

**Comparaison des modes de tenure privée et publique de la forêt du Bas-Saint-Laurent en fonction d'indicateurs environnementaux et socio-économiques /
*Comparing private and public forest tenures of Lower St. Lawrence using environmental and socio-economic indicators.***



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Edmundston, Nouveau-Brunswick**

Forests...



- **Provide environmental services**
 - Regulation of climate, water and carbon cycle
 - Biodiversity
- **Perceived as a common resource by humans**
- **Timber harvesting**
 - Provides leverage for the economy
 - Increasing pressure on forest ecosystems
 - Concerns about its long term sustainability
- **Tragedy of the commons** (Hardin 1968)
 - Common pool resources overexploited without privatization or government control.
 - Many reactions and critics, but no solution... (Dietz et al. 2003)

Forest tenure



- Two main types, according to ownership
 - Private
 - Public
- Distribution
 - Historically almost entirely public
 - Worldwide (81% public, 19% private ↑)
 - Sample of developed countries
- Economic analysis consider privatisation as the solution to the tragedy of the commons, normal evolution of organisation in forested countries (Desrochers 2002)
- Calls for reflection on the potential effects of tenure change

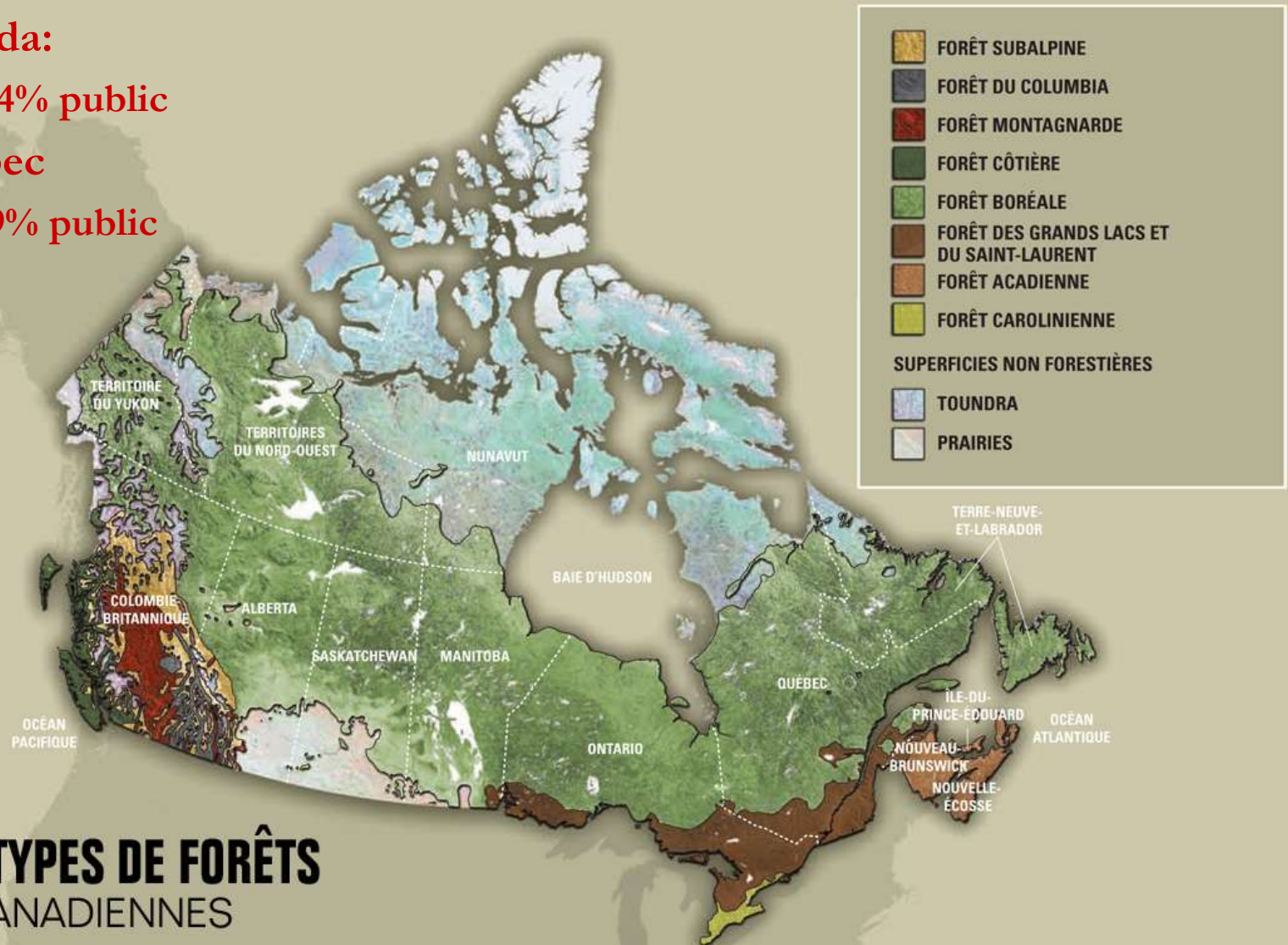
Country	Public	Private	Communal
France	10%	74%	16%
Switzerland	1%	57%	42%
United Kingdom	44%	56%	
Sweden	5%	87%	8%
Finland	34%	61%	5%
United States	45%	55%	

Source: (Angers 2003)

Forest tenure

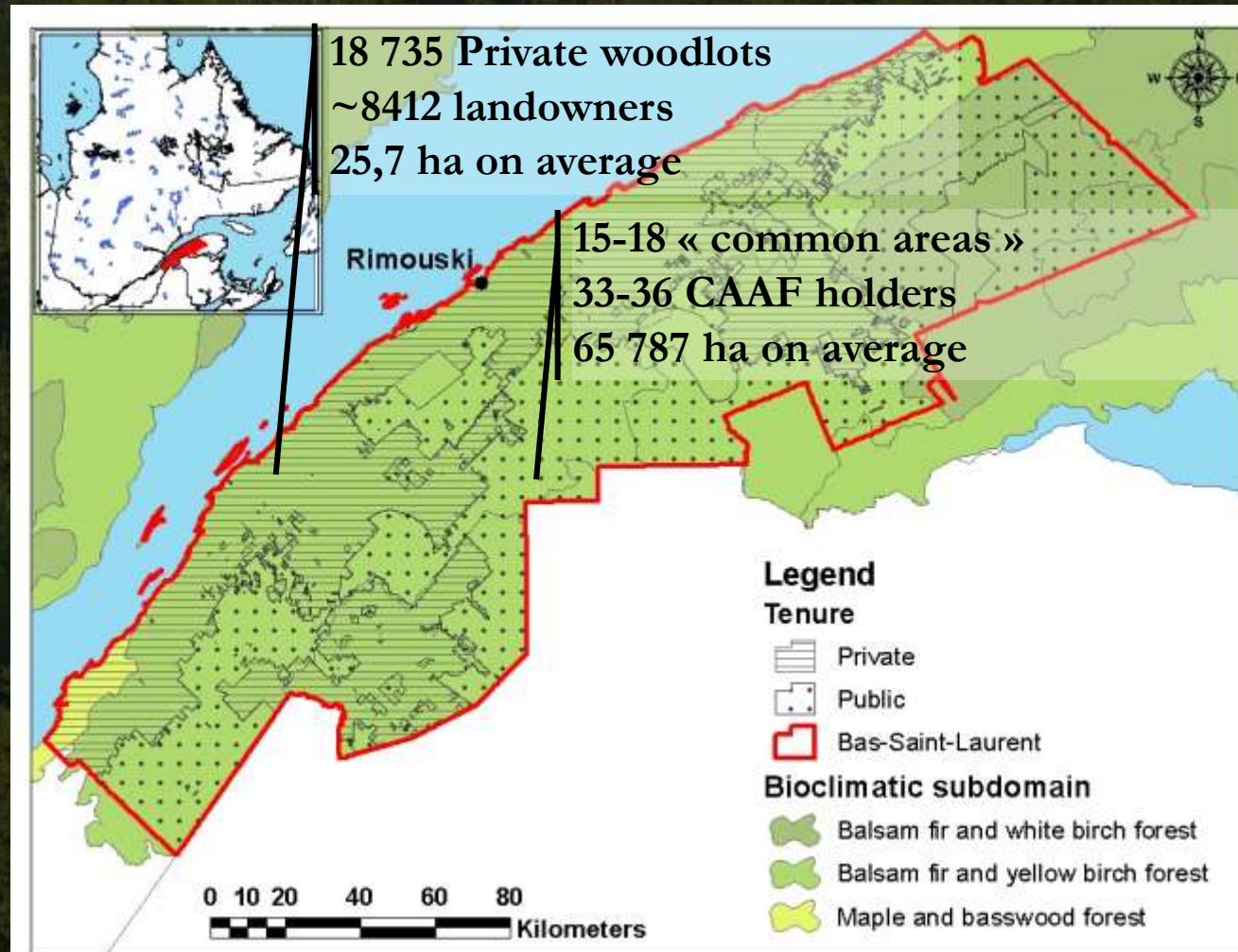
- **Canada:**
 - 94% public
- **Québec**
 - 89% public

LES TYPES DE FORÊTS CANADIENNES



Bas-Saint-Laurent

- 51% public, 49% private
- Mostly within the same ecological region
- Allows for a comparison between the two tenures to understand their respective influence on:
 - Environment (forest landscape)
 - Society
 - Economy

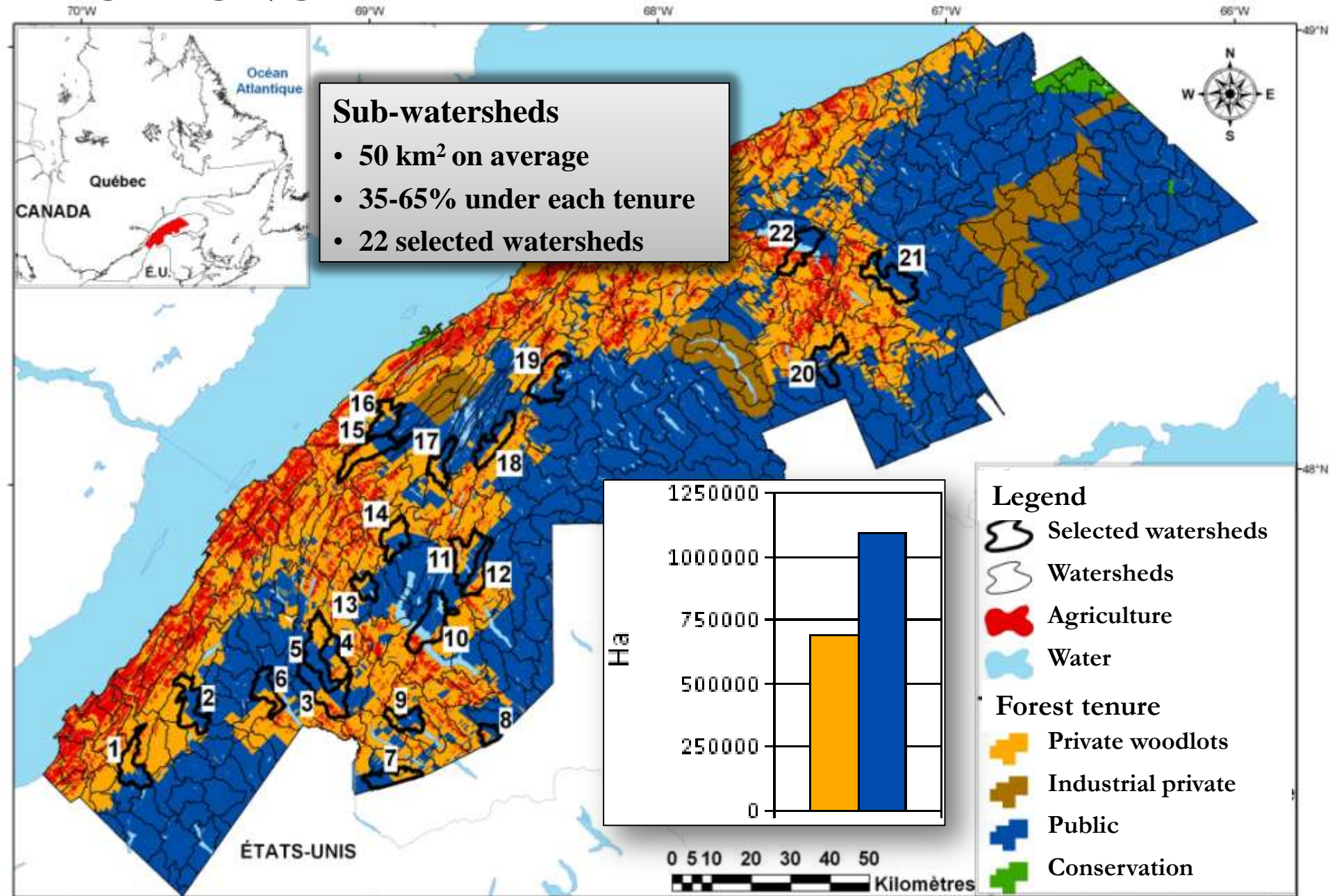


Objectifs

Verify if the tenure (private or public) influences environmental variables and the flow of social and economic values.

- 1. Compare the structure of forest landscapes**
- 2. Compare forest management approaches**
- 3. Compare social and economic indicators**
- 4. Model that system, and simulate alternative tenure scenarios**

Methods



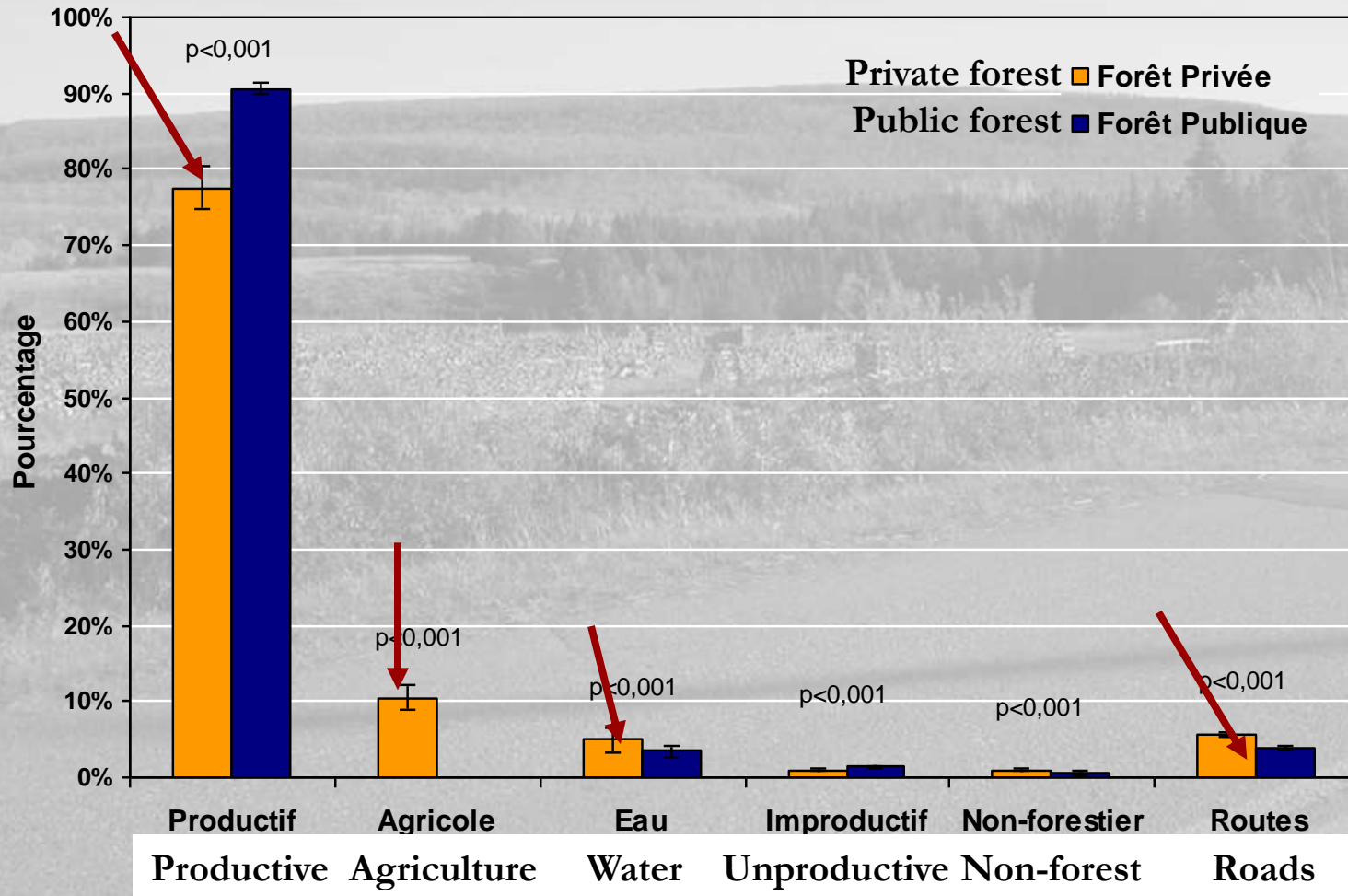
Indicators

- **Structure**
 - Age
 - Type of cover
 - Patch area
- **Biodiversity potential –coarse filter** (Hunter 1990)
 - Human disturbances (roads, etc.)
 - Habitat loss and fragmentation
- **Updated forest map**

Landcover

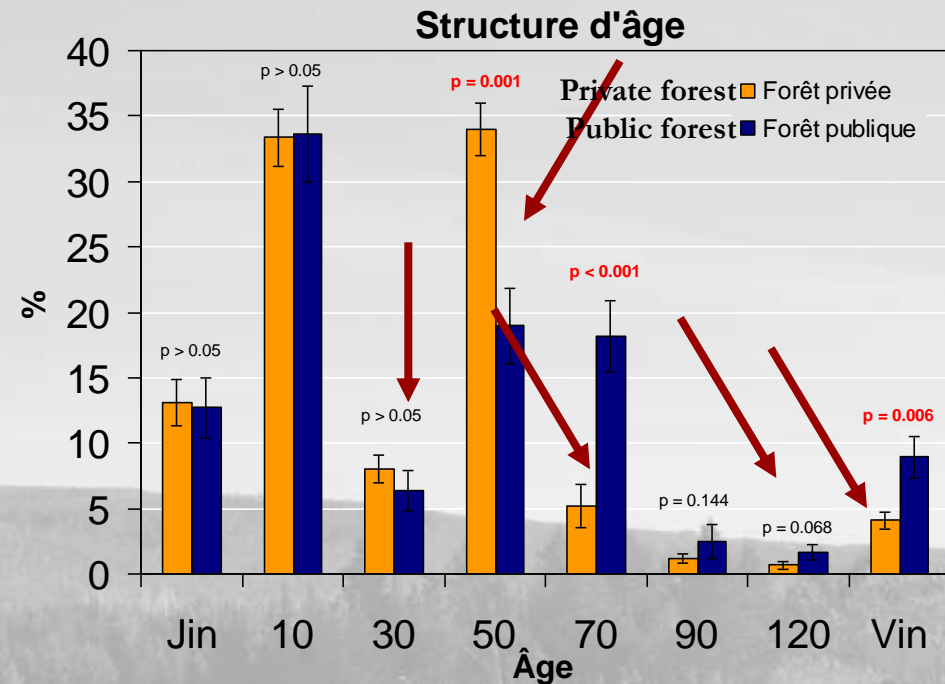
- Less productive forest under private tenure
 - More agriculture, water and roads
 - Habitat loss and fragmentation

Types de terrain par tenure (moyenne des bassins)

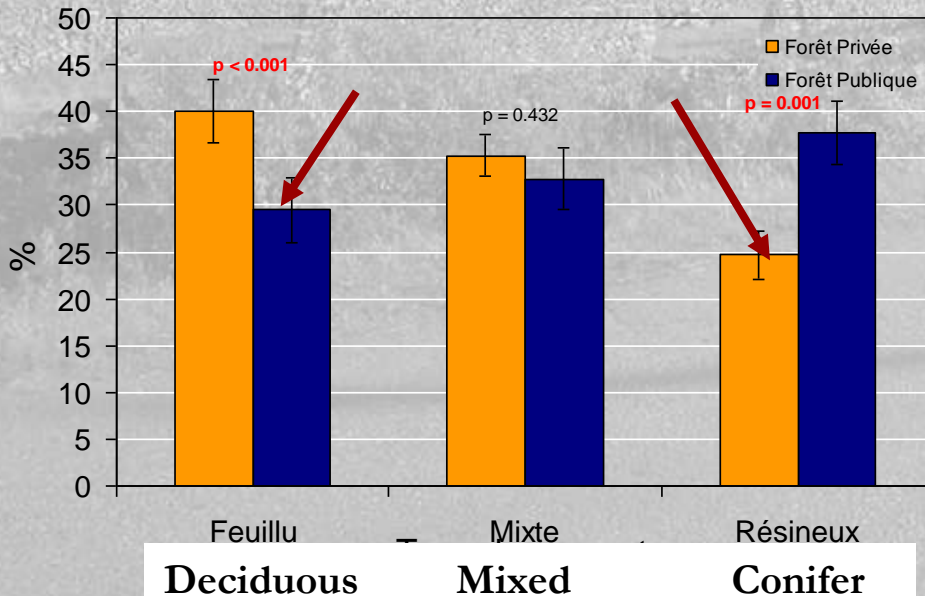


Forest structure

- Age
 - Anticipated stock rupture
 - More old forest under public
 - Biodiversity
 - Related to forest history



Structure du couvert

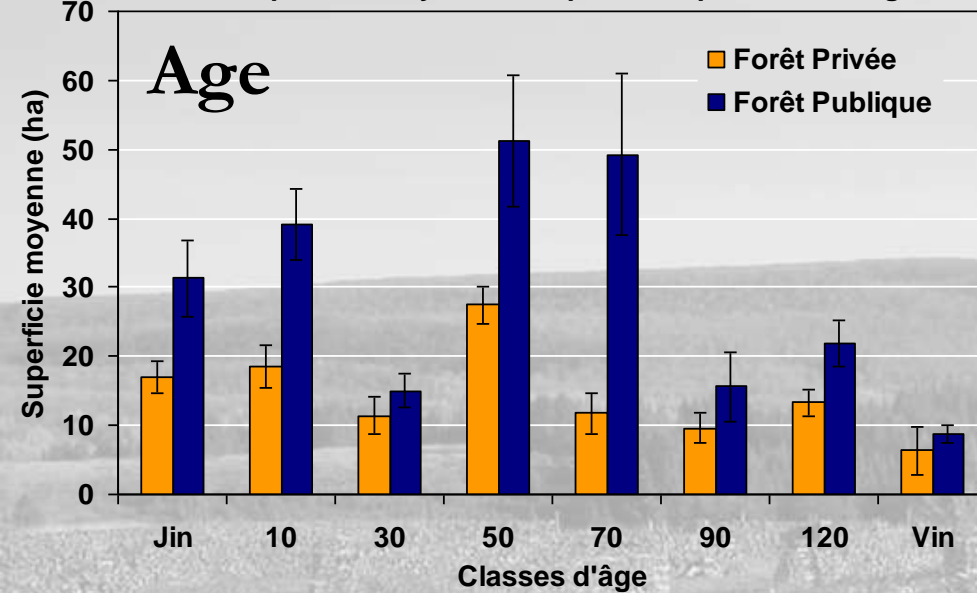


- Cover
 - More conifer under public
 - More deciduous under private
 - Relics of settlement
 - Deforestation
 - Slash and burn

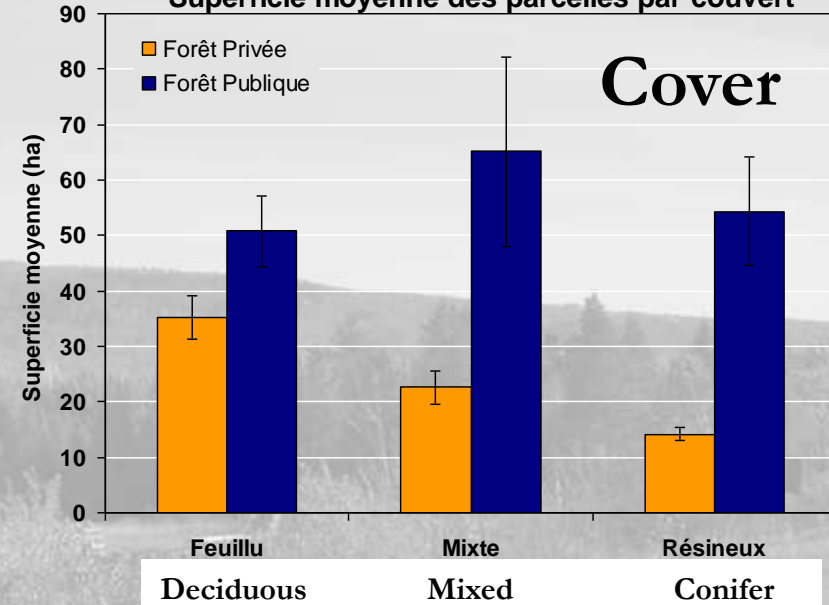
Heterogeneity

- Patches systematically smaller under private

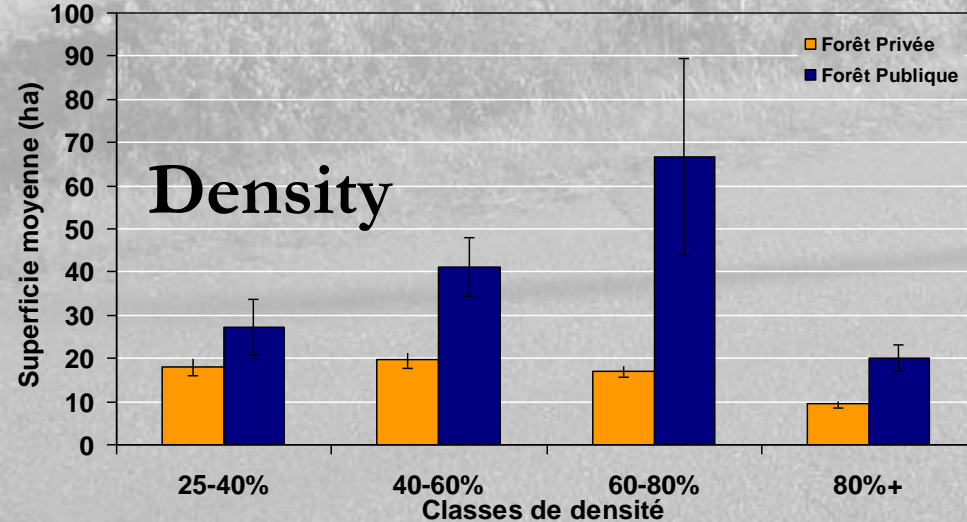
Superficie moyenne des parcelles par classe d'âge



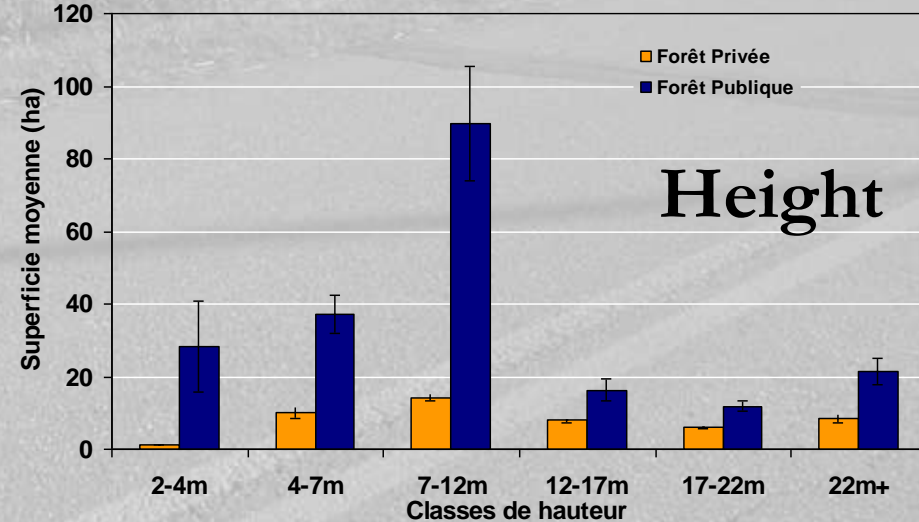
Superficie moyenne des parcelles par couvert



Superficie moyenne des parcelles par classe de densité



Superficie moyenne des parcelles par classe de hauteur



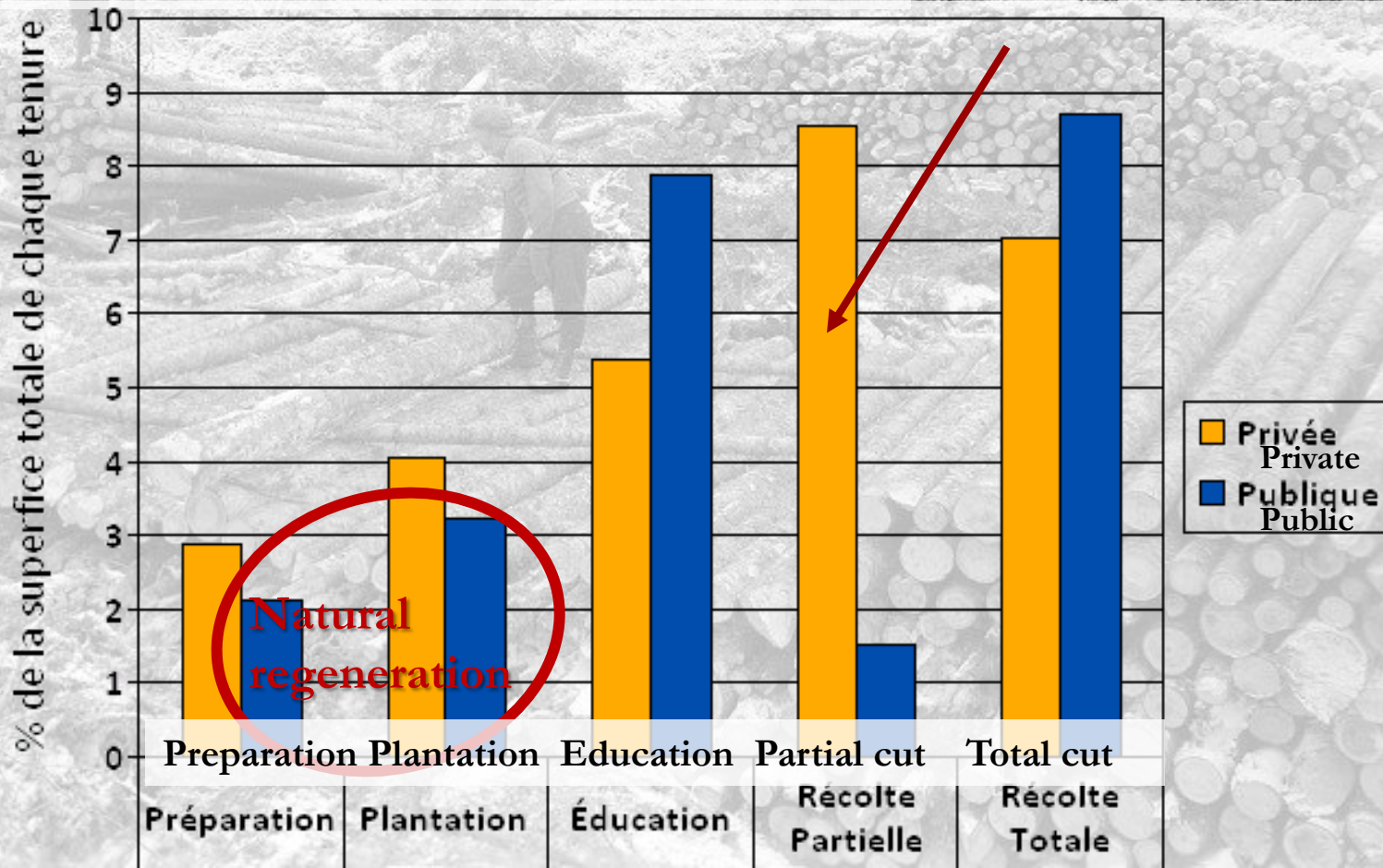
Sylvicultural operations



- **Influences on forest structure**
 - Underly the trends in forest structure
- **Sylvicultural treatments databases (1990-2001)**
 - Subsidized treatments
 - Not spatially explicit
 - Treatment cumulative over time
- **Updated forest map for harvest**

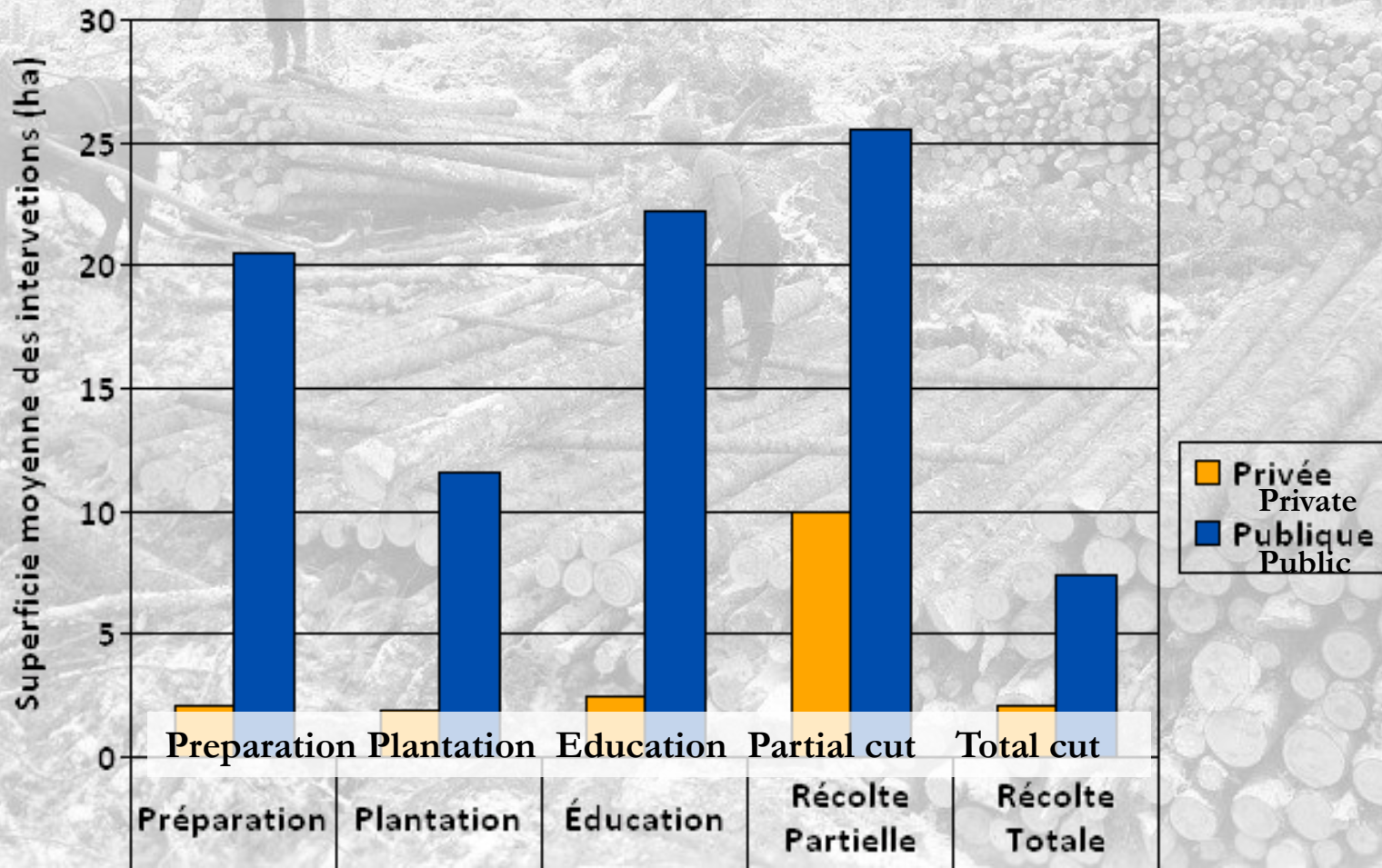
Treatment « basket »

- Distribution of treated areas
 - In proportion to total forest tenure
- Partial cutting
 - Predominant in private forest
- Education and total cuts



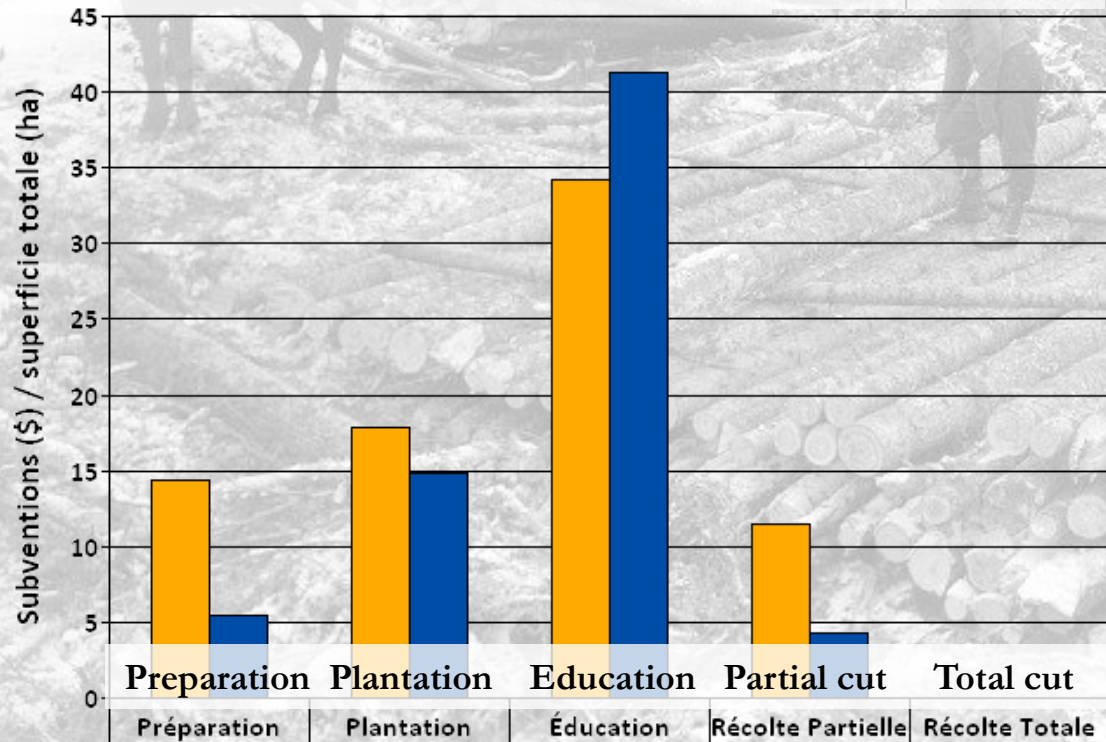
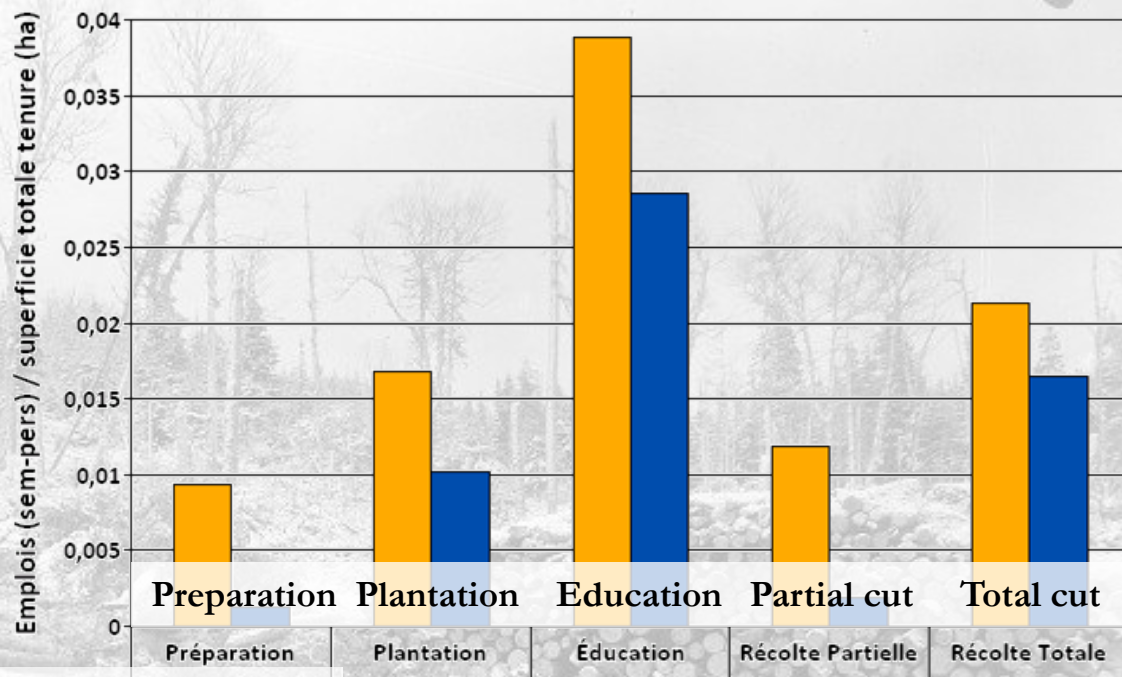
Treatment areas

- Drive forest structure
 - Underly the observed heterogeneity



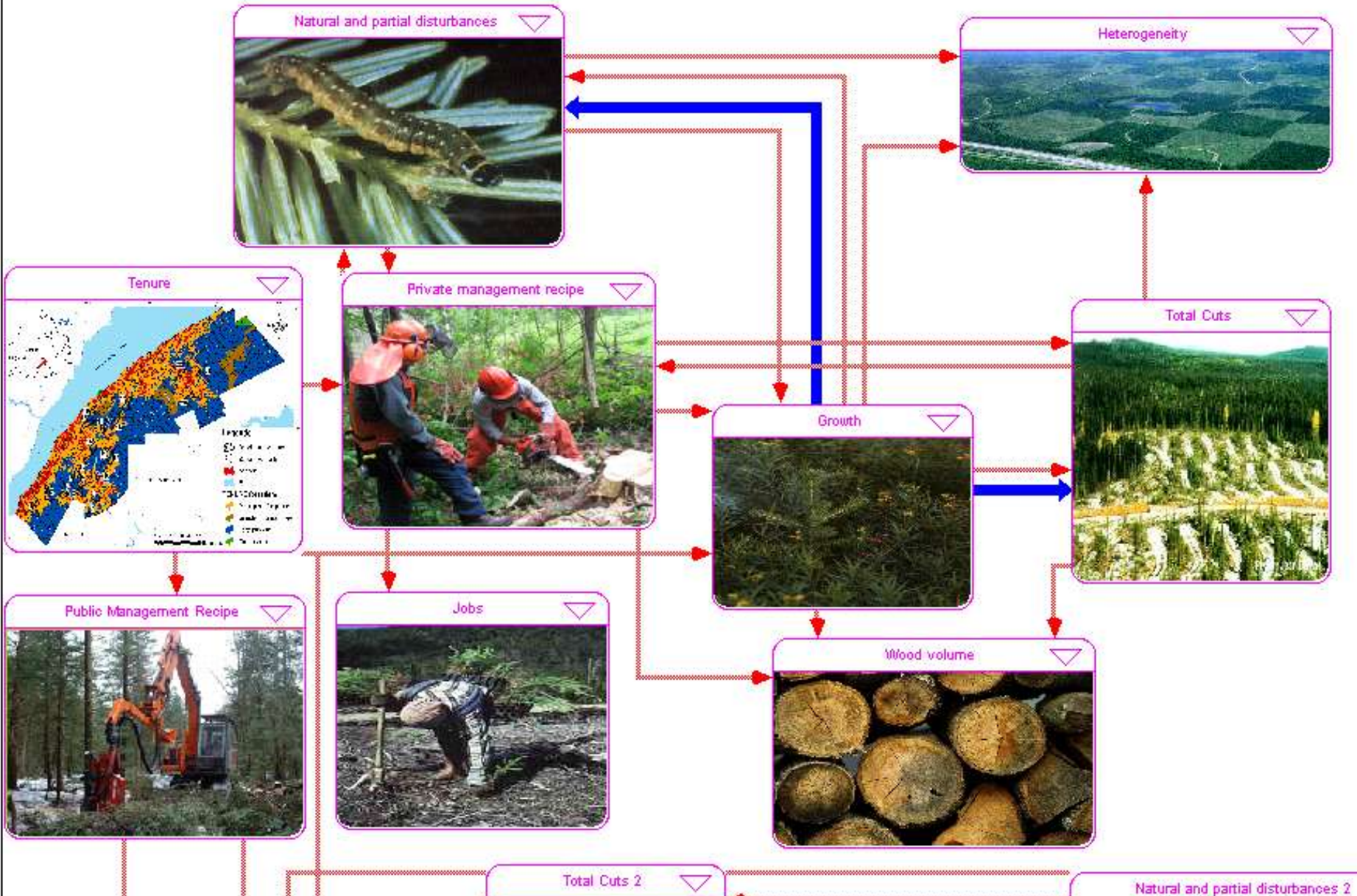
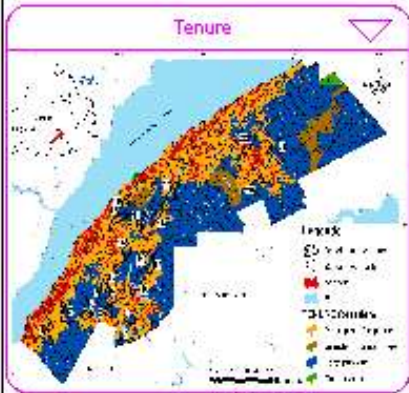
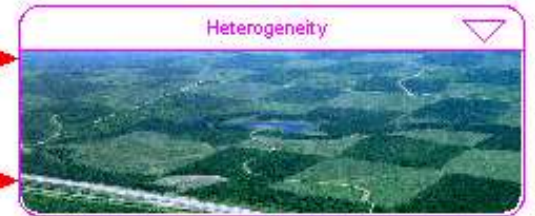
Jobs

- Obtained via productivity ratios
- Private forest
 - Yields more jobs
 - Less machinery



Public incentives

- Generate more jobs per invested dollar under private forest



Conclusion

- **Tenure has a significant effect on forest structure**
 - Private forest more fragmented and heterogeneous
 - Smaller scale treatments
 - More old forest in public forests
- **Different treatments depending on tenure**
 - More partial cutting in private forest
- **Each tenure has pros and cons and can fulfill different benefits**
 - Private: more job creation
 - Public: better biodiversity potential
- **None solves the tragedy alone...**
- **« Diversity begets diversity » -Malcom Hunter**

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MERCI!

THANK YOU!

QUESTIONS?

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