



# Action plan for Swedish bio energy companies - Canada -

Version 1.0

Swedish Trade Council  
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This report was made by the Swedish Trade Council

Swedish Trade Council

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## Summary market prioritization bio energy

- There is a growing global demand for renewable energies
- There are many opportunities and in order to succeed the bio energy companies have to focus and have a long term commitment on the most promising markets
- In order to shorten lead times to business for Swedish bio energy companies the Swedish Trade Council analyzed 25 selected markets
- Nine markets were identified as the most promising; Austria, Canada, Czech Republic, Ireland, Poland, Romania, Spain, United Kingdom and USA
- In the next step a deeper market analysis and an action plan for each prioritized market was conducted
- This is the action plan for the Canadian market



## Why prioritize?

- focus and long term commitment are essential to success

Entering a new market requires a substantial commitment in terms of time and money especially in relation to a small company's resources

Before entering a new market the following factors need to be evaluated:

- Customer demand and buying criteria
- Laws & regulations
- Business climate & culture
- Local and international competition
- Access to financing

When entering a new market the following need to be created:

- Sales & distribution network
- Local references
- Customer contacts
- Brand recognition
- Local networks (Swedish companies, sub-suppliers, consultants, politicians, etc)

Substantial scale and learning curve effects exist per country



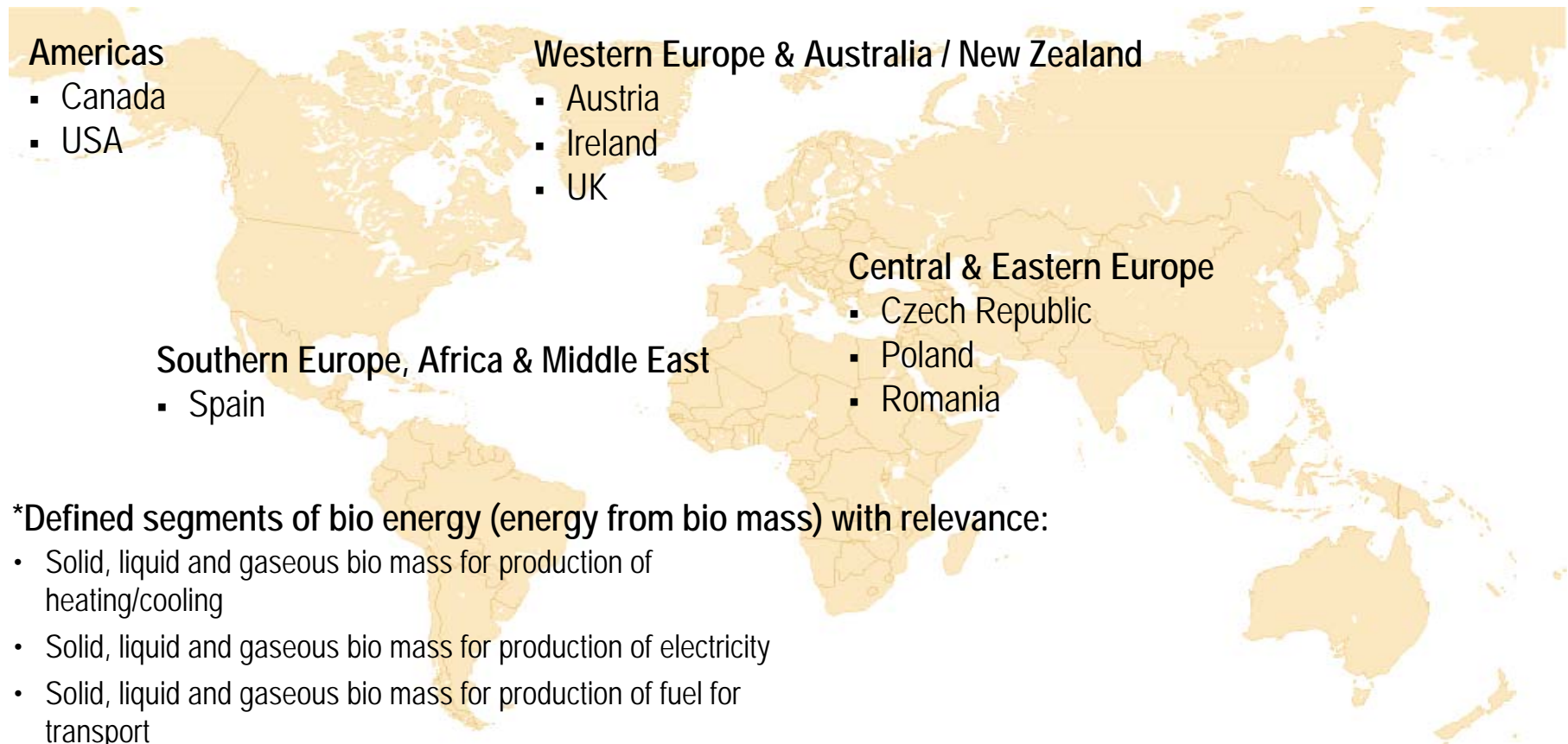
## The 25 countries are found in five regions\*

- identified through company preferences, industry experts, Svebio





## 9 geographical markets were identified for further analysis and development of an action plan in the field of bio energy\*



### \*Defined segments of bio energy (energy from bio mass) with relevance:

- Solid, liquid and gaseous bio mass for production of heating/cooling
- Solid, liquid and gaseous bio mass for production of electricity
- Solid, liquid and gaseous bio mass for production of fuel for transport



## Three tracks identified

- different characteristics for each track

### "EAST TRACK"

- Czech Republic
- Poland
- Romania

#### Characteristics:

- New EU-member
- District heating
- Mainly public financing
- Based on opportunities waiting to be explored

### "WEST TRACK"

- Canada
- Ireland
- Spain
- UK

#### Characteristics:

- Bio energy for transport + electricity production
- Domestic heating/cooling
- Public and private financing
- Based on demand from markets

### "SPECIAL TRACK"

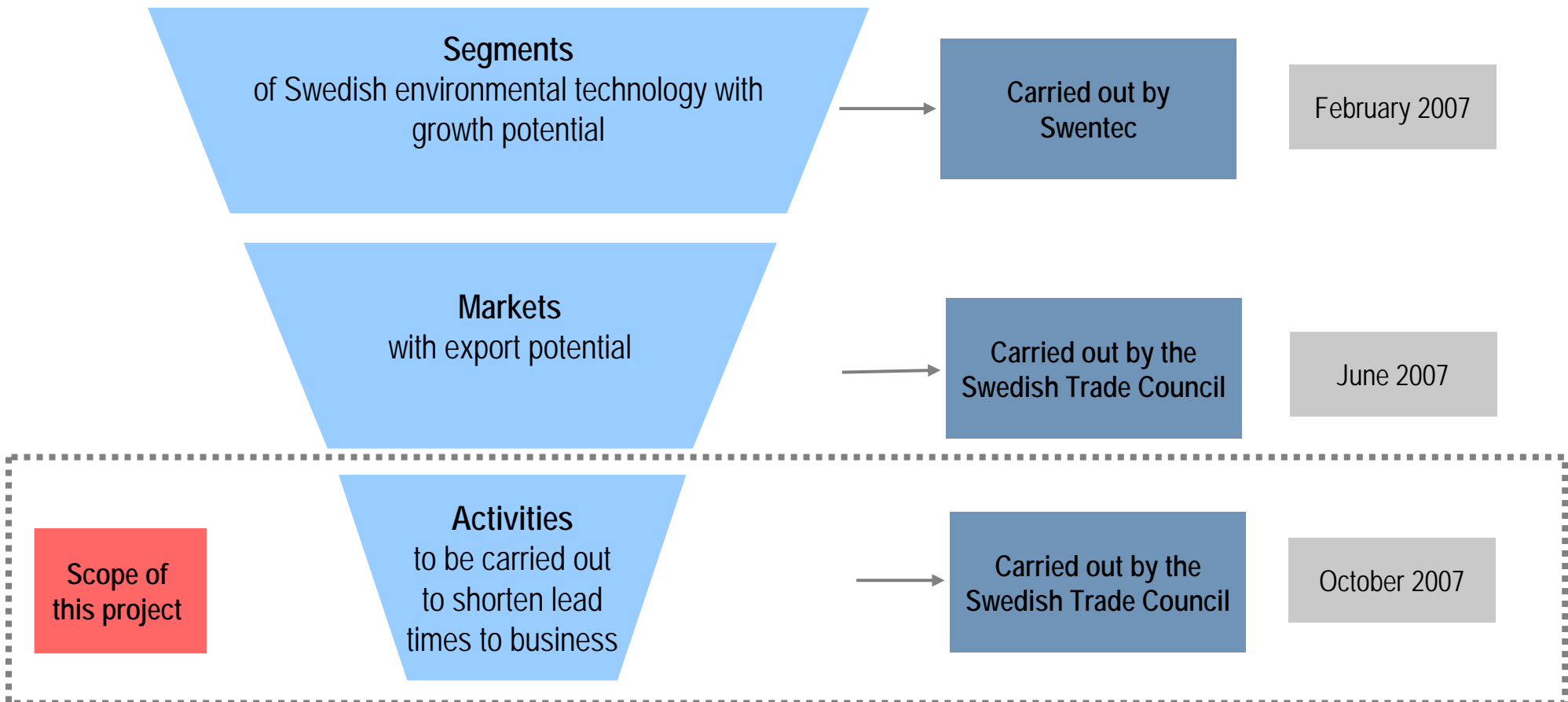
- Austria
- USA

#### Characteristics:

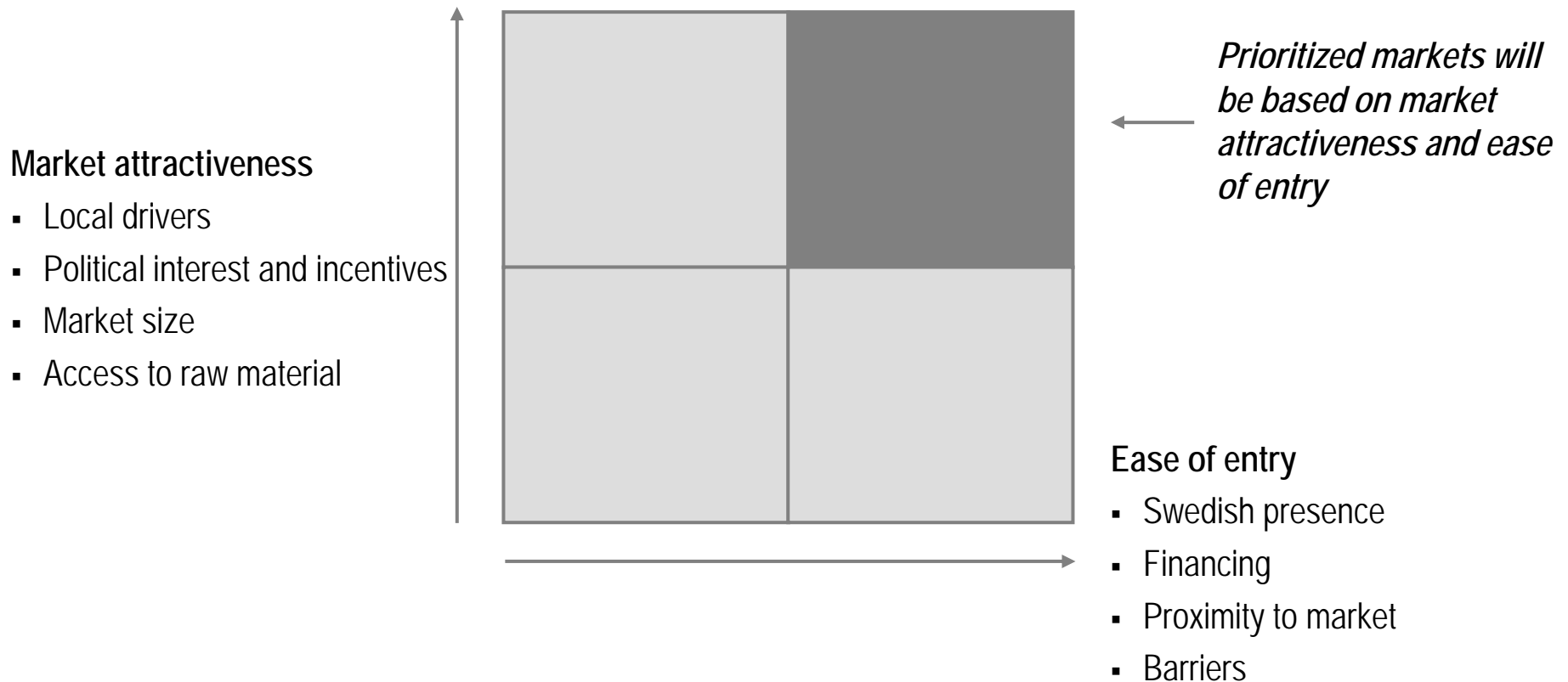
- Window of opportunity open now
- Very advanced in certain segments, i.e. bio fuels for transport
- Public and private financing
- Based on bench marking opportunities



# Funnel approach to zoom in on segments, markets and activities with largest potential for export



In the last report markets with most potential (market attractiveness vs. ease of entry) were identified with Svebio  
- this project focuses on WHEN and HOW to enter the market



This project entails 3 segments - The company strategy needs to be adapted accordingly

# Project plan: Activities

## Market analysis

### Activities

- Local interviews with bio energy companies, experts and organizations

### Deliverables

- Answered key questions
- Local action plans for the 3 sub segments

## Aggregated analysis

### Activities

- Analysis of local reports and action plans
- Development of action plans for regions and or types of companies

### Deliverables

- Action plans for regions and or types of companies
- Action plan for a central Swedish initiative

## Seminars

### Activities

- Seminars in Stockholm and Gothenburg

### Deliverables

- Conducted seminars

This process will assure well founded strategies / action plans



## Definitions and abbreviations

Term / abbreviation	Definition
Environmental technology	All technologies whose use is less environmentally harmful than relevant alternatives. Environmental technology are according to ETAP categorized into the following areas; air pollution control, bio energy, district cooling/heating, energy efficiency, environmental consultants, environmental training & information, hydro power, noise protection, soil remediation, solar energy technology, sustainable building, systems/control/monitor engineering, transportation, waste management & recycling, water & wastewater treatment, wave power, wind energy technology
Bio energy	Bio energy is energy from biomass. Includes solid, liquid, gaseous bio fuels for production of heating/cooling, electricity and fuel for transport.
RES	Short word for renewable energy sources, normally wind, solar, bio energy, hydro etc.
Market	In this report a market is defined as a geographical country
Off-grid electricity production	Means that the electricity is consumed on site and not sold through the grid
Lignocellulosic feedstock	Corn stover, straw, wood and forest residues
Renewable Portfolio Standards	RPS are market driven policies to ensure a minimum inclusion of renewable sources in electricity production



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# CANADA

The Canadian bio energy market is developing at an increasing rate each year

## Country facts

Population:	33 Million
GDP/capita:	\$ 35,200
GDP growth:	2,8 %
Swedish export:	11.4 mrd SEK
Swedish export, growth:	8 %



## Bioenergy facts

Feed in tariffs:	Approx 2500 SEK/MWh in some provinces
RES in energy mix:	6 %
Share of EU funds for bioenergy:	-
Available financing sources:	Mainly Natural Resources Canada & Provincial governments
Available raw material:	Wood, bio-diesel, methanol, wind, solar, hydro
Domestic expertise:	Wood pellet, bio-diesel, ethanol, bio-gas
Environmental public awareness:	Medium to High
Bioenergy companies present:	Several companies including FVB and Talloil from Sweden
Active Swedish regional networks:	City of Linköping, Växjö and Malmö are known in Canada
Other:	Embassy of Sweden, Ottawa

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# CANADA

## The future of Canadian bioenergy looks very promising

### Business opportunities

- Segments with opportunities for Swedish companies: District heating & cooling, bio fuels and electricity generation from biomass materials
- More public & private initiatives for energy conservation
- All three levels of government have increased funding for environmental & energy technologies
- Canada has an estimated 123 million tonnes of unutilized biomass
- Increasing awareness for the environmental and economical benefits of bioenergy

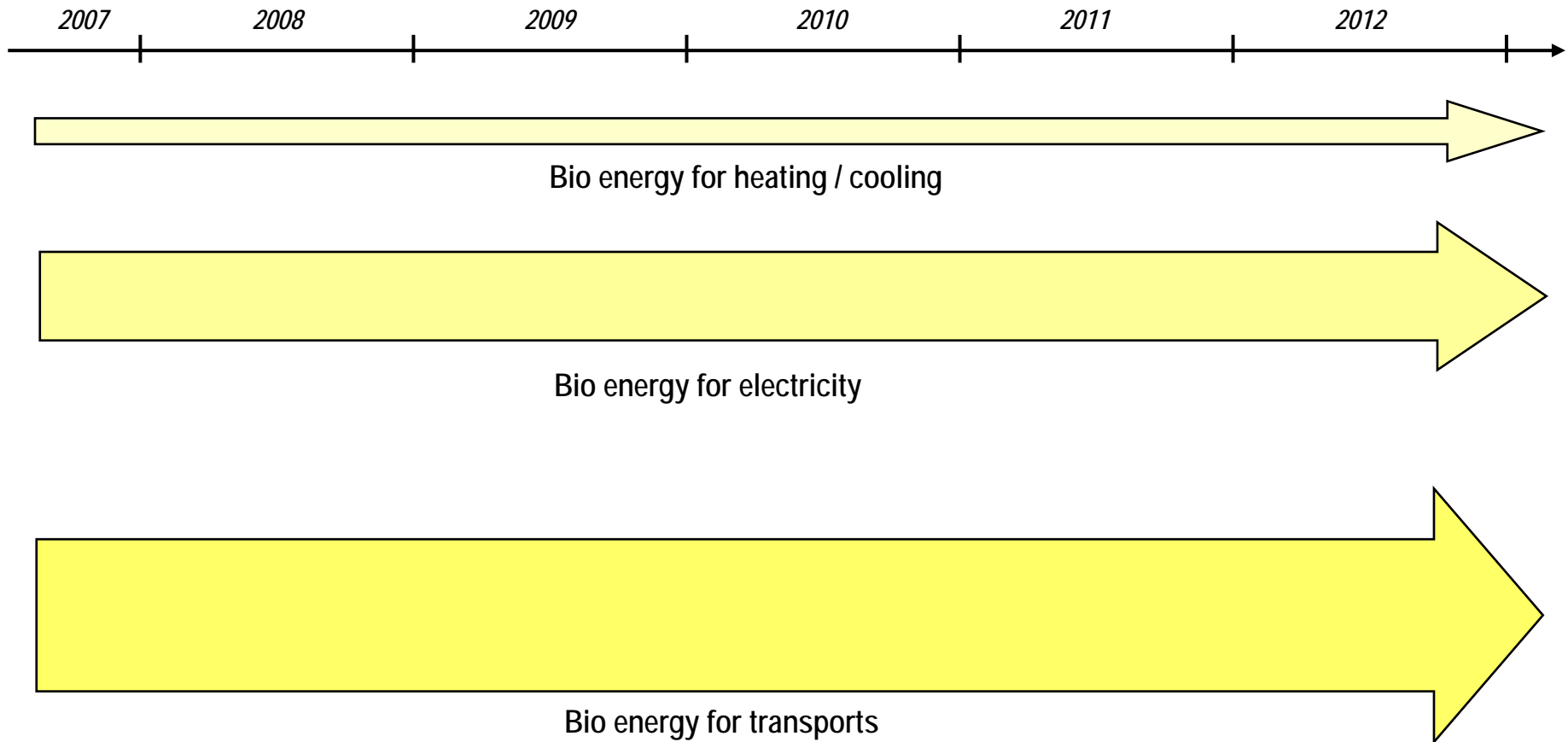
### Challenges

- Availability of low cost energy (fossil fuels and grid electricity)
- Awareness of biomass as an energy option
- Lack of capital financing
- High capital costs for installation of technologies
- Availability and cost of biomass
- Undeveloped supply chains for biomass
- Lack of access to the grid for power production
- Complex domestic government incentive plans
- NGO misinformation on bioenergy

### Conclusion

- In Budget 2007, Canada's new government allocated CAD \$2 billion over seven years to support the production of renewable fuels.
- Swedish companies could benefit on the growing market potential in several sectors as identified above.
- Sweden stands high among Canadians within the industry and authorities for its expertise and experience. There has been several delegations in both directions.
- Swedish companies would mostly benefit to enter at the planning & design stages, rather than the construction and implementation. There is a window of opportunity due to increased awareness and programs in the next 1-5 years.

# On the short term, the bio fuels for transportation sector is the most attractive



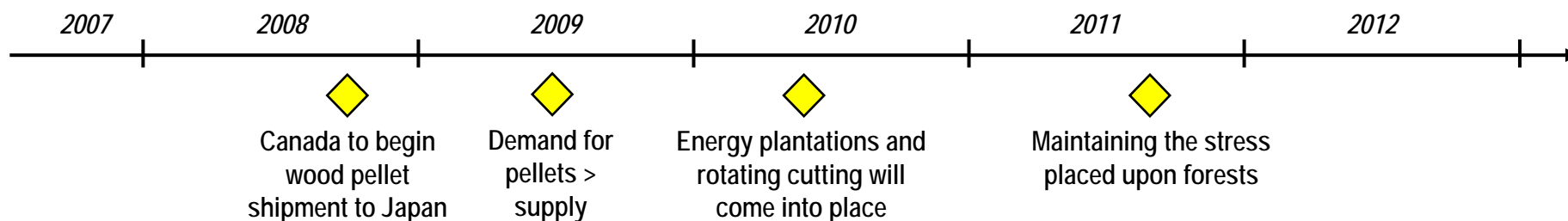
The width of the arrows indicate market potential and size.

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## Solid, liquid and gaseous bio mass for production of heating/cooling is a growing segment



### Comments

- Canadian wood pellet producers are experiencing aggressive growth rates
- Canadian wood pellet producers often sell their entire inventory prior to production
- The Netherlands and Belgium are Canada's top export markets for wood pellets followed by Sweden and Denmark
- Biomass fired district energy solutions has been in place since 1986, but the larger systems mostly use fossil fuels. However, multi-fuel combustion systems are becoming increasingly popular
- Over 100 000 homes use wood as their main source of heat.  
\*Note: this is a difficult number to measure as many homes who use wood heat do not report it to government

### Actions

- The Canadian government needs to develop policies that will increase the use of renewable resources for heating/cooling over the common methods used now
- More investors are needed in the Canadian wood pellet production process to help meet export demand from Europe
- Slash and forest floor materials are now being trucked away at a price for cogeneration purposes whereas in the past these materials were trucked away for free

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# Canada is incorporating more renewable resources for electricity generation

## Outline for Electricity generation throughout Canada

Refined products	Electricity supplied to the main grid in Edmonton	Electricity for the town of Charlottetown	CHP as well as electricity
Know how	Landfill gasses to supplement natural gas supplies	Waste to steam	Anaerobic Digestion
Raw material	Landfill gas wells	Municipal Waste	Pine Beetle Wood Waste, Landfill Gases

Time →

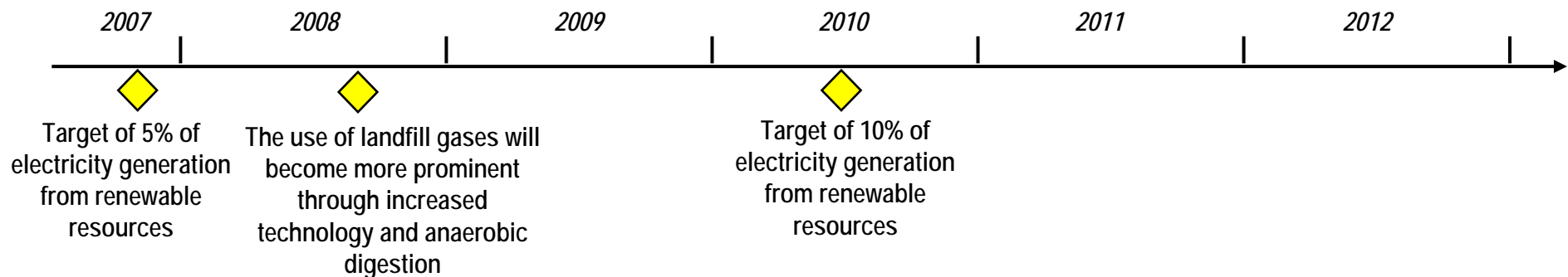
Now

Future

- A district energy system has been generating electricity from municipal waste in Charlottetown, Prince Edward Island, since the 1970s. Approximately 30,000 tonnes of municipal waste are converted into steam that provides electricity to more than 80 buildings
- The Ontario government has a set goal of generating 5% of its electricity supply from renewable resources by 2007 and up to 10% by 2010
- In British Columbia there are plans to build a 300 megawatt electricity plant in order to make use of the pine killed by the Mountain pine beetle

**Provincial governments are aware that changes to the electricity generation techniques and supplies must be employed in the future**

## Solid, liquid and gaseous bio mass for production of electricity is a growing segment in its early stages for the private sector



### Comments

- Power companies, like BC Hydro, are pursuing several CHP opportunities with pulp and paper companies across Canada
- Current renewable energy projects for electricity generation consist of wind, hydro, landfill and biogas projects
- Bio mass for electricity generation is most commonly used in the private sector, by industries such as pulp and paper mills. Some mills create enough electricity to power their operations, while some others produce excess capacities that are sold into the local power grids
- \*Note: Fossil fuels are still being used as a starting point throughout mills/factories in the forestry industry

### Actions

- The Ontario government has developed a program, the Standard Offer Program, that makes it easier for smaller energy producers to operate to their local electricity distribution networks
- The Ontario Power Authority is currently encouraging businesses and institutions to invest in distribution systems that help supply their own electricity and heating needs, where possible
- Additional electricity that is supplied to the grid will be purchased at a fixed rate



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# Canada has only begun to exploit the ethanol and bio diesel market

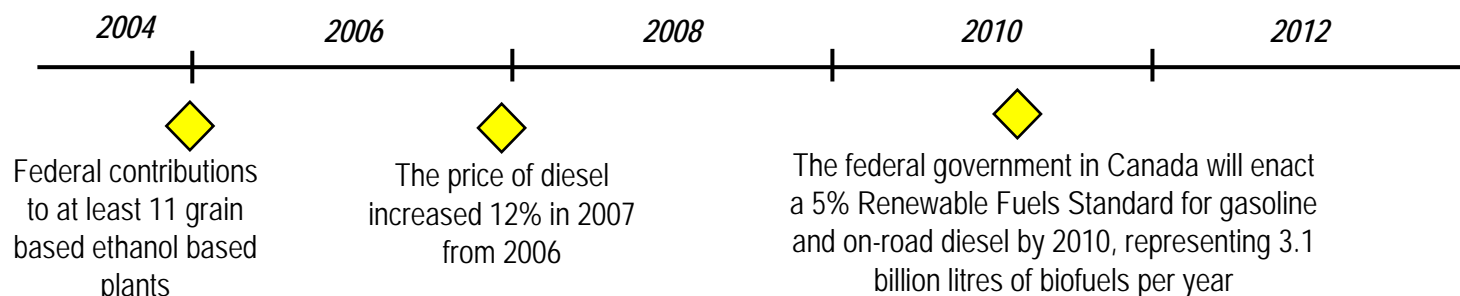
Timeline according to type of company			
Refined products	Ethanol	Bio Diesel	Ethanol
Know how	Technologies for lignocellulosic ethanol	Transesterification: glycerin is separated from fat or vegetable oil.	Anaerobic digestion
Raw material	Energy crops Agricultural and forestry residues	Energy crops Canola	Wood
	Now		Future

*Time* →

- The Canadian government has committed to require 5% *Renewable Fuels Standards* for gasoline and on road diesel fuel by 2010
- To meet this target Canada needs to produce 3.1 billion litres of renewable fuel
- 10% ethanol blended gasoline is now available at 1000 service stations
- Most of ethanol fuel is produced mainly from corn. However, still much can be done to improve economics of production, harvesting and processing
- Innovative technologies are also being developed to produce ethanol from corn stover, straw, wood and forest residues

**Ethanol production is expected to double, if not triple, in the coming years**

## The production of bio fuels for transport is rapidly expanding



### Comments

- The federal government has launched The Ethanol Expansion Program and granted contributions, \$118 Million CAD in total, to at least 11 grain based ethanol production plants
- The federal Canadian government, along with NextGen Biofuel Fund, has agreed to provide innovative companies a total of \$500 Million CAD. The government is willing to pay up to 40% of costs

### Actions

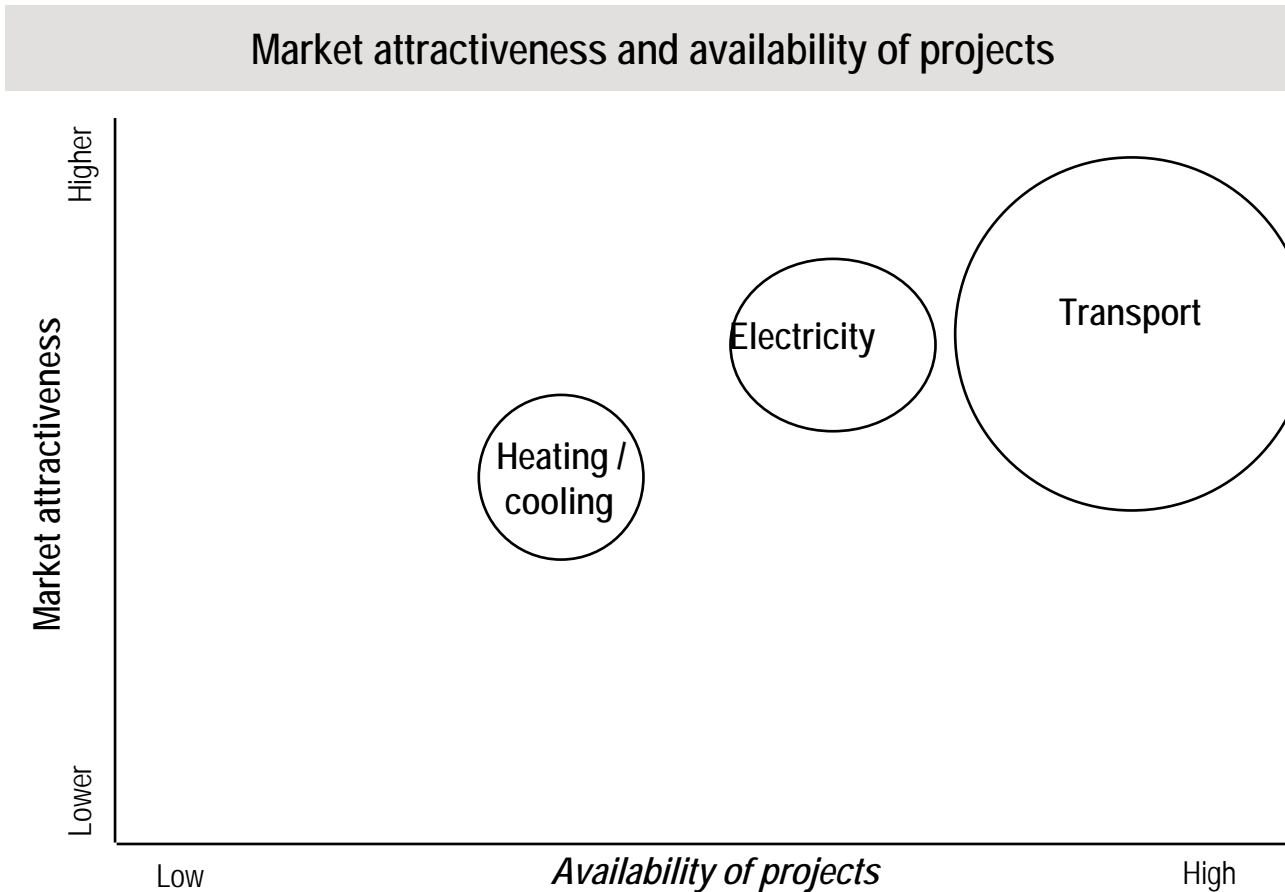
- Large scale production of bio diesel began in 2005. There are some pilot projects with the majority of exports going to the U.S
- Bio Diesel is not required to pay the 14.3 cents/litre of provincial tax as well as the 4.0 cents/litre federal tax
- Many municipal public transportation and working fleets are already using these technologies to help raise general public awareness, i.e. the City of Toronto

**It is projected that by 2010 Canada will increase production by 12 times the amount it currently produces**


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## All three segments of biomass technologies are present in Canada



- Transportation fuels maintain the most prominent use of biomass materials in Canada
- The production of wood pellets for cogeneration and export around the world are expected to greatly increase
- Large energy companies who most commonly use fossil fuels and hydroelectricity are now exploring their options of harnessing landfill gases through anaerobic digestion
- A large majority of research and development as well as investments are occurring in the ethanol and biodiesel markets
- \*The size of the market has been measured by an estimate amount of private and public investments

 The size of the circle indicates market size (1 cm = 100 MCAD)

**Multi million dollar investments are occurring in the bio transport fuels sector**

## The Canadian bio energy market is in a developing stage

### Indications from the market

- The Canadian biomass sector is in a research and development stage. High growth will be recognized in the coming years
- The Canadian government is taking pro-active steps to promote the industry throughout continued funding and financing
- Canada has an abundant supply of biomass. For the time being, biomass produced in Canada is being consumed (with the exception of wood pellets). Exports are expected to begin in the coming years
- Main heating/cooling and electrical customers of biomass are the private sector. Main industry involved is pulp and paper. However, technologies are still in their early stages. There are only limited public agencies that use biomass for public heating/cooling and electricity
- Main customers of bio fuels for transport are municipal transportation and work fleets as well as the general public

### Implications

- There are numerous benefits and cost advantages to conduct research and development within Canada
  - i.e. tax breaks, research grants, government funding, etc...
- The Canadian government's funding is targeted to create incentives for national and international firms
  - Swedish firms that have invested in the Canadian market are TalOil and KMW Energy
- Canadian sectors, such as wood pellet producers, need the assistance of companies with experience in these fields because they currently are not able to meet the needs of the world export market
- Along with Canadian companies, Swedish companies can help raise more awareness of the benefits of using bioenergy

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## Within the field of bio energy, transport is the fastest growing segment

Bio energy – description of the market		
Heating / cooling	Electricity	Transport
<ul style="list-style-type: none"> <li>•100 000 households use wood or pellets for heating their homes<sup>1</sup>.</li> <li>•Canada has a 30% world market share in pellets production. With 19 domestic producers, its exports are growing fast</li> <li>•There are more than 80 district heating facilities in Canada. Many of these systems are cogeneration systems using natural gas or oil</li> <li>•There are few district heating systems that solely run on biomass. The largest one is 1.2 MW district heating system in Charlottetown, Prince Edward Island</li> <li>•There are numerous other biomass space heating applications, including farm use, rural stores, schools, hospitals, and government buildings. Most of these are of small capacity systems in the 50 to 300 kW range</li> </ul>	<ul style="list-style-type: none"> <li>• Electricity from biomass generates less than 2% of Canada's total electricity production</li> <li>• The provinces with the greatest capacity of biomass electricity production is British Columbia (50%) followed by Ontario</li> <li>• The vast majority of Canadian biomass electricity, approximately 80%, is generated by the pulp and paper industry. In terms of installed electrical capacity, these industries have a capacity of producing 1,500 megawatts. However, most of this is off-grid</li> <li>• There are several independent power producers generate electricity, currently there about 12 of these plants, with an installed capacity of about 130 megawatts</li> <li>• Electricity is generated from landfill gas (LFG) at several locations across Canada</li> <li>• In terms of potential, it is estimated that more than 7% of Canada's annual consumption of electricity could be generated from biomass</li> </ul>	<ul style="list-style-type: none"> <li>• In 2005 the Canadian government committed to require 5% average renewable content in Canadian gasoline and diesel fuel by 2010</li> <li>• E10, a blend of 10% ethanol and 90% petrol, is now available at more than 1,000 service stations across Canada</li> <li>• Most of ethanol fuel now available in Canada is produced from grain, mainly from corn</li> <li>• However, still much can be done to improve economics of production, harvesting and processing</li> <li>• Innovative technologies supported by the government are being developed to produce ethanol from lignocellulosic feedstock</li> <li>• In late 2005, production of bio diesel began on a very limited industrial scale</li> </ul>

1. Most houses in Canada have central heating systems that use oil, gas or electricity as energy sources.

## Historically initiatives for promoting bio energy comes from all three levels of government as well as from the industry

### Electricity 1970's

Pulp and paper industry starts producing own electricity and heating from biomass using cogeneration plants

### Heating and cooling 1980's

High energy prices in the 1980's also stimulated new interest in biomass energy and district heating – especially in Atlantic Canada

### Electricity 2004

•Many provinces are implementing Renewable Portfolio Standards (RPS). Ontario was the first province in 2004

### Electricity 2007

British Columbia Energy Plan (Energy Plan Electricity Policy #31), referenced a need to generate electricity from mountain pine beetle wood by turning wood waste to energy

### Electricity 1993

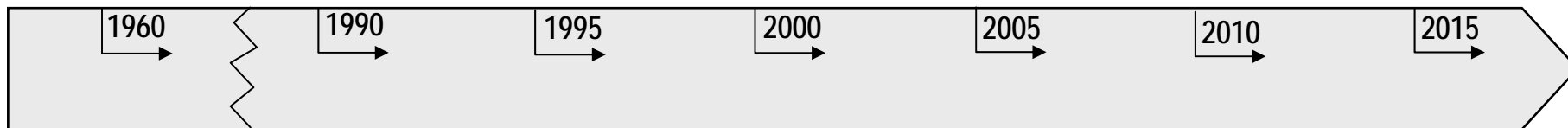
The largest stand-alone facility in the country for electricity production from biomass is constructed at Williams Lake, British Columbia

### Heating and cooling 2007

*Renewable Energy Deployment Initiative* focuses on green heating and cooling through the deployment of high-efficiency/low emissions biomass combustion systems. The goal is to reduce carbon dioxide by 284 000 tones by the end of 2007

### Electricity 2010

The Province of Ontario has set a goal of generating 2,700 Megawatts of electricity from renewable energy sources by 2010



1960

1990

1995

2000

2005

2010

2015

### Transport 1992

The Canadian government grants an excise tax exemption for ethanol used in blended fuels

### Bio diesel 2004

Demonstration testing the viability of bio diesel as fuel for public transit and work fleets

### Transport 2010

Currently there are 1000 filling stations for E10, but by 2010 10% of all fuel from transport should be bio fuel

### Transport /Heating 2012

As part of its National Renewable Fuels Strategy, the Government of Canada has put in place a requirement of 2% renewable fuel content in diesel fuel and heating oil no later than 2012



# The most significant challenge within bio energy in Canada is moving away from traditional energy systems

## Bio energy – major challenges in each field

- The greatest obstacle to bio energy in Canada is the availability of cheap fossil fuel sources
- One of the uncertainties facing future development of biomass energy is competition for biomass materials
- Even though Canada is abundant in biomass much of its forest resources are located in remote regions that lack established transportation corridors and where access to the grid is poor
- Energy generation from renewable biomass is capital intensive, so its cost can be prohibitive especially in comparison with fossil fuels
- Biomass energy has some environmental impacts such as releasing air emission when being burnt
- Environmentalists and industry say that more government support and policies are critical to stimulating a strong biomass industry in Canada

Heating / cooling	Electricity	Transport
<ul style="list-style-type: none"> <li>• Limited access to capital (high capital costs for installation)</li> <li>• Small, widely separated biomass sources (most of forest biomass is difficult to access)</li> <li>• District energy systems require extensive co-ordination between utilities, private sector builders, financiers, and government approval authorities</li> </ul>	<ul style="list-style-type: none"> <li>• Access to transmission is a challenge since the best sources of biomass materials are in remote locations, distant from power grids</li> <li>• The cost of producing one kilowatt of electricity from bio mass is more expensive than other sources because of high capital equipment, collection, transportation and handling costs</li> <li>• Only a limited number of electricity utilities in Canada offers the consumer the possibility to choose renewable sources from solar, wind and biomass</li> </ul>	<ul style="list-style-type: none"> <li>• Domestic producers of grain-based ethanol is competing with the food industry thus driving up the prices for grains</li> <li>• Improvements needed of the production, harvesting and processing of both grain based and lignocellulosic ethanol</li> <li>• Moderate public awareness about renewable fuels</li> <li>• Retail availability of renewable fuels is still somewhat limited</li> </ul>



## The most significant entry barriers are the availability and low cost of energy as well as the awareness of biomass as sustainable energy

Bio energy – main entry barriers		
Heating / cooling	Electricity	Transport
<ul style="list-style-type: none"> <li>• Prospective customers have limited knowledge about and experience with renewable energy systems. Preference is usually given to well-established, off-the-shelf space solutions that are perceived to be risk-free and affordable</li> <li>• Negative experience with earlier renewable energy technologies may have tarnished the reputation of certain systems</li> <li>• Some renewable energy systems have higher purchase and installation costs compared to conventional technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Existing regulations on safety or environmental impact often hinder the implementation of new technologies. These are based on the performance of old technologies that have little in common with newer, cleaner and safer options</li> <li>• The renewable energy community in Canada have to work hard to address these barriers through seminars and courses, and the development of standards and test procedures</li> <li>• There is a sometimes lack of relevant infrastructure associated with expertise, commercial channels of distribution and service</li> <li>• There is also a need to define the costs associated with the supply, production and logistics associated with bioelectricity</li> </ul>	<ul style="list-style-type: none"> <li>• Bio diesel sold in Canada must be produced in facilities that are certified for quality according to ISO standards</li> <li>• Canada is currently still in a “test phase” where municipalities are testing the feasibility of biodiesel in transit bus fleets. conducted are: Brampton, Toronto, Halifax, Montreal, Saskatoon and Vancouver</li> <li>• Biodiesel performance is influenced by climate conditions. In Northern areas of Canada, biofuels may not be a viable option</li> <li>• The cost and availability of crops (corn) are a major stumbling point as ethanol production is increased</li> <li>• Fossil fuels are often used to convert corn stalks into ethanol that is mixed with gasoline</li> <li>• Bio fuels can get an EcoLogo certificate if they meet stringent environmental criteria set by Environment Canada’s Environmental Choice Program</li> </ul>

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# The most significant influencing entities include the federal and provincial government's as well as the forestry industry

## Bio energy – influencing entities

- All three levels of government; federal, provincial and municipal are significant decision making and influencing entities within Bio Energy
- Natural Resources Canada (NRCan) develops policies and programs for Canada's natural resources, including energy, forests, minerals and metals
- Provincial power authorities, e.g. Ontario Power Authority
- Energy and power companies
- Forestry and agricultural industries
- Pulp and Paper Industry
- Lobby organizations such as Canadian District Energy Association, Landfill Gas Industry Alliance, Clean Energy Canada and Canadian Renewable Fuels Association
- Magazines such as Canadian Silviculture

Heating / cooling	Electricity	Transport
<ul style="list-style-type: none"> <li>• BioEnergy Focus Ontario</li> <li>• Canadian Bioenergy Association (CanBio)</li> <li>• CANMET Energy Technology Center</li> <li>• Canadian District Energy Association</li> <li>• Natural Resources Canada</li> <li>• The Canadian Renewable Energy Alliance</li> <li>• The Pembina Institute</li> </ul>	<ul style="list-style-type: none"> <li>• Clean Energy Canada</li> <li>• Canadian Biomass Innovation Network</li> <li>• Hydro One and Ontario Power Generation</li> <li>• Landfill Gas Industry Alliance</li> </ul>	<ul style="list-style-type: none"> <li>• Agricultural and forestry processing companies e.g. GreenField Ethanol and Tembec</li> <li>• Canadian Petroleum Products Institute</li> <li>• Canadian Renewable Fuels Association</li> <li>• Forest Products Association of Canada</li> <li>• Energy companies, e.g. Suncor and Husky</li> <li>• Grain producers' associations e.g. Ontario Corn Producers' Association</li> <li>• The Biodiesel Association of Canada</li> <li>• Vehicle and engine manufacturers.</li> </ul>

# Canadians are very welcoming and interested in Swedish bio technologies

## Wood Pellet Production:

- Pellets are produced in British Columbia and exported to Sweden for use. (Vancouver to Stockholm)
- Companies: There are 9 pellet producing companies in total

- Tall Oil: planned to invest 107 million Euro for Canadian pellet production. Targeted to help produce pellets from Pine Mountain Beetle infested wood
- Plans to build four pellet production factories in British Columbia

## FVB Energy

District energy company with offices in Edmonton, AB and Toronto ON

## Swedish Renewable Energy Technology Mission to Canada, 2006

Swedish industry delegation to Ontario, Canada

- Export promotion activity organized by Swedish Trade Council, 2007
- Participation at the Canadian District Energy Association, CDEA
- Speaker: Magnus Lundberg discussed Swedish District Energy Association

## Partnership:

- BIOX Corporation (Canadian) has worked with ABB in the past
- BIOX is a leading Canadian developer of new technologies used to create more advanced biofuels

## KMW Energy & BioCap

- Both entities have committed to help further the development of Canada's bio energy industry.
- KMW are backing the initiatives of BioCap's

## National cooperations

- Wood Pellet Association of Canada, Canadian District Energy Association, Natural Resources Canada, Environment Canada, BioCap, Canadian Bioenergy Corporation



## Funding is a crucial aspect within the Canadian bioenergy industry

	Private	Public
National	<ul style="list-style-type: none"> <li>• Banks / leasing companies</li> <li>• Equipment suppliers</li> <li>• Private and corporate investors</li> <li>• Venture capital firms</li> </ul>	<ul style="list-style-type: none"> <li>• CanBio, Canadian Biomass Innovation Network, The BIOCAP Canada Foundation</li> <li>• Ethanol Expansion Program:</li> <li>• Export Development Canada</li> <li>• Natural Resources Canada's Bioenergy Development Program</li> <li>• Provincial governments (i.e. Alberta funding 14 new projects in 2007)</li> <li>• The Green Municipal Fund and the Infrastructure Canada Program</li> </ul>
International	<ul style="list-style-type: none"> <li>• Representatives of International financing firms</li> <li>• Subsidiaries of major energy, fuel and technology companies</li> </ul>	<ul style="list-style-type: none"> <li>• Canadian International Development Agency (CIDA)</li> <li>• Resource Efficient Agricultural Production Canada (REAP)</li> </ul>

- Funding crucial to a company's success. According to a survey conducted in 2007, 60% of biotech companies are looking for \$10 million CAD of financing while 40% are looking for \$20 million of financing
- Access to capital is the number one barrier for successful commercialization of intellectual property of 78% of companies surveyed

**National public project funding is developed to encourage private investment**



## There are several financing alternatives available from Sweden (1/2)

### Financing alternatives for Swedish corporations from Sweden

#### EKN (Exportkreditnämnden)

**Financing:** Government authority that gives warranties in order to insure export deals and cross border investments. Such a warranty can be the prerequisite for offering the buyer credit – and can also enable better financing.

**Environmental focus:** Gives warranties for different types of business endeavors incl. Environmental oriented ones. Takes the environment into consideration when evaluating all business endeavors.

**Geographical focus:** Basically all countries, but with different levels of premiums according to the country list on the website.

**Info:** [www.ekn.se](http://www.ekn.se), [martin.Kallervald@ekn.se](mailto:martin.Kallervald@ekn.se)

#### SEK, Svensk Exportkredit (“Swedish Export Credit”)

**Financing:** State owned corporation that offer export financing solutions, general corporate financing, project financing, capital market transactions or qualifies consulting services Swedish companies and their international customers.

**Environmental focus:** Not specifically

**Geographical focus:** All regions

**Info:** [www.sek.se](http://www.sek.se), [bo.leander@sek.se](mailto:bo.leander@sek.se)

There are entities for different needs – venture capital, credits, subsidies and warranties



## There are several financing alternatives available from Sweden (2/2)

### Financing alternatives for Swedish corporations from Sweden

#### Exportlånet ("The export credit")

**Financing:** "The export credit" is administrated by Almi and is a collaboration between Almi, EKN, Swedish Trade Council and Swedfund. The credit is developed to be complementary to a market and specifically for export deals. It can finance up to 90 per cent of the total capital need without a maximum credit amount.

**Environmental focus:** Not specifically

**Geographical focus:** The credit is only offered to Swedish SMEs with operations in Sweden

**Info:** [http://www.almi.se/finansiering\\_export.html](http://www.almi.se/finansiering_export.html)

#### Exportlånet ("The export credit")

**Financing:** "The export credit" is administrated by Almi and is a collaboration between Almi, EKN, Swedish Trade Council and Swedfund. The credit is developed to be complementary to a market and specifically for export deals. It can finance up to 90 per cent of the total capital need without a maximum credit amount.

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**Info:** [http://www.almi.se/finansiering\\_export.html](http://www.almi.se/finansiering_export.html)

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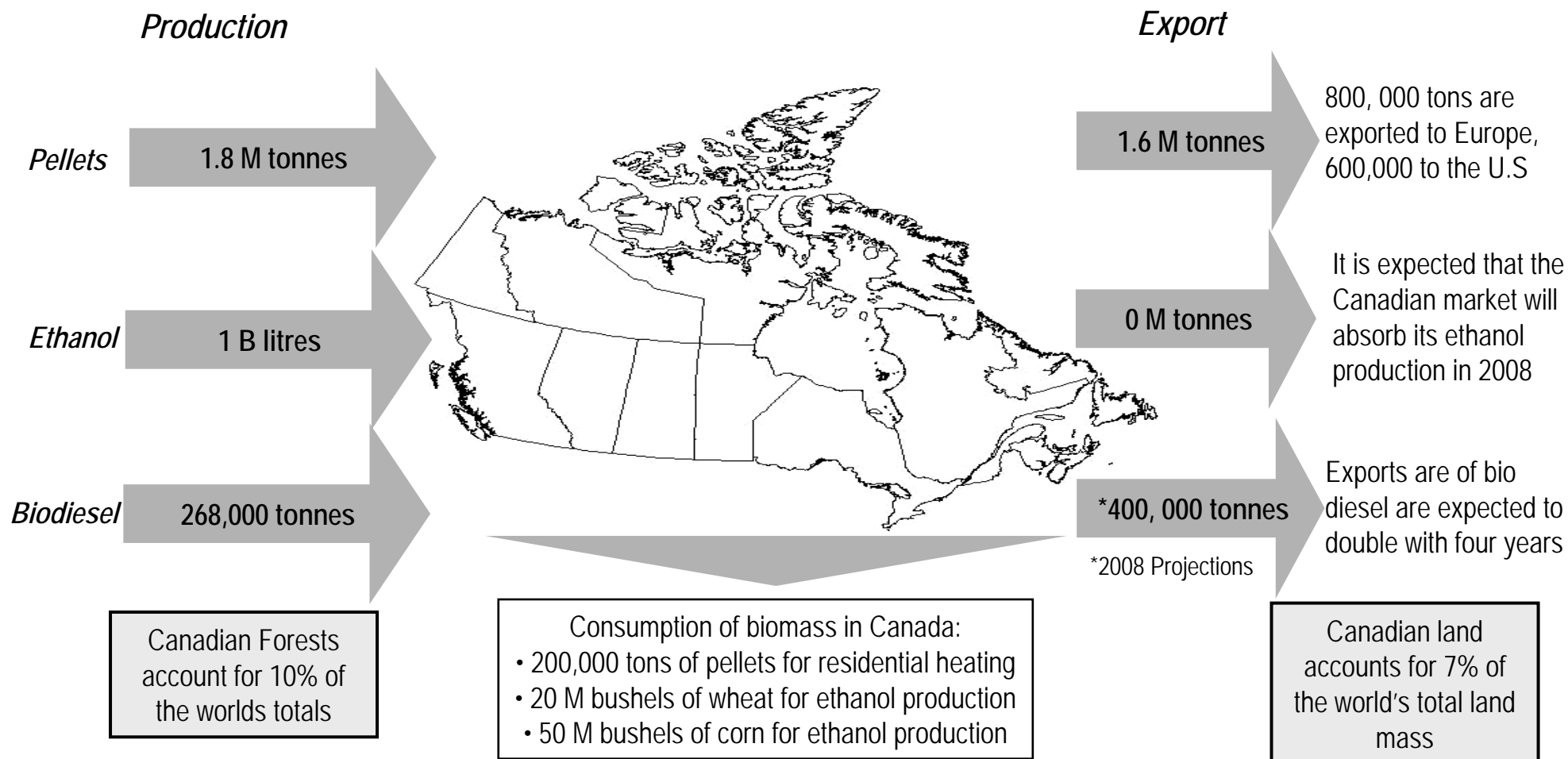
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## The most significant customers of bioenergy in Canada are private industries, such as forestry companies and fuel producers

Bio energy – main customers		
Heating / cooling	Electricity	Transport
<ul style="list-style-type: none"> <li>• Communities and municipalities for district energy. For example in Charlotte town, Prince Edward Island a wood fired district heating system has been supplying heat to 15 buildings since 1986</li> <li>• Rural areas in Canada have used wood to produce heat as a long standing tradition in Canada</li> <li>• Combustion in commercial facilities such as: hotels, warehouses, apartment buildings, hospitals, schools and correctional facilities</li> <li>• Some specific companies in Canada who use biomass for heating and cooling are: Valley Truss and Metal, Schurman Farms Inc, Denco Enterprises and Koughan</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial own-use establishments such as the pulp and paper Industry and saw mill industry</li> <li>• Other industrial users include greenhouses, small sawmills, furniture factories and garages who are using hog fuel, straw, whole tree chips and sometimes wood pellets to produce their own electricity</li> <li>• Independent electricity generation companies sell their electricity to larger electricity distribution companies and municipalities, e.g.:           <ul style="list-style-type: none"> <li>- Toromont Energy (by landfill gas from waste)</li> <li>- The Williams Lake Power Plant (largest biomass power plant in North America) sells 55 MW under contract to BC Hydro</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Canadian Railways and urban commuter are potential users of bio diesel</li> <li>• Energy companies</li> <li>• Government fleet vehicles are potential users of bio diesel</li> <li>• Municipal governments vehicles, e.g. Societe de Transport de Montreal (STM) conducted one of the largest biodiesel projects in North America called BIOBUS</li> <li>• Canadian general public: E10, blended gasoline and ethanol is available at over 1,000 fuelling stations located throughout central and western Canada</li> </ul>

# Supply for biomass from wood is mainly secured within the borders



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## The most common technologies are targeted towards transport fuels

Technology	Description	Uses
Combustion	This is the most common conversion technique of biomass. It is a commercially proven and successful technique. Improvements are being made to increase efficiency rates as well as reduce emissions and costs incurred	-Heat -Electricity
Gasification	This involves the conversion of forestry and agricultural residues and municipal waste into syngas. It occurs by starving the surrounding environment of oxygen through high temperatures	-Heat -Electricity
Pyrolysis	A thermal decomposition process that involves rapidly heating biomass at high temperatures and eliminating oxygen. The result is a condensed liquid fuel, i.e. bio-fuel. Typical biomasses used throughout this process are hardwoods and softwoods, grasses and agricultural residues	-Fuel
Fermentation	Fermentation is a specialized and accelerated method of decomposition. It occurs as starch and cellulose components of biomass are converted to bio-ethanol's. The main components used are the sugars from grains and corns. This is the most common procedure for producing ethanol in Canada	-Fuel
Transesterification	This involves the process of treating vegetable and animal fats with sodium hydroxide and methanol to produce glycerine and fatty acid methyl esters (also known as bio diesel)	-Fuel
Anaerobic Digestion	This process uses bacteria to breakdown biomass in an air-free environment. This commonly occurs in landfills where it is used to treat certain fractions of municipal waste waters. Current trends are also seeing farmers use this technique to treat manure, animal processing wastes and agricultural wastes	-Heat -Electricity -Fuel



## For public government contracts, there are six different types of tenders/bid processes available

Type of Process	Description
Telephone Buy	This method is only used for smaller contracts, valued under \$25,000 CAD. A requisition is done over the phone as it can be identified quickly. A PWGSC worker at least three companies who place their bids over the phone. The company who meets all the requirements and offers the lowest price wins
Request for Quotation	This method is only used for smaller contracts, valued under \$25,000 CAD. The bid document are kept simple to maintain a simplified process
Invitation to Tender	This method occurs when the contract is a higher value, more than \$25,000 CAD. The company that responds with the lowest bid while meeting all the requirements is awarded the contract
Request for Proposal	This method occurs when the contract is a higher value, more than \$25,000 CAD. The PWGSC is not based on lowest price, rather it is based upon the quality of services/products offered
Request for Standing Offer	This method is unique from the other 5. The company registers with the PWGSC and places an offer for products or services over a given period of time and validity. Standing offers are not considered to be contracts
Request for Supply Arrangement	This is a method of solicitation where clients may solicit bids from a pre-screened, selected group of candidates. It is used when a product or service is commonly used on a regular basis. Clients have the option of negotiating price drops from the regular price given by suppliers

**All contracts over \$25,000 are advertised on an online system called MERX**

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# The largest competitors and complementing companies include both Canadian and international companies

## Bio energy – main competitors and complementing entities

Heating / cooling	Electricity	Transport
<b>National</b>		
<ul style="list-style-type: none"> <li>• <u>Wood pellet producers:</u></li> <li>- Armstrong Pellets</li> <li>- Energex Pellet Fuel</li> <li>• <u>Waste-to-energy technology:</u></li> <li>- Waste to Energy Inc.</li> <li>- Naanovo Energy.</li> <li>• <u>Engineering and system design:</u></li> <li>- Aldworth Engineering Inc.</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Power companies:</u></li> <li>- Hydro One</li> <li>- BC Hydro.</li> <li>- Independent power producers e.g. Maxim Power Corp.</li> <li>- Pulp mills are Self-generators that produce electricity largely for their own consumption rather than for the grid</li> <li>• <u>Engineering and system design:</u></li> <li>- Finning Power Systems</li> <li>• <u>Technology:</u></li> <li>- Dynamotive Energy Systems Corporation</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Domestic ethanol producers:</u></li> <li>- Green Field Ethanol</li> <li>- Suncor Energy</li> <li>- Commercial Alcohols</li> <li>- Husky Energy</li> <li>- NorAmera Bioenergy</li> <li>- Okanagan Biofuels</li> <li>- Seaway processors.</li> <li>• <u>Technology:</u></li> <li>- logen (enzyme products for cellulosic biofuels)</li> </ul>
<b>International</b>		
<ul style="list-style-type: none"> <li>• <u>Technology</u></li> <li>- Naanovo Energy Inc.</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Engineering and solutions experts</u></li> <li>- Caterpillar Inc.</li> <li>- ABB</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Technology</u></li> <li>- Verenium Corporation (enzyme products for cellulosic biofuels)</li> </ul>



# BC Hydro

## One of Canada's largest electric utilities



Category	Energy company
Line of business	BC Hydro is one of the largest electric utilities in Canada, serving more than 1.7 million customers in an area containing over 94 per cent of British Columbia's population.
Technology	BC Hydro operates 30 hydroelectric facilities and three natural gas-fuelled thermal power plants. Looking to move away from conventional technologies.
Turnover	\$266 million (net income 2006)
Ownership structure	The provincial government of British Columbia
Investment plans	BC Hydro has entered into an electricity purchase agreement for a proposed biomass project that meets detailed green criteria and that will be built by an independent power producer. BC Hydro also support the development of wood residue technologies, to encourage forest industry producers to increase their electricity production.
Comments	BC Hydro is also pursuing several biomass fired cogeneration opportunities with BC pulp and paper companies. In late 2003 BC Hydro announced a collaborative project with Canfor. BC Hydro contributed 49 of the 81 million dollars to build a cogeneration facility at Canfor's Prince George Pulp and Paper Mill. In addition, through a load displacement agreement, BC Hydro will pay Canfor a premium for any electricity used internally from this project.



# BIOX Corporation, Toronto

## Producer of bio diesel

Category	Bio-diesel
Line of business	Producer of bio-diesel for commercial companies. They only sell to companies with 20 million litres or more of output annually.
Technology	The BIOX Process is a new commercial-scale bio-diesel production process in which fatty acids and triglycerides are converted to methyl esters by acid catalysed esterification and base catalysed transesterification. Dr. David Boocock has transformed the production process through the selection of inert co-solvents that generate an oil-rich one-phase system.
Turnover	\$10-25 Million CAD
Ownership structure	BIOX Corporation
Investment plans	Works in connection with Monteco Holdings Inc., University of Toronto, Lockerbie and Hole Inc., Adam Clark, AMEC and ABB.
Comments	BIOX intends to build, own, operate and maintain biodiesel plants around the world using it's own proprietary technology, specifically in jurisdictions where clear environmental policy exists requiring the inclusion of biofuels into the petroleum distribution pool. BIOX also anticipates that in certain regions and situations it will potentially partner with companies which will be able to bring key strategic assets to a project. In such cases, BIOX is interested in structuring partnerships with these companies or individuals.



# Dynamotive Energy Systems Corporation

## Producer of bio oil from cellulosic biomass



Category	Energy solutions provider
Line of business	Dynamotive has emerged as a leader in the production of fuels from lignocellulose that do not compete with food applications. The company's headquarter is in Vancouver and it has operating subsidiaries in the U.S. and Latin America, licensing agreements with Australian and European partners, and the strategic alliances with Consensus Business Group.
Technology	Dynamotive's technology for fast pyrolysis turn dry waste biomass and energy crops into BioOil® for power and heat generation. BioOil® can be further converted into vehicle fuels and chemicals.
Turnover	-
Ownership structure	Dynamotive Energy Systems Corporation is listed on the Toronto Stock Exchange.
Investment plans	<p>Dynamotive's new flagship bio oil plant is in Guelph, just west of Toronto, will to turn waste wood into industrial heating oils and be in full operations during the second quarter of 2007. The plant, is designed to process 200 tonnes per day of cellulosic biomass (recycled wood) and 37,000 gallons of biofuel per day with the equivalent energy content of 550 barrels of conventional oil, for a total of 12.2 million gallons a year.</p> <p>Total development costs for the plant have been estimated at \$16.5 million USD.</p>
Comments	Dynamotive intends to generate its main source of revenue from license fees and royalties as well as technical services contracts from licensees, and from direct investments in biofuel projects.

# EPCOR Power L.P.

## Biomass power producer



Category	Energy and energy-related services and products
Line of business	EPCOR is responsible for operating power generation facilities with a gross capacity of more than 3,400 MW.
Technology	EPCOR owns and operates a number of power plants in North America. All using a diverse mix of fuel sources, including gas, biomass, and small hydro.
Turnover	Million \$350.2
Ownership structure	Units of the Partnership trade on the Toronto Stock Exchange
Investment plans	EPCOR Power is continuously looking into new investment opportunities with in heat and power facilities.
Comments	<p>EPCOR owns a number of biomass power plants, such as:</p> <ul style="list-style-type: none"> <li>-Calstock Power Plant: Hearst, Ontario (Capacity: 35MW)</li> <li>-Williams Lake Power Plant: Williams Lake, British Columbia (Capacity: 66MW, Canada's largest biomass fueled power plant)</li> </ul>



# logen Corporation

## A world leader in cellulose ethanol technologies



<b>Category</b>	Biotechnology
<b>Line of business</b>	logen has the world's most advanced process for making cellulose ethanol. The company owns and operates the world's first and only cellulose ethanol demonstration facility, and has an industry-leading speciality enzyme business serving pulp and paper, textile, and animal feed market.
<b>Technology</b>	Enzyme technology is one of the key areas of logen's innovation. logen owns and operates a large-scale state-of-the-art enzyme manufacturing facility in Ottawa, Canada.
<b>Turnover</b>	\$10,000,000 to \$24,999,999 USD
<b>Ownership structure</b>	Privately held company, owned among others, by Goldman Sachs Group Inc., Royal Dutch Shell PLC, Petro Canada and the Canadian government.
<b>Investment plans</b>	logen is currently assessing potential locations for the world's first commercial prototype cellulose ethanol plant (estimated investment cost is \$25 million). In the long-term, logen intends to commercialize its cellulose ethanol process by licensing its technology broadly through turnkey plant construction partnerships. License fees and the supply of enzymes to the licensees' plants will generate income.
<b>Comments</b>	Established in the 1970s, logen Corporation has become one of Canada's leading biotechnology firms. logen is the world leader in technology to produce cellulose ethanol, a fully renewable, advanced biofuel that can be used in today's cars. logen is also an industrial manufacturer of enzyme products with a focus on products for use by the pulp and paper, textile and animal feed industries.

# Maxim Power Corp.

## An independent power producer (IPP)



Category	Independent Power Producer
Line of business	Based in Calgary, Alberta, MAXIM is an Independent Power Producer that owns and operates 30 power plants in Western Canada, northeast and western USA and France. Maxim Power Corp. owns and operates, innovative and environmentally responsible power projects such as the Vancouver Landfill Project (VLF).
Technology	The VLF cogeneration facility is a 7.4 MW electrical and 9.1 MW thermal project located on the greenhouse lands in Delta, British Columbia and was interconnected to the BC Hydro grid on September 21, 2003.
Turnover	111 million CAD (2006)
Ownership structure	Maxim Power Corp. is listed on the Toronto Stock Exchange.
Investment plans	Maxim Power Corp. is continuously looking into new investment opportunities with in environmental friendly energy production.
Comments	-

# Pinnacle Pellet Inc.

## The oldest established wood pellet producer in western Canada



<b>Category</b>	Natural Resource Production
<b>Line of business</b>	Wood pellet manufacturer.
<b>Technology</b>	Premium softwood pellet fuel and pine animal bedding pellets
<b>Turnover</b>	\$5-10 Million CAD
<b>Ownership structure</b>	Owner – Mr. Jim Swaan, President – Mr. Craig Lodge, Vice President Finance – Mr. Doug Beckman, Vice President of Brand Marketing – Mr. Peter Brand & Manager of Sales and Logistics Mrs. Brenda Gardiner
<b>Investment plans</b>	Last year Pinnacle Pellet formed a partnership with Canadian Forest Products Ltd. and the Moricetown Band for the development of a wood pellet production facility to be located adjacent to the Canadian Forest Products Ltd. sawmill in Houston, BC. The wood pellet plant is part of a larger project that includes the installation of a new bark-fired energy system at the Houston sawmill. The project should be completed during 2007. The wood pellets produced at this facility will be suitable for both industrial and home heating consumption and will be sold into a combination of the North American, Asian and European markets.
<b>Comments</b>	They are the oldest established wood pellet producer in western Canada as they have been in operation for over 20 years. Pinnacle Pellet Inc. produces 400,000 tonnes of product annually from our various locations in Quesnel, Williams Lake, Houston, BC (a Joint Venture with Canada's largest lumber company, Canfor) and Armstrong, BC.



## Rothsay (a division of Maple Leaf Foods Inc.) Canada's largest producer of bio diesel



<b>Category</b>	Bio fuel producer
<b>Line of business</b>	Canada's largest producer of bio diesel.
<b>Technology</b>	Rothsay produce bio diesel from two main sources: tallow and yellow grease.
<b>Turnover</b>	5 895 million CAD (Maple Leaf Foods)
<b>Ownership structure</b>	A division of Maple Leaf Foods Inc.
<b>Investment plans</b>	Over the past few years, Rothsay has completed two successful projects, having partnered with the Government of Canada, the Government of Quebec, the Montreal Urban Transit, the Canadian Renewable Fuels Organization, and several other organizations. Rothsay is continuously evaluating new plants for bio diesel production.
<b>Comments</b>	Rothsay opened Canada's first commercial-scale bio diesel plant in Ville Ste. Catherine , Quebec in 2005. The 35 million liters of bio diesel that is produced at the plant is equal to taking 16,000 light trucks or 22,000 cars off the road.



# Suncor Energy Products Inc.

## A leader in the production of ethanol



<b>Category</b>	Energy company
<b>Line of business</b>	Suncor Energy Products Inc. is a wholly-owned subsidiary of Suncor Energy Inc., an integrated energy company.
<b>Technology</b>	Carbon capture and storage technology, water recycling initiatives and mine operation improvements.
<b>Turnover</b>	Over \$100 Million CAD
<b>Ownership structure</b>	A division of Suncor Energy Inc.
<b>Investment plans</b>	Suncor is looking to expand its St. Clair facility to therefore be able to provide double its current capacity of ethanol. A new target has been set to reach 400,000 litres per day.
<b>Comments</b>	Suncor Energy Products Inc. owns and operates St. Clair Ethanol Plant.. With a production volume of 200 million liters per year, the St. Clair Ethanol Plant is the largest ethanol production facility in Canada. In addition to producing ethanol, Suncor is also supporting renewable energy development in Canada by pursuing wind power projects.



# Topia Energy Distribution Ltd.

## Producer & Distributor of bio diesel



Category	Bio-diesel
Line of business	Involved in the production and distribution of biodiesel throughout Canada. They actively distribute 15,000,000 litres of biodiesel to Canada and the U.S. They have building a 20,000,000 litre biodiesel production facility in Sudbury, ON. They also operate a number of retail outlets, Topia GreenStops, which are Canada's first all renewable fueling stations.
Technology	They use 3 forms of transesterification: 1) base catalyzed transesterification of the oil, 2) (ii) direct acid catalyzed transesterification of the oil, 3) (iii) conversion of the oil to its fatty acids and then to Biodiesel
Turnover	
Ownership structure	
Investment plans	Currently involved in building a production plant in Sudbury, ON as well as a number of smaller production plants throughout Canada.
Comments	Topia has been a leader in helping the Ottawa region lower its emissions. In the city of Ottawa, they helped reduce the city's emissions by 5 tonnes on Clean Air Day through various programs and initiatives. Also, Topia Energy Distribution Inc. meets all of the requirements of the BioDiesel Driven Program. This program is a marketing and quality control package that stresses third party testing and verification of fuel quality. Currently this is the only way to guarantee that a BioDiesel product is adhering to the strict standards of ASTM 6851, which is the industry standard for BioDiesel as ratified by Petroleum Marketers and Engine Manufacturers.

# Toromont Energy – Electricity

## Energy company with a turnover of 1,760 MUSD



<b>Category</b>	Energy company
<b>Line of business</b>	Toromont Energy's core business is the supply, construction and operation of high efficiency power plants less than 50 MW, using Caterpillar's leading edge power generation technologies. The plants are fuelled by natural gas, landfill gas, biogas and diesel fuel in remote locations. It reduces GHG emissions by more than 148 000 tonnes of eCO <sub>2</sub> per year. The innovative generation of this "green" energy also displaces fossil fuels that would otherwise be used to produce electricity.
<b>Turnover (Toromont Industries Ltd.)</b>	1,760 MUSD
<b>Ownership structure</b>	Toromont Energy Ltd. is a wholly owned subsidiary of Toromont Industries Ltd, a public company listed on the Toronto Stock Exchange (TIH).
<b>Investment plans</b>	Toromont Energy is planning to expand the power plant in order to accommodate a greater number of engines." If the plant reaches its full potential of 8 megawatts, the company will be able to produce electricity for 5300 homes
<b>Comments</b>	<p>Toromont Energy, a subsidiary of Toromont Industries Ltd., began constructing the power plant at the Waterloo Landfill in December 1998. Toromont Energy signed a long-term agreement with the Regional Municipality of Waterloo, owner and operator of the landfill, for the right to use the LFG. In return, the region would receive royalties from the company.</p> <p>Toromont also has an agreement with Ontario Power Generation to purchase and market the LFG-generated electricity to Ontario consumers.</p>

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## There are several large Swedish companies on the Canadian market

Company	Line of business	Local position	Large projects	Contact data
FVB Inc.	District energy systems, particularly hot water district heating and CHP	Since the 1990's FVB Energy has played a major role in the growth of the district energy industry	Biomass District Heating in Prince George, Biomass-fuel District Heating in Northern Canada, and Ouje-Bougoumou District Energy System	Phone: +1 (905) 265-9777 Email: <a href="mailto:info@fvbenergy.com">info@fvbenergy.com</a> Web site: <a href="http://www.fvbenergy.com">www.fvbenergy.com</a>
KMW System Inc.	Biomass energy technology	KMW System Inc has been operating in Canada since 1987 and a member of BIOCAP	Foothill Greenhouses Ltd., Taylor Lumber Co. Ltd, and Ouje Bougoumou Village	Phone: +1 519-686-1771 Web site: <a href="http://www.kmwenergy.com">www.kmwenergy.com</a>
Naanovo Energy Inc.	Biomass, municipal solid waste incineration technologies and waste-heat to energy technologies for the generation of electricity	Been present in North America since the amalgamation of the Swedish companies Anovo AB and Add power AB	Waste to Energy facility in Ontario, Canada	Roland Genereux, Regional Vice President Canada Phone: +1 403-260-1422 Web site: <a href="http://www.naanovo.com">www.naanovo.com</a>
Talloil Canada Inc.	Biofuels and energy company	Talloil Canada Inc. announced recently that it hopes to break ground this summer on the first of four \$30-million pellet plants planned for north-central British Columbia	Construction will begin in mid-2007 for the company's first of four wood pellet plants planned for north-central B.C. The company also intends to build plants in Fraser Lake and Quesnel	Staffan Stymne Phone +46(0)8 53 52 46 00 Email: <a href="mailto:info@talloil.ca">info@talloil.ca</a> Web site: <a href="http://www.talloil.com">www.talloil.com</a>

# KMW Systems Inc.

## A leading district energy system's developer



<b>Category</b>	Bio Energy Systems
<b>Line of business</b>	KMW designs and engineers customized bio energy systems for thermal heat and electric energy production.
<b>Technology</b>	KMW Systems Inc. are typically constructing in 6 major sections: fuel handling, combustion system, energy recovery (Boiler), ash handling, emission control and computerized control system.
<b>Turnover</b>	-
<b>Ownership structure</b>	Privately held by the management since 1987
<b>Entry strategy</b>	KMW Energi AB sold a bio energy system to Canada in 1978. The following year Systems Inc. was incorporated as a subsidiary of the Swedish company.
<b>Growth</b>	In 1989 there were very few new projects for energy companies as the market for bio energy systems went sour when the oil price dropped and public funding for bio energy systems dried up. KMW Systems Inc. had to shift customer focus to the pulp and paper industry and saw mills. Since 2005 the market for bio mass fuelled systems has returned some what.
<b>Comments</b>	Built the first biomass fuelled district energy system in Charlotte town 1984, Ouje Bougoumou (First Nation community), Quebec in 1992., Grassy Narrows 1998-99, Red Stoke 2002 in British Columbia. These four systems are the only four known biomass fuelled district energy systems.

# TallOil Canada Inc.

## Employing technologies to combat Mountain Pine Beetle



<b>Category</b>	Bio energy fuels and bio energy system solutions
<b>Line of business</b>	Producer of bio energy products such as bio-diesel, ethanol, and solid bio fuel products from agricultural and wood waste.
<b>Technology</b>	Specializes in combustion technology that enables the use of bio fuels without major modifications or replacement of existing furnaces and boilers.
<b>Turnover</b>	-
<b>Ownership structure</b>	TallOil Canada Inc. is a subsidiary of Swedish TallOil AB
<b>Entry strategy</b>	In 2002 Tall Oil and a BC based engineering company jointly developed a proposal to make industrial wood pellets from logs. At the time this was considered non economically feasible since most wood pellets are produced from sawmilling waste. energy prices have risen and the Mountain Pine Beetle (MPB) epidemic has grown exponentially, generating a much stronger interest within BC to explore biomass opportunities.
<b>Growth</b>	TallOil Canada Inc. is making a large investment in BC to produce wood pellets and help rehabilitate the MPB damaged forests.
<b>Comments</b>	Last year, TallOil Canada Inc. won four timber licenses. The total volume awarded was just over one million cubic meters per year. TallOil intends to develop four pellet plants that convert round wood into pellets. Its investment will be over \$160 million and it will be employing over 600 people throughout the interior region, which has been heavily damaged by the MPB epidemic. TallOil will manufacture industrial-grade wood pellets for the European biomass energy market or develop biomass energy opportunities here in Canada.



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## Contact list - Canada

Company	Contact person
Canadian District Energy Association	Richard Damecourt
CANBIO	Doug Bradley, President
Canadian Petroleum Products Institute	Peter Boarg
The Wood Pellet Association of Canada	John Swaan
CANMET Energy Technology Center	Rudy Lubin
The Pembina Institute	Roger Peters
Clean Energy Canada	Chris Noyes
Canadian Biomass Innovation Network	Hamid Mohamed
Canadian Renewable Fuels Association	Robin Speers
Forest Products Association of Canada	Isabelle Des Chênes
The Swedish Trade Council	Magnus Andersson, Trade Commissioner



## List of Sources Used (1/2)- Canada

Organisation	Report / Website
Bio Cap Canada	"Biomass Conversion and Utilization"
Biotechnology Focus Magazine	"Funding Remains Crucial for Canadian Biotech Industry"
BIOX	<a href="http://www.bioxcorp.com/">http://www.bioxcorp.com/</a>
Birgit Kajat	"Bioenergy and Biofuels Canadian industry and market opportunities"
Canada-Ontario Business Service Center	"The Canadian Bidding Process"
Canadian Renewable Energy Network	"Technologies and Applications"
Centre for Energy	"Biomass Challenges and Opportunities"
Climate Change Solutions	"Renewable Portfolio Standards & Other Incentives"
Eastern Ontario Development Program	"Anaerobic Digestion for Bioelectricity Production"
Farm Credit Canada	"Biofuel Support included in the Federal Budget"



## List of Sources Used (2/2)- Canada

Organisation	Report / Website
FVB Energy	<a href="http://www.fvbenergy.com/">http://www.fvbenergy.com/</a>
Globe-Net, Clean Technology Group	"Canada's Biofuels Future"
KMW Energy	<a href="http://www.kmwenergy.com/">http://www.kmwenergy.com/</a>
Natural Resources Canada	"Economic, Financial, Social Analysis and Public Policies For Fuel Ethanol" and "Bioenergy options for woody feedstock: are trees killed by mountain pine beetle in British Columbia a viable bioenergy resource"
Tall Oil	<a href="http://www.talloil.se/english.html">http://www.talloil.se/english.html</a>
Wood Pellet Association of Canada	Discussion with head representatives