



IISD Experimental Lakes Area’s Response to Ontario’s Commitments to Freshwater Protection in *Preserving and Protecting our Environment for Future Generations: A Made-in-Ontario Environment Plan*

The Government of Ontario’s Environment Plan sets out necessary steps and goals to achieve a more sustainable future for the province, and seeks to safeguard and leverage the great natural resources of our province. Indeed, this is the foundation of IISD Experimental Lakes Area (IISD-ELA), the world’s freshwater laboratory. Our world-class research facility makes practical and innovative use of Ontario’s natural gifts, setting aside 58 isolated lakes and their watersheds to perform experiments on whole lakes to get a full picture of what is affecting our fresh water.

We are using IISD-ELA’s 50 years of unparalleled experience in freshwater science and policy to **respond directly to the plan’s commitments on *freshwater environments* only.**

Investing in **scientific evidence** to inform environmental policy is imperative and ensures that the Government of Ontario is effectively investing its limited resources in measures that have the greatest impact on human health and ecosystems while being cost-effective. **Monitoring, evaluation and transparency** provide necessary internal checks so the Government of Ontario can be sure its efforts are having the intended effects while also communicating those achievements and lessons to a broader range of actors. **New technologies** such as big data and the Internet of Things are revolutionizing how the world monitors and protects the environment, providing the Government of Ontario with a chance to be ahead of the curve and use limited resources innovatively for maximum impact.

Scientific Evidence

The commitment or statement in Ontario’s Environment Plan	IISD Experimental Lakes Area recommends that the Government of Ontario...
<ul style="list-style-type: none"> • “Monitor pollutants to evaluate long-term trends so we can gather the information we need to take action on air pollution” (page 10). 	<ul style="list-style-type: none"> • Extend the monitoring of air pollutants to the monitoring of freshwater bodies for those same pollutants (such as airborne mercury) given that they can settle in freshwater bodies and cause harm to resident flora and fauna, and to people who swim, boat and eat fish from these waterbodies. • Systematically track new and emerging contaminants and update their monitoring programs accordingly.
<ul style="list-style-type: none"> • “Excess road salt can damage roads, cause vehicle corrosion and be harmful to fish in our waterways.” (page 12). • “Review and update Ontario’s Great Lakes Strategy ... reducing salt entering waterways to protect our aquatic ecosystems” (page 13). • “Build on the ministry’s monitoring and drinking water source protection activities to ensure that environmental impacts from road salt use are minimized” (page 13). 	<ul style="list-style-type: none"> • Recognize the importance of the overall increased salinity in Ontario’s freshwater bodies and that increased salinity has an impact wider than just the Great Lakes and fish. • Ensure the investigation of salinity and its impacts extends beyond roadways to other sources of salts, such as from agriculture, municipal and industrial sources. • Dedicate resources to scientific research on the impact of increased salinity (including road salts) on the health of freshwater bodies. • Uses those findings to develop province-wide thresholds on salts leaching into fresh water. • Consult with IISD-ELA to develop this research—the only place on earth where this necessary whole-lake experimentation can be conducted.

The commitment or statement in Ontario's Environment Plan	IISD Experimental Lakes Area recommends that the Government of Ontario...
<ul style="list-style-type: none"> • “The changing climate is compounding these stresses with droughts, floods and extreme storms. Declining ice cover is causing shoreline erosion, warmer water is creating conditions for blooms of harmful algae, and shifting water conditions are changing when and where fish spawn” (page 12). 	<ul style="list-style-type: none"> • Continue to assess the impact of a changing climate on fish productivity in the province—critical information for recreational fishers and fisheries alike. IISD-ELA will be highly useful in that regard, with over 50 years of data on the impact of climatic fluctuations on fish productivity in Ontario. • Use those assessments to adapt fishing limits and quotas, if necessary, in order to safeguard fish populations.
<ul style="list-style-type: none"> • “Protect the quality of the Lake of the Woods by continuing to work with partners on reducing phosphorus that, in excessive quantities, can cause toxic blue-green algae” (page 13). 	<ul style="list-style-type: none"> • Set a target to reduce phosphorus by 18.4 per cent—in line with the targets of the Government of Minnesota and the recommendations of the International Joint Commission. • Continue to recognize that phosphorus alone is the key driver of toxic blue-green algal blooms, and that IISD-ELA’s 48 years of research is informing policy in its home province.
<ul style="list-style-type: none"> • “Work to ensure the Great Lakes and other inland waters are included in national and international agreements, charters and strategies that deal with plastic waste in the environment” (page 42). 	<ul style="list-style-type: none"> • Devote resources to scientific research into the (i) provenance, (ii) prevalence and (iii) impacts of plastics found in Ontario's freshwater bodies, including, but not limited to, the Great Lakes. • Use the findings of this research to inform clear thresholds on plastics leeching into fresh water and strategies for reducing its impact.
<ul style="list-style-type: none"> • “Continuing partnerships and negotiations with the federal government under agreements and plans such as the Canada-Ontario Great Lakes Agreement (COA) and the Canada-Ontario Lake Erie Action Plan” (page 12). 	<ul style="list-style-type: none"> • Continue to financially support the Canada-Ontario Great Lakes Agreement, which supports a significant amount of research and monitoring efforts on the Great Lakes in Canada, allowing us to gather the data required to set fisheries quotas on Lake Superior and answer important conservation-related questions to ensure the Great Lakes are managed sustainably.

Monitoring, Evaluation and Transparency

The commitment or statement in Ontario's Environment Plan	IISD Experimental Lakes Area recommends that the Government of Ontario...
<ul style="list-style-type: none"> • “We will also work with municipalities and other partners to increase transparency through real-time monitoring of the sewage overflows from municipal wastewater systems” (page 12). 	<ul style="list-style-type: none"> • Monitor sewage flow regularly (not just during instances of overflows) to provide a complete picture of sewage behaviour. • Make this information readily available so that scientists, policy-makers and the public can access them and use the results to make informed decisions. • Ensure that “other partners” include First Nations, industry and other governments so those who are affected and those who can take action are fully informed.
<ul style="list-style-type: none"> • “Encourage targeted investment and innovation in managing wastewater that overflows into our lakes and rivers” (page 15). 	<ul style="list-style-type: none"> • Set relevant thresholds in effluent treatment in wastewater treatment facilities for emerging contaminants such as pharmaceuticals, nutrients, salts and plastics. • Introduce policy to ensure regular revision of thresholds in line with current scientific evidence.

The Use of New Technologies

The commitment or statement in Ontario's Environment Plan	IISD Experimental Lakes Area recommends that the Government of Ontario...
<ul style="list-style-type: none"> • “Increase transparency through real-time monitoring of sewage overflows from municipal wastewater systems into Ontario’s lakes and rivers” (page 15). • “Consider approaches for the management and spreading of hauled sewage to better protect human health and the environment (including land and waterways) from the impacts of nutrients and pathogens” (page 45). 	<ul style="list-style-type: none"> • Explore the use of new technologies such as the Internet of Things (using data from a wide range of accessible sources ranging from cell phones to dedicated sensors) to produce a more comprehensive picture of sewage flows that would be easily accessible to scientists, policy-makers and the public.

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