

Role of Stakeholders' expectations on Sustainability of Bioenergy: Case Study of La Tuque. Québec

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IEA Bioenergy Inter-Task project: Measuring. governing and gaining support for sustainable bioenergy supply chains

May 18-19. 2017



**UNIVERSITÉ
LAVAL**

Direction des services aux étudiants
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Introduction

- Biorefinery planning and development relies on stakeholders along the supply chain;
- Establishment of successful and sustainable bioenergy business cases is complex and requires the full implication of stakeholders.
- Stakeholders may have various expectations towards such a project.
- Sustainability includes:
 - **Environmental protection**
 - **Economic feasibility**
 - **Social acceptability**

Problem & research questions

Problem:

- Lack of relevant and reliable information on stakeholders' expectations, special needs and concerns to enable bioenergy investment decisions

Research questions:

- What are the main expectations (both positive and negative) related to the establishment of a sustainable forest biorefinery in La Tuque?
- What would be relevant strategies/policies to support the development of successful and sustainable bioenergy business cases?

Research protocol & Fuzzy AHP approach

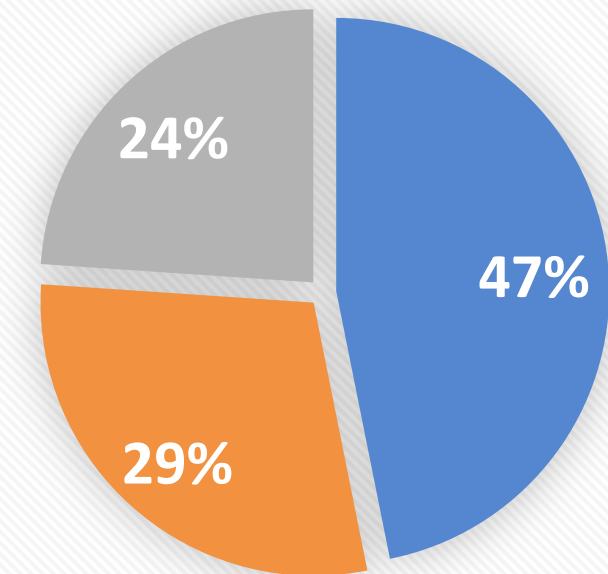
- Identify the stakeholders groups with experience and knowledge along the forest biomass supply chain in La Tuque
- Semi-structured interviews with stakeholders' groups representatives
- Identify expectations & transform them into hierarchy
- Hierarchy transformed into questionnaire
- Survey n=85 stakeholders to evaluate expectations
 1. Simple ranking
 2. Fuzzy analytical hierarchical process (fAHP)

Stakeholders' Expectations towards the projected biorefinery in La Tuque (Simple Ranking of factors)



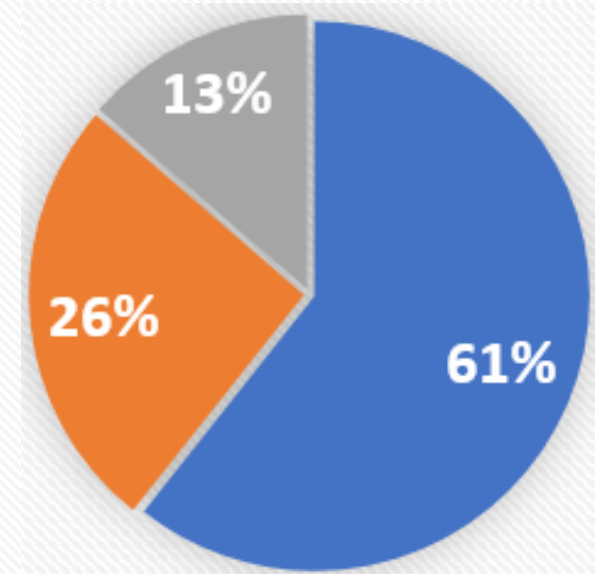
Comparison of results obtained through Simple ranking and fAHP

Average Values from simple ranking



- Economic expectations
- Social expectations
- Environmental expectations

Weight Values through the fAHP

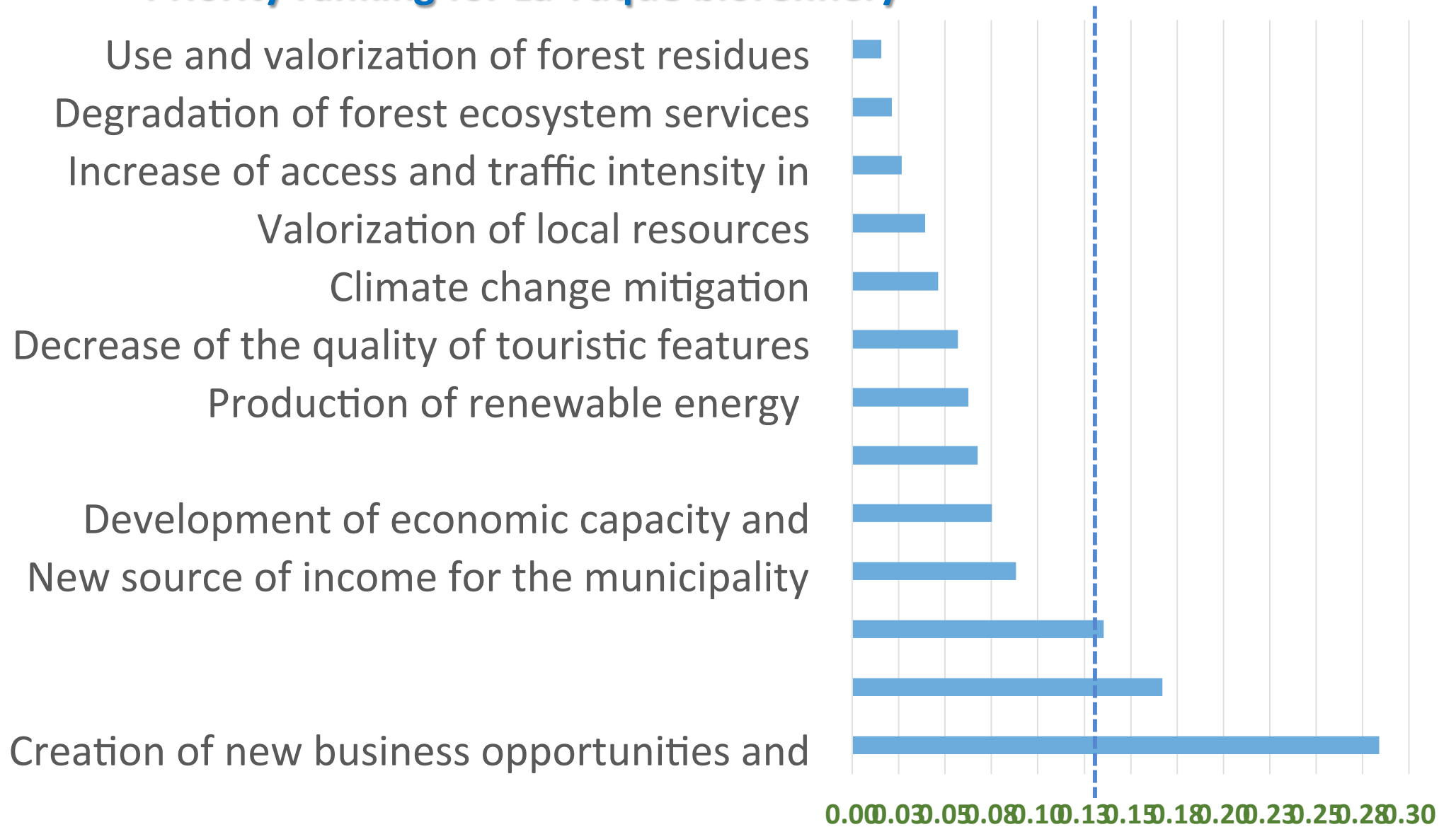


- Economic expectations
- Social expectations
- Environmental expectations

Preliminary results:

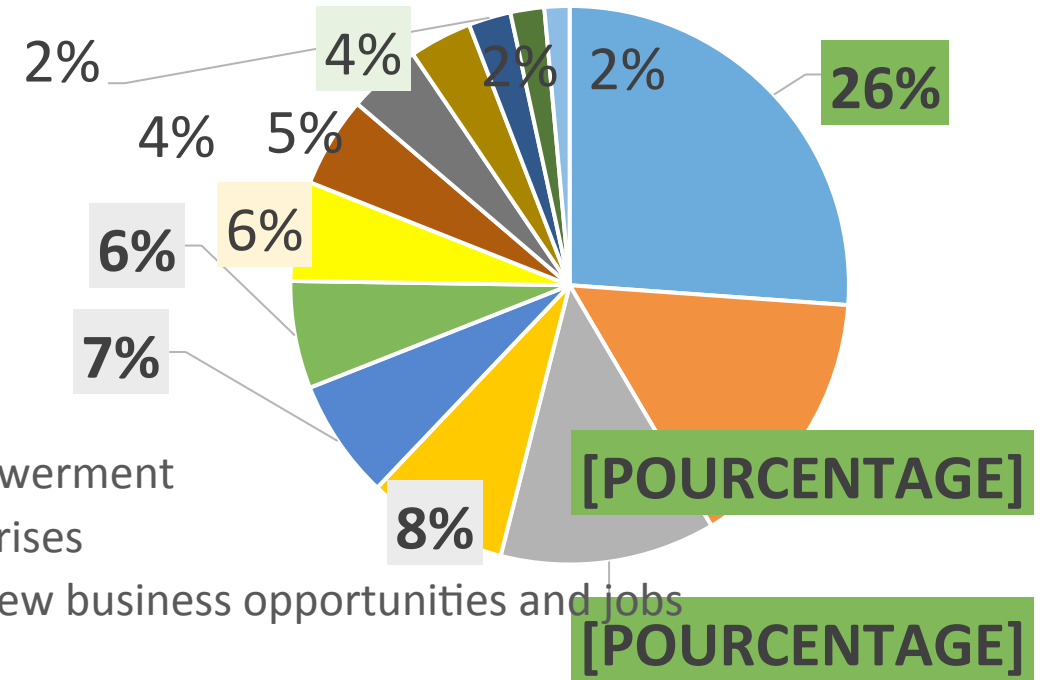
Expectations	Weights	fAHP Ranking
Creation of new business opportunities and economic empowerment	0.2840	1
Creation of new source of revenues for individuals and enterprises	0.1672	2
Keeping youth in their communities trough creation of new business opportunities and jobs	0.1353	3
New source of revenues for the municipality (Taxes)	0.0883	4
Development of economic capacity and local empowerment	0.0752	5
Competition for fiber between companies operating in the forest sector (biomass, pulp and paper, sawing)	0.0676	6
Production of renewable energy less polluting than fossil fuels	0.0626	7
Reduction of the quality of recreational tourism offer on the territory	0.0570	8
Attenuation of Climate Change	0.0463	9
Valorization of local resources	0.0394	10
Increase of the access and traffic intensity in the forest of the territory	0.0266	11
Degradation of biodiversity and ecosystem services provided by forests in the region	0.0213	12
Use and valorization of forest residues in the region	0.0158	13

Priority ranking for La Tuque biorefinery



Attributed weight to the expectations for La Tuque biorefinery

- Creation of new business opportunities and economic empowerment
- Creation of new source of income for individuals and enterprises
- Keeping youth in their communities trough the creation of new business opportunities and jobs
- New source of income for the municipality (Taxes)
- Development of economic capacity and local empowerment
- Competition for access to fibre among forest companies
- Production of renewable energy
- Decrease of the quality of touristic features on the territory
- Climate change mitigation
- Valorization of local resources
- Increase of access and traffic intensity in forests
- Degradation of forest ecosystem services
- Use and valorization of forest residues



Conclusions & Policy Implications

A successful and sustainable forest biorefinery business case in La Tuque needs a fine understanding of stakeholders' expectations from the project.

According to the preliminary results, the main focus of biorefinery policy should be :

1. Creation of new business opportunities and economic empowerment
2. Creation of new source of income for individuals and enterprises
3. Keeping youth in their communities through new business opportunities and jobs.
= 54% of the attributed weight of perceived importance
4. New source of income for the municipality (Taxes)
5. Development of economic capacity and local empowerment
6. Competition for access to fibre among forest companies (sawmills, pulpmills, biorefinery)
= 75% of the attributed weight of perceived importance

Thank you for your attention !



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