



Towards Sustainable Development in Manitoba: Recommendations for Manitoba's Watershed-Based Policy Framework



The International Institute for Sustainable Development (IISD)

The International Institute for Sustainable Development (IISD) is one of the world's leading centres of research and innovation. The Institute promotes the idea of sustainable development, balancing social, environmental and economic aspects of development, and provides practical solutions to the growing challenges and opportunities of integrating these in the context of development.

IISD has been active on Manitoba-based research for close to three decades, providing technical and policy insight on provincial issues including climate change mitigation and adaptation, sustainable agriculture, watershed management, and water resources management in the context of Lake Winnipeg. IISD works to balance social, economic and environmental outcomes in policy design and implementation. In addition, IISD-Experimental Lakes Area provides world-class research on aquatic ecosystems and has provided evidence for global decisions around air and water pollution.

IISD welcomes the focus on watershed-based action and commends the Manitoba government on the development of these three proposed watershed-based programs. Based on our breadth of research and knowledge, we offer inputs and comments to strengthen these programs and the impacts they seek for sustainable development in Manitoba.

Our overarching comments across all proposed watershed-based programs

IISD is pleased to see the structure and content of the three consultations documents under the proposed watershed-based policy framework. We have long promoted a watershed approach to integrated land and water management as a means to greater impact, more measurable outcomes and stronger local level engagement.

We believe that watersheds provide a range of benefits, many of which are not adequately recognized and managed. We strongly support the vision of multifunctional, watershed-based programming that values ecosystem services such as clean water, nutrient cycling, flood protection, biodiversity, carbon sequestration, water storage—one which results in sustainable economic development through stewardship of our land and water.

- Our recommendation to ensure long-term impact and sustainability across the three proposed programs—GRowing Outcomes in Watersheds (GROW), Watershed-based Drainage and Water Resource Management, and Modernizing Manitoba's Conservation District Program—is a **robust, evidence-based evaluation and monitoring framework that considers cumulative impacts** across watersheds for broader societal benefits and the achievement of regional priorities. Initiatives under the proposed GROW, licences under the drainage and water resource management program and responsibilities of the renewed watershed authorities should be linked through this overarching framework. The framework would clarify how they are helping Manitobans meet objectives such as better resilience, cleaner water and an improved Lake Winnipeg.
- This framework should include the means to effectively measure program impacts across provincial watersheds including open access to data and information such that a diverse set of stakeholders can engage in watershed planning and management. Monitoring must include conventional environmental monitoring led by government agencies, but should also incorporate community-led initiatives and local and Indigenous knowledge. Tools such as remote sensing and analytical systems should be promoted and made available across different sectors and agencies in Manitoba.



- Net impacts should be measured to ensure net gain in EGS benefits, **net gain in water retention as well as other co-benefits, such as a net reduction** of nutrient loading into Lake Winnipeg and overall coordination of integrated watershed management plans. In this goal for net gain, we strongly support the continued protection of Class III, IV and V wetlands.
- Geographic targeting of EGS is important for ensuring impact, as well as for value for money of public resources.¹ We emphasize the need for targeting and suggest that program implementation take into account current scientific evidence on context-specific implications.
- We commend the provincial government for linking these three programs under Manitoba’s watershed-based policy framework. We suggest that this effort at coordination be continued between the three proposed programs, their implementation as well as other programs, agencies and geographies. Strengthening coordination between proposed watershed authorities, municipal plans, agricultural extension groups, and other local planning entities is necessary to clarify and improve overall impact. The evaluation and monitoring framework should include assessment of coordination effectiveness and facilitate a better understanding of these related plans and implementation bodies.

GRowing Outcomes in Watersheds (GROW)

IISD commends Manitoba Agriculture and Sustainable Development for jointly developing and administering the proposed GROW program and recommend that the program **aim for enhanced watershed-based ecological goods and services (EGS) in agri-Manitoba** as a means to the twin goals of “most improved province” and “value for money” through government action. In particular, IISD feels that ensuring additionality will include **targeting regions with highest EGS benefits, applying a robust evaluation system, and applying a higher ratio when considering offsets for lost watershed-based EGS.**

A publicly funded program like GROW will rely on limited tax dollars to deal with complex, long-term environmental challenges. To ensure **financial sustainability**, this program should leverage revenues from emerging markets to build on incentives based on public moneys. For example, GROW can potentially open a space for selling offsets into existing or upcoming carbon markets², or enable municipalities to offset point-source phosphorus loading with land management practices that provide lower cost phosphorus retention through actions such as biomass harvesting and water retention³.

To ensure that GROW remains a **high-impact program**, we strongly recommend **regional targeting** of beneficial management practices (BMPs) to the specific watersheds most suitable to their provision. This entails identifying hotspots within watersheds where the prescribed EGS are most vulnerable and/or most cost-efficient to attain. This could mean applying BMPs related to nutrient management in the nutrient-rich Red River Basin or building flood resilience in flood-prone areas. A critical step in effective regional targeting is consideration and measurement of **cumulative impacts**. While individual actions can be evaluated for implementation ease, costs, etc., cumulative measurements focus on overall, watershed-based impact and value for money. Examples of overall impacts include reduced nutrient loads to Lake Winnipeg, improved resilience to floods, improved provincial carbon sequestration, and improved connectivity of grassland habitat. These enhanced cumulative impacts will ensure that program actions enhance provincial

¹ Roy, D., Venema, H.D., & McCandless, M. (2011). *Ecological Goods and Services: A review of best practice in policy and programming*. Retrieved from http://www.iisd.org/pdf/2011/egs_policy_programing.pdf

² Currently there is no offset market in Manitoba, however there are already existing approaches elsewhere such as the Verified Carbon Standard and the Western Climate Initiative where Manitoba may be able to identify market opportunities. Also, opportunities may open up across Canada should a pan-Canadian offset framework be established under the Pan-Canadian Framework on Clean Growth and Climate Change.

³ See <http://www.iisd.org/sites/default/files/publications/iisd-bioeconomies-watershed-scale-brochure.pdf> and http://www.iisd.org/sites/default/files/publications/water_quality_trading_lake_wpg_basin.pdf



environmental systems and also benefit Manitobans economically and socially. **Monitoring** within this impact assessment framework must include conventional environmental monitoring led by government agencies, but also incorporate community-led initiatives and local and Indigenous knowledge. Tools such as open data and remote sensing should be promoted and made available across different sectors and agencies in Manitoba.

Carbon sequestration and nutrient management are complex ecological processes, and the program design will also need to be **context-specific and apply appropriate scale and timelines** for ensuring impact. Trade-offs will also need to be considered in program design and delivery. For example, conservation tillage is promoted as a BMP that maintains soil moisture and carbon storage. However, in Manitoban conditions the practice increases phosphorus runoff into waterways⁴ and must be carefully considered in the context of priorities. Water retention is critical for mitigating flood damage, enhancing resilience to drought, *as well as* providing water quality⁵ and biodiversity benefits. However, in order to maximize all these different benefits, the amount of water and the storage time is important. Water stored over spring melt or high-rain events might help with resilience to floods, but to achieve multiple benefits water needs to be retained over a longer period of time.

Watershed-based Drainage and Water Resource Management

IISD commends the province on recognizing the benefits from both water drainage and retention in the context of sustainable development and proposing a program to balance the need for both in Manitoba. **IISD supports the continued protection of Class III, IV and V wetlands through ensuring that there are no approvals for draining such systems.**

While drainage is necessary in wetter and flood-prone parts of the province, water retention is critical for drought resilience and improved nutrient management. A strategy that pairs drainage and water retention will ensure that the benefits of both are realized. Based on the established role of water retention in achieving ecological, resilience and economic priorities, this program must aim for **a net gain in water retention** in Manitoba, particularly in light of the potential for increasing floods and drought due to climate change. One way to operationalize an effort for net gain would be through **designing offsets**. To account for variability and uncertainty, offsets and compensation often follow a higher, multiplier ratio. For example, Alberta's wetlands offset system ranges from 1:1 to a 1:8 ratio depending on wetland classes and location.⁶ A similar, context-specific ratio would need to be determined for Manitoba. This principle of net gain would particularly apply to proposed tile drainage in the province. Tile drainage is seen as an efficient way of removing excess water—an important solution to Manitoba's flooding. However, to mitigate downstream flooding, nutrient overloading, and other resulting water quality issues,⁷ **tile drainage projects should be required to include a corresponding retention basin**. This could be in the form of an “end-of-pipe” drainage, or an offset option to ensure equivalent or increased retention in the same watershed.

⁴ Flaten, D. (2016). *Soluble phosphorus losses in spring snowmelt runoff in the Northern Great Plains*. North Dakota Soil and Water Conference (Conference Proceedings). Retrieved from https://www.ndsu.edu/fileadmin/soils/pdfs/Flaten_P_loss_in_snowmelt_runoff_ND_Soil__Water_Conf_2016.pdf

⁵ Cheng, F., Basu, N. (2017). Biogeochemical hotspots: Role of small water bodies in landscape nutrient processing. *Water Resources Research* 53(6), 5038–5056.

⁶ See <http://www.wetlandpolicy.ca/wetland-mitigation/>

⁷ Agriculture and Agri-Food Canada (AAFC). (2010). *Controlled Tile Drainage—Increasing yields and helping the environment* (WEBs Fact Sheet #3). Retrieved from http://publications.gc.ca/collections/collection_2013/aac-aafc/A22-516-2010-eng.pdf



IISD supports building capacity of landowners for managing and monitoring environmental impacts of human actions. However, we are particularly concerned about the potential impacts of placing “increased onus on downstream landowners to demonstrate the impacts of upstream activities.” While citizen monitoring should be encouraged and even leveraged to ensure higher benefits from the program, putting the onus of proof on individual landowners can result in increased program-related costs and take away from the focus on cumulative and collective action.

There are hundreds of wastewater lagoons across Manitoba used for rural sewage treatment. Most of these consist of primary treatment cells with secondary treatment cells that are released into a nearby ditch or creek. Many of these aging systems do not meet provincial phosphorus discharge regulations. Ensuring that **municipal lagoons are captured under the regulations** and treated as a distinct category would ensure that municipalities are also playing their part in maintaining water quality and quantity in Manitoba.

Modernizing Manitoba’s Conservation Districts Program

IISD has long promoted the need for decentralized and nested watershed management with a strong role for local watershed groups. We commend the province for **modernizing Manitoba’s Conservation Districts Program** and strengthening their role as watershed authorities.

To achieve the proposed goal of strengthened coordination, attention is needed at the **local level** not only between proposed watershed authorities (WAs), but also with other local government agencies such as planning districts, Manitoba Agriculture outreach offices and other agencies linked to land and water management. Such coordination can contribute to improved impact, mitigate unintended consequences and help pool resources across local organizations that are in chronic need for more capacity and resources. A tangible way to coordinate could be through defining program metrics that consider other local programs such as land-use planning, WAs can then play a clear role in defining these metrics and evaluating the program on their basis.

Watershed authorities require **more authority and resources** in order to be an effective, decentralized implementation agencies. Ontario-based Conservation Authorities (CAs) wield more authority in delivering water resources planning and environmental protection and have access to additional resources through local taxation. A current review of the CAs is focused on strengthening oversight and accountability, consistency across different CAs, improved collaboration and engagement, modernizing funding mechanisms etc. These are directions that the refreshed WAs in Manitoba need to adopt.

WAs can play a significant role in the monitoring of linked programs such as GROW and water resource management. An evaluation framework including conventional and innovative forms of monitoring could include a strong role for the renewed CDs to coordinate, train and enforce monitoring for overall evaluation purposes. WAs can be responsible for dissemination of tools such as remote sensing, community-based monitoring, and data validation.

A critical gap in land and water management is local level **implementation capacity**. With their local presence and relationships, the watershed authorities should be tasked, and appropriately resourced, to play a role in identifying context-specific actions under the GROW and water resource management programs. Based on their local presence and relationships with land owners, municipalities and others, they can also play a role in program support, information dissemination and technical needs for program implementation and evaluation.



Conclusions

Watersheds provide us with a range of important benefits, and good management can mean better environmental, economic and social systems for Manitobans long into the future. The proposed programs are an opportunity to demonstrate strong, made-in-Manitoba solutions for coordinated, evidence-based watershed management resulting in multiple benefits for all Manitobans. In order for the proposed watershed-based programming to be impactful, achievable and sustainable, they must:

- Aim for restoration or a net gain of identified, priority EGS and water retention capacity;
- Target regions and ensure that the most effective actions are matched with them for the most impact and the least cost;
- Include a robust, evidence-based evaluation framework focused on cumulative improvements;
- Adopt effective measurement that takes into account conventional environmental monitoring, benefit cost analyses, community-based monitoring, traditional and local knowledge, remote sensing and other analytical means available;
- Strengthen coordination in the context of watershed management, particularly between geographies, impacts, agencies and processes.

© 2017 The International Institute for Sustainable Development
Published by the International Institute for Sustainable Development.

INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT

The International Institute for Sustainable Development (IISD) is one of the world's leading centres of research and innovation. The Institute provides practical solutions to the growing challenges and opportunities of integrating environmental and social priorities with economic development. We report on international negotiations and share knowledge gained through collaborative projects, resulting in more rigorous research, stronger global networks, and better engagement among researchers, citizens, businesses and policy-makers.

IISD is registered as a charitable organization in Canada and has 501(c)(3) status in the United States. IISD receives core operating support from the Government of Canada, provided through the International Development Research Centre (IDRC) and from the Province of Manitoba. The Institute receives project funding from numerous governments inside and outside Canada, United Nations agencies, foundations, the private sector and individuals.

Head Office

111 Lombard Avenue, Suite 325
Winnipeg, Manitoba
Canada R3B 0T4

Tel: +1 (204) 958-7700

Fax: +1 (204) 958-7710

Website: www.iisd.org

Twitter: @IISD_news



IISD.org