



POLIS Project on Ecological Governance

watersustainabilityproject

Creating a Blue Dialogue Webinar Summary

The Climate Nexus: Water, Food, Energy & Biodiversity

April 26th, 2016

Attendance: Approximately 95—local, First Nations, provincial, and federal government staff; students and researchers; private sector professionals; environmental NGOs

Introduction

The interrelationships or “nexus” between water, food, energy, and biodiversity face a perfect storm of ever-increasing demands and stresses. Changes to hydro-climate regimes are creating a crisis for the Nexus elements, threatening their security, vitality, and human well-being around the globe. At the heart of the Nexus is water: the critical, sustaining input for energy, food, and biodiversity. Without stable water and climate, sustainability will never be a reachable target. Yet, water is facing tremendous challenges due to increasing droughts, flooding, extreme weather patterns, and human mismanagement. A functioning Nexus is needed to sustain all communities: yet, the Nexus is in crisis.

This webinar summary is based on an April 26th, 2016 webinar where speakers Bob Sandford and Jon O’Riordan shared key messages from their recent book *“The Climate Nexus: Water, Food, Energy, and Biodiversity in a Changing World.”* The speakers introduced the Nexus elements and explained why they face a crisis. The discussion also highlighted international and national policy responses, and explored the potential roles and actions for individuals in managing their own Nexus footprint. This webinar provides insights around how governments, individuals, communities, and society must adapt and adopt transformative policies to thrive in a world of quickly changing hydro-climatic realities and declining earth system function.

Guest Speakers

Bob Sandford, Author; EPCOR Chair for Water and Climate Security

Jon O’Riordan, Senior Policy and Research Advisor, Simon Fraser University’s Adaptation to Climate Change Team

About the Series

Hosted by the POLIS Water Sustainability Project at the Centre for Global Studies, University of Victoria, *Creating a Blue Dialogue* brings together expert water practitioners and thinkers, as well as emerging water leaders, to engage with innovative ideas on water policy and governance in Canada. By creating an online community of interest, the webinar series serves to strengthen the national capacity to engage with and solve problems, and raises awareness about emerging Canadian water issues, best practices, and policies.

Growing international awareness of unprecedented change and “new realities”

Scientists across the globe now recognize the “anthropocene,” an entirely new geological epoch. The anthropocene is distinguished by fossil records illustrating a rise in the rate of extinction, a prevalence of hydrocarbons in the atmosphere and oceans, and other human effects on the planet. Economists, businesses, governments, and global institutions now understand how failures around climate-change mitigation and adaptation have tremendous social, security, and economic implications. Figure 1 provides a summary chart of top global socio-economic, environmental and geopolitical risks, identified by the World Economic Forum. Across the globe, the costs of inaction for climate change mitigation and adaptation are now higher than the costs of action. The fundamental stability of our political structures and economy is predicated on hydrologic stability, which is increasingly at risk.

Recent discussions and developments at the international level, such as the Paris climate conference and UN Development Summit, demonstrate the incremental steps nation-states are making to address Nexus challenges. Yet social and political barriers impede further and more meaningful progress. Unless nations take action on common goals and implement international and national-level changes, global sustainability cannot be achieved. Political will and permission is needed to solve global change problems. One way to galvanize the conversation around climate and resilience is to link concerns back to water—the lifeblood of our economies and environments.

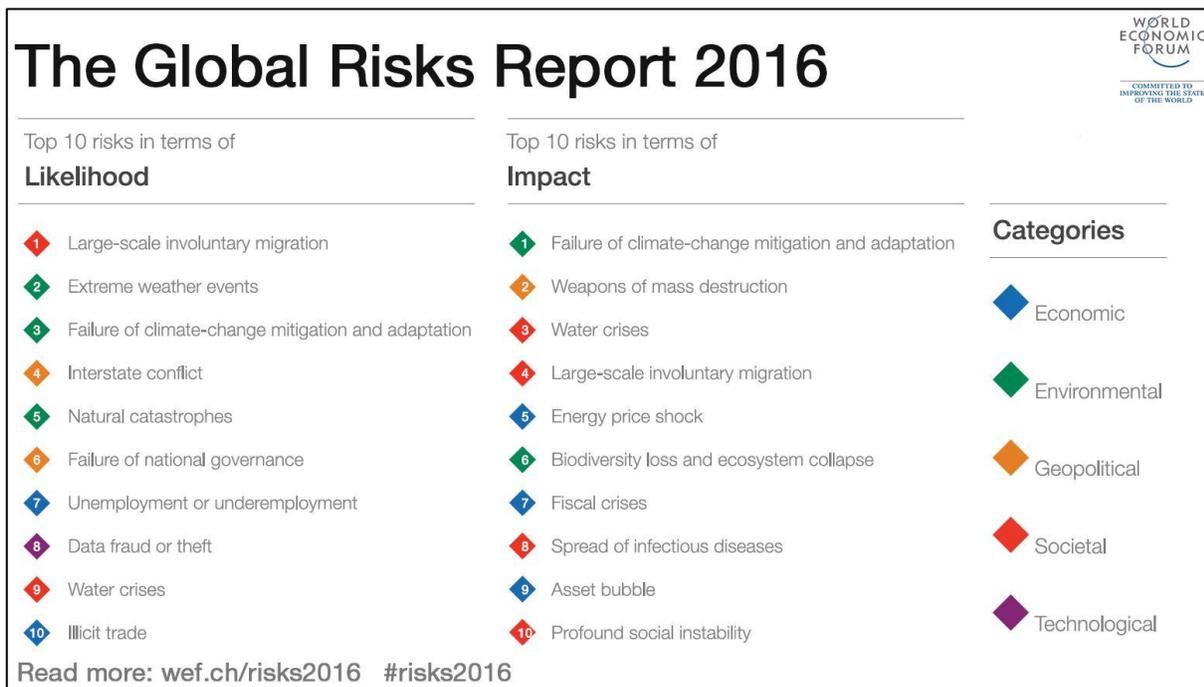


Figure 1: The top 10 global risks for nations, outlined in The Global Risks Report 2016, published by the World Economic Forum. Available at: <http://www3.weforum.org/docs/Media/TheGlobalRisksReport2016.pdf>. Slide Source: Bob Sandford and Jon O’Riordan, 2016, Webinar Presentation for The Climate Nexus Crisis: Water, Food, Energy & Biodiversity.

Adaptation: From Reaction to Transformation

All levels of government—including local, regional, First Nations, provincial, and federal—play a role in designing adaptation policies to ensure communities and ecosystems are resilient in the face of change. Adaptation is needed alongside robust national and international policies to mitigate change through reducing carbon emissions. Three policy approaches to adaptation were highlighted by the webinar speakers:

Reaction

- Responding after events
- Re-creating the same infrastructure that failed
- Out-of-date and costly

Adaptation

- Planning in advance of events
- Retaining the same paradigms for risk management

Transformation

- Totally new approaches to managing the Nexus elements
- Demand-side and supply-side evaluation
- Public awareness and education. Behavioural changes are needed, which incorporate fundamentally different patterns of consumption and production
- Aiming beyond environmentally neutral solutions—development must be both sustainable and restorative to repair and reverse declining earth system function

Yet adopting robust adaptive and transformational policies may upset the status quo, and stir social conflict. For example, building a reservoir to help control future flood events might displace land-owners for its construction. However, there are also more positive and less confrontational examples of adaptive approaches. For example, the *Don Mouth Naturalization Plan* in Toronto, Ontario seeks to restore habitat links at the river's mouth, create sustainable development, and improve flood resilience in the city.¹

Integration of top-down and bottom-up measures is necessary for all adaptation initiatives. Big picture policies—such as pricing carbon, eliminating fossil fuel subsidies, creating financial incentives for renewables, and establishing robust regulations—must be in place to support on-the-ground operational practices. These policies may include integrated land, water, and food production systems, and creating new professional standards for all Nexus facets.

¹ For a full discussion of the *Don Mouth Naturalization Plan* see: Toronto and Region Conservation (2016). "Don Mouth Naturalization and Port Lands Flood Protection Project." Available online: <https://trca.ca/conservation/green-infrastructure/don-mouth-naturalization-port-lands-flood-protection-project/>

Water, Food, and Energy Transformations

Sustainable **water transformations** depend on maintaining healthy watersheds, which are better able to withstand and adapt to changing hydro-climate regimes. In British Columbia, regulations under the new *Water Sustainability Act*² are important tools for adaptation, particularly:

- **Environmental flows and risks assessments** enhance protection for fish and aquatic organisms, and help ensure functioning healthy aquatic ecosystems. Environmental flow rules may affect water use and planning, particularly in times of scarcity.
- **Provincial water objectives** can help address the challenge of cumulative effects and help align land and water objectives.
- **Area-based regulations and Water Sustainability Plans** provide an alternative approach to planning and decision-making for watersheds at a regional or sub-watershed scale.

Food transformations require an agricultural revolution. Fundamental shifts are needed in how food is produced and consumed, including changes to the human diet as well as elimination of food waste. Close to half of all food produced worldwide is wasted: discarded during harvest, in processing, transport, supermarkets, or kitchens. Rebuilding soils is also a global priority, for improved agricultural yields and other critical functions. Soils rich in microorganisms filter contaminants and provide a natural process of water purification. This is one reason why over 200 cities in 29 countries have initiated watershed restoration of their upstream sources. Restoration at the headwaters enables natural water filtration, enhances water protection, and helps avoid building costly water treatment plants. Recent research demonstrates that soil is a major store of carbon, and thus a potential feedback effect of global warming is the loss of carbon reserves in soil.³

Energy transformations are characterized by a shift from centralized to distributed systems of energy production, which requires re-designing energy grid infrastructure to accommodate a diversity of energy source inputs. Distributed systems of energy production also require new business models that emphasize net metering and battery storage. Changing technologies and energy sources, such as solar power and electric cars, are critical features in energy transformations. For example, the state of Hawaii—historically an importer of gas and oil—created policies to enable solar panel development. The resulting shift to distributed energy led to changes in energy consumption and ways of conducting business.

² For an in-depth analysis of BC's *Water Sustainability Act* and key regulation areas, see: Brandes, O.M., Carr-Wilson, S., Curran, D., & Simms, R. (2015, November). *Awash with Opportunity: Ensuring the Sustainability of British Columbia's New Water Law*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Available at <http://poliswaterproject.org/awashwithopportunity>

³ See research by Dr. John Hart at the University of Berkeley: <https://ourenvironment.berkeley.edu/people/john-harte>

Education to Increase Universal Awareness

In conclusion, the speakers introduced ways in which individuals can reduce their “Nexus footprint”:

- **Food Security**
 - ✓ Eliminate waste
 - ✓ Buy locally
 - ✓ Reduce beef consumption
- **Energy Security**
 - ✓ Reduce energy use
 - ✓ Develop new business model for distributed energy systems
 - ✓ Transition to electric vehicles
- **Water Security**
 - ✓ Water conservation and metering
 - ✓ Water reuse in wastewater treatment design
- **Nature**
 - ✓ Ecosystem resiliency

A “Nexus footprint tracking system” is currently under development, a tool which can help individuals track and reduce their Nexus footprint. An important psychological aspect of this tracking tool will be the encouraged sharing of success stories to empower individuals to take action, rather than a focus on guilt.

Interested in More Webinars?

To view past *Creating a Blue Dialogue* webinars visit www.youtube.com/POLISWaterProject. Previous topics include “Environmental Flows and Healthy Watersheds: Towards Protection in Canada and B.C.,” “Groundwater Reform: Lessons from California,” and “Aboriginal Co-Governance of Water and Watersheds.”

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