

Environmental considerations of forest biomass for energy



"Of course it's renewable — you just throw more *sticks* on it!"

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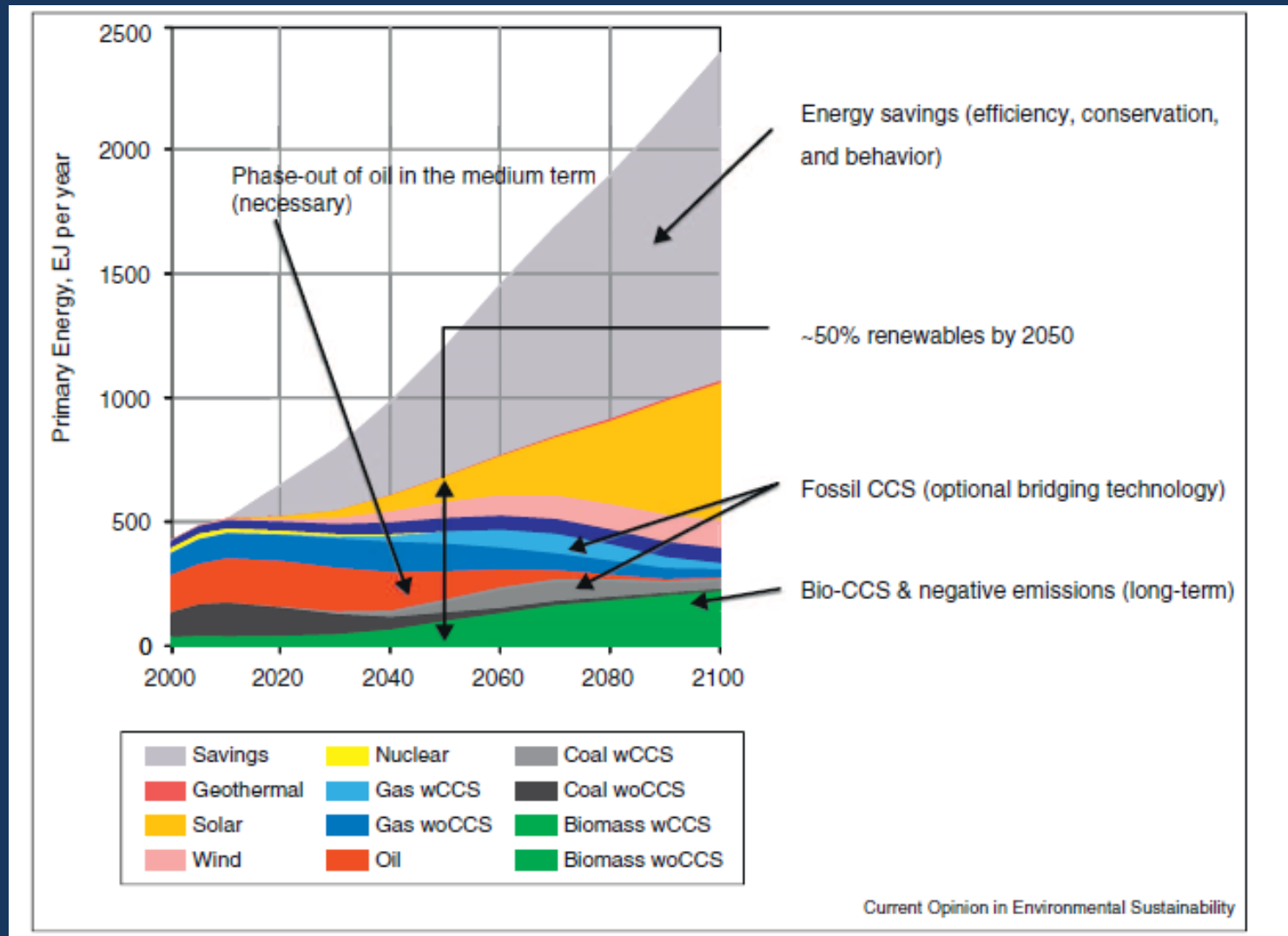
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Québec



RÉSEAU
BIOFUELNET
CANADA

Transition of global energy systems



Reference scenario



COAL

Bioenergy scenario



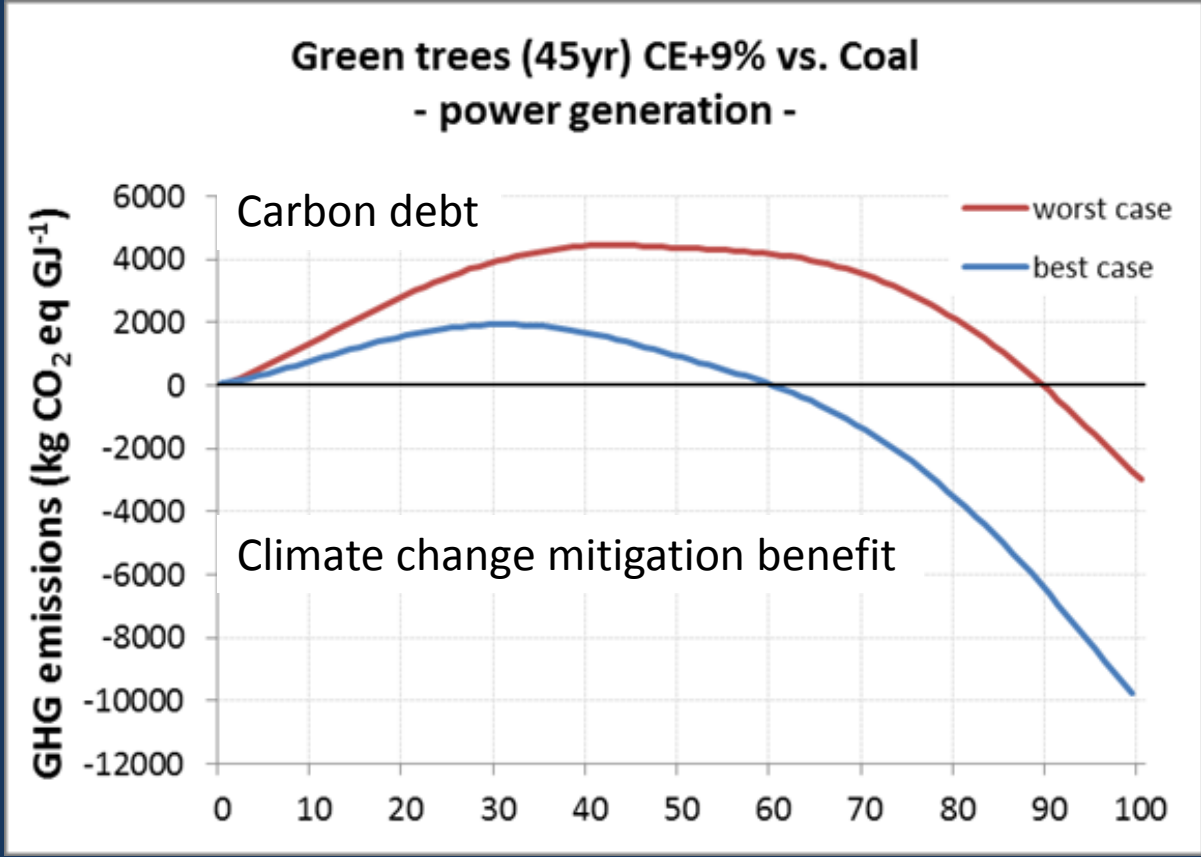
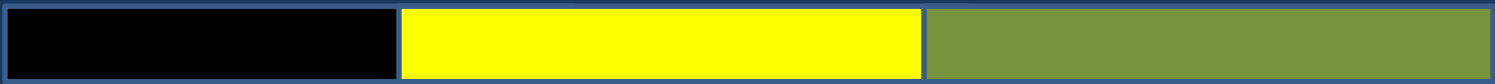
BIOMASS

Forest bioenergy systems always provide benefits in terms of climate change mitigation relative to fossil fuel systems. But some systems take longer than others before providing such benefits

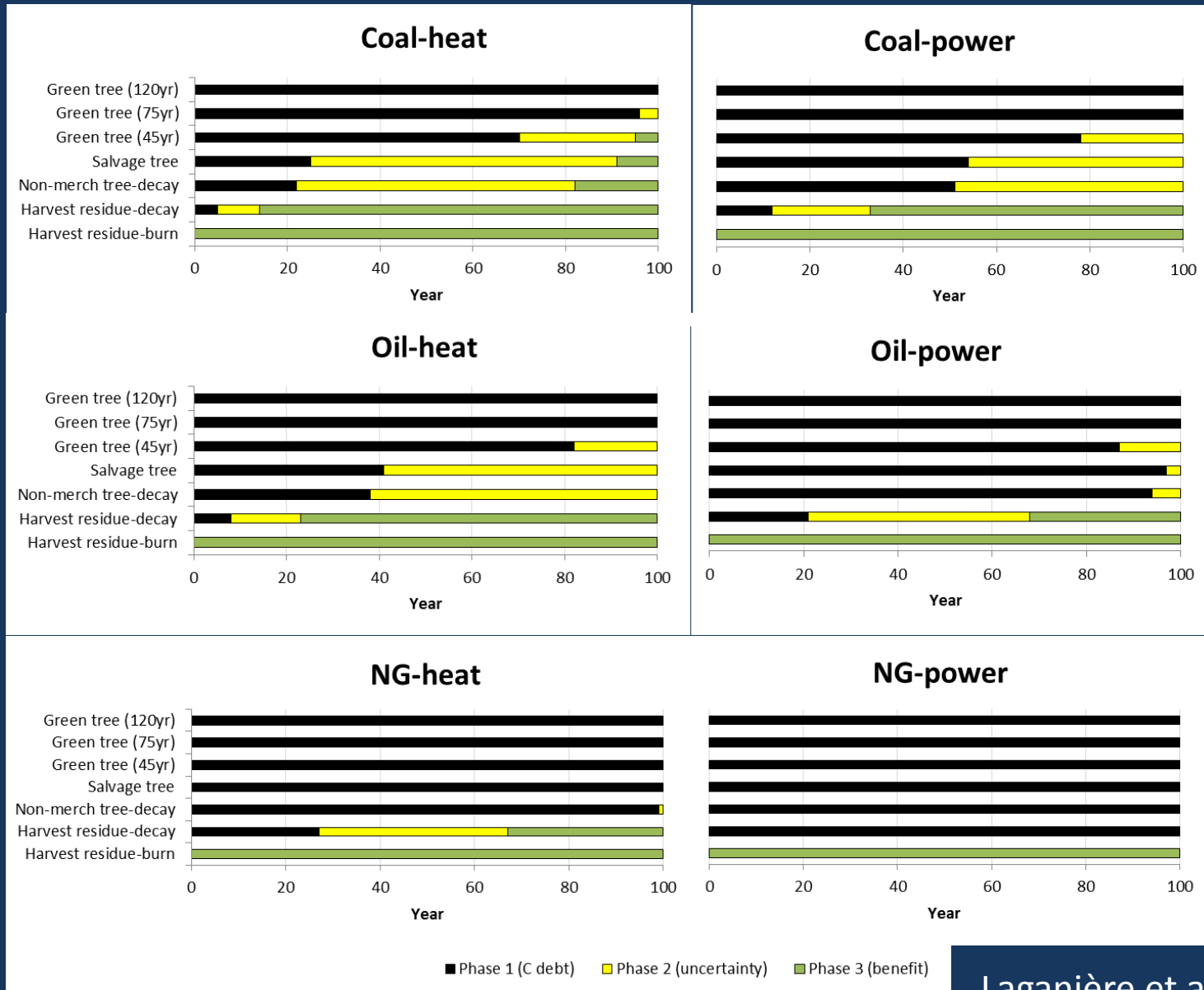
Forest bioenergy system
does not provide mitigation
benefit

Uncertainty period

Forest bioenergy system provides
mitigation benefits

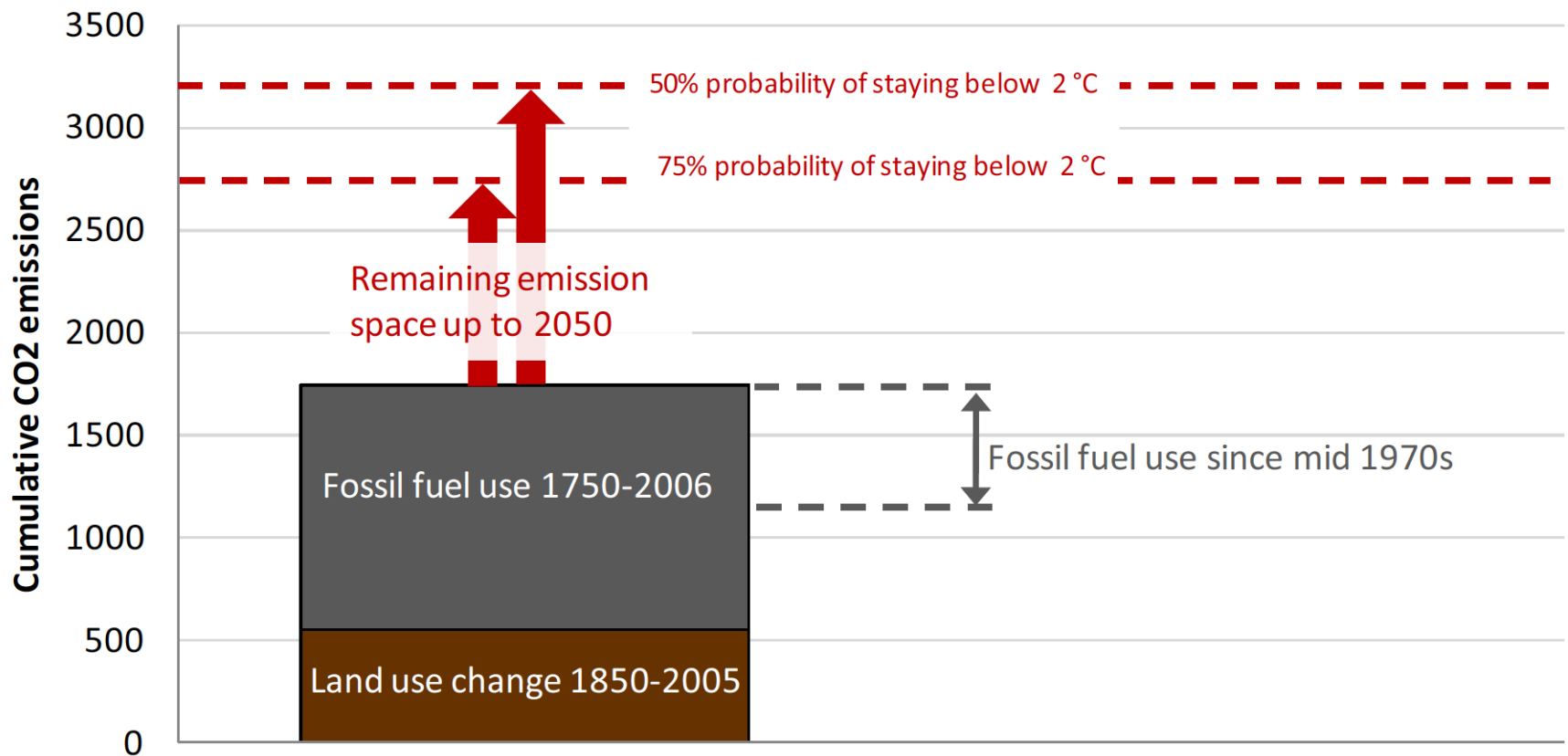


Some forest-based bioenergy systems provide mitigation benefits rapidly. Other systems take longer to provide benefits.



Forest bioenergy GHG calculator from the Canadian Forest Service:
<https://apps-scf-cfs.rncan.gc.ca/calc/en/bioenergy-calculator>

From the perspective of global temperature targets, scientists have estimated a threshold for atmospheric GHGs.



Option A

Option B

Remaining
emission space

Fill it up with
fossil carbon

Non-fossil fuel related

...or use some
space for
developing
alternatives to
fossil fuels?

Emissions from bioenergy

Non-fossil fuel related

Göran Berndes, Chalmers U. Sweden

Public perception:

**THIS IS A
MANAGED FOREST**



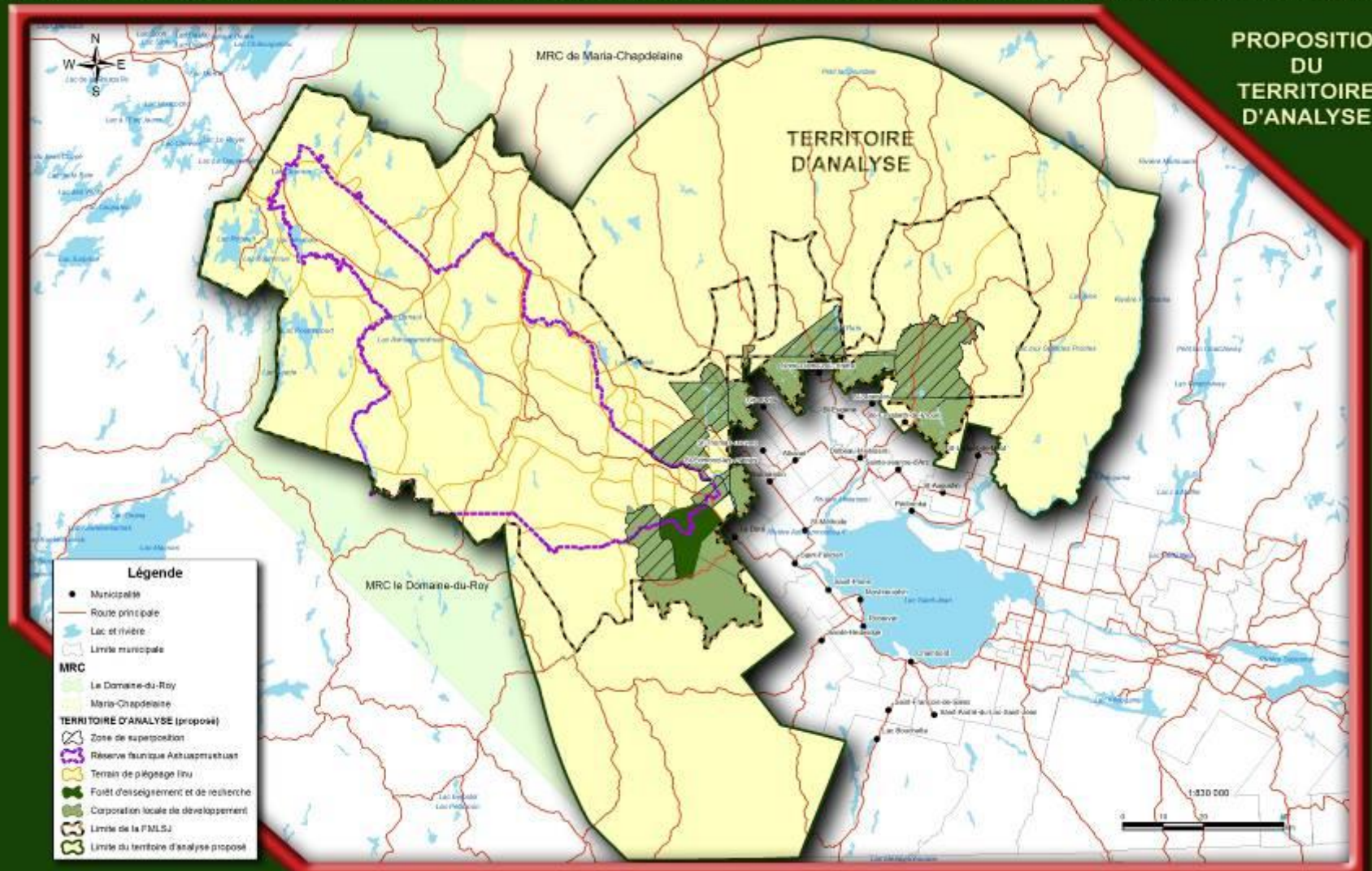
**THIS IS AN
UNMANAGED FOREST**



ANY QUESTIONS?

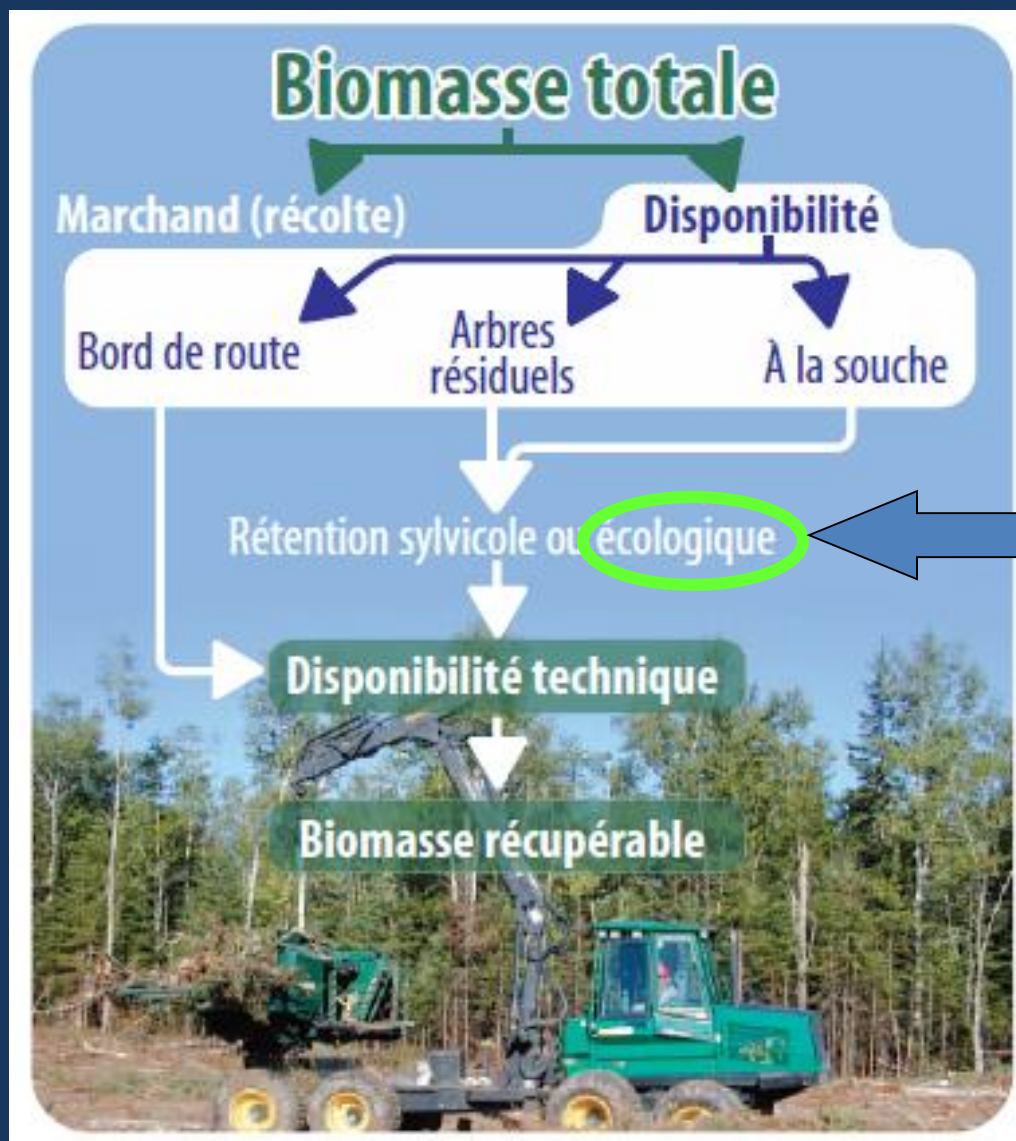
Case study, Lac St-Jean (QC)

Cartographie du potentiel et des contraintes des sites forestiers à la récolte de la biomasse pour le territoire de la FMLSJ

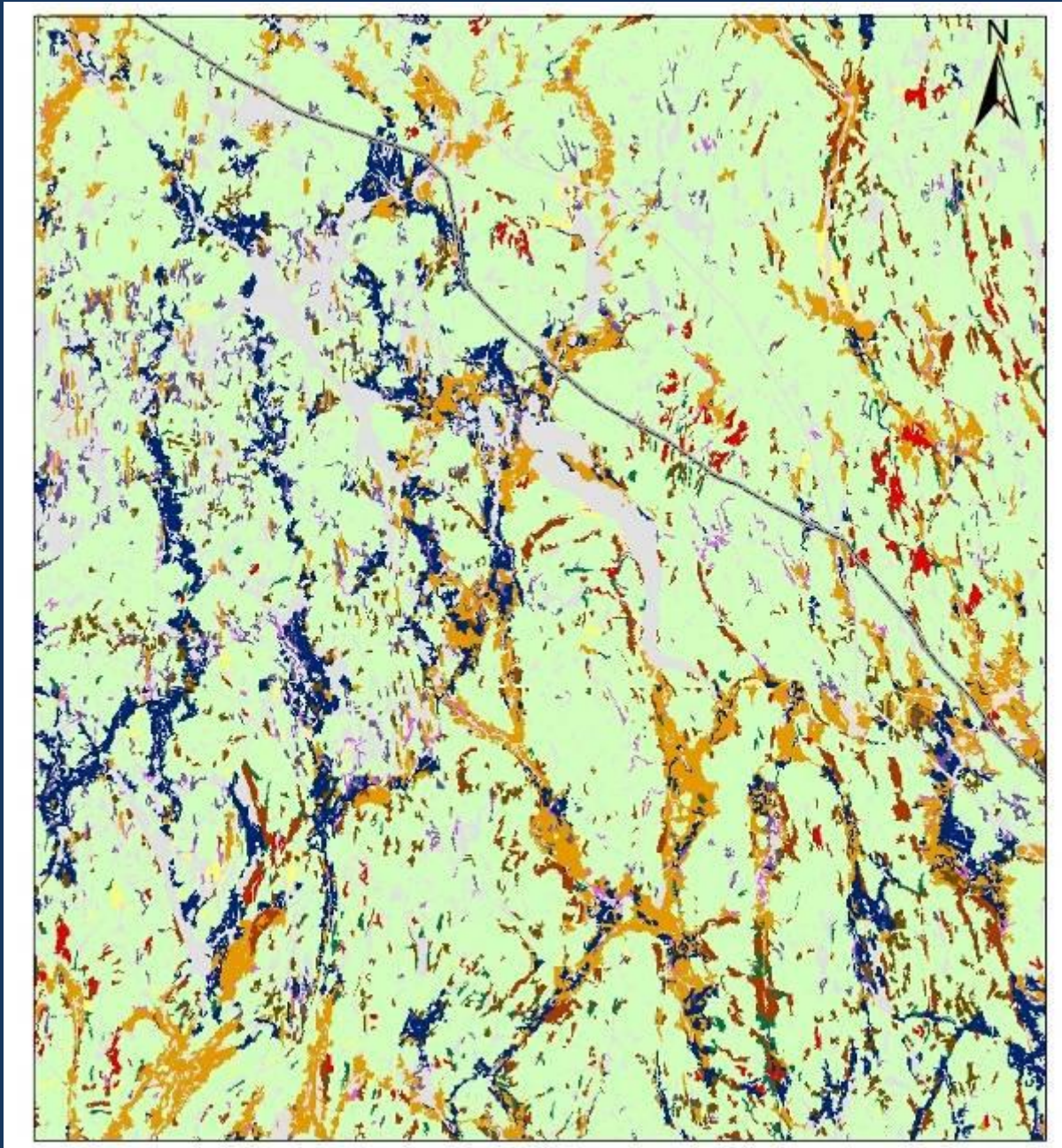


Modèle BiOS (Biomass Opportunity Supply)

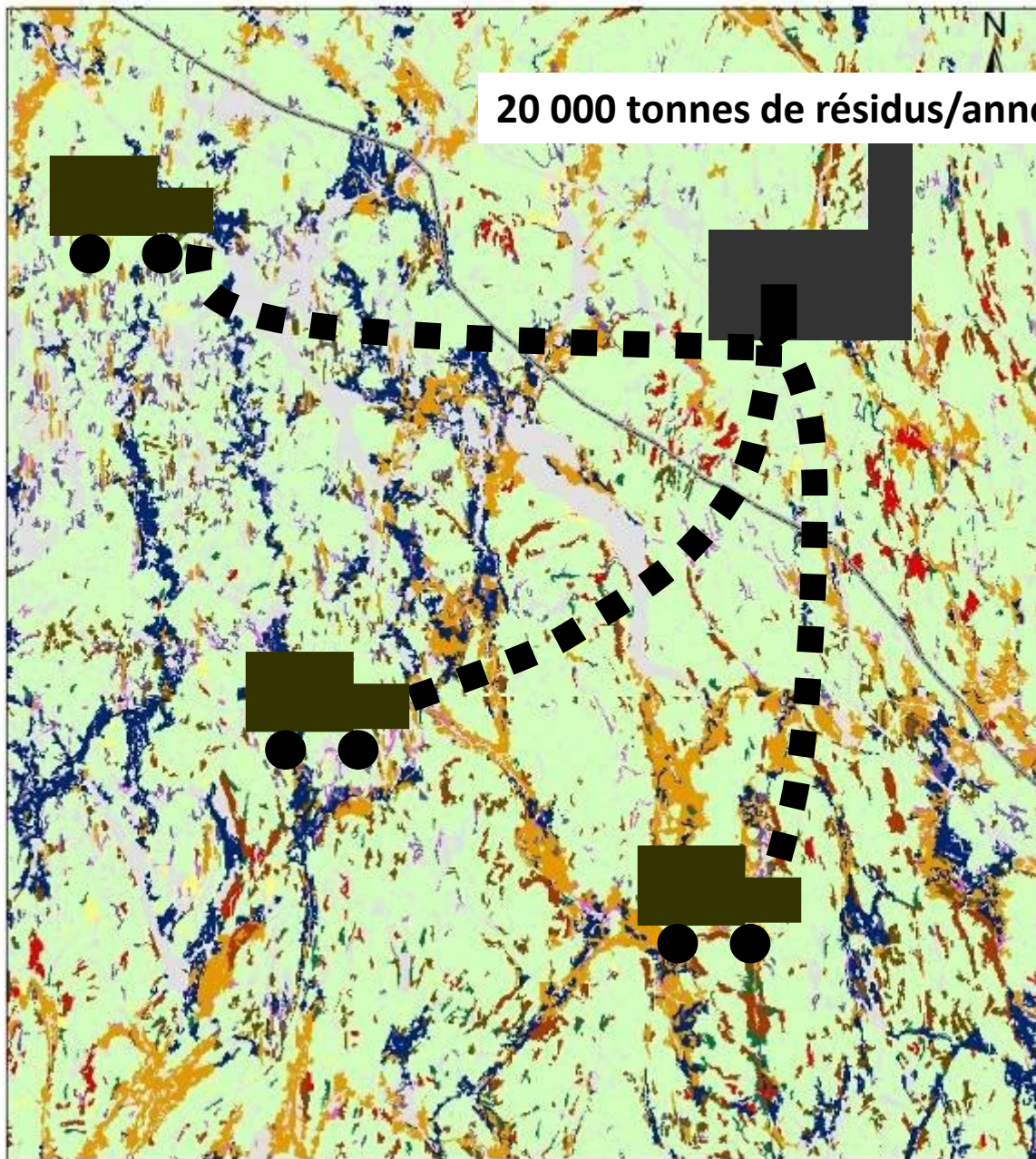
FPIinnovations - FERIC



Ecological constraints: Site suitability to forest residue removal



20 000 tonnes de résidus/année



Increase in biomass
supply costs:

1 to 4%



Costs of
protecting soil,
water and
biodiversity

The Ugly Duckling

(Den grimme ælling)



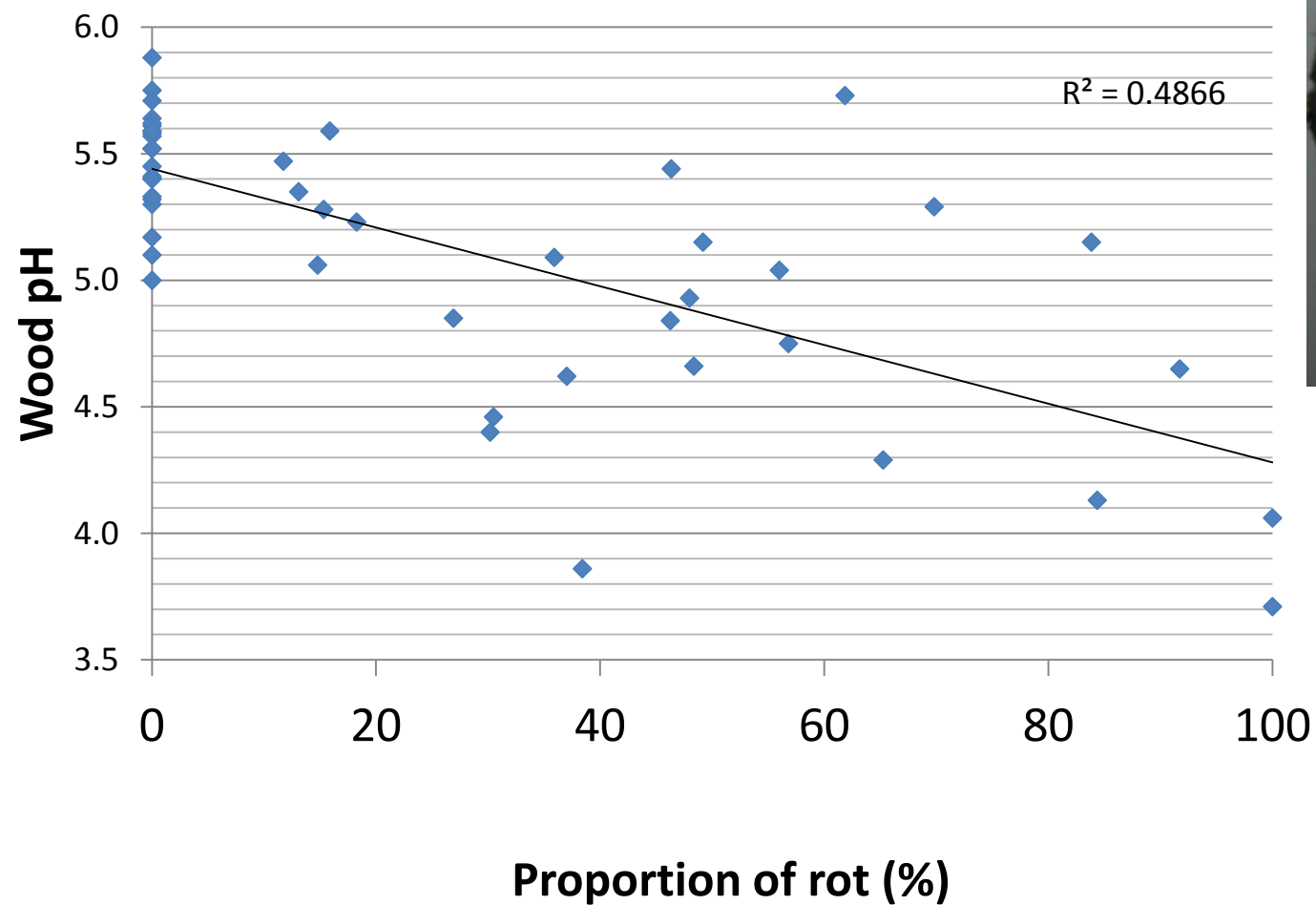












Barrette et al. In preparation




Intolerant and unloved woods



American Beech bark disease

Des femmes, des hommes, des régions, **nos ressources...**

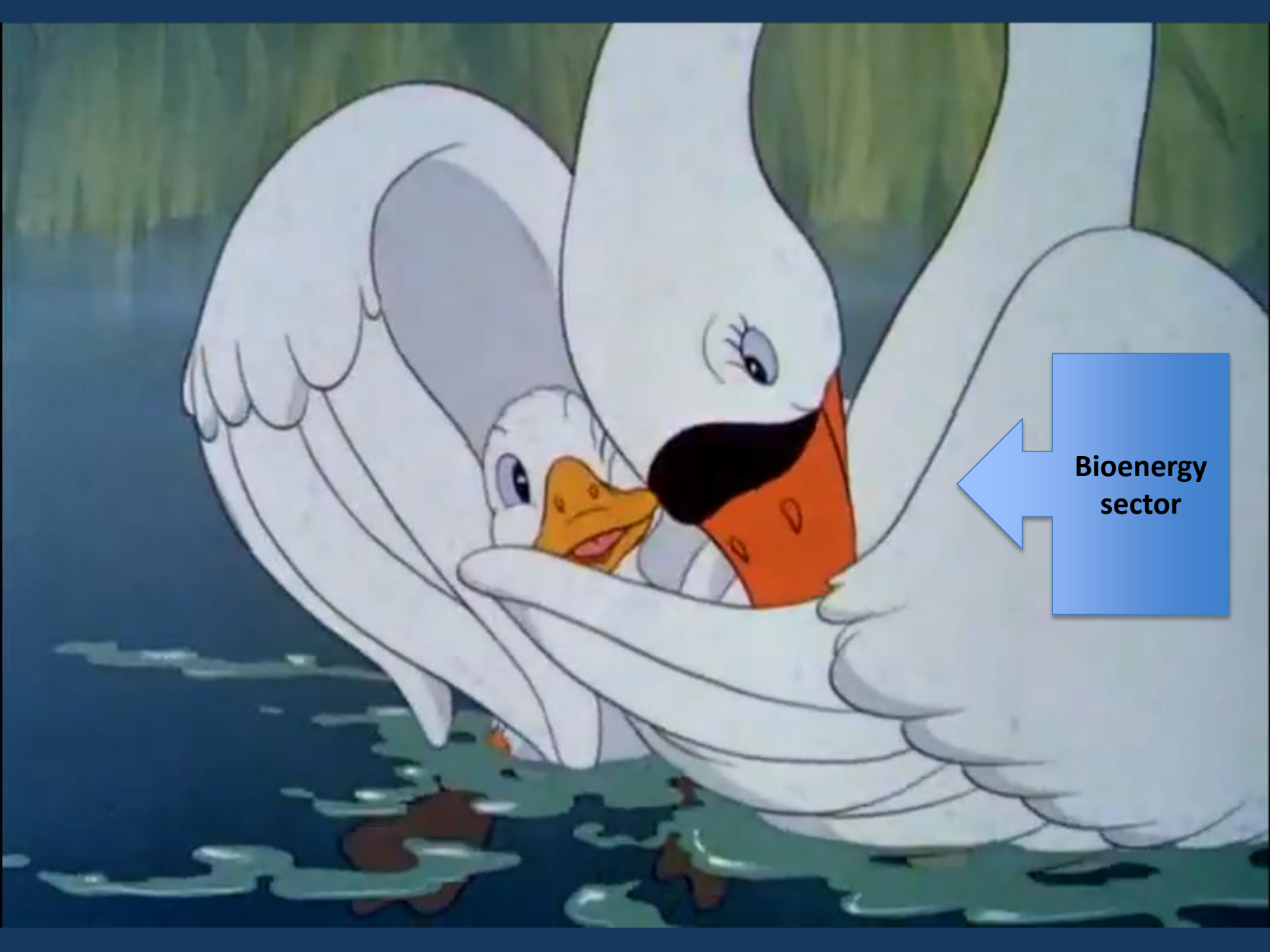


Le mal de l'Hêtre

Montebello
8 Mars 2016
Forêts, Faune
et Parcs
Québec



Source: Sébastien Meunier, MFFP



**Bioenergy
sector**





Polyvalent fibre-taker that can
give value to low-quality trees and residues:
The heart of forest value chains
The heart of climate change mitigation



