

Progress and Challenges in Making Canada's Ocean Laws and Policies Climate-Ready

Cecilia Engler, Phillip Saunders, and David L. VanderZwaag

Grasping Canadian ocean laws and policies is challenging for various reasons. Canadian marine environments along the Pacific, Arctic, and Atlantic coasts are naturally diverse, supporting distinct ecological niches, economic activities, and cultural values. Management of activities within Canadian waters has developed on a sectoral and regional basis in the context of shared federal, provincial, territorial, Aboriginal, and local responsibilities (Mageau et al. 2010). As a result, and despite the integrative aspiration of the *Oceans Act*,¹ the legal and regulatory framework is fragmented and tangled. Multiple global and local drivers of change contribute to this complexity. The greatest challenges are, arguably, climate change and ocean acidification, which will profoundly transform these interdependent coastal and marine social-ecological systems.

Climate change law and policy are evolving both internationally and domestically. Earlier scholarship focused on mitigation law, including tools and incentives to reduce greenhouse gas (GHG) emissions (Craig 2010; Ruhl 2010). Oceans were mostly absent from early climate change mitigation debates (Hoegh-Guldberg et al. 2019), but there is growing recognition of oceans' potential contribution to mitigation efforts. They include ocean-based renewable energies, enhanced blue carbon ecosystems, fertilization, alkalization, or carbon sequestration (Gattuso et al. 2018).

Increasingly, attention on the part of practitioners and academia has shifted to adaptation law, which is a far more complex legal problem (Craig 2010). Climate

change will impact all components of social-ecological systems, and adaptation efforts are not “owned” by any particular discipline, sector, or actor. Thus, climate change adaptation needs to be *integrated* in our legal systems as a whole, particularly in environmental and natural resources law.

Legal challenges of climate change adaptation are even more profound, however. Traditional environmental law has centred on stationary visions of ecosystems, i.e., the “idea that natural systems fluctuate within an unchanging envelope of variability” (Craig 2010). Anthropogenic impacts are considered unnatural and degrading but non-transformative and therefore generally reversible (Craig 2010). This understanding has informed the general goal of environmental law (ecosystem preservation and restoration) and the design of regulatory interventions (Craig 2010; Garmestani et al. 2019). However, climate change (alone and cumulatively and synergistically with other anthropogenic stressors) is pushing ecosystems to non-analogue realities where this regulatory assumption and the associated regulatory goals and tools are increasingly unhelpful (Craig 2010; Garmestani et al. 2019). Climate change will require not only the *integration* of climate change risks into environmental law but also a transformation of goals, requirements, standards, and prohibitions in order to adapt to changing social-ecological systems and to allow these systems to exercise their own adaptive capacity (Garmestani et al. 2019; McDonald et al. 2018).

Legal scholarship has outlined some key features of new legal systems under climate change. These include