Climate Opportunities in the Agriculture Sector

April 2022

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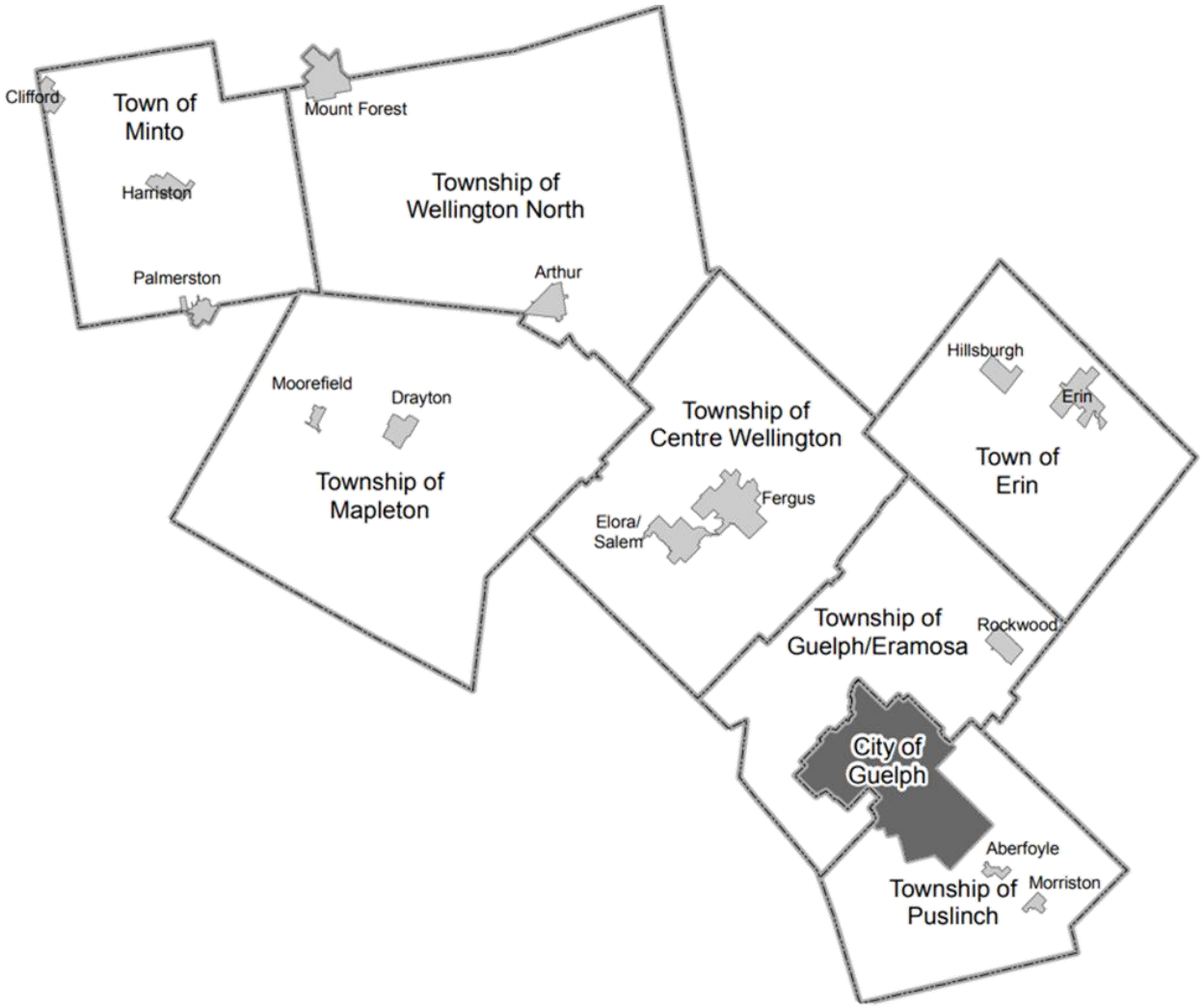
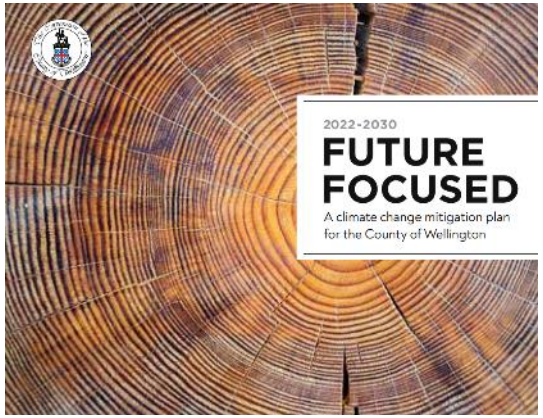
Background



- Wellington County land use is predominantly agricultural
- Agriculture is the third largest employer in the County and a focus area for growth in the County's 3-year Economic Development Plan
- 522,000 t CO2e (2016) from agriculture:
  - 50% Enteric fermentation
  - 23% Manure management
  - 26% Soil management
  - 1% Liming and urea

Picture it, Wellington County, 2019.

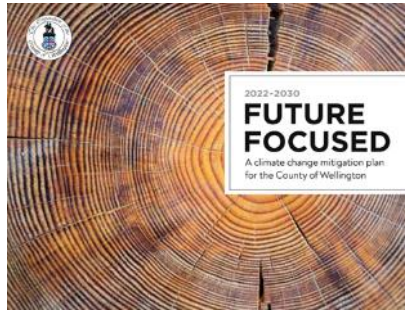


- MCIP grant to complete mitigation plan
- 2 years

OurFoodFuture
Guelph-Wellington

- Create Canada's first circular food economy
- $10 million Smart Cities grant
- Partnership with City of Guelph
- 4 years

Scope of Work



- Buildings
- Transportation
- Solid Waste
- Agriculture

Scope of Work

Agriculture

methane, nitrous oxide, carbon dioxide

- Manure Management
- Soil Management
- Lime and Urea Application
- Biomass burning
- Carbon Sequestration

OurFoodFuture
Guelph-Wellington

- 50% increase in access to affordable nutritious food
- 50 new circular food businesses
- 50 % increase in economic benefit by unlocking the value of waste

Scope of Work

Agriculture

methane, nitrous oxide, carbon dioxide

- Manure Management
- Soil Management
- Lime and Urea Application
- Biomass burning
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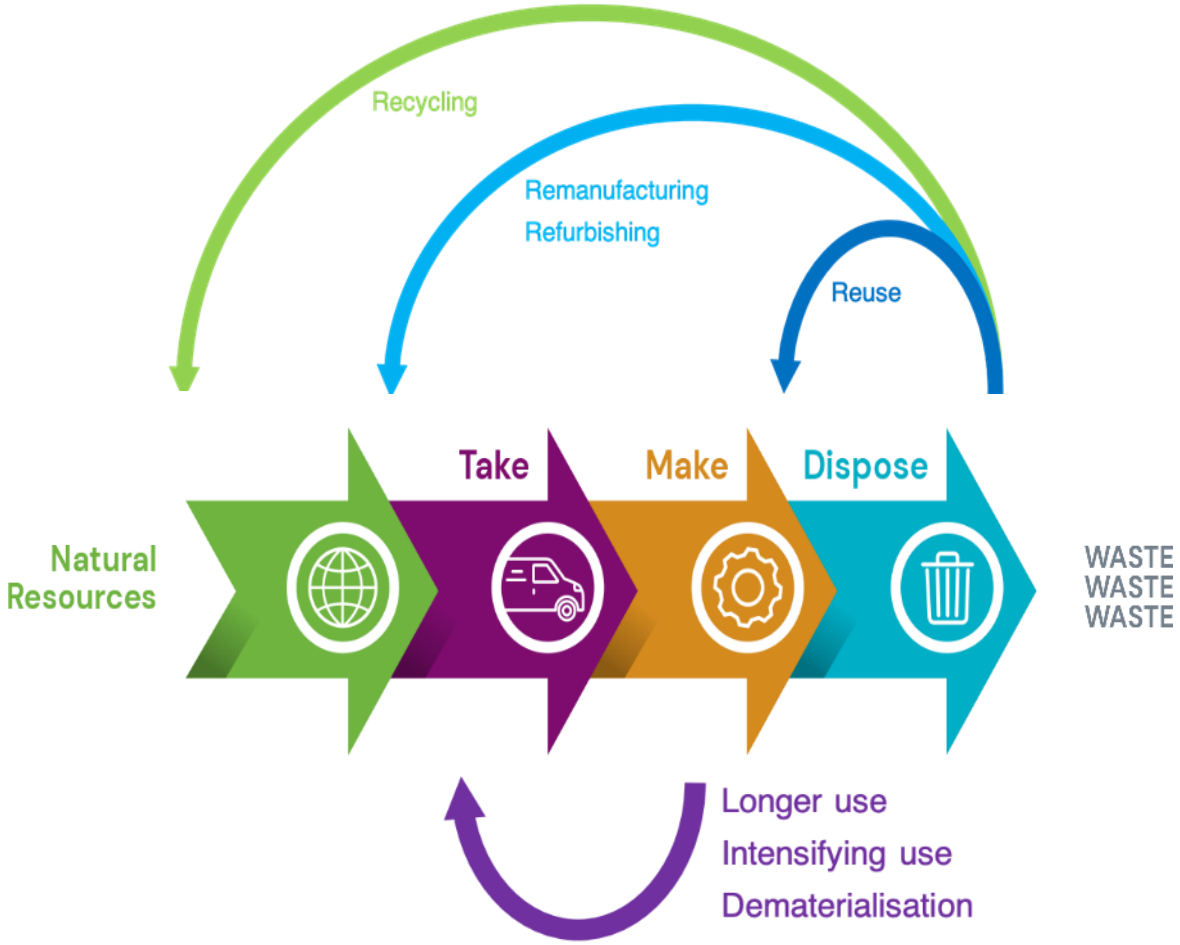
Circular Economy

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems

What is a circular economy?

What is a circular economy?



Regenerative Agriculture

- Don’t disturb the soil
- Keep the soil covered
- Keep living roots in the soil
- Keep it diverse
- Bring animals back to the land

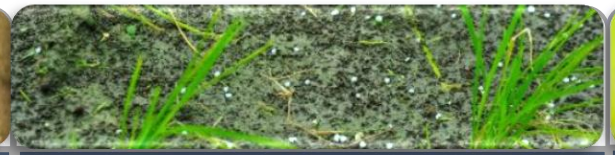
Regenerative Agriculture Practices

Cover Crops

- Manage water, pests, weeds
- Maintain soil carbon
- Add nutrients to soil
- Protect against erosion
- Reduce nutrient loss
- Stimulate biological activity
- …so much more!

Rotational/Mob Grazing

- Reduce disruption of carbon stores
- Less need to feed cows grains
- Less need to apply fertilizers



Nutrient Management

- Reduce cost of fertilizer
- Improve knowledge of soil health
- Reduce nitrous oxide emissions

Tree Planting

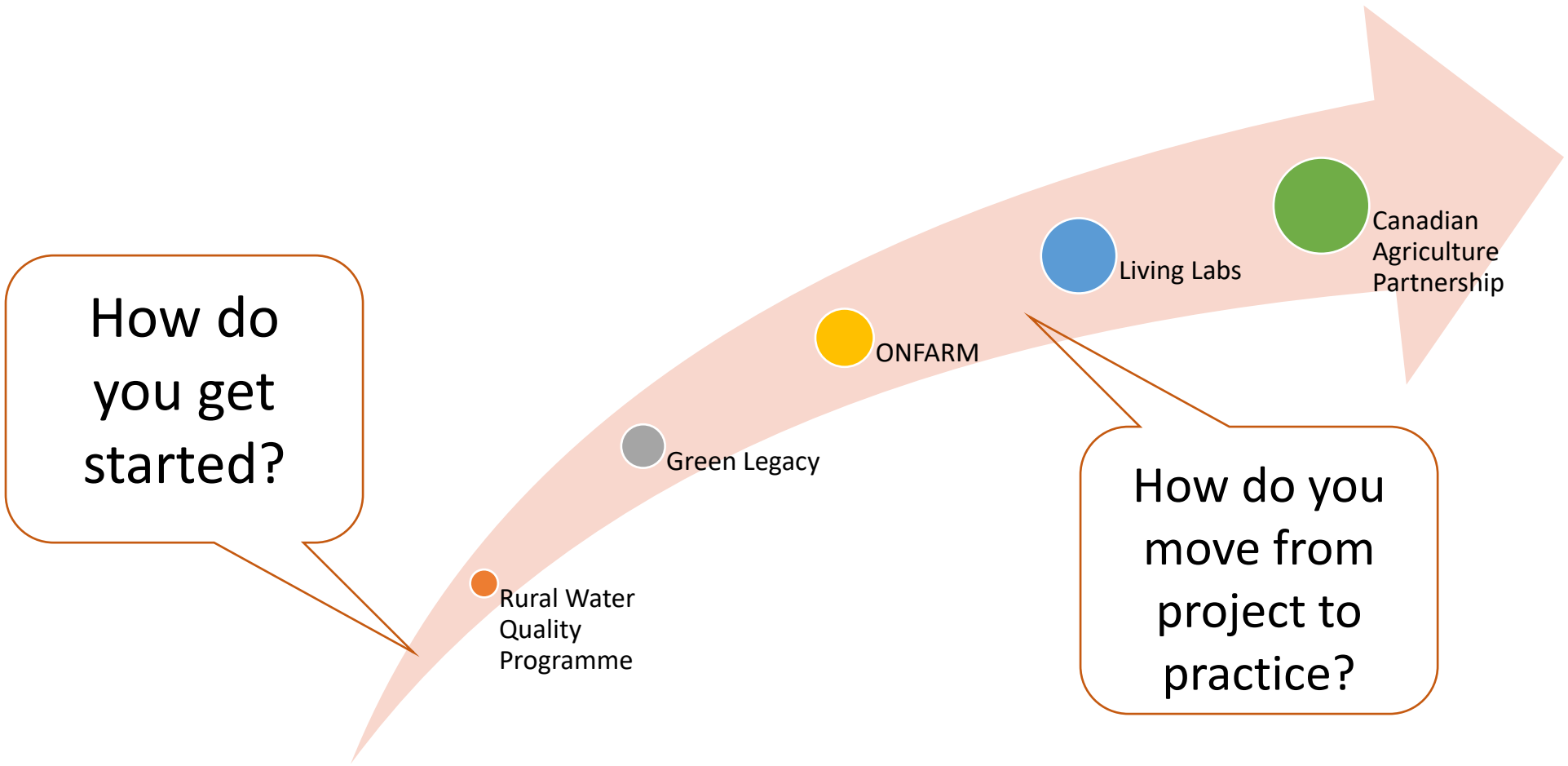
- Increase carbon sequestration
- Mitigate heat
- Improve biodiversity and habitats
- Support pollinators

Assessment of Existing Programmes

Farmers for Climate Protection	Agricultural Climate Solutions – Living Labs	Federal Budget 2021	Rural Water Quality Programme (CAs)	Carbon credit protocols
Cover crop uptake	Carbon sequestration – cover crops, shelter belts, N-fixing crops	Support of ACS	Cover crops	Lower methane
Less nitrogen	GHG mitigation – nutrient mgmt., feeding strategies	Climate Solutions – wetlands and trees	Nutrient management plans	Lower nitrogen
Rotational grazing		AG Clean Tech – clean energy, grain dryers	Manure storage and handling	Sequestration
Wetlands and trees			Erosion control	Fuel switching
Clean energy on farms			Tree planting	
Celebrate champions				

ALUS	OSCIA/EFAO Living Labs 2021-2023	ONFARM (OSCIA)	LEADs – Lake Erie Agriculture Demonstrating Sustainability (OSCIA)	CVC Soil Observation Test
Recover/restore marginal farmlands	Water Quality	Water Quality	Soil health	Soil Health
New Acre and grazing forward in support of regenerative agriculture	Soil Health Conservation	Soil Health	Reduce nutrient loss	

Existing and Anticipated Programmes



What is the municipal role?

- Provincial Policy Statement
  - Regarding stormwater management – minimize erosion and changes to water balance…using green infrastructure.
  - Long term economic prosperity…minimizing negative impacts of climate change and consider ecological benefits of nature.
  - Protect, improve, restore water quality and quantity…by preparing for impact from climate change.
  - Prepare for impacts of climate change that may increase risks associated with natural hazards.

Experimental Acres Pilot

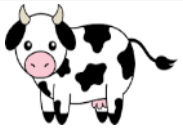
- Focus on a practice that the farmer thinks could work on their farm
- Provide some funding to cover expenses and time
- Offer assistance in drafting a plan to evaluate the success of the experiment
- Include farm visits to assist with metrics

Experimental Acres Pilot

Learning objectives:

- What are the barriers?
- What are the knowledge gaps?
- How do we measure?
- How do we collect data?
- What is the role for municipalities?

X-Acres - Measuring and tracking

			
Soil testing	Soil Health Assessment	Photo Documentation	Farmer Journal
• Organic Matter, • Phosphorus, • Potassium, • Magnesium, • Calcium, Sodium, • Soil pH • Nitrogen-Nitrate	• Soil profile • Soil structure • Infiltration • Compaction • Cover • Microbiology • Insects	• Monthly, at minimum	• Optional • Pre and post pilot surveys

X-Acres – Outcomes and Deliverables

- X Acres pilot handbook and programme evaluation
- Data collection and tracking framework
- X Acres farmers' reports
- Stories from the field




Opportunities

- Opportunity # 1: Align goals across departments
- Opportunity #2: Use existing frameworks that respond to shared goals
- Opportunity #3: Find the gaps in existing programmes
- Opportunity #4: Create programmes that align with greater body of work

Lessons learned (so far)

- Regenerative agriculture is a continuous practice.
- Measure the profit, not the yield, and include the value of the co-benefits.
- Farming is personal.
- Science doesn’t sell. Social science does.
- Don‘t be annoying.
- Gather local experts, cross-sector (academia, practitioners, industry leaders, farmers, expert coaches, etc.).
- Find cheerleaders.

Acknowledgements

- Mel Luymes, Headlands Ag-Enviro
- Janet Harrop, WFA
- Mark Eastman, CVC
- Tracey Ryan, OSCIA
- Chris Meier, A & L Labs
- Arrell Food Institute Students, University of Guelph:
  - Evan Tollenaar
  - Olatunbosun Ayetan
  - Hannah Woodhouse
  - Brenda Zai
  - Havie Carter
- Royalty-free photos: unsplash.com, pexels.com

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