GLOBAL PARTNERSHIP FOR BUSINESS AND BIODIVERSITY (Third Meeting)
Canadian Peat Industry's Sustainability

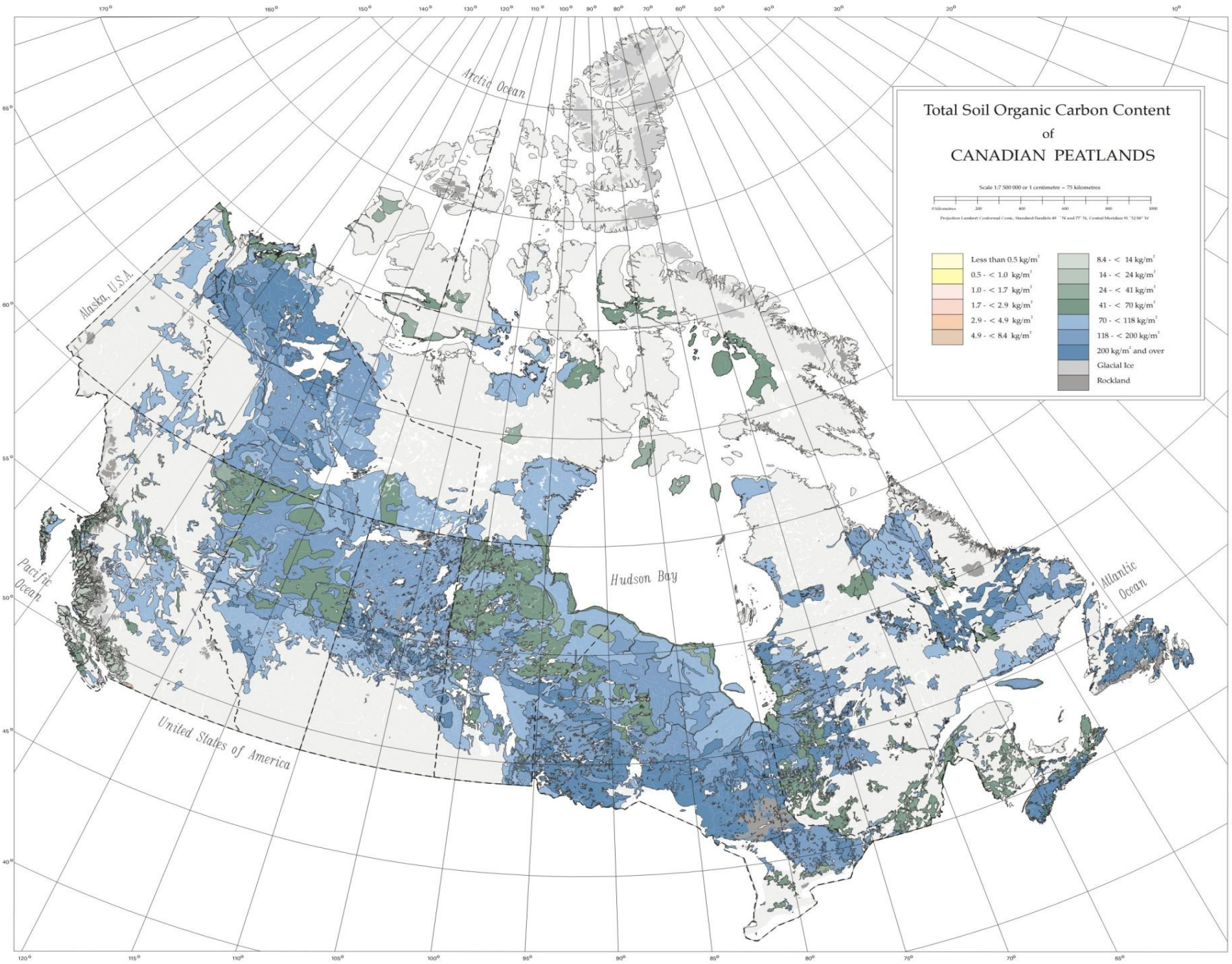
MONTREAL, CANADA

October 2/3, 2013

Canadian Sphagnum Peat Moss

Overview

- Canadian peatland resource
- Peatland restoration research
- Sustainability Initiatives
- Conclusions


Total Soil Organic Carbon Content
of
CANADIAN PEATLANDS
Scale 1:7 500 000 or 1 centimetre = 75 kilometres
0 Kilometres 200 400 600 800 1000
Projection Lambert Conformal Conic, Standard Parallels 49 °N and 77° N, Central Meridian 91 °32'00" W
Less than 0.5 kg/m²
0.5 - < 1.0 kg/m²
1.0 - < 1.7 kg/m²
1.7 - < 2.9 kg/m²
2.9 - < 4.9 kg/m²
4.9 - < 8.4 kg/m²
8.4 - < 14 kg/m²
14 - < 24 kg/m²
24 - < 41 kg/m²
41 - < 70 kg/m²
70 - < 118 kg/m²
118 - < 200 kg/m²
200 kg/m² and over
Glacial Ice
Rockland
Arctic Ocean
Alaska, U.S.A.
Pacific Ocean
Hudson Bay
Atlantic Ocean
United States of America

Canadian peatland resource

- Over 70 million[1] tonnes of peat accumulates each year in Canada

- 1.3 million[2] tonnes of peat is harvested each year in Canada

1. Canadian Peat Harvesting and the Environment, Second Edition, Issues Paper, No. 2001-1, North American Wetlands Conservation Council
2. Statistics Canada, 2005 (http://www.statcan.ca/bsolc/english/bsolc?catno=26-202-X&CHROPG=1)

Peatland uses in Canada

- 81% Virgin Peatlands
- 15% Agriculture
- 0.8% Urban Development
- 0.8% Reservoirs
- 0.7% Misc. Development
- 0.3% Ports
- 0.02 % Forestry
- 0.016% Peat Moss Production

Importance of peat in horticulture

- Peat is underpinning of multi-billion dollar horticultural industry.

Importance of peat in horticulture

- Canada is largest producer of horticultural peat.
- Supplies 98% of *Sphagnum* peat to U.S.

Restoration Progress since 1992

Restoration workshop in 1992

Greenhouse experiments in 1992

Field experiments in 1997

Full scale restoration in 1999

350 hectare industrial restoration in 2000

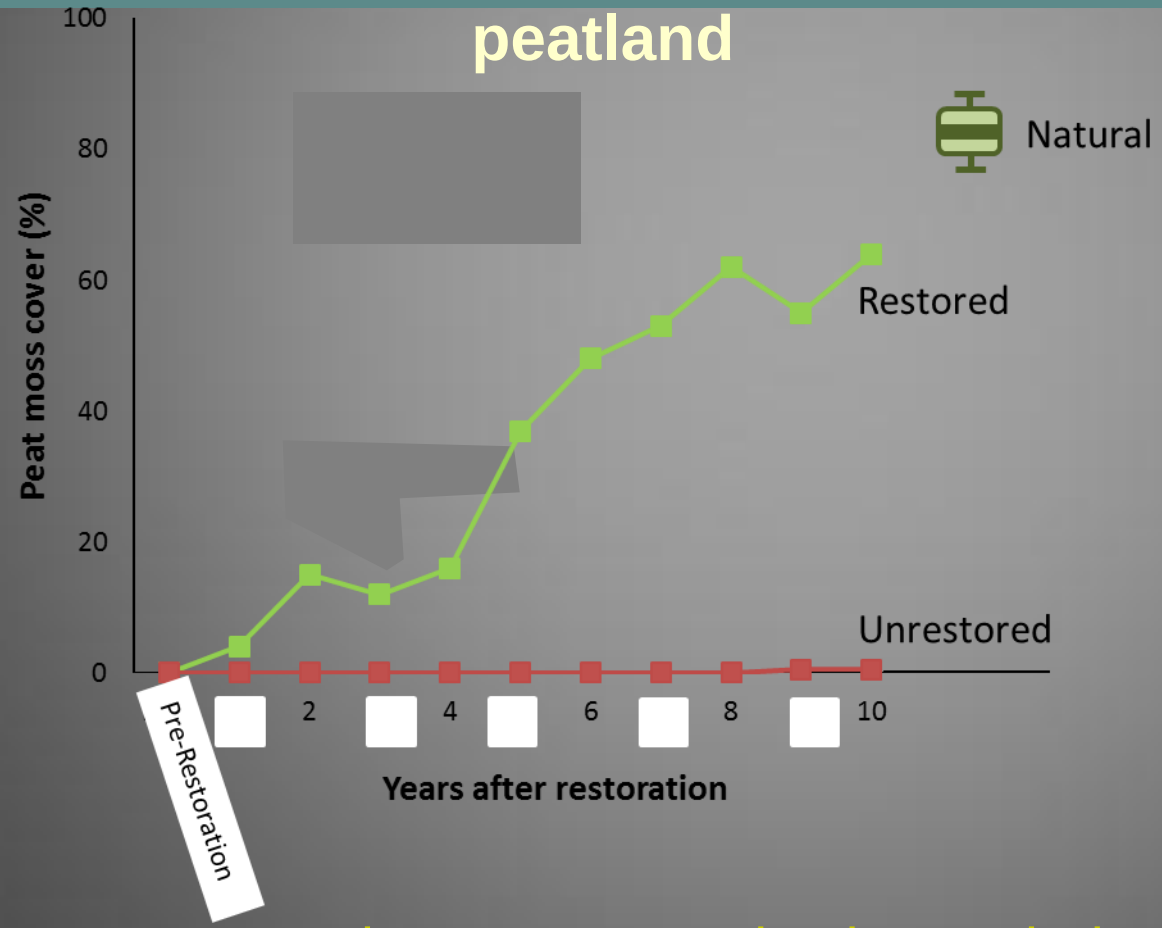
Chair in Peatland Management

- In 2003, established first five-year term of the Industrial Research Chair in Peatland Management
- Line Rochefort (U. Laval) appointed chair
- In 2008 a second five-year term of the Industrial Research Chair began
- There are 17 Canadian peat producers that are partners

Restoration of Peatland Ecosystem: the Case of Bois-des-Bel

Current state of knowledge: Biodiversity

Peat moss abundance in restored peatland



Experimental site

Bois-des-Bel

- Central Quebec
- Restored in 2000

Sphagnum cover increase = production and decomposition

Current state of knowledge : Biodiversity of restored sites

Unrestored | Restored | Natural

Number of plant species

Plant composition

Peatland species

Wetland species

Forest plants

Berries

Current state of knowledge : Biodiversity of restored sites

Birds:

Some species typical of natural peatlands are present

Low abundance

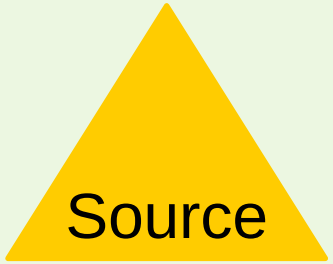
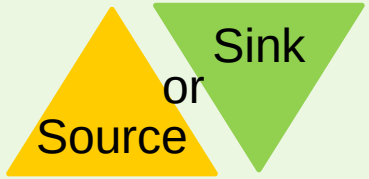
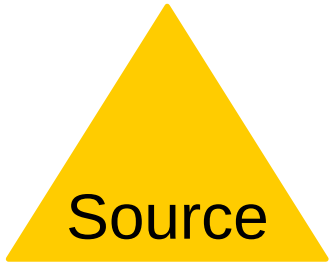
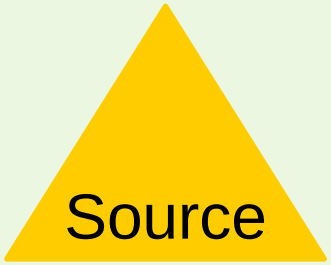
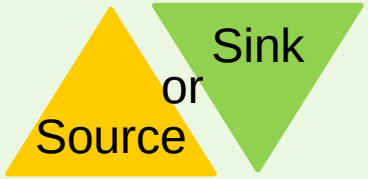
Coleoptera:

Amphibians:

Species are different than in natural peatlands

Higher abundance

Current state of knowledge: Carbon cycling in peatlands

	Unrestored	Restored	Natural
CO_2 Carbon dioxyde			
CH_4 Methane			
Net balance			

Peat Industry Sustainability Initiatives

- Strategy for Responsible Peatland Management. (IPS Sponsored)
- Life Cycle Assessment Studies.
- Certification: Peatland Harvesting.
- Industry Social Responsibility Report

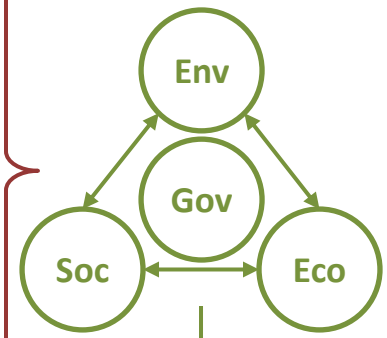
Canadian Sphagnum peatmoss CSR process

Diagnostic

Supply chains | Sector

- Environmental dimension (2009-2012)
- Social dimension (2011-2012)
- Economic dimension (2011-2012)

Strategic integration



Stakeholder dialogue

Issues identification and prioritization (adaptation of SAFA framework)

CSR reporting

Approaches

- E- LCA — S- LCA
- I/O
- SAFA (V.1.1)
- Focus groups
- Indicators
- Commitments
- External review

Horticultural peat life cycle

Restoring peatlands
At the end of the development cycle, the harvest site can be restored, meaning it can return to its role as a wetland ecosystem that accumulates carbon and whose vegetation is dominated by sphagnum moss.

Ensuring proper drainage
Drainage ditches are dug around and within the development site to drain a portion of the peatland's water.

Removing surface vegetation
Surface vegetation is removed using a rotovator, giving access to the peat deposit. Plant fragments can then be collected and transported to restoration sites.

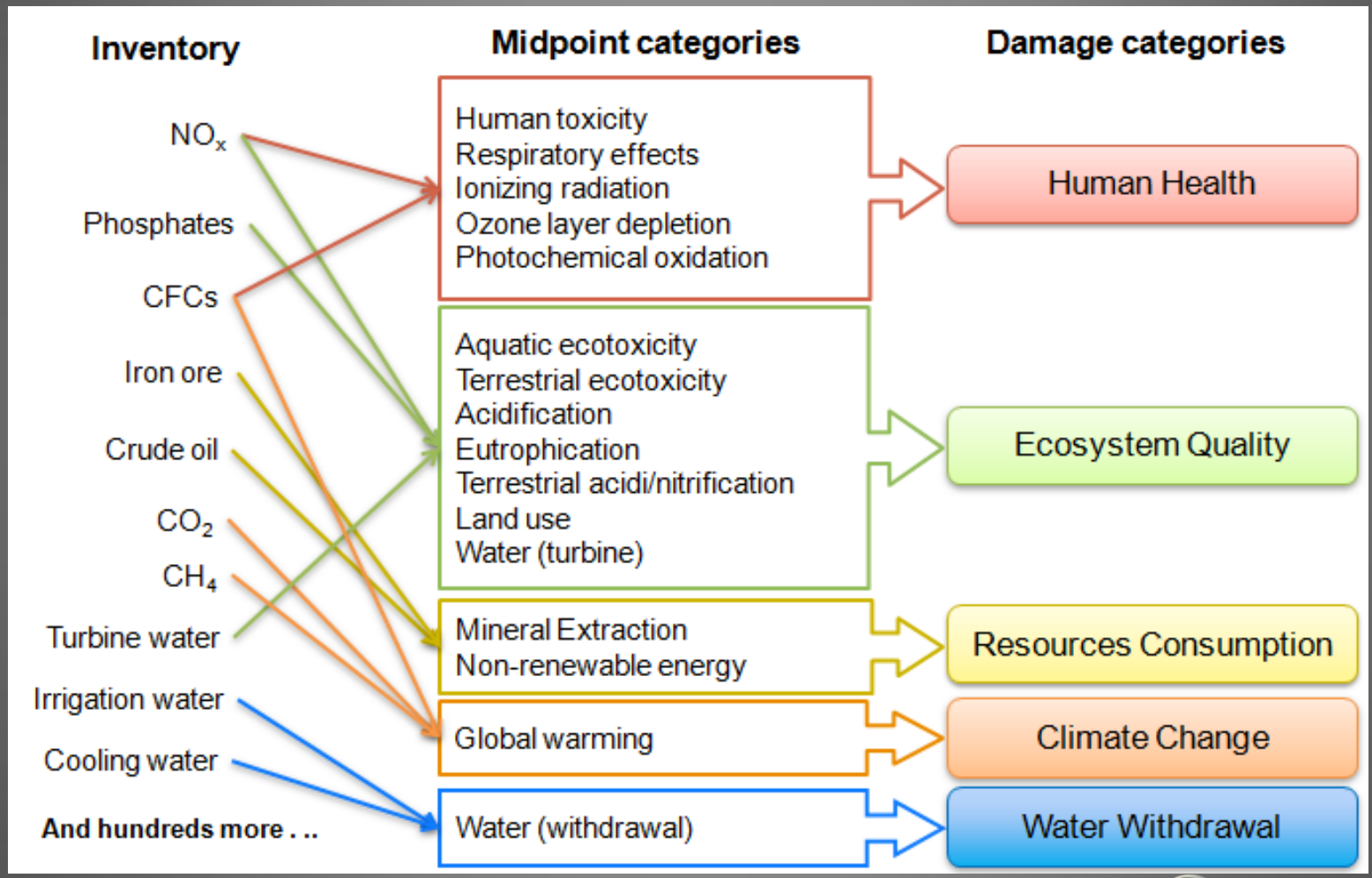
Levelling the ground
A leveller is used to evenly flatten the ground.

Preparing the field
Sun and wind are required to dry the surface peat layer before harvesting. An uppermost layer is usually harrowed to disrupt capillary flux (a process called milling), which accelerates the drying process.

Drying and collecting
One to three days later, the dry peat layer is collected using large vacuum harvesters or other equipment. The peat is transported to a processing facility for sifting and packaging. Often, peat is combined with other ingredients such as compost, bark, fertilizer, etc.

Rehabilitation of peatlands
The closure of a site may involve its rehabilitation towards another type of environment, which is generally the case where conditions do not allow for the restoration of a peatland site. Examples of rehabilitation: berry crops, forest plantations, etc.

Life cycle impact assessment: *From cause to effect*



According to the IMPACT 2002+ methodology (2003, 2011)

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The Social LCA perspective

- A recent assessment tool (2009)
- Assesses **behavior** – not processes
  - By identifying the organizations involved
    all along a product's life cycle
  - By referring to a list of issues of concern
  - Related to five main stakeholder categories

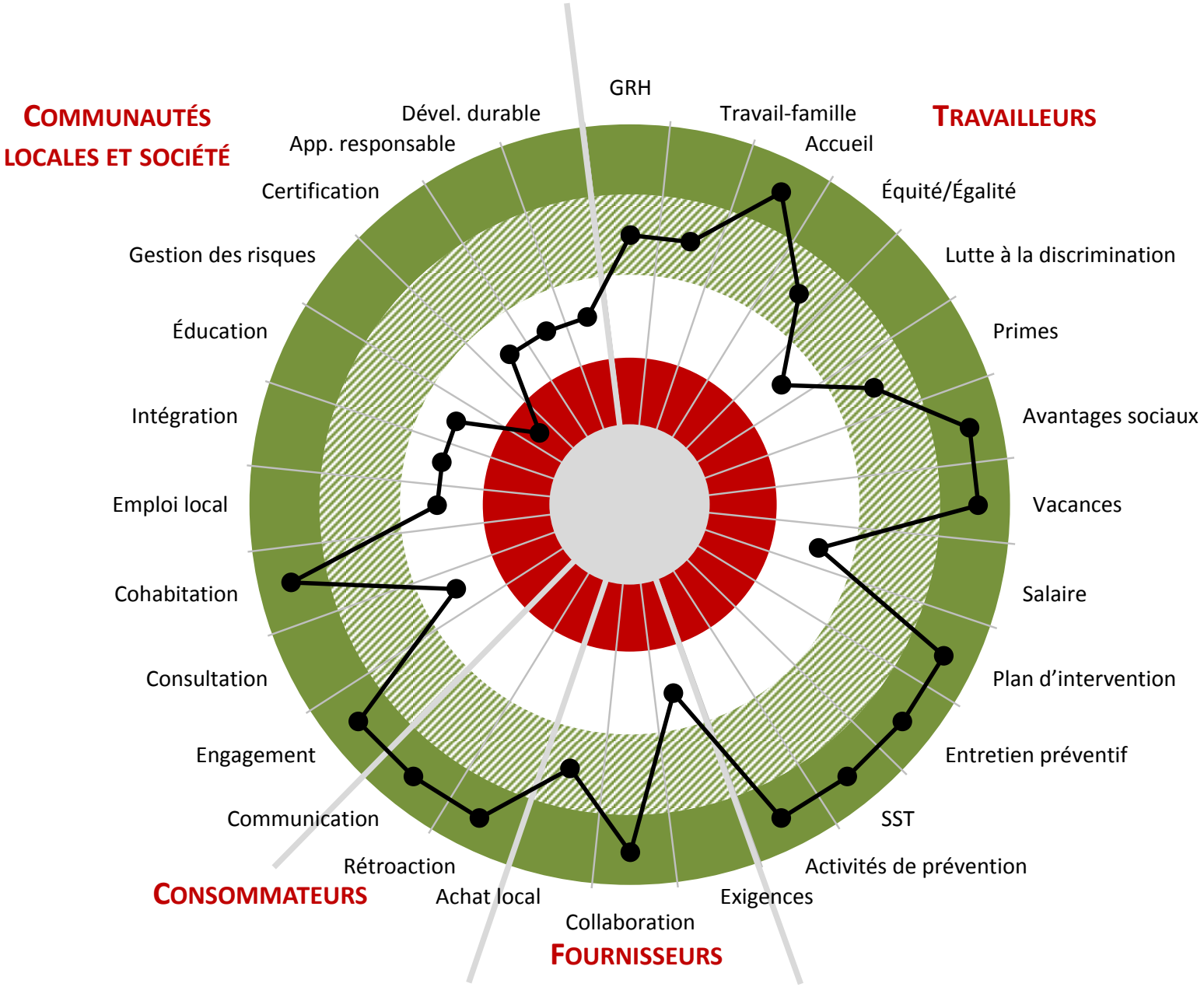
Workers **W**

LC Local communities

Consumers **C**

VCA Suppliers & partners

Society **S**


COMMUNAUTÉS LOCALES ET SOCIÉTÉ
TRAVAILLEURS
CONSOMMATEURS
FOURNISSEURS
GRH
Travail-famille
Accueil
Équité/Égalité
Lutte à la discrimination
Primes
Avantages sociaux
Vacances
Salaire
Plan d'intervention
Entretien préventif
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Activités de prévention
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Cohabitation
Emploi local
Intégration
Éducation
Gestion des risques
Certification
App. responsable
Dével. durable


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GESTION RESPONSABLE DES TOURBIÈRES
Contient un minimum de 90% de tourbe certifiée

Implementation

- Seven peat producers have achieved certification.
- Approximately 70% of the peat produced is covered under this certification label.
- additional companies are in the process of acquiring certification.

THE SOCIAL RESPONSIBILITY REPORT

Context and objectives

- Structure and organise in a coherent and systematic way the various LCA-based initiatives as well the Veriflora® certification process conducted so far by the industry
  - **Identify a recognized accounting method suited to the need of the CSPMA**
- Make an Industry Social Responsibility (ISR) Report to provide a benchmark for sustainable accounting of the industry's social, environmental and economic impacts
  - **Communicate information** to stakeholders on the performance, targets, and actions planned towards sustainability indicators;
  - **highlights the actions** taken by the sector toward sustainability and **sets the stepping stones for the future**

Sustainability Assessment of Food and Agriculture systems (SAFA) pilot project

- The **SAFA framework**
  - An **international reference tool** for assessing the sustainability performance of food and agriculture businesses
  - Based on **selected sustainability themes**, sub-themes and indicators of performances
  - **Developed by** United Nations Food and Agriculture Organization (**FAO**) over a 4 year period as a holistic proposal for assessing sustainable agriculture
- The **SAFA guidelines** are a test version
  - 23 pilots – from developed and developing countries
    - Peat moss (Canada)

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- … **Economic dimension (2011-2012)**

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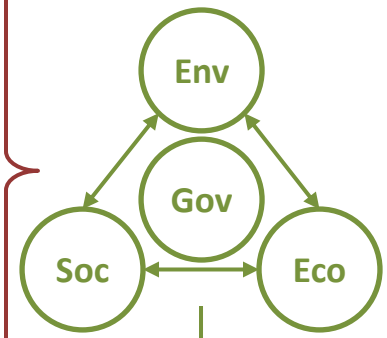

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- **I/O**
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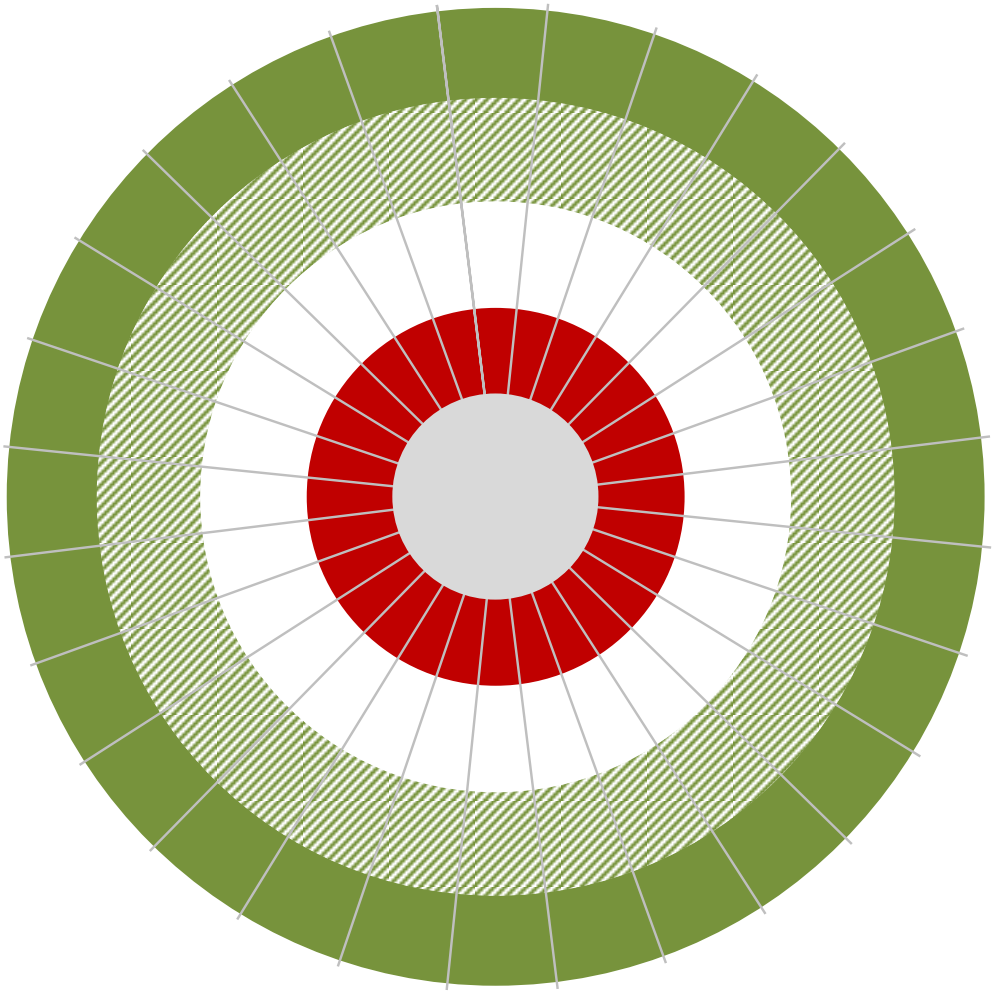
- **Focus groups**
- **Indicators**
- **Commitments**
- **External review**

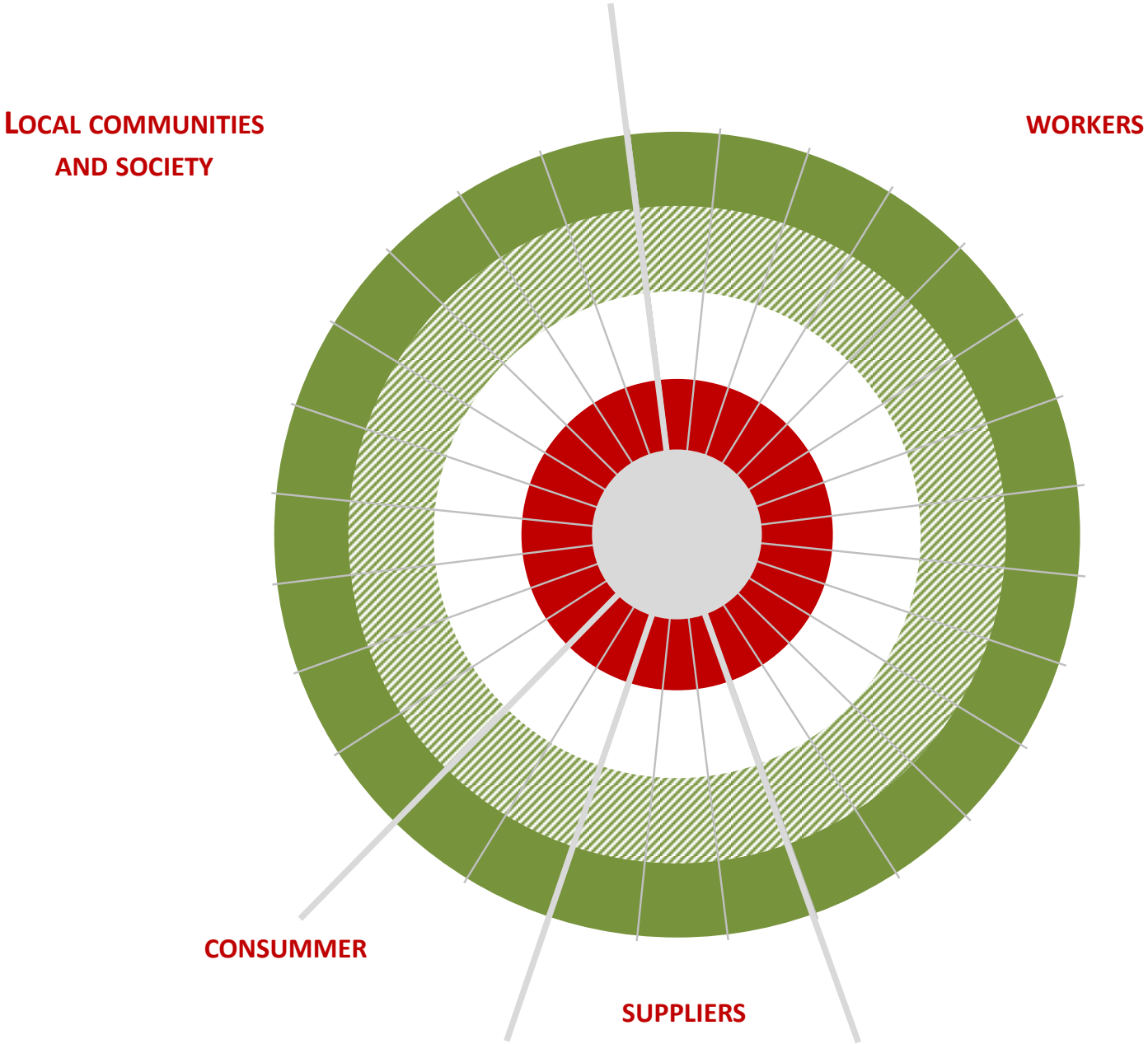
For the coming years, priorities are to:

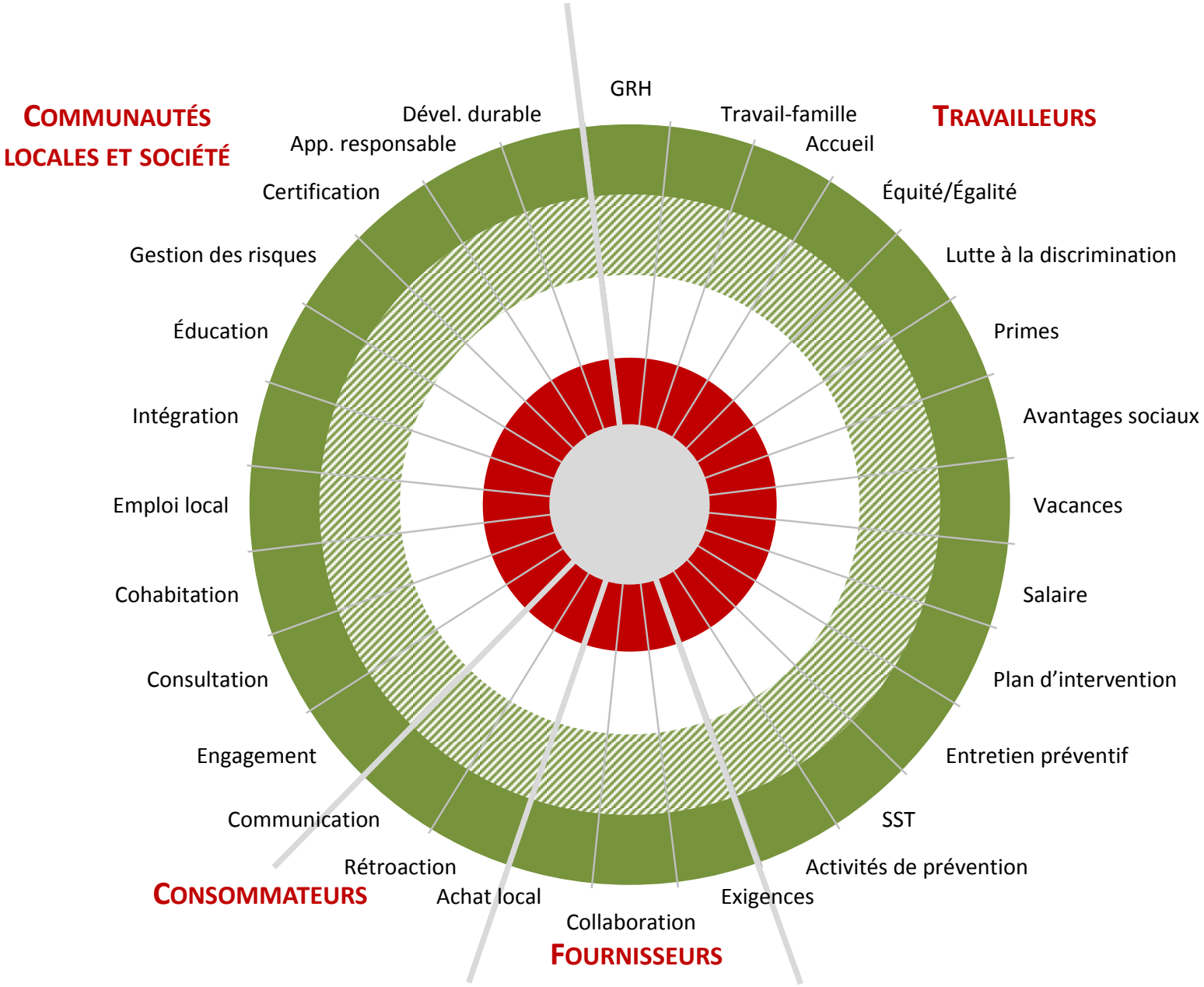
- Encourage sustainability research in environmental areas that impact the peat moss industry
- Ensure that restoration of post-harvest sites are conducted by the association's members in accordance with government compliance
- Enhance close, positive and supportive relationships with various levels of government including the First Nations
- Engage in constructive dialogue with NGO, and consumer stakeholders

Thank you

results




LOCAL COMMUNITIES
AND SOCIETY
WORKERS
CONSUMMER
SUPPLIERS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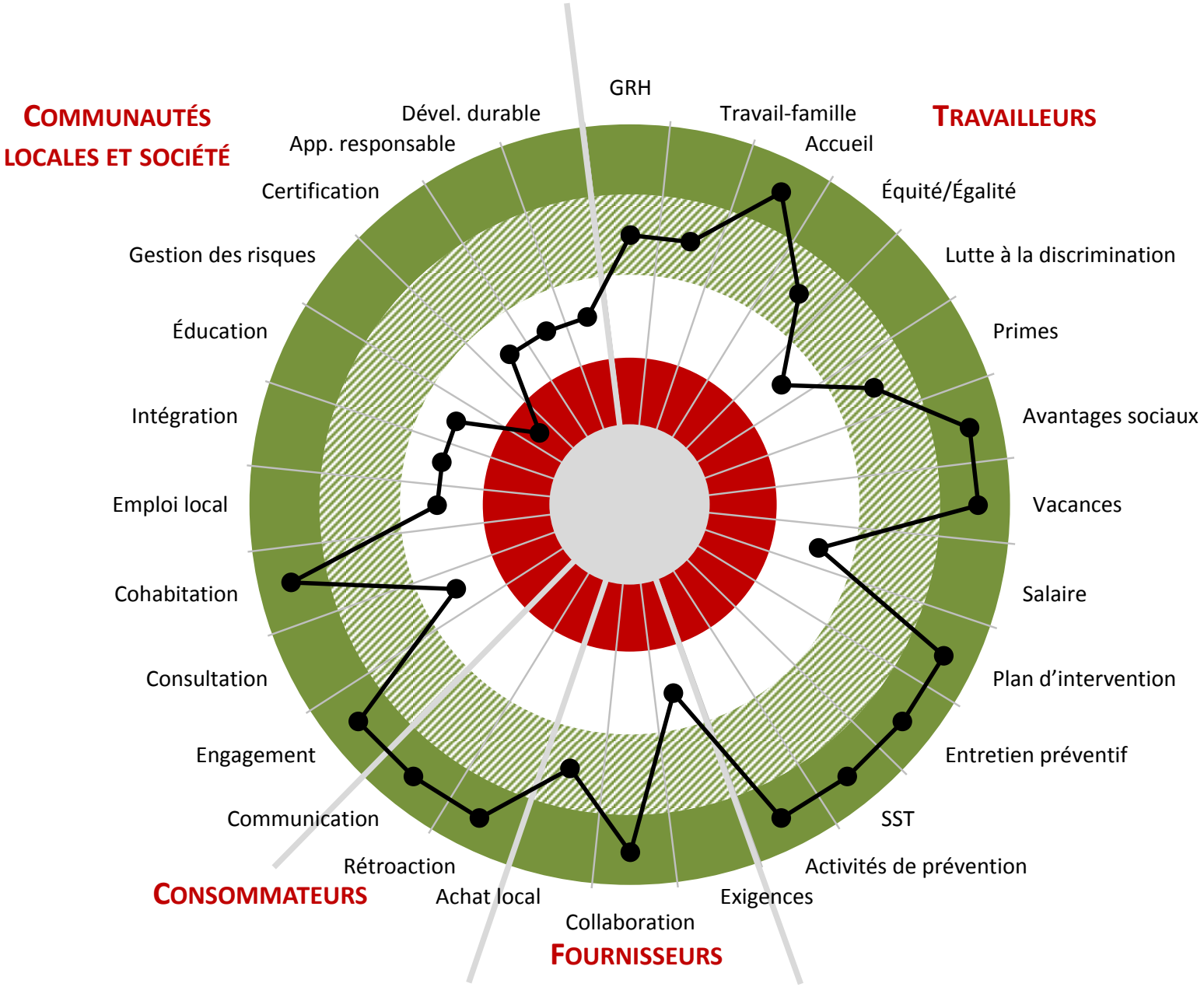
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Canadian Peatlands: Climate Change

- Globally peatlands storage estimated between 455 Gt carbon (C) (Gajewske et al. 2001).

- In Canada, peatlands store an estimated 147 Gt C (Tarnocai, 2006).

Peatlands: Wildfire vs. Harvesting

- Direct and indirect effects of fire amounts to a source to the atmosphere totaling 23.1 Mt CO_2 y^{-1} (6.3 Mt C yr^{-1}) in western Canada.

- It is estimated that decomposition from all harvested peatlands in Canada is 0.26 Mt CO_2 yr^{-1} (0.07 Mt of C y)

Canadian Peatlands: Industry Emissions

- A study was conducted to examine the net GHG from the horticultural harvesting process. The study revealed that the entire life cycle of peat extraction emitted 0.54 Mt of CO_2 in 1999 rising to 0.89 Mt CO_2 in 2000.

- The study showed that 71% of the emissions was associated with peat decomposition, 15 % from land use change, 10% from transportation to market and 4% from processing (Cleary et al., 2005).

Canadian Industry Restoration

- While emission studies from restored peatlands in Canada are limited, emissions from European studies suggest that restored peatlands can be annual sinks of 113.67 g CO_2 m^2 y^{-1} [31 g C m^2 y] (Yli-Petays et al., 2007).
- If applied to current restoration, this would amount to 2000 t CO_2 m^2 of current sequestration a year with an additional uptake of 4000 t CO_2 m^2 yr^{-1} in the future.

Canadian Peat Emissions

- Canadian peat horticultural emissions (all sources) of (0.89 Mt) represent 0.03 per cent of all degraded peatlands (3 Gt) worldwide.
- Emissions are 0.006 per cent of all total global net anthropogenic emissions (15.7 Gt).
- With national total GHG in Canada at 771 Mt CO_2 in 2006, the peat industry represented 0.1% of total GHG.
- Manitoba's GHG emissions are 20.8MT CO2/yr.

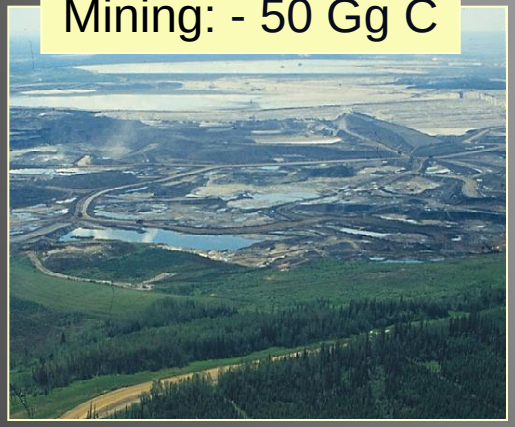
C sources

±8940 Gg C yr^{-1}

Flooding: - 100 Gg C

Fire: - 6300 Gg C

Mining: - 50 Gg C



Extraction: - 140 Gg C

C sinks

Thaw: + 160 Gg C

= + 1320 C balance

E.I.C.A for growth media: what did we compare

Functional Unit : Providing 1 m^3 of horticultural substrate (professional use) in Canada, in 2006, and distribute and use them in greenhouse in Canada, US or Japan.

category	parameters	e use		
1. High Porosity Professional	1 to 5	Annual/ Perennial in greenhouse production	Peat/perlite	1. Coco duo: coir and crush 2. Peat/Barks 3. Sawdust/Peat 4. Coco coir/Barks
2. All-Purpose Professional	1 to 5		Peat/perlite/ vermiculite	1. Peat/Barks 2. Sawdust/Peat 3. Sifted peat 4. Compost/Barks/Peat 5. Coco coir
3. Retail	None	Flower box	Best seller (peat based)	Best seller (without peat)

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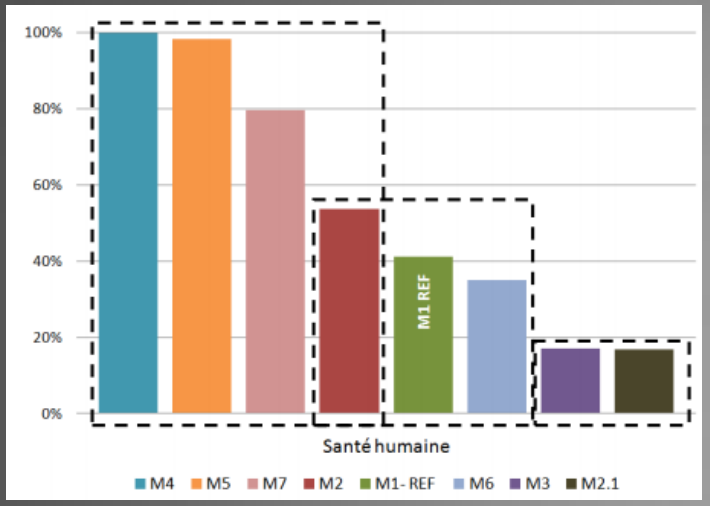
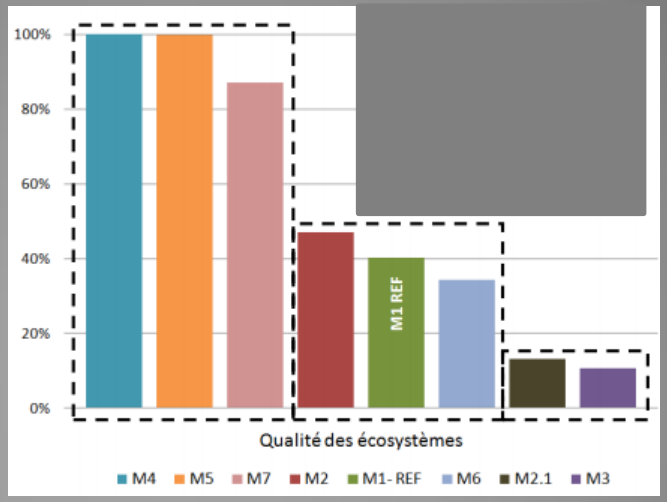
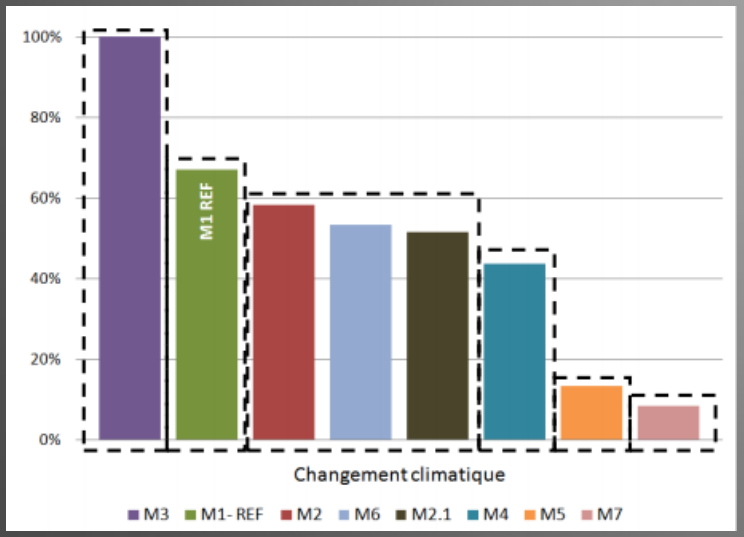
E-LCA results for growth media

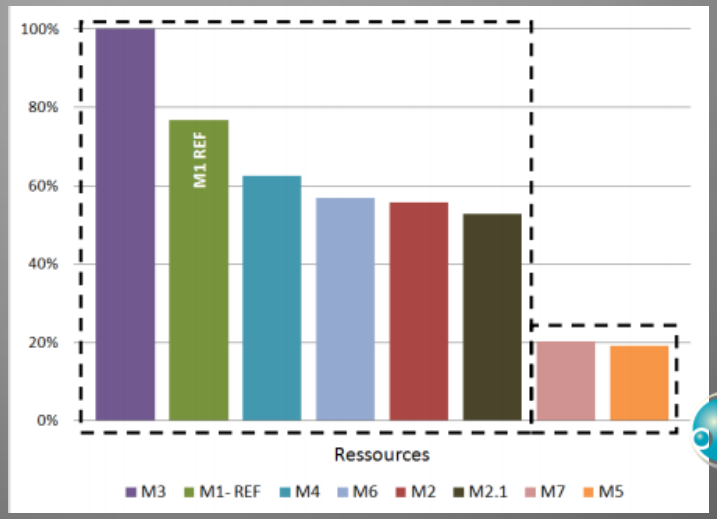
1 m³ of horticultural substrate (professional use)





M1 REF - Tourbe, Perlite, vermiculite
M2 - Écorces, Tourbe
M2.1 - Sciure, Tourbe
M3 - Tourbe tamisée
M4 - Compost, Écorces, Tourbe
M5 - Parenchyme, Écorces
M6 - Parenchyme, Tourbe





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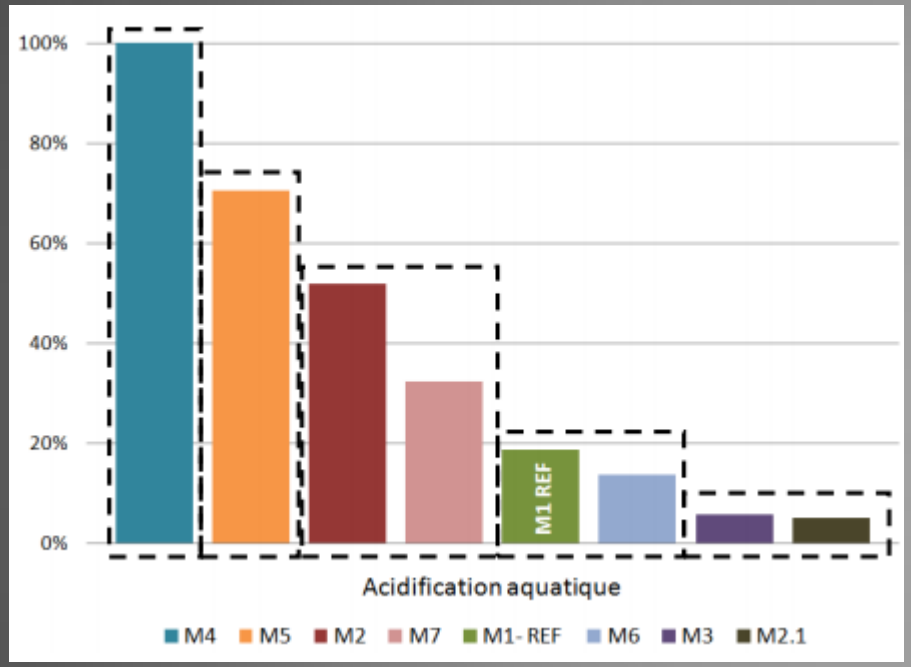

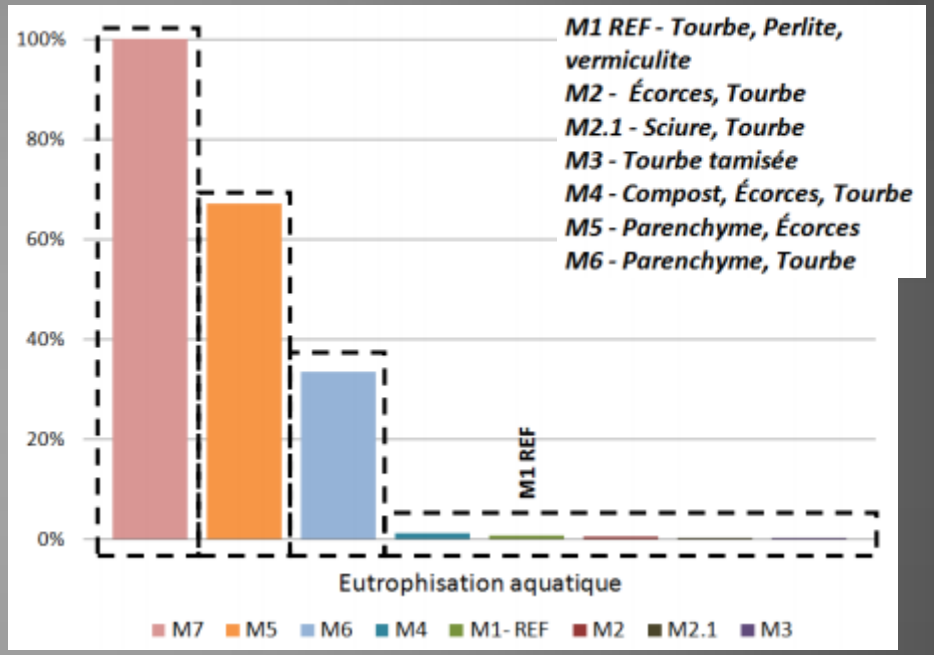

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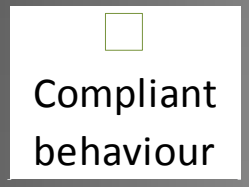
Four-level evaluation scale

A behaviour that may have negative consequences



A normal and minimally expected behaviour

An in-between socially responsible behaviour

A leading socially responsible behaviour

Assessed using **benchmarks** such as best expected practices