



The German Chamber Network 

Willkommen - Bienvenue - Welcome

Canada

**Latest Developments on the Renewable Power Markets
for Wind, Solar and Bioenergy**



Industry and Export Forum on Renewable Energies

April 22, 2010 - Hannover



Agenda

1. Economic Framework and Energy System in Canada
2. Renewable Power Markets in Canada
 - Wind Energy
 - Solar Energy
 - Bioenergy
3. Your Opportunities on the Canadian Market

Our Profile & Key Services



AHK Canada

- 3 offices: Toronto (Head Office), Montreal, Vancouver
- 27 employees

Specializations of the Montreal Office

1. Renewable Energies (wind energy, solar energy, bio energy)
2. Environmental Technologies
3. Green Building & Energy Efficiency

Individualized Consulting Services

- Market potential analysis
- Strategic consulting services for market entry in Canada & Germany
- Identification of business partners in Canada & Germany
- Administrative support to develop your business in Canada & Germany

Projects

- Trade Missions (Renewable Energy & Green Building)
- Conferences & Networking Platforms in Germany and Canada
- Trade Show Participation

VAT-Refund

- Refund of 19% of German VAT and other European VAT to Canadian businesses
- Refund of Canadian GST to German businesses



The German Chamber Network 



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Key Economic Data - Germany & Canada

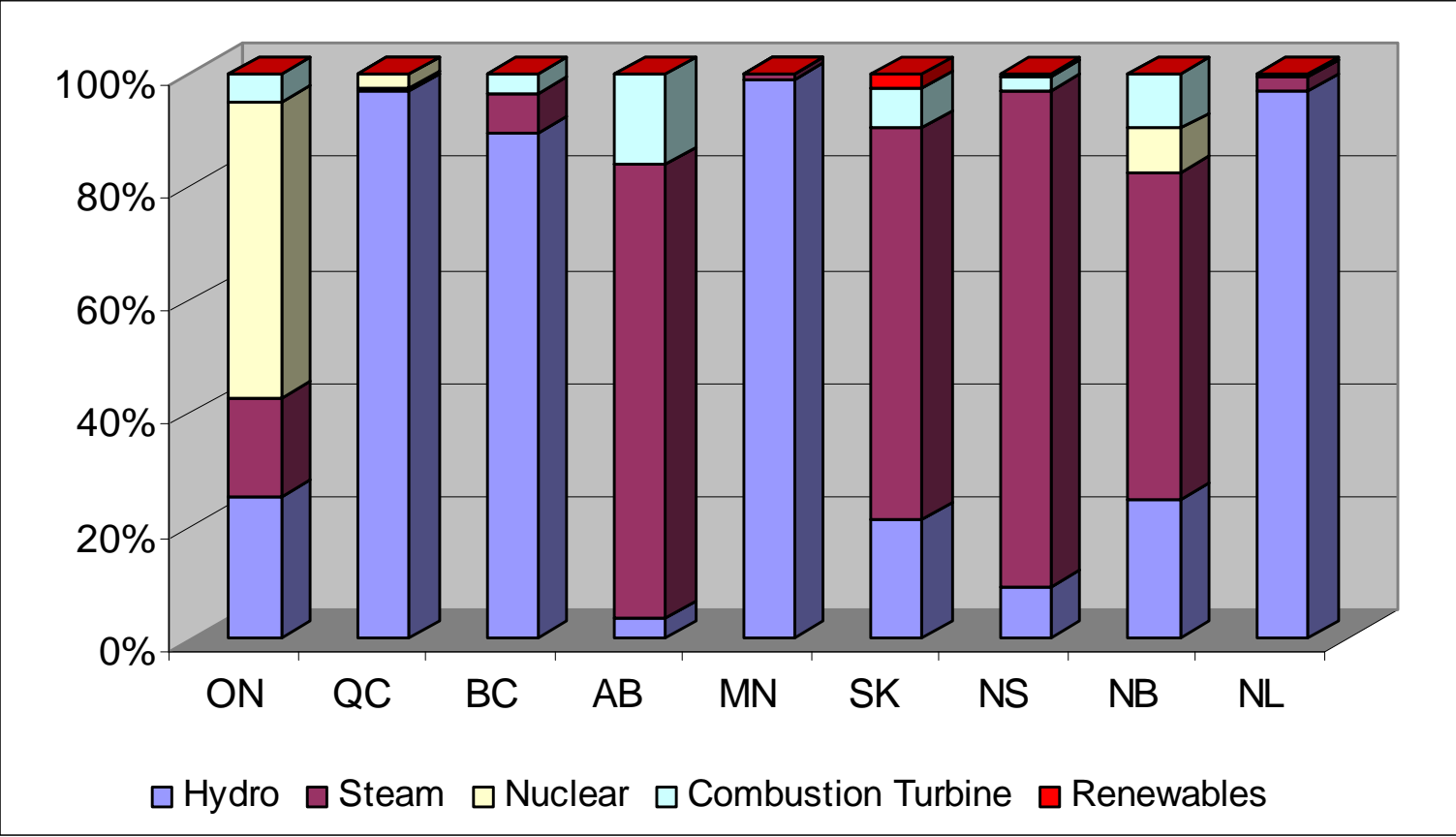
| | Germany 2009 | Canada 2009 | Canada 2010 |
|----------------------------------|-------------------------------------|-------------------------------------|----------------------------------|
| Population | 82 million | 33 million | 34 million |
| Population/km² | 230 | 3,5 | 3,5 |
| Real GDP-Growth | -4,9 % | -2,9 % | +2.5 % (exp.) |
| Unemployment rate | 8,2 % | 8,5 % (December 2009) | 8,5 - 9 % |
| Key interest rate | 0,25 % | 0,25 % | 0,25 % |
| Exchange rate | 1 EUR = 1,57 CAD (December 2009) | 1 EUR = 1,57 CAD (December 2009) | 1 EUR = 1,39 CAD (March 2010) |
| Inflation rate | 0,4 % | 1,0 % | 0,8 -1,2 % |

Total Canadian Power Generation



| <u>Province</u> | Population (mio.), 2009 | BIP (mio. EUR), 2008 | <u>% of the total power generation</u> |
|--------------------|----------------------------|-------------------------|--|
| Ontario | 12.93 | 398.8 | 27.0 % |
| Quebec | 7.75 | 205.0 | 32.0 % |
| British Columbia | 4.38 | 134.3 | 11.0 % |
| Alberta | 3.58 | 197.6 | 10.0 % |
| Manitoba | 1.20 | 34.5 | 6.0 % |
| Saskatchewan | 1.02 | 43.1 | 3.0 % |
| Nova Scotia | 0.94 | 23.2 | 2.0 % |
| New Brunswick | 0.75 | 18.6 | 2.0 % |
| Nfld / Labrador | 0.51 | 21.2 | 7.0 % |
| Canada | 33.06 | 1,039.9 | 597,520 GWh |
| Germany | 82.30 | 2,489.4 | 596,000 GWh |

Power Generation in Canada by Province



Source: Canadian Electricity Association;
 Chart: Canadian German Chamber

Structure of the Canadian Electricity Market

Share of Competences Federal vs. Provincial Level

- Energy policy = Responsibility of provinces and territories (goals & strategies to promote solar energy differ in provinces)
- Federal government = international agreements, cross-province energy topics and Canada-wide know-how exchange

Degree of Liberalization of the Energy System

- Most provinces (e.g. Quebec, Manitoba, Saskatchewan): government owned power production, transmission & supply
- Alberta: completely liberalized
- Ontario, British Columbia, New Brunswick: partially liberalized

Electricity Prices in Canada





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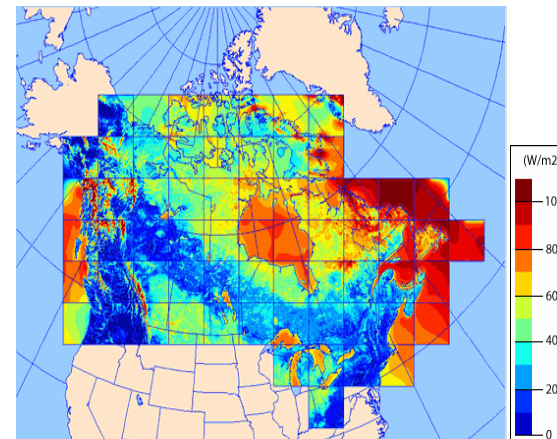


Wind Energy in Canada

Installed capacity: 3,432 MW (March 2010) (+30% every year since 2005)
Goal: 50,000 MW in 2025



Source: CanWEA



Canada Wind Atlas

Boom regions

- **Quebec:** 3,000 MW RFP (built, under construction or construction to start in 2010)
RFP for small wind projects of communities and first nations.
- **Ontario:** March 2009: Introduction of *Green Energy and Green Economy Act GEA* (≈ dt. EEG);
24.9.2009: Introduction of *Feed-in-Tariffs (FIT)*
but local content requirements: wind: 25%, as of Jan. 1st 2012: 50!
onshore: 13.5 CAD¢/kWh (10 EUR¢/kWh); offshore: 19 CAD¢/kWh (14 EUR¢/kWh);
price adder for community projects (up to 10 MW): +1 CAD¢/kWh) and first nation projects
April 2010: Announcement of 1,229 MW(47 projects on-shore and 1 off-shore)
- **British Columbia:** March 2010: Announcement of winners of *Green Power Call*
6 wind projects (1,528 GWh/year) (other announcements to follow)

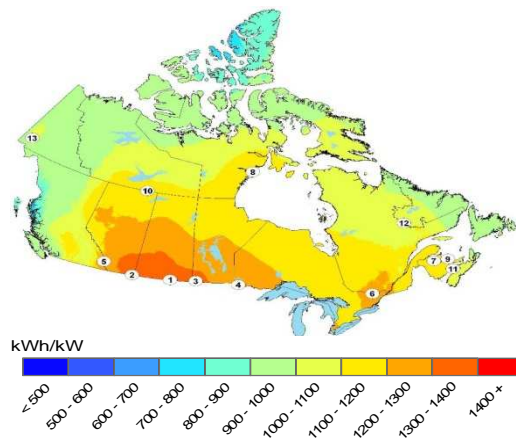
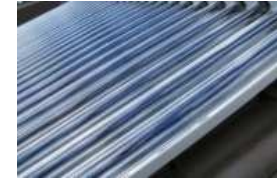


Market Potential for Wind Companies in Canada

- Huge wind resource in many provinces
- Complementary use with existing hydro power capacities
- Environmental awareness is rising
- Green strategies containing wind energy targets (QC, ON, BC...)
- Economic development for rural communities and struggling industries = a political focus
- Provincial RFPs (QC, BC and others), Green Energy Act with FITs (ON), Standing Offer Program (BC)
- Availability of sparsely populated land
- Need for technology transfers

Barriers: Restricted grid access, lack of transmission lines, Not-in-my-backyard (NIMBY), low energy prices due to predominant use of hydro power & nuclear power (only in some provinces)

Solar Thermal in Canada



Average Canada: 1150 kWh/kW/a
(South of Germany: 900 kWh/kW/a)

Solar Thermal in Canada

- 715.000 sqm collector area installed (2008) (+139k sqm in 2008)
(DHW: 21k sqm, commercial HW: 11k sqm, pool heating: 509k sqm, solar air: 174k sqm)
- = 27% annual growth in installed solar thermal capacity in 2008
- Revenues in 2008: 18.8 mio. CAD (13.9 mio EUR) (+ 44%)
- Predominant: unglazed water and air collectors
(large number of pool heating systems; solar air walls in ICI)
- Glazed flat-plate collectors gaining in importance;
use predominantly in DHW systems, but increasingly also in ICI
- Vacuum tubes collectors still marginal

Federal Incentives in Canada

- ecoENERGY for Renewable Heat (commercial and institutional installations)

Boom Regions in Canada

- **Ontario** - Ontario Solar Thermal Heating Incentive and 100.000 roof systems objective
- **Saskatchewan** - Solar Heating Incentive for Today
- **Québec** - utility incentives for retrofit and energy efficiency in new buildings

Photovoltaic in Canada



Photovoltaic (PV) in Canada

- **80 MWp** total installed in Canada (2009)
- Growth rate: + 48 MWp (2009) (+ 36% per year over past 5 years)
- 27% on-grid systems, 27% **off-grid** domestic systems, 46% **off-grid** industrial systems

Federal Incentives in Canada

- ecoENERGY for Renewable Power (0.62 EUR Cent/kWh for 10 years) (federal budget nearly empty); income tax advantage

Boom Regions in Canada

- **Ontario** - *Green Energy and Green Economy Act* (\approx dt. EEG) and FITs, but local content requirements!
46 MWp PV projects (built in 2009)
March 2010: Announcement of 476 PV projects (103.7 MWp) under 500kW (FIT-program)
April 2010: Announcement of 77 PV (154.5 MWp) over 500 kW (FIT-program)
- **British Columbia** - Standing Offer Program (0.7 EUR¢/kWh for up to 10 MW), Carbon dioxide tax

Photovoltaic in Canada



Feste Einspeisevergütungen (FIT) für erneuerbare Energien in Ontario im Rahmen des *Green Energy Act*

Wechselkurs am 9.4.2010
= 1 EUR : 1.35 CAD

| Technologie | Projektgröße | Kanadischer Tarif in CAD¢/kWh | Kanadischer Tarif in EUR¢/kWh umgerechnet | Tarife des deutschen EEG 2009 (ohne Berücksichtigung von Boni) (ohne geplante Absenkungen ab 2010) | Projektgröße des deutschen EEG 2009 |
|--|-----------------|-------------------------------|---|--|-------------------------------------|
| Photovoltaik | | | | | |
| Aufdach- anlagen | ≤ 10 kW | 80.2 | 59.23 | 43.01 | ≤ 30 kW |
| | 10 kW - 250 kW | 71.3 | 52.66 | 40.91 | 30 kW - 100 kW |
| | 250 kW - 500 kW | 63.5 | 46.89 | 39.58 | 100 kW - 1000 kW |
| | > 500 kW | 53.9 | 39.81 | 33.00 | > 1000 kW |
| Freiland- anlagen | ≤ 10 MW | 44.3 | 32.72 | 31.94 | |
| <p>* = Spitzen- und Nebenzeitenpreise angewandt; Alle Energieformen außer PV mit 20% Progression local content: 2009-2010: 50%, as of 1.1.11: 60%; Zusatzzahlung (price adder) für Bürger- und Ureinwohner-Projekte im Bereich Freilandanlagen (nicht fuer Dachanlagen).</p> | | | | | |
| | | | | Quelle: Ontario Power Authority OPA (24.09.2009) & eigene Darstellung der AHK Kanada in Montreal | |

Market Potential for Solar Companies in Canada



- High solar radiation
- Strong growth expected in the Canadian solar energy industry, particularly in Ontario
- Low competition from local companies so far, but local content requirements in Ontario changes the picture
- Research centres & associations promoting solar use
- Federal and provincial incentives (in particular FIT-program in Ontario)
- High amount of roofs available for construction (some restrictions for land use)

Barriers: Low energy prices, lack of certified installers, local content requirement in Ontario urges companies to set up shop in Ontario, certification process, lack of standardized regulations of installation, relatively marginal practical knowledge of customers.



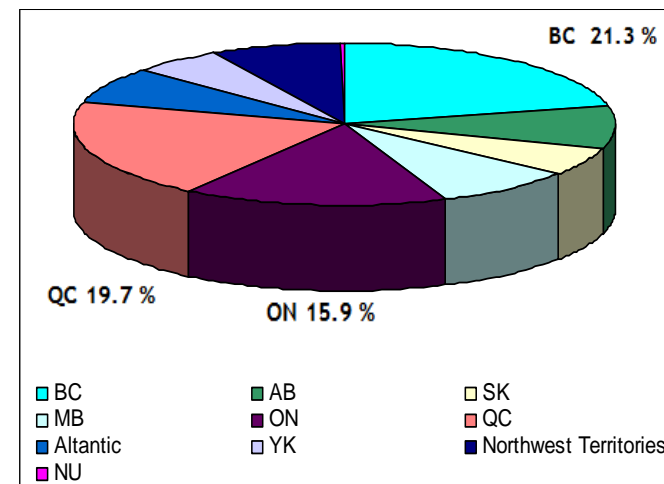
Energy from Biomass in Canada

- 1,380 MW installed capacity in 52 biomass plants in Canada in 2007 (biomass = manure, municipal waste, wood, agricultural crop residues)
- 17 % of total energy consumption in Canada could be produced by biomass in 15 -20 years (Sustainable Development Technology Canada)
- Majority of the combined heat and power plants (CHP) is owned by pulp, paper, saw mills
- Ontario: 18 CHPs with a capacity of more than 401 MW
- Quebec: 12 CHPs with a capacity of about 321 MW
- British Columbia: huge dead wood resources due to pine beetle damage

Forest and Other Wooded Areas in Canada



Forest Areas

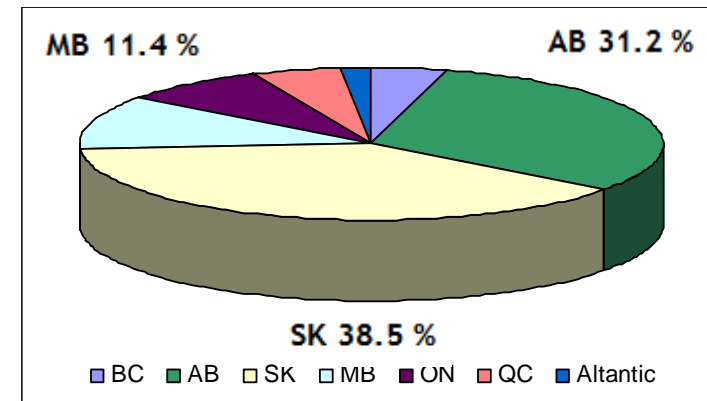




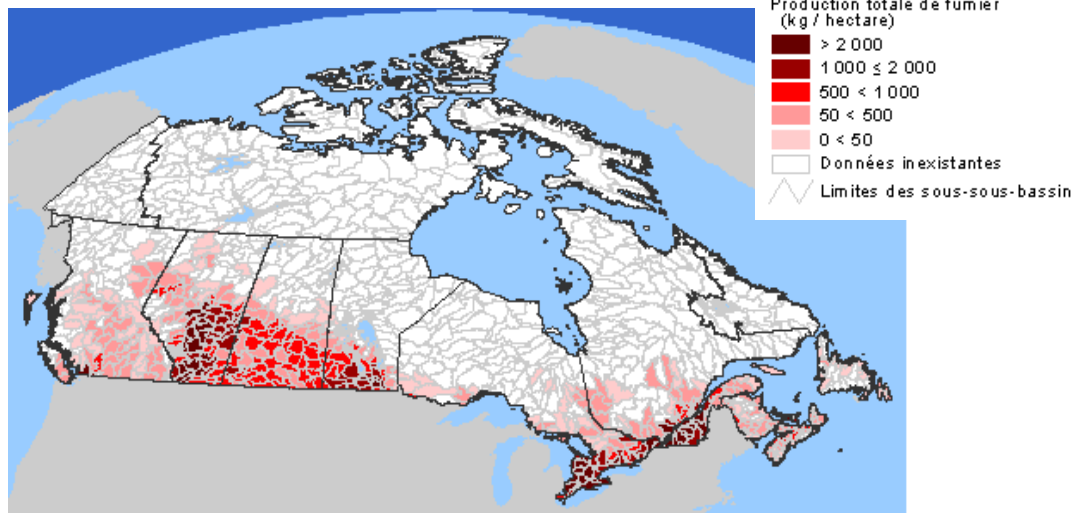
Energy from Biogas in Canada

- 17 biogas plants installed, +20 planned
- Leading regions:
 - Alberta
 - Manitoba
 - Saskatchewan
 - Quebec
 - Ontario (16 projects recently announced under FIT-Program; totalling 19.1 MW)

Agricultural Areas in Canada



Manure Production in Canada





Market Potential for Bioenergy Companies in Canada

- High availability of biomass (relatively low cost)
- Environmental norms for agriculture increasingly strict & rising tipping fees
- Not enough proven biogas and biomass technology available in Canada
- Important incentives on the provincial level introduced:
 - Net metering feasible in all provinces (except Alberta)

– Ontario:

| Feste Einspeisevergütungen (FIT) für erneuerbare Energien in Ontario im Rahmen des <i>Green Energy Act</i> | | | | | |
|--|-----------------------------|---------------------------------|---|--|-------------------------------------|
| | | | Wechselkurs am 9.1.2010 = 1 Euro : | \$1.35 | |
| Technologie | Projektgröße | Kanadischer Tarif in kan. ¢/kWh | Kanadischer Tarif in Euro-¢/kWh umgerechnet | Tarife des deutschen EEG 2009 (ohne Berücksichtigung von Biom) | Projektgröße des deutschen EEG 2009 |
| Biomasse ¹ | ≤ 10 MW | 13.8 | 10.19 | keine Biogas | |
| Biomasse ² | ≥ 10 MW | 13.0 | 9.60 | keine Biogas | |
| Biogas ³ | Farmanlagen ≤ 100 kW | 19.5 | 14.40 | 11.67 | ≤ 150 kW |
| | Farmanlagen 100 kW - 250 kW | 18.5 | 13.86 | 11.67 | ≤ 150 kW |
| | Biogas ≤ 500 kW | 15 | 11.22 | 9.98 | ≤ 500 kW |
| | Biogas 500 kW < 10 MW | 14.7 | 10.86 | 8.25 | < 5 MW |
| | Biogas > 10 MW | 10.4 | 7.63 | 7.79 | ≤ 10 MW |

Quelle: Ontario Power Authority OPA (24.09.2009) & eigene Darstellung der AHK Kanada in Montreal

- Québec: RFP 125 MW of cogeneration (winners announced in autumn 2009), net metering
- British Columbia: Standing offer program

Barriers: Low energy prices, norms not strict enough, certification process, relatively marginal practical knowledge of customers.



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Why Canada?

- Strong and stable economy
- Suitable market size and business culture for German small & medium-sized firms
- Clear market structure with 4 important centers: Toronto, Montreal, Calgary and Vancouver
- Strong currency with relative stability to the Euro
- Good access to NAFTA Market
- Well-educated workforce
 - 18 of the top 40 North American engineering schools (university) situated in Canada
 - Network of 6 colleges for service technician education in wind energy (solar installation programs to follow)
- Canadian companies very interested in this growth sector and seeking partnerships

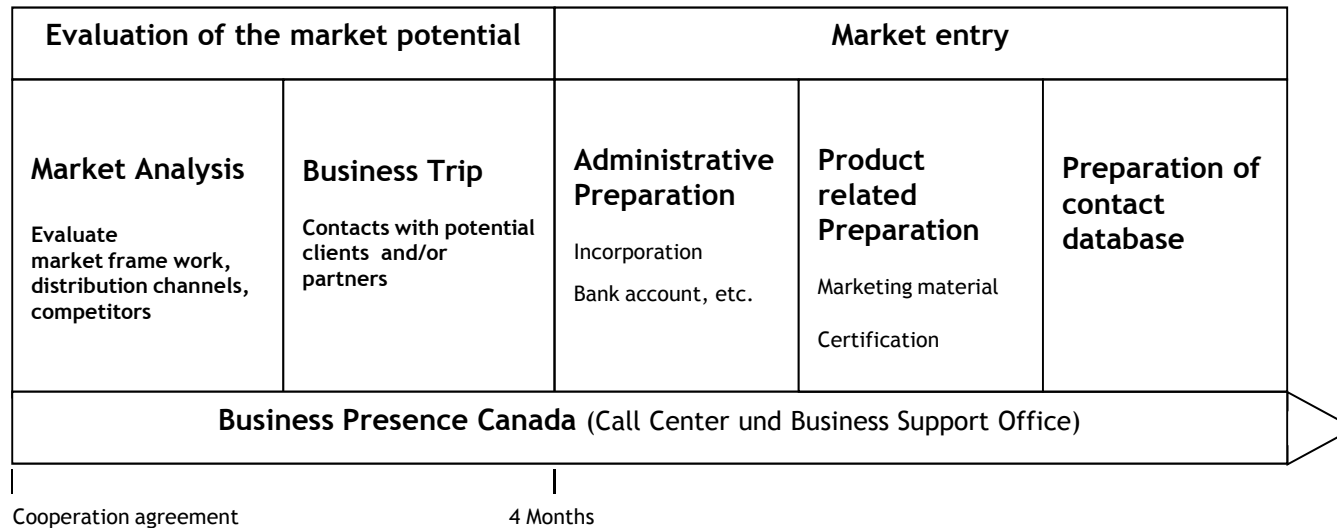


Important Considerations for Market Entrance in Canada

- Extensive analysis of market potential
- Successful long-term market entrance only possible if present on the market in Canada
- Local commitment necessary ⇒ “Canadian Identity” (direct contact person with knowledge of business culture, no time difference, no language barriers)
- Own sales office is risky and costly during the first years of market entrance

⇒ The Canadian German Chamber - Your Local Partner!

Market Development Canada



1. Extensive analysis of market potential (market analysis + business trip)
 = Realistic assessment of chances of success for the product
2. Market Entry with *Business Presence Canada*
 = Administrative and product-related preparation & set-up of customer databases
 = Successful long-term market entrance only possible if present in Canada (“Canadian Identity”)
 ⇒ *Business Presence Canada* = address, phone line + direct contact person with knowledge of business culture representing your company in Canada, no time difference, no language barriers, work done according to your specifications)

Our Upcoming Projects



Business Trip for German Solar Companies to Ontario
April 26 to 30, 2010, Ontario, Canada



Delegation for Canadian solar energy companies to Germany
June 7 to 15, 2010 Munich, Germany



Expert Luncheon Wind Energy
May 21, 2010, Halifax, Nova Scotia, Canada



Trade Show Canada Green Building Summit 2010
German Pavilion
June 9 and 10, 2010, Vancouver, British Columbia, Canada

Our Upcoming Projects



Trade Show HUSUM WindEnergy 2010
Canadian Pavilion
September 21 to 25, 2010, Husum, Germany



Business Trip for German Energy Efficiency Companies to Canada
September 27 to 30, 2010, Toronto, Ontario, Canada



Trade Show Canadian Wind Energy 2010
German Pavilion
November 1 to 3, 2010, Montreal, Quebec, Canada



Trade Show CanSIA Solar Energy Show & Conference 2010
German Pavilion
December 6 to 7, 2010, Toronto, Ontario, Canada

To Prepare Your Market Entry in Canada: Contact us!

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of Industry and Commerce Inc.

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