

hot topic RENEWABLE ENERGY & CLIMATE CHANGE

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Our dependence on oil and other fossil fuels (which give off greenhouse gases when we burn them) is causing irreversible climate change. Renewable energy is a significant part of the **solution to climate change** and a **secure energy future**.

WHAT IS RENEWABLE ENERGY?

Renewable energy is obtained from natural sources that can be replenished and renewed within a relatively short timeframe; this makes it sustainable. We often call it “clean energy” or “green power” because it emits little or no greenhouse gas. Renewable energy currently accounts for **5% of global energy supply**.

Promoting renewable energy also means producing our own energy in Canada, creating a more secure energy supply and helping the Canadian economy through new clean-energy jobs.

RENEWABLE ENERGY IN CANADA

Canada’s large landmass offers lots of renewable resources that can be used to produce energy. These include moving water, wind, solar, geothermal, biomass and ocean energy. 16% of Canada’s total primary energy supply comes from renewable sources.

DID YOU KNOW?

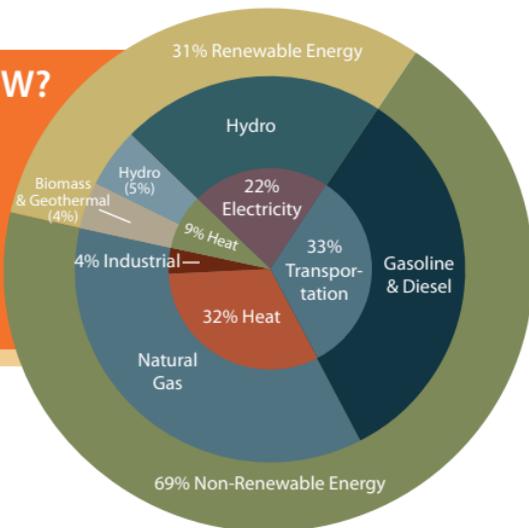
If Canada’s spending matched U.S. investment in renewable energy alone, an additional estimated **66,000 jobs** could have been created.¹

RENEWABLE ENERGY IN MANITOBA

Manitobans spend \$5.5 billion annually on energy. Of that, we spend \$3.4 billion on gasoline and diesel and \$700 million on natural gas.²

DID YOU KNOW?

Almost **70% of Manitoba’s energy comes from non-renewable** sources such as natural gas, coal and oil.²



¹ Falling Behind: Canada’s Lost Clean Energy Jobs (May 2010) by Blue Green Canada - A partnership of United Steelworkers and Environmental Defense

² Data from public domain assembled by Dr. Eric Bibeau, NSERC/Manitoba Hydro Alternative Energy Industrial Chair, Mechanical Engineering Department, University of Manitoba, Winnipeg, MB, Canada, Web: <http://home.cc.umanitoba.ca/~bibeauel/>

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KEY TYPES OF RENEWABLE ENERGY

Solar Energy: Photovoltaic power generation uses solar cells to convert sunlight directly into electricity.

Wind Energy: Modern wind turbines extract energy from the wind by transferring the momentum of passing air to rotor blades. Electricity from wind energy is one of the fastest growing methods of electrical generation in the world.

Geothermal Energy: Geothermal energy taps the earth's internal natural heat for a variety of uses including electric power production and the heating and cooling of buildings.

Bio Energy: Bio Energy is renewable energy derived from biomass. Biomass is material produced by living organisms such as wood from trees.

Hydroelectric Energy: Hydro Power is electricity produced from the movement of water. This is usually produced at a dam in a river. It is the most important renewable energy source in Canada.

Ocean Energy: Bordered by three oceans, Canada is rich in ocean energy resources. This energy comes from energy flows such as waves, tides, and ocean currents.

NEW TERMS

Feed-In-Tariffs: Feed-in tariffs are prices set by the government or utilities and paid to producers of renewable energy through long-term contracts. These make development of renewable energy systems a secure and valuable investment.

Smart Grid: A smart electrical grid attempts to predict and intelligently match the demands of electric power users with available supply. A smart grid is needed to compensate for the inconsistencies of energy sources like wind and solar.

Resources:

<http://home.cc.umanitoba.ca/~bibeauel/>

<http://www.nrcan.gc.ca/eneene/renren/index-eng.php> (Natural Resources Canada)

<http://www.renewableenergyworld.com/rea/home>

<http://www.un.org/en/development/desa/climate-change/renewable-energy.shtml>

<http://www.manitoba.ca/iem/innovation/hydroel.html>

<http://www.biobasics.gc.ca/english>

<http://investincanada.gc.ca/eng>

IPCC – Working Group III – Mitigation of Climate Change: Special Report on renewable Energy Sources and Climate Change Mitigation – Summary for Policy Makers (2011)

Pembina Institute – Feeding the grid renewably (February, 2008)

Paul Murphy et. al., Enabling Tomorrow's Electricity System: Report of the Ontario Smart Grid Forum, http://www.ieso.ca/imoweb/pubs/smart_grid/Smart_Grid_Forum-Report.pdf (September, 2010)

A Smart Grid: A Pragmatic Approach: A "State-of-Play" Discussion Paper Presented by the Canadian Electricity Association (2010)

U.S. Energy Information Administration: <http://www.eia.gov/countries/cab.cfm?fips=CA>

<http://www.50by30.org/wp-content/uploads/2011/07/Manitoba-2010-energy-usage.jpg>

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