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A Sustainable Ocean Economy, Innovation and Growth: A G20 Initiative

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Key Points

- The Group of Twenty (G20) should initiate a global ocean governance process and call for dialogues, strategies and regional cooperation to ensure that investment and growth in ocean use become sustainable and reach their full potential.
- The ocean is the largest and most critical ecosystem on Earth, and potentially the largest provider of food, materials, energy and ecosystem services. However, past and current uses of the ocean continue to be unsustainable, with increasing demand contributing to the ocean's decline.
- Better governance, appreciation of the economic value of the ocean and “blue economy” strategies can reduce conflicts among uses, ensure financial sustainability, ecosystem integrity and prosperity, and promote long-term national growth and employment in maritime industries.

Challenge

Germany's G20 presidency can help strengthen the growing ocean economy by calling for national ocean or blue economy development frameworks, coordination among coastal and ocean states, and for integrated and ecosystem-based management ensuring the ocean economy is sustainable.

The G20 countries have a special responsibility toward the ocean. They are all coastal states with 45 percent of the world's coastline among them, and jurisdictional responsibility over 21 percent of exclusive economic zones (Shugart-Schmidt et al. 2015). Argentina and India are committed to addressing the ocean economy in their upcoming G20 presidencies. Complementing the G20, Italy's current Group of Seven (G7) presidency has a broad ocean agenda, with a focus on cooperation in regional seas, building on the presidencies of Germany (2015) and Japan (2016). Canada may consider the ocean in its G7 presidency in 2018.

The ocean covers 71 percent of the earth's surface and provides both renewable and non-renewable resources that sustain hundreds of millions of livelihoods in coastal areas and on islands, and in inland areas. Eighty percent of life on Earth is in the ocean, 50 percent of the available oxygen is from the ocean, which is also the largest carbon sink, absorbing about one-quarter of the carbon dioxide (CO₂) emitted, thus reducing global warming.

About the Author

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It also absorbs 90 percent of the additional heat caused by greenhouse gas emissions.

The ocean's productivity is greatly reduced and likely to deteriorate further because of overfishing and destruction of ecosystems by bottom trawling, seabed mining and offshore industries (for example, oil and gas extraction), pollution from maritime industries and land-based activities, urban development of coasts, acidification caused by emissions from fossil fuels, and warming of the ocean. The rapid acidification destroys critical ecosystems, such as coral reefs, and the ocean's ability to provide fish and seafood as a source of protein in 20 to 30 years. Current trends cannot be allowed to persist, or there will be 1 kg of plastic waste in the ocean for every 3 kg of fish by 2025. More plastic in the ocean, with many of the chemicals they contain, poses a great risk of contaminating the food system. Marine litter, which is mostly plastic, was an issue in the G7 presidencies of Germany (2015) and Japan (2016).

The ocean is a great potential driver of economic growth, jobs and innovation, and is expected to provide economic opportunities in the future. The (lower bound) of the value of key ocean assets has been estimated at US\$24 trillion and the value of derived services at US\$2.5 trillion per year (Hoegh-Guldberg 2015; Lillebø et al. 2017) or US\$1.5 trillion without non-market benefits (Organisation for Economic Co-operation and Development [OECD] 2016). This is equivalent to between three and five percent of global GDP or similar to the economic size of France or California.

The value of the ocean is reduced by environmental pressures from overfishing, climate change, pollution, loss of habitats and biological diversity, and urban development of coasts, which are symptoms of weak ocean governance (Global Ocean Commission [GOC] 2014; 2016). Despite progress with the UN Convention on the Law of the Sea (UNCLOS), there are gaps and outdated approaches in ocean-related policy and law, and severe shortcomings in implementation and law enforcement, resulting in many unregulated, partly illegal activities, and inadequate or non-existent stewardship of many parts of the ocean. Bad governance increases investment risks and holds back growth of a sustainable ocean economy.

The challenge is now understood, but meaningful action is still pending. Sustainable Development

Goal (SDG) 14¹ is a universally agreed instruction to conserve the ocean, seas and marine resources, and use them sustainably — with a focus on the access and benefits for small island states and small-scale fishers. The UN Ocean Conference in June 2017 highlighted the ocean’s importance for sustainable development and the relationship between a healthy ocean and the other SDGs. The UN climate negotiations are also considering the ocean’s role in the climate system, and the effects of global warming, ocean acidification, the increased energy in the ocean that has been added as a result of fossil energy burning over the past two centuries, and accelerating sea-level rise on island and coastal communities, and their adaptation needs.

Proposal

The ocean or the blue economy — the human use of the ocean — is rapidly expanding. We are at the threshold of a new wave of industrialization and exploitation of the ocean (McCauley et al. 2015). It holds the promise of more innovation, growth and jobs (United Nations Environment Programme [UNEP] et al. 2012; UNEP 2015; OECD 2016; Patil et al. 2016; Rustomjee 2016a; 2016b; Bhatia 2017a; 2017b). As the ocean economy expands, the world must ensure that maritime industries and the use of ocean space, resources and ecosystems are ecologically sustainable; economic activities must be in balance with the long-term carrying capacity of the ocean ecosystems (Visbeck et al. 2014; Silver et al. 2015). They also need to be sensitive to regional differences and conditions (see, for example, Kildow 2016; Bhatia 2017a; 2017b) and demands on resources.

In parallel, it is important to acknowledge that different measures to support conservation of ocean ecosystems and biological resources (for example, the designation of marine protected areas [MPAs]), can generate economic benefits — both to individual sectors and to society overall — through the delivery of wider ecosystem services and increased human well-being. The realization of such synergies, however, depends on various factors, including that the MPAs and their regulatory measures are designed and managed

in collaboration with relevant stakeholders, that sufficient resources are allocated for effective monitoring and enforcement and that any benefits accrued are shared fairly (Russi et al. 2016). Valuable as well-managed MPAs with effective enforcement may be, they are no substitute for effective governance of the whole ocean.

Understanding of the links between economic development and maintaining environmental sustainability in the marine environment is still developing, but action cannot wait. The state of the ocean is anything but satisfactory (UN 2016). Past experiences with whaling, fishing of species to (commercial) extinction and the aggregate effects of marine pollution should be warnings (G7 Science Academies 2015; Spalding 2016; Arnason, Kobayashi and de Fontaubert 2017). The current state of the ocean and projected future exploitation and use calls for G20 leadership to ensure the new ocean economy is “green,” that the integrity and productivity of ocean ecosystems are maintained and, where possible, restored (Visbeck et al. 2014; Golden et al. 2017).

The responsibility of the G20 countries in the global community goes beyond their shares of coastlines and marine areas. The world is looking to them to provide robust coastal and ocean governance and leadership in protecting the ocean, maintaining the integrity of its ecosystems and using ocean resources sustainably. The ocean is clearly an important part of the world economy, and a potential driver of sustainable growth in the future; however, this growth is only possible with better and more complete ocean governance and blue economy strategies that break past trends.

The consequences of unsustainable patterns of (largely terrestrial) industrialization, production and consumption on the ocean can be illustrated. The rise of gross world product (global GDP) is coupled closely with plastic waste dumped and washed into the ocean, the rise in “dead zones” in the ocean (where there is no oxygen to sustain the ecosystem) and overfishing. These are just a few of the many interlocking challenges that need to be addressed to ensure ocean health, the integrity and productivity of ocean ecosystems and, thus, the sustainability of the ocean economy, which also needs protection from harmful economic activities on land and in the atmosphere. Each of these challenges is the consequence of activities in different sectors, and subject to regulation or the absence of regulation, or its enforcement, by

1 UN SDG 14: “Conserve and sustainably use the oceans, seas and marine resources for sustainable development.”

different departments of government, international bodies or agreements. The lack of integrated and adaptive management of maritime industries — the lack of effective ocean governance — is an overarching challenge that heads of state and government must address in the G20.

A Selection of Pertinent Challenges on the Way to a Sustainable Ocean Economy

Global marine fisheries are declining (Food and Agriculture Organization [FAO] 2016): almost one-third of those assessed are considered as overfished (compared to just 10 percent in 1974), and another 58 percent are considered fully fished with no room for further expansion. Ninety percent are thus fully fished or overfished. The result is not only a threat to nutrition and human health (Golden et al. 2016), but also lost economic benefits of approximately US\$83 billion a year (Arnason, Kobayashi and de Fontaubert 2017). Reducing overfishing would allow highly exploited and overexploited fish stocks to recover over time. Subsequently, the combination of larger fish stocks and reduced but sustainable fishing activities would lead to higher economic yields and increased production of goods. Yimin Ye et al. (2013) suggest an additional 16.5 million tons of fish could be sustainably harvested from the ocean per year. However, to reach that equilibrium, comprehensive and coordinated reforms are necessary (see also Onguglo, Vivas Eugui and Cusi 2016).

Offshore oil and gas industries have expanded markedly over the last decades, with drilling more frequently moving into deep and ultra-deep waters, which increases threats to the environment and natural resources, as well as human activities and the industries that depend on the integrity of ecosystems. The current regulatory framework for oil and gas industries has significant gaps (Rochette et al. 2014). Following the Deepwater Horizon accident in 2010, the G20 recognized “the need to share best practices to protect the marine environment, prevent accidents related to offshore exploration and development, as well as

transportation, and deal with their consequences” (G20 Leaders 2010, para. 43). Although the GOC addressed the issue, there is no substantial initiative, apart from the proposed oil and gas safety protocol under the Abidjan Regional Seas Convention, and offshore oil and gas remains the least regulated maritime industry of all.

The dynamics of ocean and climate (atmosphere) systems are better understood now than in the past. The ocean moderates warming of the atmosphere by absorbing a considerable amount of the additional heat that is being generated. This has major impacts on ocean ecosystems and the behaviour of the ocean itself (Gattuso et al. 2015), particularly its acidification. Policy interlinkages between the ocean and climate have yet to be built as strongly as they should be. As a first step, and in view of the Paris Agreement, governments should integrate ocean-related components in their nationally determined contributions for climate protection in order to minimize the adverse effects of climate change on the ocean and to contribute to its protection and conservation.

Seabed mining is currently seen as both the potential greatest opportunity for short-term growth in the ocean economy and as the gravest emerging threat to the integrity and productivity of marine ecosystems. There are concerns about irreversible losses caused by an unpremeditated and uncontrolled expansion of sea-bed mining before environmental impacts have been understood and properly assessed. There is a risk of undermining trust in and acceptance of the ocean economy, which may be mitigated by improving the transparency of sea-bed mining and its regulation and oversight (Christiansen et al. 2016).

Pollution, mostly from land-based sources, remains a major threat to the ocean economy, with impact on fisheries, fish farming and other seafood production for human consumption, and on wider ocean ecosystems, as well as tourism. Five large marine ecosystems are now most at risk, all of them affected primarily by emerging economies with insufficient policy frameworks to avoid and reduce pollution: the Bay of Bengal, the East China Sea, the Gulf of Mexico, the North Brazil Shelf and the South China Sea. Dead zones, areas deprived of oxygen in the deep ocean, are expanding, and the deoxygenation of ocean waters is increasing. The solution requires many and varied policy responses — from land use planning in coastal areas and flood plains, to

waste management and the transition to a circular economy, and improvements to the design and management of waste water treatment systems.

Plastic — marine litter or marine debris — is a threat to the ocean that has gained some attention in recent years, from media, non-governmental organizations (NGOs) and business entrepreneurs, as well as policy makers. It is increasingly recognized that the damage to the ocean ecosystems also creates risks to social and economic systems (Oosterhuis, Papyrakis and Boteler 2014; Watkins et al. 2017; Brouwer et al. 2017). There is an urgent need for a wide range of policies to keep plastic and its value in the economy and out of the ocean, and the responses so far are far from what will be required. The new political focus on the circular economy offers a window of opportunity to encourage upstream measures (for example, product design and multi-use products), consumer measures (for example, awareness and pricing to inform purchasing and waste disposal habits) and downstream measures (for example, collection and recycling) (ten Brink et al. 2016).

SDGs as a Framework for Leadership

The UN SDGs provide a starting point for the integration of numerous challenges into one conceptual framework for action (Nilsson, Griggs and Visbeck 2016). SDG 14 recognizes the role of the ocean for future economic, social and ecological development. SDG 14 seeks to “conserve and sustainably use the oceans, seas and marine resources for sustainable development” and, most importantly, is linked in one way or another to 97 of the 159 targets in other SDGs. It may indeed be the most cross-cutting SDG of all (Unger et al. 2017). The interactions of the various SDGs with the ocean (and therefore SDG 14) are particularly important in relation to:

- SDG 1: “End poverty in all its forms everywhere,” especially and directly in islands and coastal communities, but indirectly everywhere, which is indispensable for sustaining (subsistence) livelihoods;
- SDG 2: “End hunger, achieve food security and improved nutrition and promote sustainable

agriculture,” especially with seafood from the ocean being an important source of protein and micronutrients, and indispensable for sustaining (subsistence) livelihoods;

- SDG 6: “Ensure availability and sustainable management of water and sanitation for all,” where concern over ocean health can drive improvements in land-based water supply and sanitation;
- SDG 7: “Ensure access to affordable, reliable, sustainable and modern energy for all,” with ocean and off-shore renewable energy a large potential source of sustainable energy;
- SDG 8: “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all,” through the contribution of the ocean economy to innovation, and further growth and employment;
- SDG 9: “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation,” where concerns about ocean health and its environmental integrity need to be integrated into the choice, design, location, and management of infrastructure and patterns of industrialization;
- SDG 10: “Reduce inequality within and among countries,” because a sustainable and equitable ocean economy would, for example, ensure access for small-scale fishers, which constitute the largest employment category in the ocean economy and are among the bottom 40 percent of the population by income; this would benefit developing coastal and island populations, which are also part of the global bottom 40 percent by income;
- SDG 11: “Make cities and human settlements inclusive, safe, resilient and sustainable,” with coastal regions at risk of being damaged or even lost because of climate change-induced storms and sea-level rise; coastal cities may become “underwater assets,” literally;
- SDG 12: “Ensure sustainable consumption and production patterns,” both of resources, products and services derived from the ocean, and of (land-based) production and consumption affecting the ocean (for example, plastic litter); and

- SDG 13: “Take urgent action to combat climate change and its impacts,” with the interface of “ocean” and “climate” being perhaps the most important interaction between any two SDGs.

This leadership framework is conceptual but, at this point, not programmatic or strategic. It highlights the possible synergies among the SDGs, where attainment of one goal will make it not only easier to attain others, but will also increase the return on investment for reaching the other goals. However, the SDG framework lacks clarity on the processes and instruments for ensuring a sustainable ocean economy.

Ocean or Blue Economy Strategies for Guiding and Coordinating Action

A framework for action can be provided by ocean or blue economy development frameworks, spelled out by, *inter alia*, the World Bank (2016) and the Prince of Wales’s International Sustainability Unit (ISU). There are various standards relating to marine activities that are thus relevant to the ocean economy (Potts et al. 2016), but no international agreement or standards are yet in place regarding an ecologically sustainable blue or ocean economy (National Maritime Foundation 2017).

Ocean or blue economy strategies following ecosystem-based management practices should be developed in dialogue with all relevant stakeholders, including representatives for public interests, such as health, conservation, the environment and consumer interests. Dialogues should take regional circumstances and geographic characteristics into account and be mindful of the specific needs and limitations of each case. In general, however, ocean or blue economy dialogues and strategies, drawing from and building on the initial concept of the ISU, should include, *inter alia*:

- The understanding of socially, economically and ecologically sustainable international ocean governance as a means of international (economic and political) cooperation as well as international peace building and thus “*pacem in maribus*” — the most sustainable basis for economic and social progress and

ecological sustainability (Mann Borgese 1999; Ekstrom et al. 2009; Fritz 2016).

- Articulation of blue economy principles for guiding investment, based on consensus among actors in government, among stakeholders and in business. The principles should ensure the environmental sustainability of all ocean activities and investment, broad access to opportunity and fair sharing of benefits. This should include mechanisms to ensure that a fair and sufficient share of the expected financial gains is re-invested in the restoration, protection and sustainable management of ocean ecosystems and ocean-dependent communities.
- Mapping the state of the ocean and its ecosystems, and the ecosystem services it provides, including trends and the outlook, and mapping in geography and seasonal variations of all investments and activities in marine and coastal areas. This should include relevant land-based and airborne activities that impact the marine environment.
- Linking the status of the marine environment, trends and outlook to activities (as mapped). This analysis should include subsistence livelihoods and activities not captured in the money economy and provide the basis for identifying risks and opportunities as well as formulating value propositions for the ocean or blue economy.
- Mapping of data, information, knowledge and gaps, research capacities and needs.
- An assessment of the current allocation of competences in government and administration, including gaps and options for improvement and reform. This should include consideration of any overlaps with neighbouring countries sharing access to or draining into (enclosed) seas.
- Mechanisms and incentives at the country and regional level to implement measures to protect the ocean as an asset providing ecosystem services as the basis for the ocean economy, including commitments contained in international agreements (for example, SDG 14).
- Creating EU standards and protocols for mapping, protecting and promoting European maritime heritage sites.

→ Investing in the scientific knowledge of ocean ecosystems — at each of the ecosystem, species and genetic levels — should be a high priority. An appreciation of both the intrinsic values and anthropocentric values, given the multiple (potential) social and economic values of the ocean ecosystem services is needed, as is an understanding of risks to these from climate change and other man-made pressures. The ocean can be seen as the largest “living laboratory” with more than one billion years of “experimentation” and, hence, a, to date, largely untapped “library of life.”

The G20 should encourage scientists, ocean economy practitioners, civil society organizations and governments to develop, on this basis, international agreement and standards regarding an ecologically sustainable blue or ocean economy. One way would be to convene stakeholders and existing ocean data collection initiatives to identify a set of essential ocean economy variables — built as much as possible on existing data collection. The purpose might be to incorporate a small but critical set of G20 economic indicators that can be tied to existing marine data collection to offer the first global set of indicators on the sustainability of the ocean economy.

Building Ocean Economy Development Strategies and Regional Partnerships

Most of marine biodiversity is found and marine fish catch occurs predominantly in the exclusive economic zones that can be regulated by coastal states (Sumaila et al. 2015). The development of effective ocean economy strategies and the implementation of SDGs and related targets is, first and foremost, the responsibility of the national authorities. States must transpose these commitments into standards and policies, establish monitoring mechanisms and provide regular reporting on actions undertaken. The implementation of SDG 14 will, however, fall short of the transformative ambition of the Agenda 2030 without an effective coordination between states, in particular at the regional level, with a focus on regional seas, especially enclosed and

semi-enclosed seas, or migratory fish populations and other marine life and non-living resources.

Over recent decades, regional organizations and mechanisms have proved to be effective in fostering marine conservation and sustainable ocean management (GOC 2014; 2016). They are a cornerstone of marine ecosystem-based management, the best-known practice to facilitate long-term sustainability, and have frequently succeeded in securing greater commitments by states and stakeholders than global instruments (Rochette et al. 2015). Their inclusive nature facilitates cooperation among national and local stakeholders, fosters peer-to-peer learning and invites the involvement of civil society in decision-making processes, allowing for the ecological, economic, political and cultural characteristics of marine regions to inform policy and practice.

Regional partnerships should, therefore, be developed and bring together states, regional and global organizations and mechanisms, and a broad spectrum of stakeholders, including NGOs, research centres, private sector actors and donors (Unger et al. 2017). The regional partnerships would provide mechanisms through which countries and competent organizations could cooperate toward the harmonized implementation of the 2030 Agenda for the oceans, especially SDG 14, and other measures to address sustainability challenges, in particular where these are subject to different legal regimes or call for cross-cutting action (Bhatia 2017a, 2017b). Ocean acidification and overfishing both fall within the latter category, for example. Moreover, regional partnerships are well placed to respond to the integrated nature of the 2030 Agenda and to establish linkages among different sectors.

The High Seas, Areas beyond National Jurisdiction and the Ocean or Blue Economy

Developing a sustainable and prosperous ocean or blue economy in areas beyond national jurisdiction or the high seas presents a complex set of challenges. Some of these are currently being addressed in the development of rules for the extraction of deep-sea or seabed minerals within the aegis of the International Seabed Authority (ISA), or the exploitation of biological diversity in areas beyond national jurisdiction (ABNJ) under the UN Convention on Biological Diversity (CBD).

These and other approaches cannot do justice to the interconnected nature of the challenges, and a more overarching, global governance framework to complement the regional and sectoral agreements, mechanisms and institutions remains to be established. This will require significant additions and changes to UNCLOS, notably to make the laws and institutions concerning the high seas compatible with and contributing to achieving SDG 14 on the ocean.

Financing the Ocean Economy, with an Eye on Poor, Small and Vulnerable Countries

Recognizing that the ocean economy offers pathways to economic and social transformation, growth and sustainable development, many African, Caribbean, Pacific and other poor and small developing countries are building robust national frameworks and enhancing regional cooperation to strengthen the intersectoral and intragovernmental planning and coordination necessary to transit to the blue economy. But many institutional, governance and financing impediments remain, which are beyond the ability of these countries

to address and require concerted international support. Among many challenges, two stand out:

→ Identifying and securing sources of long-term financing for the investments needed in enabling infrastructure for these countries to transform from terrestrial to integrated land, coastal and maritime sources of production, employment and growth. There are large unfilled sectoral financing gaps, including in protecting and conserving ocean resources and ecosystems, fisheries, aquaculture, promoting food security and increasing sustainable productivity in marine food systems, sustainable tourism, coastal and maritime transport, ocean renewable energy, marine bioprospecting, protection and management of habitats, water supply and infrastructure, as well as other new ocean economy activities and sectors. The G20 can help address this challenge in at least three ways, including:

- supporting the establishment of a catalytic fund to support the transition of these countries to the blue economy, including dedicated resources to finance conservation and blue growth;
- recommending and encouraging increased resources and the development of new financing instruments by international financial institutions and regional development banks to support blue economy investment; and
- encouraging and supporting innovative financing for the blue economy, including accelerating the development and financing of blue bonds and developing new initiatives to price blue carbon.

→ New international initiatives to improve the valuation of marine ecosystem services, as the value of these services as a global public good is poorly quantified, limiting the opportunity for poor and small states to claim value from their efforts to help manage these services. The G20 can examine how similar global agreements to compensate for forestry conservation and sustainable management, such as the United Nations Framework Convention on Climate Change's Reducing Emissions from Deforestation and Forest Degradation mechanism, can be developed to recognize the services provided through marine ecosystem conservation and

management; can put forward proposals for such an initiative; and can catalyze new international initiatives to promote global accord on the goals, targets and measures that can most effectively protect and manage marine ecosystems.

As a first practical step, the G20 can simultaneously establish a G20 expert group tasked with examining the most practical opportunities for supportive G20 action, and can convene a broad consultative meeting of G20 members, together with small and other developing countries, to develop a focused, collaborative joint agenda and program for this purpose.

Implementation

Overview: Text for a G20 Summit Declaration

A future G20 summit or ministerial meeting might adopt the following in order to recognize the importance of a sustainable ocean economy and establish a process to make it sustainable:

The Ocean Economy

We are concerned about the state of the ocean and deteriorating trends, and recognize that the ocean economy is a last chance to reconfigure extraction, production and consumption to ensure that social and economic development respects the planetary boundaries, the integrity of ecosystems to maintain their productivity and the principles of sustainable development as expressed in the UN SDGs, notably SDG 14. In view of the potential contribution of the ocean economy, we call on scientific and business communities, civil society organizations and governments to develop and agree on criteria, principles and standards for ecologically, socially and economically sustainable management of ocean space, resources and ecosystems.

Recognizing the importance of the ocean, its economic, cultural and environmental value and the role of the maritime industries for employment and growth

opportunities, and its importance for international cooperation and cross-regional peace building, we commit to improve the sustainability of the ocean economy and to build ocean and coastal resilience. In line with the G20 leaders' communiqué in Hangzhou, paragraph 21 on sustainable growth, we believe that also in the ocean space efforts could be made to provide clear strategic policy signals and frameworks, promote voluntary principles for blue finance, expand learning networks for capacity building, support the development of local blue bond markets, promote international collaboration to facilitate cross-border investment in blue bonds, encourage and facilitate knowledge sharing on environmental and financial risks, and improve the measurement of blue finance activities and their impacts.

We further commit to identifying in each of our governments a focal point for international ocean governance and the ocean economy, and so to promote policy coherence and enforcement across sectors as well as across different scales, including improved international coordination. We invite them to submit a joint report on the ocean economy status, trends, outlook and a concept for an integrated sustainable ocean governance framework, including concrete actions for the G20 to ensure its global implementation.

Existing Agreements

There is an emerging "mainstream" of political commitments, but no legally binding agreements (yet) in support of ocean economy development dialogues and frameworks. The concept of and demand for an ocean or blue economy development framework has been verified in different forms, including by:

- the ministers of finance at the World Bank Spring Meeting in April 2016;
- the Grenada Blue Growth Week in May 2016;

- a series of meetings between public and private-sector institutions convened by the Prince of Wales's ISU; and
- the European Commission, with an explicit commitment to a blue growth strategy framework at the Our Ocean conference in Washington, DC, in September 2016, which was supported by the World Bank; the European Commission also has specific regional strategies (for example, the Baltic Sea basin strategy of the European Union).

Building on earlier initiatives (European Commission 2012a, 2012b), the institutions of the European Union published a joint communication for the future of the ocean in November 2016. The development of a blue economy development framework is among the 50 points in the agenda: "In 2017, the [European] Commission and the High Representative will support the development of a robust, evidence-based Blue Economy Development Framework" (European Commission 2016, 9; detail provided by European Commission 2017). It was based on a consultative process initiated by the European Commission on how best to strengthen policy coherence and comprehensiveness on improving its marine international governance framework. Part of this are the recent shifts toward international ocean governance, a new marine spatial planning approach (European Union 2014), a focus on tourism (European Commission 2014a) and the Marine Knowledge 2020 initiative (European Commission 2014b, 2014c).

Heads of state and government from Africa are said to have adopted the African Union Charter on Maritime Security, Safety and Development on October 15, 2016 (Lomé Charter), to establish a road map for protecting the ocean and seas around Africa in view of promoting and securing a sustainable blue economy. The charter awaits publication.

In addition to UNCLOS, other instruments are relevant to the conservation and sustainable use of marine biodiversity in ABNJ, including:

- regulations adopted by the ISA for the protection and preservation of the marine environment;
- the CBD;
- instruments adopted by the FAO relevant for fisheries;

- measures adopted in the context of the International Maritime Organization (IMO) on point and non-point sources of pollution; and
- trade and intellectual property, such as measures considered in the context of the World Trade Organization and the World Intellectual Property Organization.

United Nations General Assembly Resolution 69/292 established a process to develop a new, legally binding high-seas marine biodiversity treaty in the form of an agreement under UNCLOS.

States are committed to complete a preparatory process toward a decision on the opening of a formal treaty negotiation by September 2018. Two final UN preparatory committee meetings to prepare occurred in March and July of 2017 in New York. The UN Conference on Small Island Developing States, meeting in Apia, Samoa, in 2014, presented a "Blue Economy Concept Paper."² The FAO has created a Blue Growth Initiative (described in FAO 2016) to accelerate its work in support of sustainable management of living aquatic resources, balancing their use and conservation in an economically, socially and environmentally responsible manner. Following the Paris Agreement, the Intergovernmental Panel on Climate Change decided to prepare a special report on climate change and the oceans and the cryosphere (that is, the frozen water part of the earth system).

Author's Note

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² The concept paper is available at www.sids2014.org/content/documents/275BEconcept.pdf.

Appendix

Existing Policies and Monitoring, and New Initiatives

To date, there is a paucity of overarching policies to ensure the sustainability of maritime industries, ocean uses and the future of the ocean economy. Even sectoral policies or regional management organizations often suffer from a lack of information, instruments, resources and political will for effective implementation.

Despite the best efforts of government agencies, civil society and the scientific community, and caused by a lack of funding and political will, there are generally poor data on the ocean and its ecosystems and how human pressures interact with these. Further, available observation systems and data are sometimes not acted upon. There are no high-resolution maps of the seabed and marine environment. This lack of data, information and conventions for visualization (in maps) presents a major challenge for the good governance of the ocean.

The state of the ocean, the rate of deterioration, and projected trends imply that governance needs to be strengthened with urgency and action be taken without delay. While there is a need for investment in ocean observation to improve the knowledge base, governance cannot wait and must act on the strength of current data, information and knowledge. The international ocean governance framework is being developed to fill some of the gaps:

- Under the CBD, a process is under way for identifying ecologically or biologically significant areas in ABNJs, which might then be protected from harmful activities to safeguard their ecological or biological integrity and productivity (Ardron et al. 2014; Dunn et al. 2014; Bax et al. 2016).
- In its resolution 69/292 of June 19, 2015, the UN General Assembly decided to develop an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of ABNJ.
- A number of heads of state and government meeting during the twenty-first session of

the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21) in Paris signed the “Because the Ocean” Declaration (November 29, 2015) pledging to address the ocean-climate nexus. A second such declaration was signed at COP 22 in Marrakesh on November 14, 2016.

While the United Nations, with UNCLOS and the CBD, provides the right forum and framework for the development of international law, the G20 should support the process by providing leadership and initiate a review of the ocean or blue economy, including marine spatial planning and adaptive ecosystem-based management. Much can be accomplished by states working through UNCLOS, on the condition that they act and address deficits in implementation.

Resources

The United Nations General Assembly set up, in 2004, the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including socioeconomic aspects. The first output was the first global integrated assessment of the marine environment — World Ocean Assessment I. The summary of this was approved by the United Nations General Assembly in December 2015.

The Ocean Action Hub³ aims to facilitate multi-stakeholders’ engagement as part of the preparatory process for the Ocean Conference, bringing together governments, the UN system, intergovernmental organizations, international financial institutions, NGOs, civil society organizations, academic institutions, the scientific community, private sector, philanthropic organizations and other actors to assess challenges and opportunities related to SDG 14.

Our Ocean is a series of high-level conferences of governments and civil society organizations, initiated by the United States in 2016. Our Ocean 2017 will be in Malta (hosted by the European Union), followed by Indonesia (2018) and Norway (2019).

The Economist hosts an annual series of World Ocean Summits.

3 See www.oceanactionhub.org/.

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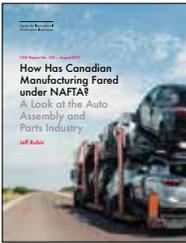
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Acronyms

ABNJ	areas beyond national jurisdiction
CBD	Convention on Biological Diversity
CO₂	carbon dioxide
COP	Conference of the Parties
FAO	Food and Agriculture Organization
G7	Group of Seven
G20	Group of Twenty
GOC	Global Ocean Commission
IMO	International Maritime Organization
ISA	International Seabed Authority
ISU	International Sustainability Unit
MPAs	marine protected areas
NGOs	non-governmental organizations
OECD	Organisation for Economic Co-operation and Development
SDG	Sustainable Development Goal
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme

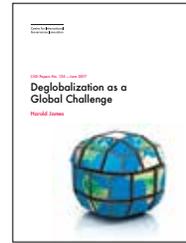
CIGI Publications



How Has Canadian Manufacturing Fared under NAFTA? A Look at the Auto Assembly and Parts Industry

CIGI Paper No. 138
Jeff Rubin

Under duty-free trade provided by NAFTA, local vehicle assembly and parts jobs and production in both the United States and Canada have been traded to Mexico for higher industry profit margins and lower vehicle prices for North American consumers. With the Trump administration pledging to renegotiate NAFTA and specifically target Mexico's burgeoning assembly and parts industries, what are the best trade policy options for Canada's largest manufacturing sector and exporter?



Deglobalization as a Global Challenge

CIGI Paper No. 135
Harold James

The world is threatened by backlashes against globalization, or "deglobalization," and, remarkably, these are particularly pronounced in the countries that drove the construction of an international order in the second half of the twentieth century. There are also attempts to build an alternative new "globalization 2.0." This paper looks at the interrelations between moves toward trade protection, the limitations of movements of people, the regulation of capital flows and the attempts to restrict information access.



De-risking: Effects, Drivers and Mitigation

CIGI Paper No. 137
James A. Haley

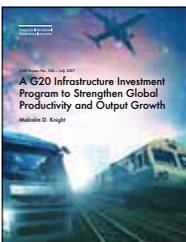
This paper examines the phenomenon of de-risking, or the loss of financial services as large international banks close or curtail correspondent banking relationships with banks in smaller jurisdictions. It outlines the effects of de-risking and identifies a range of possible measures to mitigate them. Today, global banks operate across a range of jurisdictions, regardless of the country in which they are licensed; therefore, an effective strategy for addressing the challenge of de-risking requires international cooperation.



Climate Change and the Canadian Financial Sector

CIGI Paper No. 134
Olaf Weber and Olena Kholodova

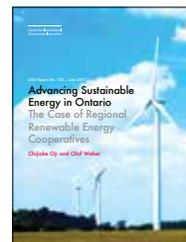
Both the Financial Stability Board of the G20 and the Bank of Canada have stated that climate change is a significant risk for financial sector stability. But assessing climate change-related risks is complex, since the information needed for such assessments is fragmented, incomplete or not yet available. Strategies and tools are needed to analyze the impact of climate change on the Canadian financial sector, but these tools do not exist yet. This paper reports on the results and policy recommendations of a project about climate risks and opportunities in the Canadian financial sector.



A G20 Infrastructure Investment Program to Strengthen Global Productivity and Output Growth

CIGI Paper No. 136
Malcolm D. Knight

In addition to the weak growth of domestic demand that has persisted in many countries since the onset of the global financial crisis, another crucial macroeconomic policy issue is the need to modernize and expand the international network of basic infrastructure to foster stronger long-term global growth of productivity and output capacity. This paper describes the nature of the supply-side issue and outlines the key policy elements that are needed in each G20 country to design and implement a successful National Infrastructure Investment Program (NIIP) and describes how these NIIPs could be integrated into an internationally coordinated program, and the leadership role that the G20 could play in carrying out the program of infrastructure renewal and expansion.



Advancing Sustainable Energy in Ontario: The Case of Regional Renewable Energy Cooperatives

CIGI Paper No. 133
Chijioke Oji and Olaf Weber

Renewable energy cooperatives have been instrumental in expanding electricity generated from renewable sources in Ontario. By developing solar, wind and bioenergy renewable energy projects (REPs), renewable energy cooperatives contribute to supporting the Government of Ontario's multifaceted approach to reduce greenhouse gas emissions and combat climate change. Despite a number of challenges, renewable energy cooperatives have been largely successful in contributing their quota through REPs to actualize the Government of Ontario's plans for sustainable energy in the province.

Advancing Policy Ideas and Debate



Issues in Bringing Canadian Fintech to the International Stage

CIGI Policy Brief No. 111

James W. Hinton, Domenico Lombardi and Joanna Wajda

The aim of this policy brief is to provide a general description of the fintech industry in Canada, and to describe and draw attention to two complementary aspects of developing a fintech strategy for Canada: first, encouraging domestic fintech innovation — through open data and payment systems — and second, encouraging international expansion — through international agreements among regulators and comprehensive intellectual property strategies.



The G20 and Building Global Governance for “Climate Refugees”

CIGI Policy Brief No. 107

R. Andreas Kraemer

The global governance of displaced and trapped populations, forced migration and refugees is not prepared for the numbers likely to manifest under climate change. The G20 has a responsibility to prepare, push for reform and initiate annual reviews to enhance humanitarian responses to aid climate mobility. Governance reform is needed to strengthen rights and obligations of peoples and governments in countries of origin, transit and destination, recognizing the special circumstances and needs of “climate refugees” or migrants.



Can Canada Step into the Breach? Addressing Climate-related Financial Risk and Growing Green Finance

CIGI Policy Brief No. 110

Céline Bak

There was no consensus on climate-related financial risk at the G20 meeting of central bankers and finance ministers in March 2017, and the final communiqué did not mention climate change or the Paris Agreement. President Trump has since announced his intention to withdraw from the Paris Agreement. G20 finance ministers must therefore assure governance of this agenda through interconnected national high-level expert groups. Canada’s financial institutions have the capacity to move swiftly to contribute to a platform for international collaboration on climate-related financial risk and green finance opportunities.



Toward a Comprehensive Approach to Climate Policy, Sustainable Infrastructure and Finance

CIGI Policy Brief No. 106

Céline Bak, Amar Bhattacharya, Ottmar Edenhofer and Brigitte Knopf

The Paris Agreement and countries’ nationally determined contributions represent important commitments to climate action; however, a collective plan to keep the global temperature increase to well below 2°C has not been reached and the world risks being caught in a cycle of low and uneven growth. This policy brief proposes a comprehensive approach that links inclusive growth, sustainable development and the climate goals.



Green Shift to Sustainability: Co-benefits and Impacts of Energy Transformation

CIGI Policy Brief No. 109

R. Andreas Kraemer

Energy transformation toward 100 percent renewable energy is desirable and inevitable. New energy systems, based on efficiency, renewables, storage and smart management, are cheaper to build, run and maintain. Energy transformation is beneficial overall, and yet it may produce misleading signals in outdated statistics. International organizations and the Task Force on Climate-related Financial Disclosures should address this paradox in joint reports to the G20 leaders, ministers of finance and central bank governors.



Overcoming Barriers to Meeting the Sendai Framework for Disaster Risk Reduction

CIGI Policy Brief No. 105

Daniel Henstra and Jason Thistlethwaite

Canada’s adoption of the Sendai Framework for Disaster Risk Reduction represents an important opportunity to manage flood risk, which is the most common and costly hazard facing Canadians. The federal government should develop a national disaster risk strategy that standardizes risk assessment, coordinates and shares responsibility for risk management between governments and stakeholders, increases investment in risk mitigation at the local level, and encourages consumer demand for insurance in high-risk areas.

About the Global Economy Program

Addressing limitations in the ways nations tackle shared economic challenges, the Global Economy Program at CIGI strives to inform and guide policy debates through world-leading research and sustained stakeholder engagement.

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Through its research, collaboration and publications, the Global Economy Program informs decision makers, fosters dialogue and debate on policy-relevant ideas and strengthens multilateral responses to the most pressing international governance issues.

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We are the Centre for International Governance Innovation: an independent, non-partisan think tank with an objective and uniquely global perspective. Our research, opinions and public voice make a difference in today's world by bringing clarity and innovative thinking to global policy making. By working across disciplines and in partnership with the best peers and experts, we are the benchmark for influential research and trusted analysis.

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À propos du CIGI

Au Centre pour l'innovation dans la gouvernance internationale (CIGI), nous formons un groupe de réflexion indépendant et non partisan qui formule des points de vue objectifs dont la portée est notamment mondiale. Nos recherches, nos avis et l'opinion publique ont des effets réels sur le monde d'aujourd'hui en apportant autant de la clarté qu'une réflexion novatrice dans l'élaboration des politiques à l'échelle internationale. En raison des travaux accomplis en collaboration et en partenariat avec des pairs et des spécialistes interdisciplinaires des plus compétents, nous sommes devenus une référence grâce à l'influence de nos recherches et à la fiabilité de nos analyses.

Nos programmes de recherche ont trait à la gouvernance dans les domaines suivants : l'économie mondiale, la sécurité et les politiques mondiales, et le droit international, et nous les exécutons avec la collaboration de nombreux partenaires stratégiques et le soutien des gouvernements du Canada et de l'Ontario ainsi que du fondateur du CIGI, Jim Balsillie.

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