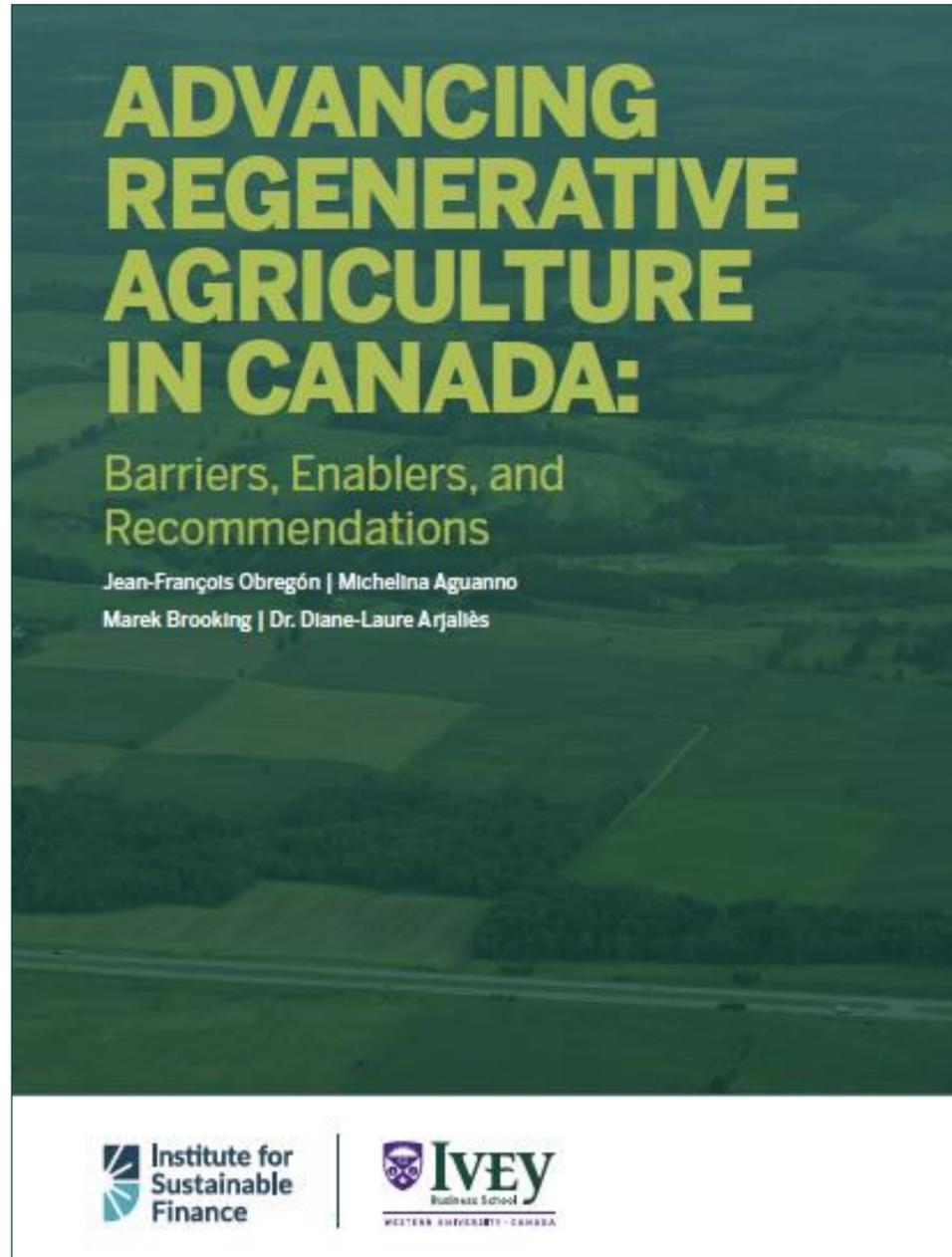




Advancing Regenerative Agriculture in Canada

Dr. Diane-Laure Arjaliès,
Ivey Business School
Sustainable Finance Lab

The Report and its Authors



Jean-François Obregón

Research Fellow,
Ivey Sustainable Finance Lab



Marek Brooking

Research Assistant,
Ivey Sustainable Finance Lab



Michelina Aguanno

PhD Candidate
Ivey Sustainable Finance Lab
& Innovation North



Dr. Diane-Laure Arjaliès

Founder and Lead,
Ivey Sustainable Finance Lab
Faculty, Ivey Business School

The Ivey Sustainable Finance Lab & Innovation North are two Impact Labs from the Centre for Building Sustainable Value, Ivey Business School, Western University (Canada)



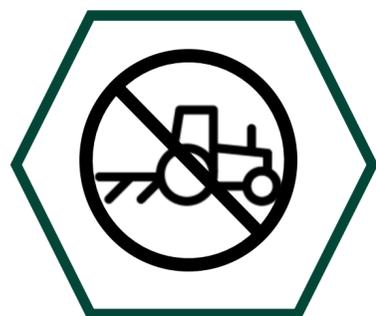


Regenerative Agriculture

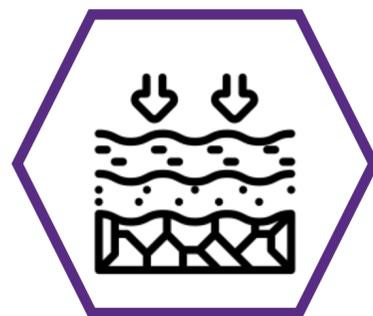
Beyond the practices, we define regenerative agriculture as a paradigm of farming.

The overarching principle of regenerative agriculture is adopting farming principles that seek to enhance ecosystems. A regenerative model creates value through ecosystem regeneration, which supports farming practices through ecosystem services.

Some Principles:



**MINIMIZE SOIL
DISURBANCE**



**PROTECT
SOIL SURFACE**



**MAINTAIN
LIVING ROOTS**



**ENSURE CROP
DIVERSITY**

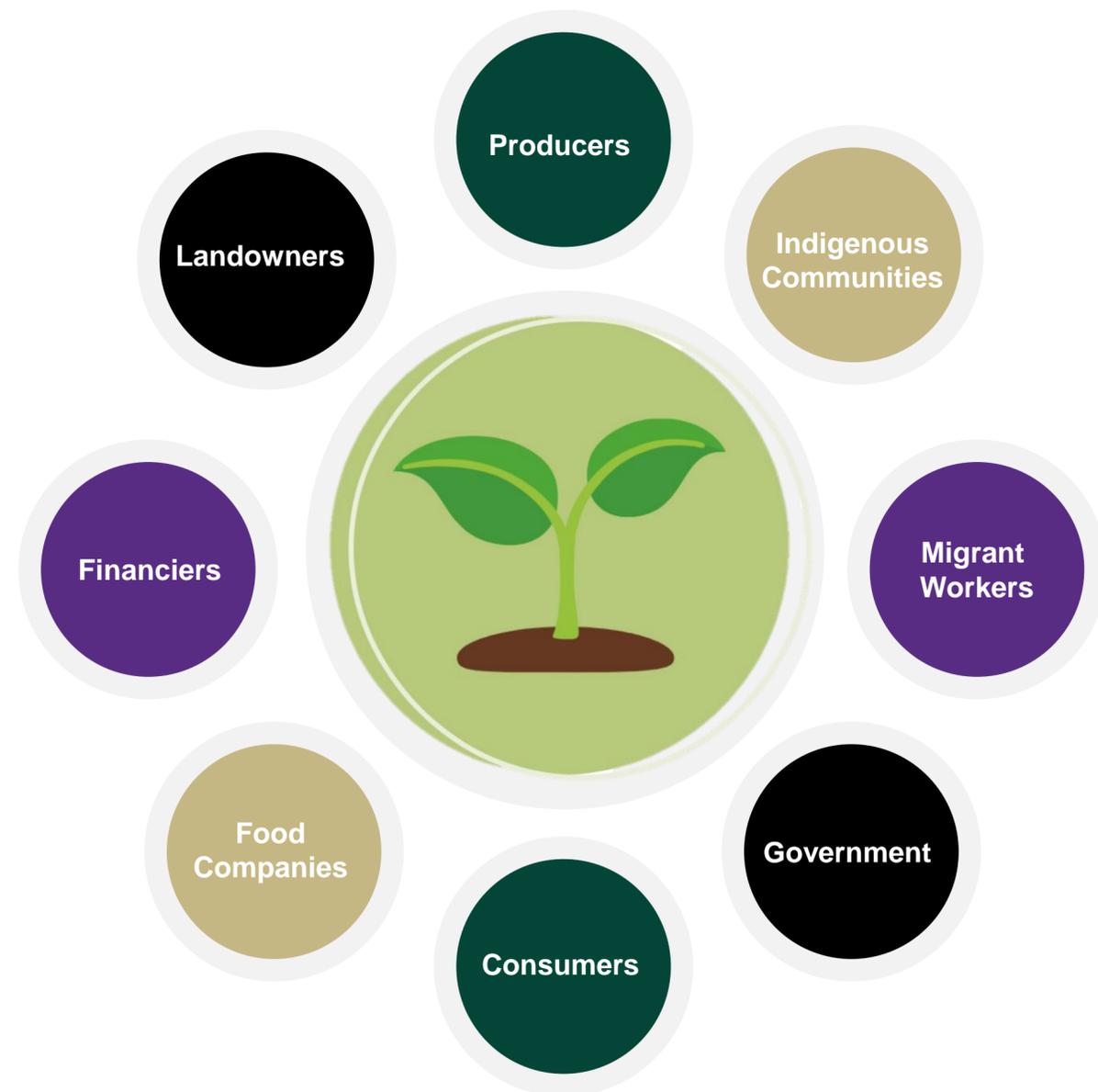


**INTEGRATE
LIVESTOCK**

(Source: Ritz, 2021)

A Systems Perspective

Regenerative Farming is about more than on-the-ground practices



Regenerative Agriculture goes beyond the farm

- Previous research in regenerative agriculture has largely targeted producers to share knowledge on best practices for sustainable land management.
- However, there are a system of actors beyond the producers that play a role in supporting a transition to regenerative agriculture.
- This report takes a systems lens to tackle this issue. It shares the role of finance in enabling the transition at different leverage points.

1

What is Regenerative Agriculture?

How regenerative agriculture creates mutually sustaining relationships with the land.

2

Perspectives of Key Actors

Barriers and enablers for engagement of actors in the system.

3

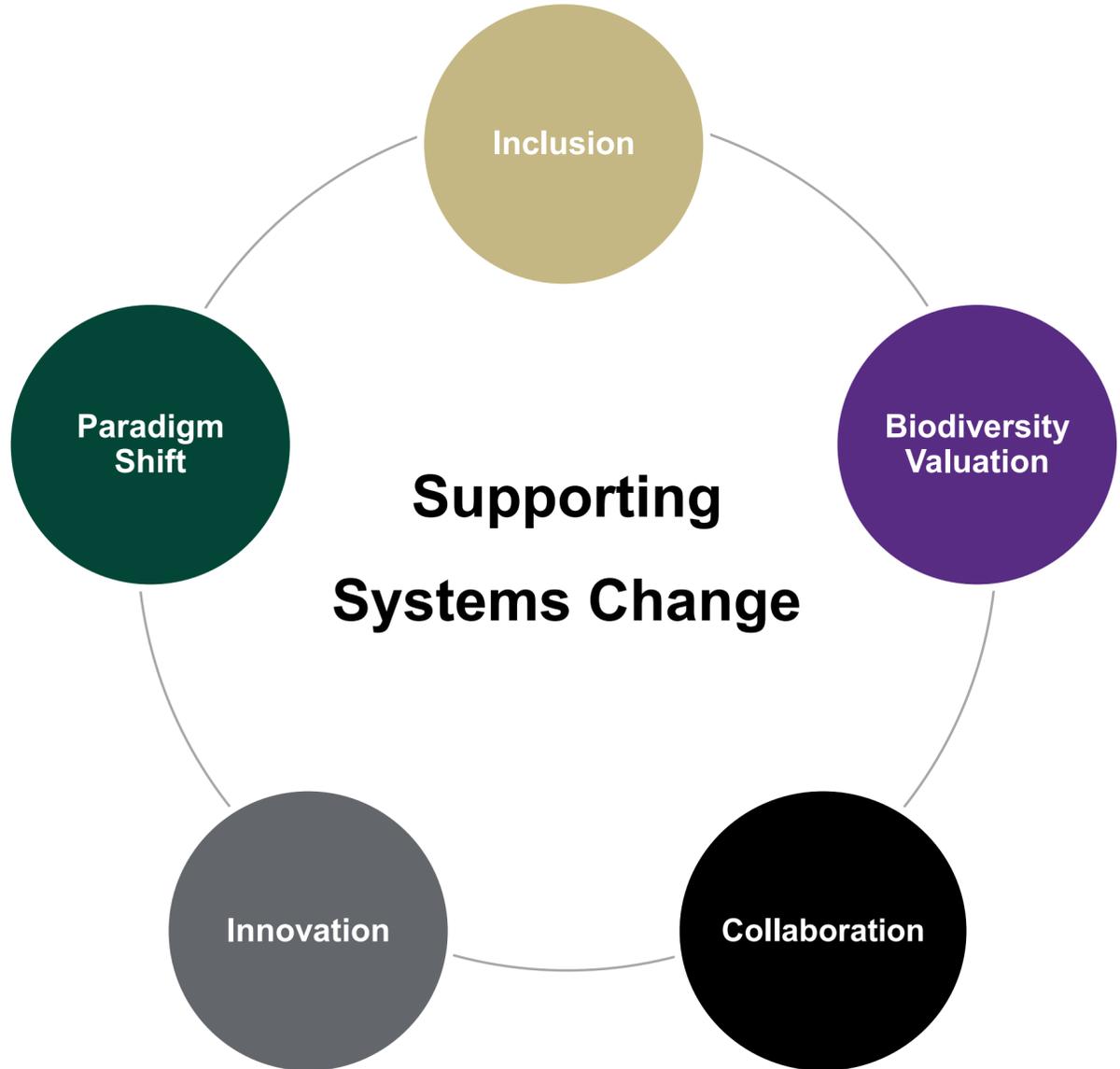
The Role of Financing

Implications to better understand how finance can support a systems transformation for regenerative agriculture – on the farm and beyond.

Recommendations

Five points to nudge the system towards a regenerative agriculture transition

- 1 ADVANCE CLARITY AROUND REGENERATIVE AGRICULTURE**
Embracing regenerative agriculture as a *paradigm* of farming.
- 2 ADVANCE ACCOUNTING FOR NATURE’S VALUE**
Create instruments that attract investment toward nature-based solutions by quantifying the value of biodiversity.
- 3 DEVELOP AN INCLUSIVE FINANCIAL INFRASTRUCTURE**
Encourage innovative thinking and hybrid approaches that address economic and non-economic barriers to supporting farmers.
- 4 EMPOWER A JUST TRANSITION**
Build a financing systems that is equitable, respectful, and inclusive.
- 5 ENGAGE THE SYSTEM FOR SYSTEMS-LEVEL SOLUTIONS**
Encourage small actions from multiple actors to contribute to a larger shift.





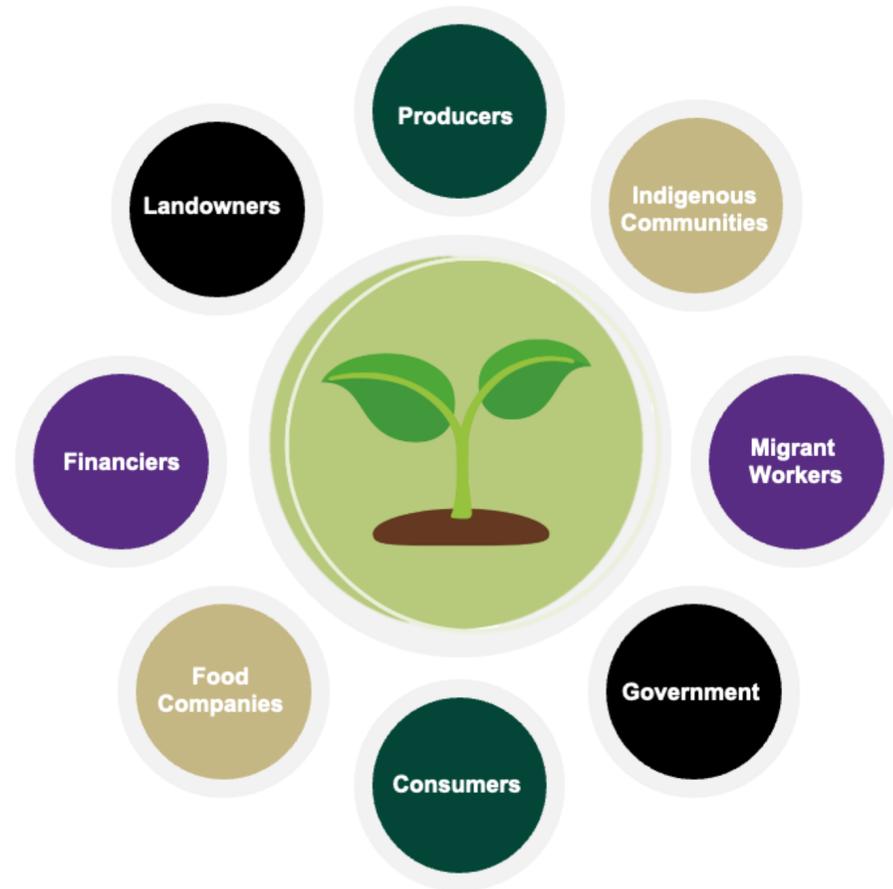
Paul Hamilton via Flickr

Motivation for the Report

- Funding from the Institute for Sustainable Finance for this Canadian Sustainable Finance Network Research Grant.
- Proposal to research conservation impact bonds to fund natural infrastructure and regenerative agriculture in Canadian farmland.
- Funding awarded in May 2022.
- Experience with Deshkan Ziibi Conservation Impact Bond (DZCIB) launched in 2020 with two phases.

Applying a Systems Perspective

Transitioning to regenerative agriculture is a systems-wide effort



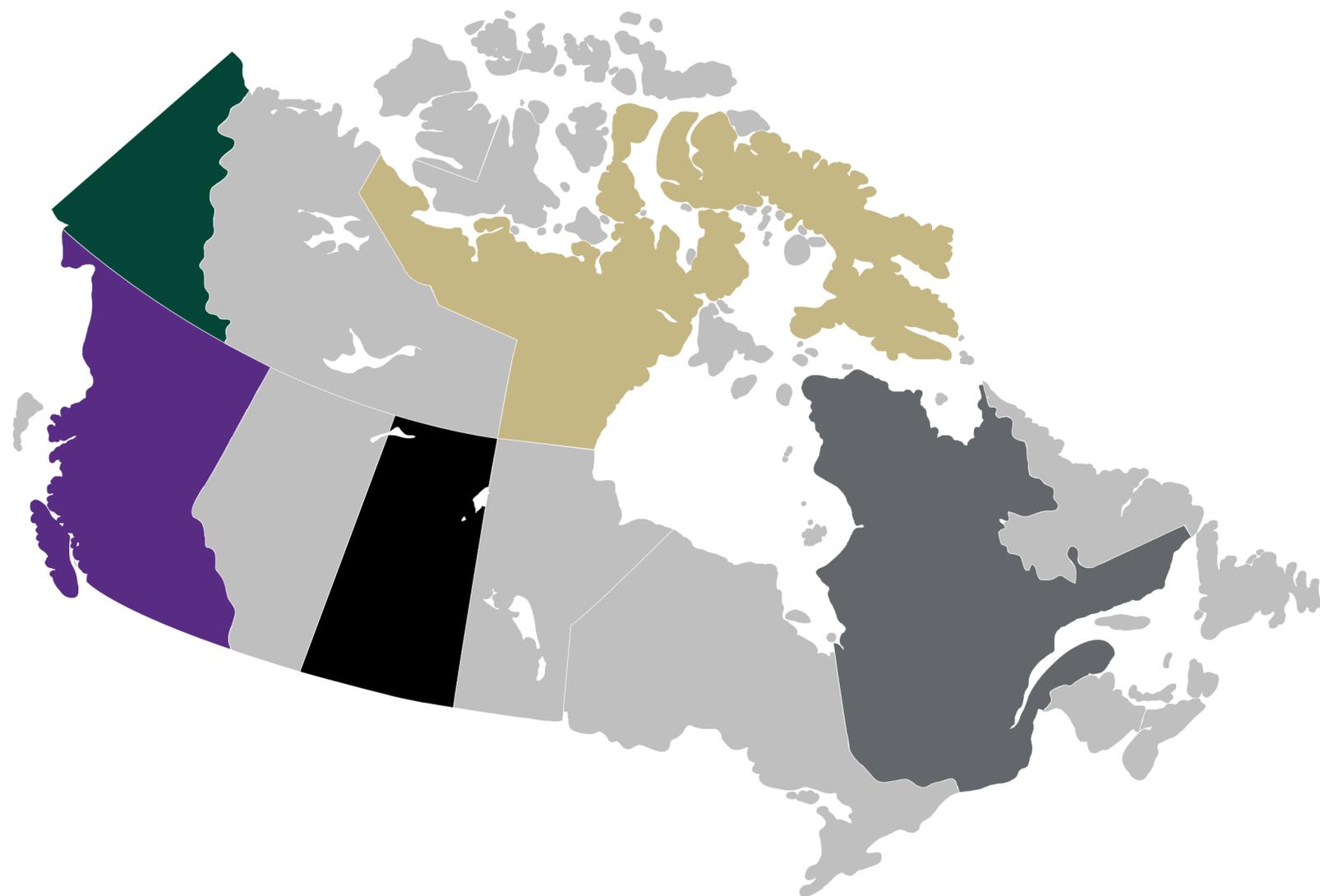
This report targets the perspectives of a diverse range of actors in the system and their primary concerns to develop a holistic view of how the system can advance toward regeneration.

Topics Researched

- Economics of industrial agriculture
- Regenerative practices
- Relationships between farming, biodiversity, and water
- Farmland ownership and valuation
- Social issues in farming
- Government priorities and initiatives on the landscape
- Science-based targets for the value chain
- Risk and resiliency in the face of climate change
- Land use planning and the role of public policy
- Traditional and innovative financing for agriculture

Canadian Agriculture Landscape

What to know about the current state of farming in Canada



1

Agriculture is an important part of the Canadian economy. It accounts for approximately 6.8% of GDP.

(Source: Statistics Canada, 2022)

2

Agriculture sector is responsible for 10% of GHG emissions in Canada.

(Source: Government of Canada, 2023)

3

Canadian survey on strategic issues in agriculture show climate change is a primary concerns for farmers.

(Source: Agriculture and Agri-food Canada, 2022)

4

Over 40% of farmland is rented.

(Source: Farmland Credit Canada, 2023)

Reciprocity in Farming

Creating value through regeneration

Natural Flows

- Farming is in a mutually sustaining relationship with the natural ecosystem.
- Farming both relies on, and impacts, soil health, biodiversity, and water outcomes.
- Regenerative agriculture leverages these natural flows to create value for the farmer, for ecosystems, and society.



Value Created from Regeneration

How regenerative practices create value



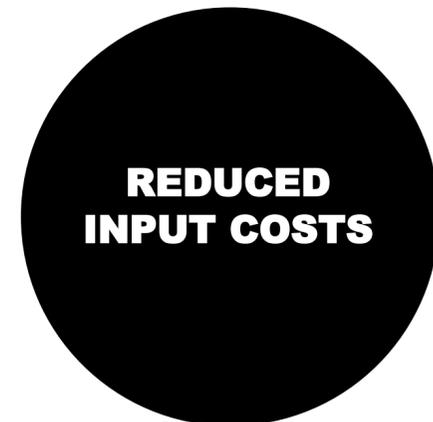
Reaching carbon targets to address climate change.



Carbon and biodiversity credits.



Develop resiliency in the face of extreme weather events.



Lower costs of fertilizer, pesticides, and industrial machinery.



Ensuring productivity into the long-term.



Increase the value of farmland to rent at a premium.

Financial Motivations

Value created by adopting regenerative agriculture practices

- **Carbon sequestration:** Healthy soil and cover crops support healthy plants. Under the Science-Based Target Initiative (SBTi), 34 companies have set targets, including five Canadian firms.
- **Development of nature-based markets:** Speculation that the Taskforce on Nature-related Financial Disclosures (TNFD) can shift financial flows to nature-positive outcomes. TNFD released its full framework in 2023.
- **Reduced costs:** Cost savings can be realized through the need for less chemicals, labour, fuel, and equipment.



Advancing Regeneration

A perspective on the barriers and enablers for farmers



Farming Perspective

For farmers to adopt regenerative practices, the business case needs to make sense. Support is required to overcome their risk adversity and enable the transition. Farmers are interested in adopting regenerative practices. Many consider the long-term sustainability of their land as integral to good land management.

BARRIERS

- Capital required to transition. Forgone revenue.
- Benefits accrue beyond the farm.
- Ecosystem services are difficult to convert to cash.
- Tenure of land management is uncertain. Short-term is prioritized.

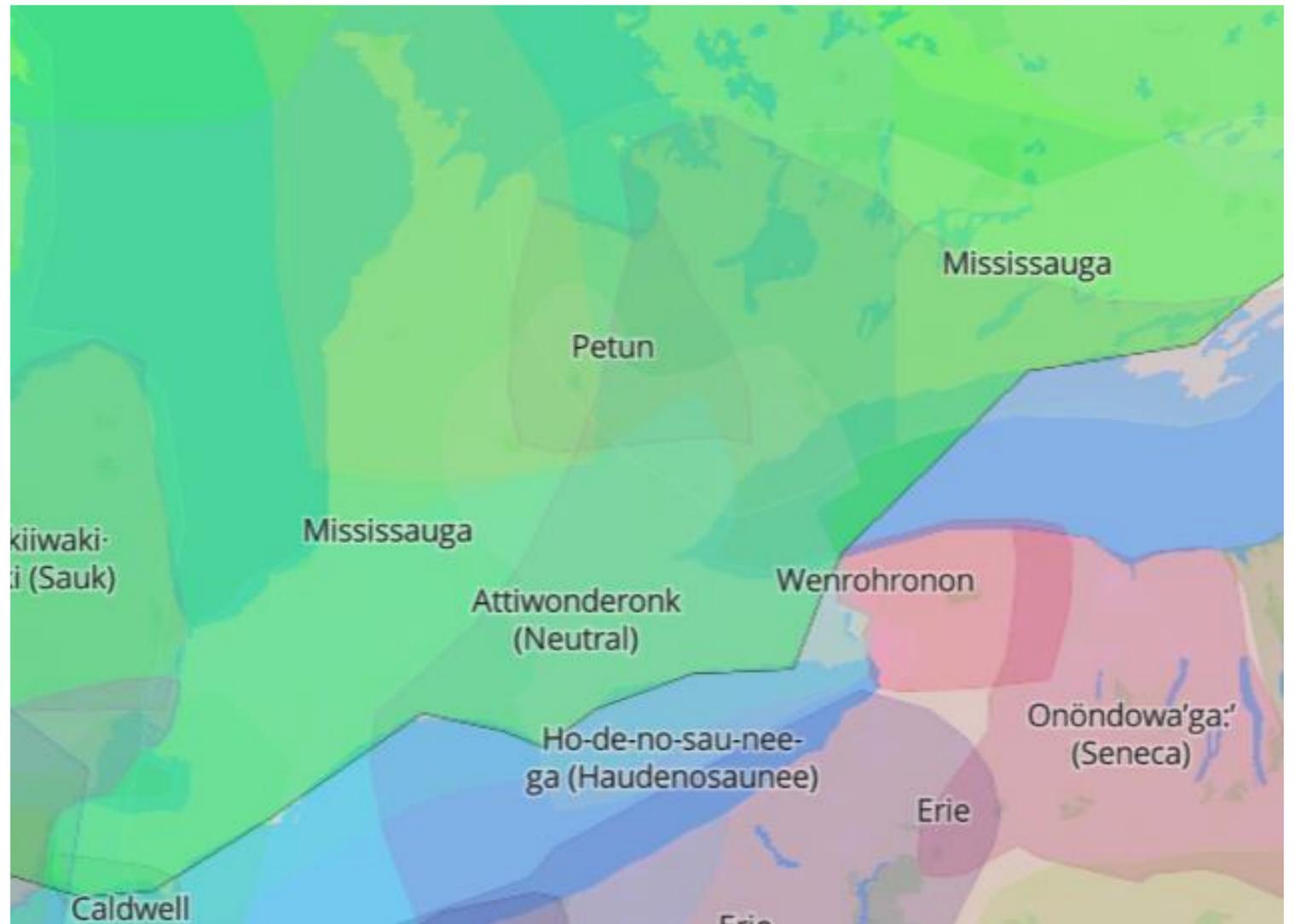
ENABLERS

- Economic incentives and financial support through the value chain.
- Co-benefits tracking for beyond the farm impacts.
- Platforms of education and knowledge exchange.
- Communities of practice.

Systemic Racism in the Agricultural Sector

Significance of Indigenous knowledge

- Indigenous worldviews hold that humans are in “kinship with the world” (Deloria 1999).
- Through an Indigenous worldview, humans are nature; environmental stewardship does not separate humans and nature.
- In Canada, 90 per cent of all protected areas within the past 20 years involve Indigenous communities and 80 per cent of all protected lands for biodiversity are under the leadership of Indigenous communities (Audette 2022).



<https://native-land.ca/>

Systemic Racism in the Agricultural Sector

Significance of Indigenous knowledge

- Three Sisters method of agriculture came from Haudenosaunee. It involves intercropping maize, bean and pumpkin, providing an increase in soil health and productivity (Mt. Pleasant, 2016).
- This method provides two to four times more energy and protein than individual monocultures.
- The Three Sisters method yielded more food and supported more people per hectare than conventional monocultures (Mt. Pleasant, 2016).
- Alignment with regenerative practices since it prioritizes soil health and avoids heavy machinery.



Three Sisters, Sarah Braun. 2006. Via Flickr.

Systemic Racism in the Agricultural Sector

The use of agriculture as a tool in colonization

- The infamous pass system (1885-1911) limited Indigenous participation in agriculture. Trade was limited between Indigenous peoples and White settlers (Carter 2019).
- The permit system affected Indigenous agricultural activity through crop and livestock seizures and prevented them from selling to the market (Bateman 1996).
- The Indian Residential Schools assimilation included agriculture classes.



First Nations farmer ploughing field on Western Canadian Indian reserve, 1920. Source: Library and Archives Canada. Via Sean Kheraj

Systemic Racism in the Agricultural Sector – Discrimination against Black farmers

- Black settlers who fought in early wars in Canada's history were rewarded with lands and started farming.
- Early Black farmers were often given poor quality and isolated farmland compared to White farmers (Rawlyk 1968).
- There is a lack of census data on Black farmers.
- A small number of Black-led farms have emerged in southern Ontario.

Griffin House (Credit: Attractions Ontario)



Systemic Racism in the Agricultural Sector – Migrant Workers

- Agriculture is one of the top recipients of migrant workers.
- Migrant workers play an important role in agriculture as 40% of farm operators will retire by 2033 (RBC 2023).
- Temporary Foreign Workers face low wages and may be reluctant to take breaks due to their working conditions (Beckford 2016; Preibisch 2010).
- The federal government has made improvements, but there are issues that persist.

The Role of Land Use Planning in Farmland



Conversion of farmland to sprawling urban developments.



Provincial legislation and policy in Ontario.



Media coverage on rising land values and population increase.



Fragmentation of Farmland: The Case of the Greenbelt

Alternatives: Farming and Higher Residential Density



SPECIALTY CROPS.
FARMING.



HIGHER RESIDENTIAL
DENSITY IN EXISTING
URBAN AREAS.



Credit: Jean-François Obregón

Financing Regenerative Agriculture

Examples of financial tools available to support the transition

Agri-Food Accelerators

Offer financial support and mentorship for equity stake in start-ups.

Blended Finance

The combination of public or philanthropic funds to attract private capital.

Carbon/Biodiversity Credits

Package regenerative practices on farms for sale on carbon markets.

Land Use Agreements

Models like conservation easements, community supported agriculture, and green leases.

Cost-Sharing Programs

Provides funding to share the costs of farmers adopting regenerative practices.

Grants

Provides funding for agriculture programs with no expectation of return.

Green Bonds

Bonds in which proceeds are earmarked for green activities.

Environmental Impact Bonds

Bonds in which returns are triggered by threshold of environmental impact.

Impact Investing

Investing strategy in which environmental or social outcomes are considered.

Transition Loans

Loans for the purpose of reducing farms' environmental harm.

Ecosystem Services Payment

Model in which farmers are paid per acre for the ecosystem services of their farmland.

Sustainability-Linked Bonds

Loans with preferred financing based on sustainability outcomes.

Financing the shift to regenerative agriculture:

- Cost Sharing Programs:
 - Funded by Federal, Provincial/Territorial, First Nations, Municipal governments, or non-for-profits.
 - **Benefit:** It provides funding to farmers to costs incurred by adopting new farming practices (i.e., upfront costs, cost sharing).
 - **Drawback:** Eligible costs can be reduced to specific practices, instead of a holistic approach
 - Examples:
 - Sustainable Canadian Agricultural Partnership (Sustainable CAP)
 - Agricultural Clean Technology Program
 - On-Farm Climate Action Fund



**Sustainable Canadian
Agricultural Partnership**

Competitive. Innovative. Resilient.

A Holistic Approach to Financing

Recommendations for financial instruments supporting regenerative agriculture

	Action	Criteria for Success
1	Engage Systems Actors	Consider system, including silenced perspectives (non-humans, marginalized communities).
2	Clarify the definition of regenerative agriculture	Regeneration is defined in terms of practices, and off-farm considerations for a paradigm shift.
3	Develop a holistic approach to outcome tracking	Multiple metrics and co-benefits are tracked. Success is determined by holistic environmental, social, and economic factors.
4	Place farmer first, redistribute the risk and benefits	Farmer/landowner is compensated for adoption of regenerative practices. Ecosystem services are priced into farming business model.
5	Consider social implications of ecosystem regeneration	Involves BIPOC leadership. Supports land sovereignty, food security, and cultural knowledge transfer.
6	Meet goals of downstream actors	Considers how the organization can better contribute to the system. Considers social and environmental impacts to the system.
7	Maintain access to farmland	Supports development of farming support services. Considers health of farmland for future generations. Considers implications for ecosystem corridors, natural heritage and cultural usage of land, and co-benefit tracking across plots of land.

Key Takeaways

Regenerative agriculture practices are not new, but the paradigm of farming has shifted to industrial production to match increasing demands placed on agriculture.

The value created from regenerative practices can be realized through cost reduction, sustained yields, food security, resilience and risk management, and land valuation.

For farmers to adopt regenerative practices, the business case needs to make sense. Support is required to overcome their risk adversity and enable the transition.

Agriculture has historically been used as a tool of colonization and a playing field for power dynamics that have marginalized certain communities.

Land use, zoning, and valuation structures have implications for the fragmentation of farmland and the barriers to entry for farmers to own land.

Financing agricultural infrastructure has been decoupled from financial support for nature. Financial instruments to advance regeneration exist and can overcome this barrier.

Key Recommendations

1. Clarity on definition of "regenerative agriculture" and its role in supporting current farming practices.
2. Accounting for nature's value in agricultural production to create markets and translating ecosystem services into financial value.
3. Inclusive financial infrastructure in cooperation with the various actors along the value chain.
4. Just transition and empowerment.
5. The need for systems-level solutions to create a systems shift.



References

Agriculture and Agri-food Canada. 2022. “Canadian Producer Views of Strategic Issues in Agriculture.” 2022.

<https://agriculture.canada.ca/en/agri-info/canadian-producer-views-strategic-issues-agriculture>

Aktar, Wasim, Dwaipayan Sengupta, and Ashim Chowdhury. 2009. “Impact of Pesticides Use in Agriculture: Their Benefits and Hazards.” *Interdiscip Toxicol*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2984095/>.

Audette, Michele. 2022. “Protecting Mother Earth: This Is the Time for Canada to Shine and Follow the Lead of Indigenous Peoples.” *Hill Times*. <https://www.hilltimes.com/story/2022/12/12/protecting-mother-earth-this-is-the-time-for-canada-to-shine-and-follow-the-lead-of-indigenous-peoples/358418/>.

Beckford, Clinton. “The Experiences of Caribbean Migrant Farmworkers in Ontario, Canada.” *Social and Economic Studies* 65, no. 1 (2016): 153–88. <http://www.jstor.org/stable/26380115>.

Corning, E, A Sadeghpour, Q Ketterings, and K Czymmek. 2016. “The Carbon Cycle and Soil Organic Carbon.” Cornell. <http://nmsp.cals.cornell.edu/publications/factsheets/factsheet91.pdf>

Deloria, Vine. 1999. *Spirit & Reason : The Vine Deloria, Jr., Reader*. Edited by Barbara Deloria, Kristen Foehner, and Samuel Scinta. Golden, Colorado: Fulcrum Publishing.

Eis, Jason, and Marc Kennedy. 2022. “The State of Nature Markets Today and Tomorrow.” McKinsey & Co. (blog). December 9, 2022. <https://www.mckinsey.com/capabilities/sustainability/our-insights/sustainability-blog/the-state-of-nature-markets-today-and-tomorrow>.

Farmland Credit Canada. 2023. “2022 FCC FARMLAND VALUES REPORT.” Farm Credit Canada.

References – Continued

Government of Canada. 2022. “Regulations Amending the Immigration and Refugee Protection Regulations (Temporary Foreign Workers): SOR/2022-142,” June. <https://canadagazette.gc.ca/rp-pr/p2/2022/2022-07-06/html/sor-dors142-eng.html>.

Government of Canada. 2023. “Greenhouse gas emissions and agriculture.” <https://agriculture.canada.ca/en/environment/greenhouse-gases#:~:text=10%25%20of%20Canada%27s%20greenhouse%20gas,Methane>

Migrant Workers Alliance for Change. 2022. “Submission on Agri-Food Immigration Pilot Program.” Migrant Workers Alliance for Change. <https://migrantworkersalliance.org/wp-content/uploads/2022/07/MWAC-Brief-on-AFIP.pdf>.

Osman, Laura. 2023. “Pilot Program Seeks to Reward Companies That Better Protect Temporary Foreign Workers.” <https://www.barrietoday.com/national-news/pilot-program-seeks-to-reward-companies-that-better-protect-temporary-foreign-workers-7379954>.

Rawlyk. 1968. The Guysborough Negroes: A Study in Isolation. <https://dalspace.library.dal.ca/handle/10222/59205>.

RBC. 2023. “Farmers Wanted: The Labour Renewal Canada Needs to Build the Next Green Revolution,” April. <https://thoughtleadership.rbc.com/farmers-wanted-the-labour-renewal-canada-needs-to-build-the-next-green-revolution/>.

Ritz, Karl. 2021. “The Groundswell 5 Principles of Regenerative Agriculture,” 2021. <https://groundswellag.com/karl-ritz-the-groundswell-5-principles-and-soil-sense/>

Statistics Canada. 2022. “Overview of Canada’s Agriculture and Agri-Food Sector.” July 18, 2022. <https://agriculture.canada.ca/en/sector/overview>

Thank you/Merci

Diane-Laure Arjaliès, Ivey Business School

darjalies@ivey.ca

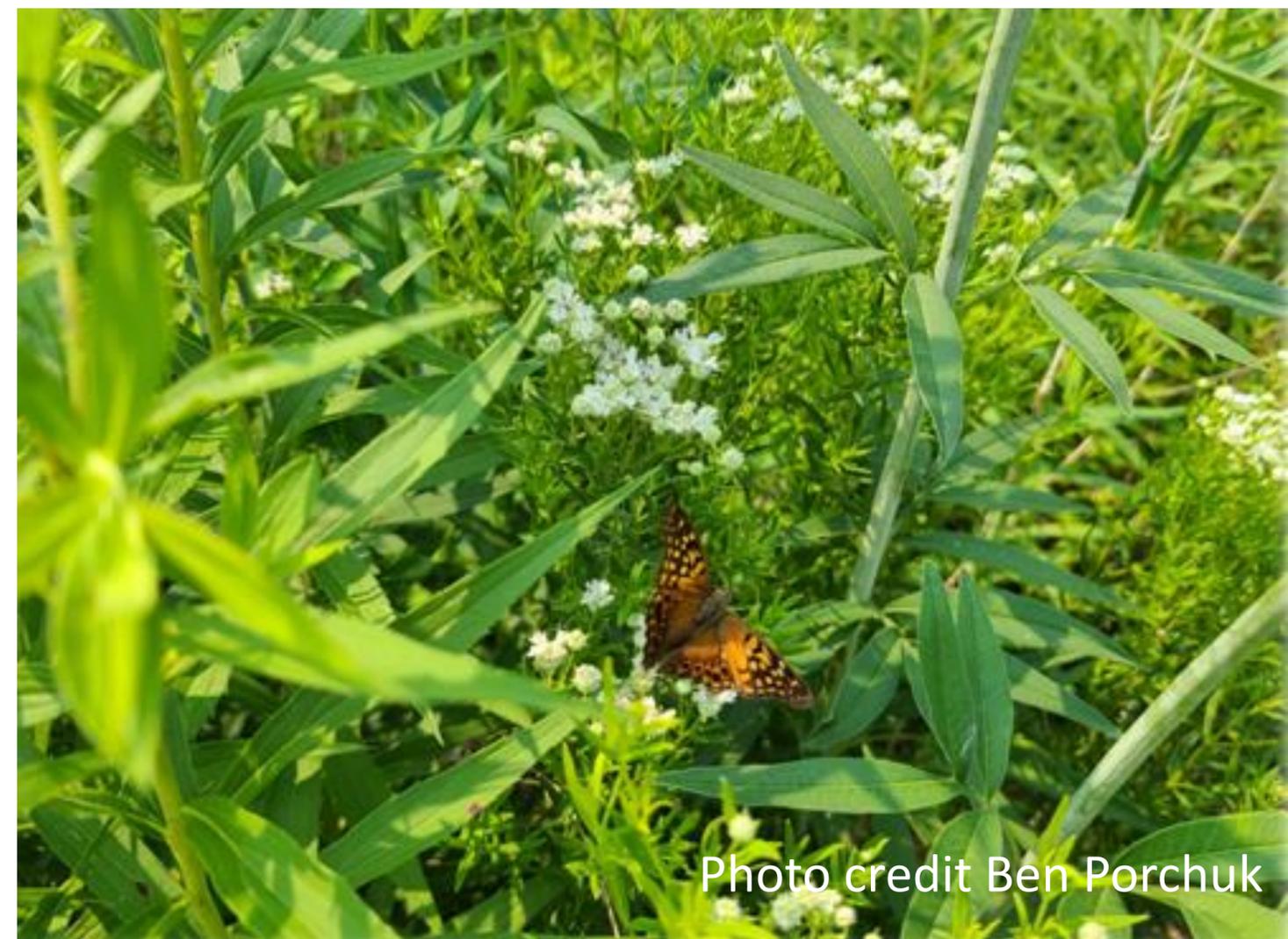


Photo credit Ben Porchuk