

Community Leadership in Wind Energy and Sustainability

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Sustainable Energy – A Community Matter
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Content of the Presentation

- Elements of Context of Wind Energy
- Wind Energy in PEI
- Model of Denmark
- Community Wind Energy
- Conclusion



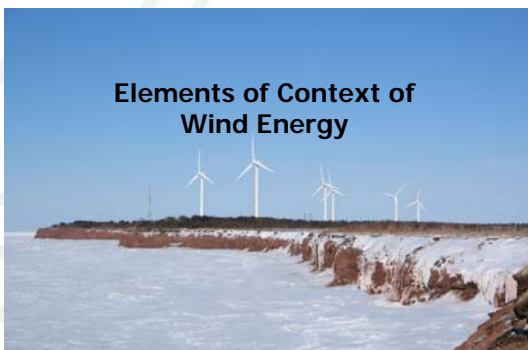
North Cape, PEI



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Elements of Context of Wind Energy



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Electricity Sector in North America

- Deregulation of the electricity generation sector
- Disengagement of public utilities in the installation of new electricity generation plants
- Emergence of new “players” – Wind Developers
 - New enterprise or existing enterprise diversifying in wind energy
 - Sector characterized by acquisitions
 - Respond to RFPs for the purchase of electricity generated from wind energy



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Wind Developers

- Objective: Secure Power Purchase Agreement
- Ultimate objective:
Generate maximum revenues and value for Shareholders
- Results for a jurisdiction:
 - Typically large wind farms (50 to 200 MW)
 - Foreign technology; foreign investors
 - Practically no participation by local communities or investors
 - Relatively low price for electricity
 - Significant reduction in GHG emissions in electricity generation portfolio



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Wind Developers (cont.)

- Success factors for Wind Developers
 - Sign land lease options with land owners
 - Obtain Power Purchase Agreements
- Drawbacks:
 - Negative stories regarding the prospecting for land
 - Small local economic impact (land lease, property taxes)
 - Communities live with large wind farms without having substantial tangible benefits
- Consequence:
 - Opposition to how wind energy is being developed
 - Communities want to participate and benefit from the wind energy sector



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Stake of Wind Energy

Who will benefit
economically and socially
from the development of this
natural resource?

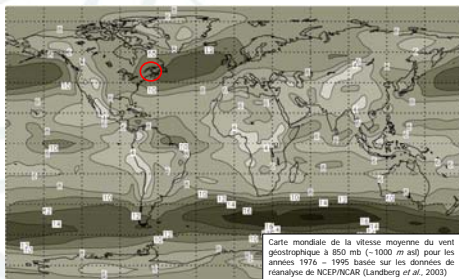
How: Ownership of wind farms

Wind Energy in PEI



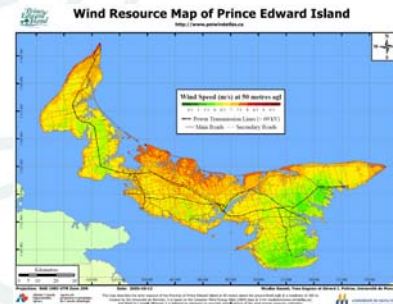
World Wind Resource

Landberg et al., Riso National Laboratory, 2003



Wind Atlas of PEI (50 m)

Gasset N., Gagnon Y., Poitras G.J., Université de Moncton, 2006



Wind Atlas of PEI (80 m)

Gasset N., Gagnon Y., Poitras G.J., Université de Moncton, 2006



Status of Development - PEI

- Installed to date: 152 MW (18% of electricity consumed)
 - North Cape Wind Farm, PEI Energy Corp., 10 MW
 - East Point Wind Farm, PEI Energy Corp., 30 MW
 - West Cape, Suez, 100 MW
 - Norway, Suez, 9 MW
 - North Cape, Vestas, 3 MW
- Planned: 500 MW by 2013
- Renewable Portfolio Standard:
 - Currently: 15% of electricity sold, by 2010
 - Planned: 30% of electricity sold, by 2013



Wind Energy Objectives – PEI

- Maximize energy security, independence and price stability
- Revenues from green energy exports
- Demonstrate community support
- Collaborative approach – Transmission
- Maximizing economic benefits
- Sound land-use planning
- Compliance with environmental review processes
- Fair and equitable land leases
- Consistent taxation and business support environment
- Partnering with proven developers

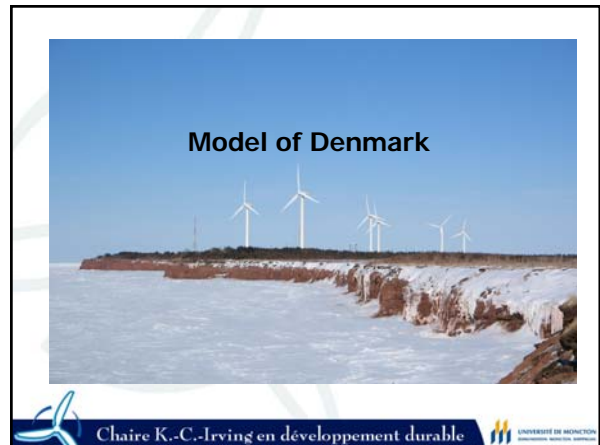
Source: Securing Our Future: 10 Point Plan, Gov. of PEI

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Wind Energy Assets of PEI

- Expertise and knowledge
 - Consultants, installation and operation of wind farms (notably Frontier Power Systems)
- Wind Energy Institute of Canada
 - Research, development, testing, consultation
- Entegrity Wind Systems inc.
 - 60 kW wind turbine
- Holland College
 - Wind Energy Technician Program

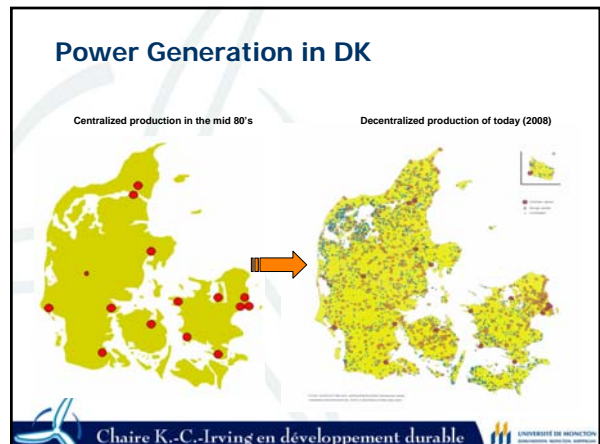
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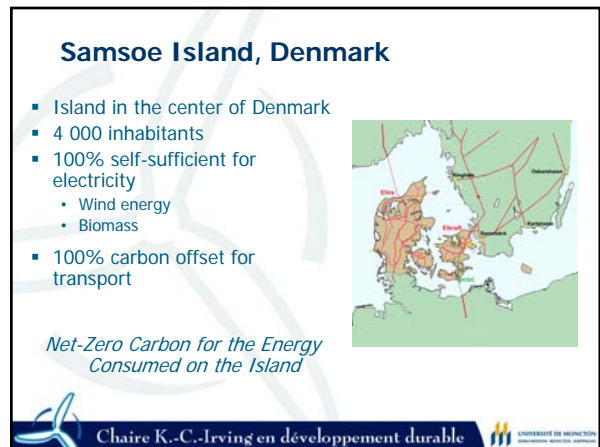
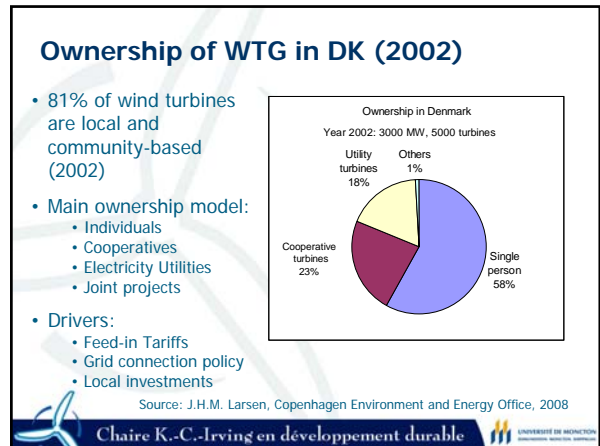
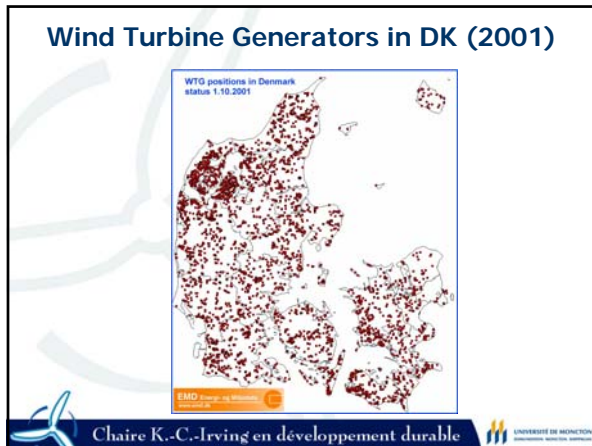


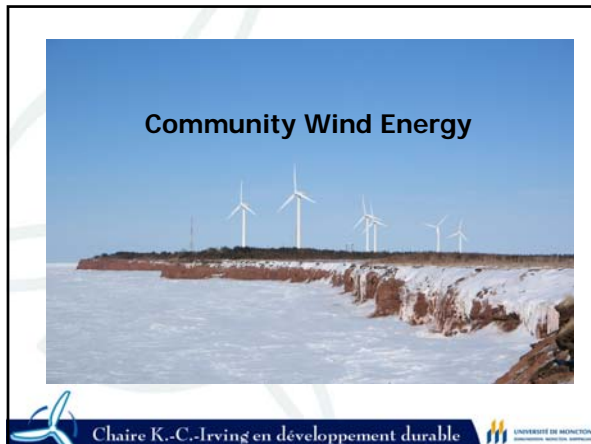
Wind Energy in Denmark - Status

- Wind installed capacity = 3 200 MW (average of 20% of electricity demand; some days, 100% of electricity demand)
- Strong manufacturing sector:
 - 21 000 jobs / 5 billion euros (8 G\$) per year
- Half of wind energy is installed on the distribution grid
- Standard Offer Contracts / Feed-in Tariffs
- Seamless integration of electricity on the grid (technical and market participation)
- Target: 30-50% of electricity consumption by 2025

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Community Wind Energy

- Elements of definition:
 - Local initiative
 - Local ownership
 - Wind farm of commercial scale
 - 15 MW is an upper limit on the size of the wind farm
 - Wind farms typically connected to local distribution grid

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Community Wind Energy (Cont.)

- A few advantages
 - Maximizes local economic benefits
 - Increases the social acceptability of wind farms
 - Develops local and community entrepreneurship
 - Small wind farms (less impact on the landscape)
 - Cooperation between communities (installation and operation of the community wind farms)
- A few disadvantages
 - Higher cost for electricity

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Vision – Community Wind Initiative NB

- Maximize the economic benefits of wind energy developments for communities in NB
 - Communities in general
 - First Nation communities
- All regions of the province participate in the NB Energy Hub
- Individuals and communities will have the opportunity to assist the province in reaching its climate change goals
- Working with communities to achieve self-sufficiency

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Mandate NB

- Recommend a community wind energy policy to the government for consideration
- Methodology:
 - Public consultations (10 communities)
 - First Nation Dialogue
 - Research work
 - Best practices from other jurisdictions

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R: Allocation for the Program

- Pilot phase :
 - 100 MW
 - Investments of 220 MS
 - Revision of the allocation depending on the success of the program

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R: Characteristics of the Individual Projects

- Maximum per project:
 - 15 MW
- Between 7 and 10 projects in NB
- Standard Offer Contracts
- In the pilot phase, one project per promoter as majority owner

R: Eligible Owners

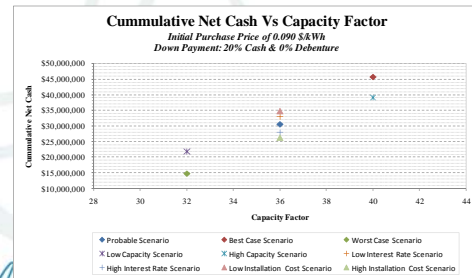
- Majority Owners (at least 51%):
 - Municipalities (or subsidiary company)
 - Cooperatives
 - Not-for-profit organizations
 - Institutions
- Possibility of being a participant (minority owner) in other projects

R: Eligible Owners (cont.)

- Participants (minority owners):
 - Private corporations of NB
 - Maximum of 15% of the capital
 - 51% of shareholders are residents of NB or production facilities in NB
 - Private investors
 - Maximum of 15% of the capital
 - Resident of NB
 - NB Power
 - Maximum of 20% of the capital

R: Purchase Price of the Electricity

- Initial price of 0.09\$ per kWh, fully indexed at 2% per year
- Potential Profits:



Financial Needs

- Financing of a project (15 MW):
 - Total cost of a project:
 - 33 M\$
 - Equity (cash contribution):
 - 20% (6 M\$)
 - Debt financing:
 - 80% (27 M\$)

Some Sources of Financing

- Traditional sources - Equity:
 - Municipal Funds
 - Gas tax
 - Funds of the cooperative
 - Private corporations
 - Private investors
 - Electricity Utility
 - Provincial economic development funds
 - ACOA
 - Etc.

Some Sources of Financing (cont.)

- Traditional sources - Debt:
 - Banks
 - Credit Unions
 - Insurance companies
 - Etc.
- Potential sources - Debt:
 - Loan guarantees (Province or ACOA)

R: New Sources of Financing

- Renewable Energy Investment Fund :
 - Eligible for residents of NB
 - Investments:
 - Minimum : \$500 (one time)
 - Maximum : \$10 000 per year
 - Minimum term of 5 years
 - Interest rate based on prime rate
 - Fiscal advantages (RRSP and tax credits)
 - Administered by independent corporation
 - Investments exclusively in renewable energy projects

Model: PEI Energy Bonds
(used for the East Point Wind Farm)

Conclusion



Conclusion

- Atlantic Canada has an important wind resource that can be exploited to the benefit of the communities

*Wind energy can be
an important source of electricity,
an engine of economic development,
a source of wealth
for PEI*

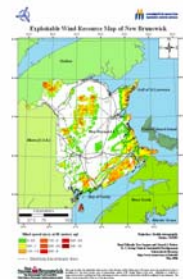
Conclusion (cont.)

- Guiding principles for the development of wind energy:
 - Economic benefits for communities and the province
 - Social acceptance of wind farms
 - Protection of the environment (notably landscape)
- Opportunities for PEI:
 - Community-based approach for wind energy
 - Need good public policies and support by Government
 - Development through the PEI Energy Corporation

www.peiwindatlas.ca
www.nbcommunitywind.ca
www.umoncton.ca/chairedd

Sources of Funding for Research Work

- Natural Sciences and Engineering Research Council (Canada)
- NB Environmental Trust Fund
- Government of New Brunswick
- Atlantic Innovation Fund
- New Brunswick Innovation Foundation
- Research contracts
- Université de Moncton



www.umoncton.ca/chairedd