreseen by the drafters of the LOSC. In her paper "Sea Level Rise and Shifting Maritime Limits: Stable Baselines as a Response to Unstable Coastlines", *Signe Veierud Busch* assesses the current status of the law regulating maritime limits which may be affected by sea level rise. She argues that the best solution is to adapt the law within the current legal framework of the Law of the Sea, as opposed to invoking the amendment procedures of the LOSC, a new supplementary agreement or creating new customary law.⁵

One of the topics repeatedly addressed during the workshop was whether existing management approaches are flexible enough to meet the challenges of today. Management approaches such as ecosystem-based management, integrated management, and dynamic ocean management were discussed in light of the overall question of being able to respond to changed circumstances. One of the main rationales behind the ecosystem approach is to facilitate adaptive management of marine environments and their resources. However, the new and rapid changes the marine environment is facing were not at the scale we see today when the policy goals for marine ecosystems and species were set. In her paper "Governing Marine Protected Areas in a Changing Climate – Private Stakeholders, Perspectives", *Xuechan Ma* looks at the private governance of MPAs. Most existing MPAs are governed by government agencies. However, Ma points out that the number of privately governed MPAs is expected to increase because of the global push to create more MPAs. In her paper, she examines what role different categories of private stakeholders can play in enhancing the effectiveness of MPA governance by assessing and reviewing selected examples of private MPA governance in different countries around the world. Her paper brings a new perspective to the discussion of the role MPAs can play in mitigating and adapting to climate change, by bringing into focus different factors of effective MPA governance. One of her findings is that diversity in the

institutions/stakeholders involved in governance systems is essential to enhance the resilience of MPA governance systems.

In the paper “Adapting the legal framework of natural marine resources management to climate”, *Vicky Tzatzaki* looks at how Greece has implemented the Marine Strategy Framework Directive (MSFD), which within the European Union is the main legal tool for the protection of the marine environment. As a member state of the European Union, Greece has, based on its implementation of the MSFD, developed legal structures to protect its marine resources from various threats, including climate change. By using Greece as a case study, Tzatzaki demonstrates that the MSFD provides for sufficient targets, indicators, and measures to be taken in order to safeguard the seas and their resources. However, she points out that both the MSFD and the domestic legal and policy management tools of Greece, focus mainly on the impacts of anthropogenic pressures on the marine environment, leaving aside the effects of climate disruption.

Management of natural marine resources is crucial to economic, social, and environmental development. Climate change is altering both access to, and the need for protection of, natural marine resources. Because natural marine resource management approaches and practices were developed under relatively stable climatic conditions in the last century, climate change related effects and implications necessitate a re-examination of these management and goal setting approaches. Development of legal structures to respond to climate change impacts will be vital for the future ability to maintain sustainable fisheries and provide for the protection of natural resources.

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Guest Editor

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1. Millennium Ecosystem Assessment, “Ecosystems and Human Well-being: Synthesis” (Washington DC: Island Press, 2005), 15.
2. The *Anthropocene* concept in Earth System science was proposed by Crutzen and Stoermer in the early 2000 to designate the time when humans began to decisively influence the state, dynamics and future of the Earth System: P. J. Crutzen, and E. F. Stoermer, “The Anthropocene”, in *Global Chang. IGBP 41 Newsletter*, 17–18.
3. Robin Kundis Craig, “Resilience Thinking and Marine Fisheries in the Anthropocene: Has the Time Come to Transition Away from Wild-Caught Fisheries to Aquaculture?”, Keynote presentation held at the workshop in Tromsø, June 13, 2017.
4. United Nations Convention on the Law of the Sea, adopted 10 December 1982, in force 16 November 1994, 1833 UNTS 396.
5. Signe Veierud Busch, “Sea Level Rise and Shifting Maritime Limits: Stable Baselines as a Response to Unstable Coastlines”, in *9 Arctic Review* (2018): 174–194, <https://arcticreview.no/index.php/arctic/article/view/1162>.
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