



Financing Sources and Mechanisms for Renewable Energy and Energy Efficiency

August 2006

This paper is one of eight background reports on the Canadian Renewable Energy Alliance's model framework and recommendations for a comprehensive Canadian renewable energy strategy. This paper includes recommendations for provincial energy efficiency and conservation policies and for actions backed up by national enabling measures and international participation.

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The Canadian Renewable Energy Alliance (CanREA) is an alliance of Canadian civil society organizations from the non-profit or voluntary sector that share an interest in maximizing energy efficiency and conservation and promoting a global transition to low-impact renewable energy. Members of CanREA believe that this transition is needed to address global climate change, pollution, global energy supply, human security, poverty eradication and economic sustainability. CanREA recognizes that our window of opportunity is limited and that this global transition must begin now through individual country action, international co-operation and a range of innovative market instruments, regulatory measures, public education efforts and voluntary actions.

The organizations actively involved in the formation of CanREA include:

- Canadian Association for Renewable Energies
- BC Sustainable Energy Association
- The David Suzuki Foundation
- Falls Brook Centre
- The Halifax Initiative
- One Sky—The Canadian Institute for Sustainable Living
- The Ontario Sustainable Energy Association
- The Pembina Institute
- Pollution Probe
- The Saskatchewan Environmental Society
- The Sierra Youth Coalition
- STORM Coalition

For more information on CanREA and its members, visit our website at www.canrea.ca

Energy Efficiency and Conservation: The Cornerstone of a Sustainable Energy Future

1. The Importance of Financing

Significant improvements in energy efficiency and conservation and a global transition to renewable energy will require huge investments in national and local energy infrastructures in every country over the coming decade. These investments will need to come from both the public and private sectors, and they will have to take many forms: including financial incentives from government; loans and capital investment from banks, private investors, venture capital funds and communities; as well as new innovative markets that contribute to the benefits of renewable energy and energy efficiency. Financing sources will include venture capital, share raised capital, energy bill charges (public benefits or lines charges), financial institutions, community development funds and general tax revenues.

The Current Situation

According to New Energy Finance, the total global investment in “clean energy” in 2005 was over US \$42 billion.¹ New Energy Finance is satisfied that renewable energy and energy-efficient technologies are poised to be a large part of the world’s energy future, and financial markets can sustain increases in investment. However, New Energy Finance estimates that a five-fold increase in renewable energy investment will be needed over the next decade if there is to be a meaningful switch away from fossil fuels and no increase in nuclear power capacity. Factors that might limit this investment include the stability of incentive programs, planning processes and regulations; a lack of support mechanisms for investment in the developing world; and general lack of information, skills and incentives for deal-makers.

There is a rapidly growing interest in renewable energy investment. Renewable Energy Finance forums are now being held regularly on every continent. Wind energy dominates renewable energy investments with investments of \$12 billion in 2005, but global solar photovoltaic cell production is expected to climb to over 5 GWp per year by 2010 as it is spurred on by new policy initiatives in US, Germany, Japan and Spain.² There is reasonable diversification by asset class, technology and geography. However, most investment is occurring in industrialized countries and large developing countries like India, China and Brazil, not in smaller developing countries where it is also urgently needed.

Energy utilities are also embracing renewable generation as a key element of their generation portfolios, with many looking for new ways to compete in this growing field. To demonstrate this commitment, Europe’s top 20 utilities have outlined investment plans to double their renewable energy capacity over the next five years.³

Unique Aspects of Renewable Energy and Energy Efficiency

Renewable energy and energy efficiency are unique in that they require higher up-front investment than conventional energy sources, while at the same time providing multiple benefits that are not reflected in their cost. Innovative strategies and policies are therefore needed to increase investment, spread cost over the life cycle, and reflect the multiple benefits of renewable energy and energy efficiency.

Many renewable energy technologies are commercially available but still in the cost-reduction phase. Experience shows that the cost of renewable energy technologies falls approximately 20% every time accumulated production doubles. Energy efficiency technologies, on the other hand, are already mature, and most pay for

themselves from the savings they provide. They face many non-price market barriers, however, such as lack of consumer understanding and capability, lack of product and service availability, and few means to recover the extra cost through savings.

There are three financing issues that need to be considered in any renewable energy and energy efficiency strategy:

1. Sources of financing—loans, investment capital, environmental markets, international facilities and partnerships;
2. Policies that leverage increased investment—financial incentives, standing offers, market transformation, training and infrastructure development; and
3. Financing mechanisms—micro-finance, on-bill payment, leasing/rental, local improvement charges.

Sources of financing include financial institutions that lend to developers of new facilities like wind farms or bio-fuel production plants. These institutions also lend to energy users who purchase renewable energy or energy-efficient equipment. Governments have also established loan funds for efficiency and renewable energy, such as the Green Fund managed by the Federation of Canadian Municipalities. Investment capital can come from venture capital organizations, socially responsible corporations, stock markets, etc., but it can also come from community funds and bond issues where community or co-operative ownership is used.

A new source of financing comes from the sale of environmental attributes such as greenhouse gas emission reduction credits, renewable energy (green) certificates or energy efficiency (white) certificates. The multiple co-benefits of renewable energy and energy efficiency include greenhouse gas reductions, air-quality improvements, fixed prices in a era of rising prices, reliability in areas where weather plays havoc with grid and fuel infrastructure, distributed economic development and job creation, and security of energy supply.

The benefits of greenhouse gas reductions are being partially monetized in the expanding markets for emission reduction credits like the Clean Development Mechanism (CDM) and the European Union Emissions Trading System. Other environmental benefits are captured in various green certificate programs around the world. They have developed as a result of Renewable Energy Portfolio Standards (RPS) and other legal requirements to meet targets, and also in response to the voluntary demand for green energy. The value of these attributes is normally determined by the portfolio standard that sets legal targets for renewable energy or energy efficiency, the environmental costs of conventional energy sources, or the voluntary demand for these certificates.⁴

Finally, there are a number of national and international funds that have been set up to provide grants or interest-free loans to developers of energy efficiency and renewable energy projects. These include the Global Environmental Facility (GEF),⁵ the Global Village Energy Partnership (GEVP)⁶ and the Renewable Energy and Energy Efficiency Partnership (REEEP).⁷ The purpose of these facilities is to provide financing that addresses the environmental and developmental value not included in the conventional financing of these projects, and also to demonstrate innovative approaches that can be replicated.

The most common government **policies for leveraging investment** in renewable energy and energy efficiency are financial incentives, regulation and market support. Financial incentives—such as production or user tax credits, standing-offer contracts that provide a fixed higher tariff for renewable power or efficiency gains, and direct financial assistance in the form of rebates or free installation—are effectively a public source of financing. Regulation includes removing inefficient and conventional investment options from the market through performance requirements in building codes and equipment standards. Legally binding targets for renewable energy and energy efficiency can also be set. Market support policies include certification and training, information and technical assistance to users, market transformation and other programs that remove investment barriers.

Renewable energy and energy efficiency **financing mechanisms** allow the purchaser or developer to pay back a loan or provide a return to investors at a rate less than or equal to the income or savings achieved. For example, micro-credit schemes used in many developing countries allow buyers of solar-home systems to pay for the

system at the same rate as they would have had to pay for kerosene or battery charging. If a building-efficiency improvement is financed by a municipality and repaid as a local improvement charge, the cost is associated with the property and not the owner, allowing transfer of costs and benefits from owner to owner.

Government policies to leverage investment and financing mechanisms are also covered in CanREA's other issue papers on green power, green heat, green transport and energy efficiency.

The Unlevel Playing Field

While investment in renewable energy and efficiency is increasing, it still lags far behind conventional energy investments. A major reason for this imbalance is the persistent focus of investors, governments and lending institutions on conventional energy sources such as fossil fuels, large hydro and nuclear energy. The United Nations Environment Program has demonstrated that "global estimates of fossil-fuel consumption subsidies have been placed at around [US] \$230 billion" per year.⁸

A similar situation exists in Canada. The Pembina Institute reports that subsidies for the oil and gas industry were almost 1.5 billion dollars in 2002 and continue to rise.⁹ In the power sector, the Ontario Power Authority recently released its twenty-year plan in which the ratio of investment in supply-versus-demand (efficiency) capacity was 64:1.¹⁰

International financial institutions like the World Bank¹¹ and the European Investment Bank¹² have adopted targets for their renewable energy portfolios. These targets are significant but do not make renewable energy their primary focus. The World Bank target has been criticized for only requiring a percentage increase. Due to its current low level of investment, this increase would not result in significant funding for renewable energies, especially when compared to its fossil-fuel lending portfolio.¹³

Other International Financial Institutions (IFIs), such as the European Bank for Reconstruction and Development (EBRD) and the Asian Development Bank (ADB), have no targets at all. This inaction exists despite the call in the Political Declaration adopted by all countries (including Canada) at the 2004 Bonn Renewable Energy Conference for "International Financial Institutions, including the World Bank and the Regional Development Banks [to] significantly expand their investments in renewable energies and energy efficiency and [to] establish clear objectives for renewable energies in their portfolios."¹⁴

NGOs and other stakeholders are calling on IFIs to significantly increase their renewable energy and energy efficiency portfolios by setting meaningful targets and making real changes in their lending portfolios. José Goldemberg, environment secretary and member of the Inter American Development Bank's Blue Ribbon Panel on the Environment, has recommended that the Bank increase its investments in this area to the point where renewable energy represents 10% of its portfolio.¹⁵ European NGOs are calling on the EBRD to adopt two separate targets: one for energy efficiency, and one for renewable energy. The policy should link the targets to overall EBRD energy sector investments, making lending for energy efficiency 50% of total EBRD energy sector investments in 2006–2010, and for renewable projects in the same time period, 10% of total EBRD investments.¹⁶

More and more private capital is being invested in renewable energy. On the equity side, dedicated venture-capital pools are being set up, while on the debt side financial institutions that have long served the energy sector (as well as some new entries) are setting up special facilities to finance renewable energy projects. According to New Energy Finance's Global Energy Innovation Index, total renewable energy capitalization at the end of 2005 was US \$27 billion, up 28% from 2004. This venture-capital and private-investment portion in renewable energy and energy efficiency investment has been rising steadily over the past few years but is still less than US \$2 billion/year—very little compared to conventional energy. Because investors and lenders are trying to chase low-risk projects, project developers must be extra diligent in minimizing risks during planning, construction, operation and decommissioning.¹⁷

1. Overview of Financing in Canada

The federal government began providing financial incentives for certain energy efficiency investments in the 1970s with the Canadian Home Insulation and Oil Substitution programs, followed by rebates for solar water heaters in the early 1980s. At that time, financial support was also provided to the fledgling solar industry to leverage investment in manufacturing plant and production cost-reduction engineering.

A wider range of market-support and financial-incentive programs began in the 1990s, culminating with the comprehensive energy efficiency programs offered by the Office of Energy Efficiency, tax credits such as the class 43 accelerated right-off tax provision, and the Wind Power Production Incentive (WPPI) tax credit.

These policies were designed to leverage fairly modest investments in efficiency and renewable energy. As noted above, the level of spending on these measures continues to be far less than the financial incentives and support that are provided to the fossil-fuel and nuclear industry.

At the provincial level, Ontario has just announced a standing-offer program for renewable energy power sources that will pay 11 cents per kWh for power from wind and biomass sources and 42 cents per kWh from solar energy sources. Other provinces have set targets for renewable energy and energy efficiency, but they have not introduced specific policies to reach these targets. More information on these federal and provincial policies is available in the other CanREA issue papers on energy efficiency and green energy sources.¹⁸

In terms of Canadian sources of financing, the Federation of Canadian Municipalities offers Green Fund loans to municipalities to finance energy efficiency improvements. Two Canadian Banks, Fortis Bank and RBC, have set up dedicated facilities to finance renewable energy projects.¹⁹ Sask Energy offers prime-rate loans for Energy Star furnaces.

Financing mechanisms used in Canada include on-bill payment for a loan or purchase of efficient equipment. Green power is offered to customers at a premium by Enmax (in Calgary, Alberta) and Sask Power (in Saskatchewan). The concept of using local improvement charges to finance energy efficiency and renewable energy in buildings was first studied in Canada²⁰ and is being considered by several municipalities across Canada.

Canada has not participated to any great extent in expanding the international financing of renewable energy and energy efficiency. Canada does not have any specific policies to attract foreign investment and still ranks 9th on the Ernst and Young Renewable Energy Country Attractiveness index.²¹ Only Quebec requires an investment in manufacturing as part of its wind-power procurement process. Industry Canada is preparing a renewable energy industry development strategy. However, the Export Development Corporation (EDC) does not provide allocations or any dedicated support for exporters of renewable energy and energy efficiency goods and services.

Canada is a member of Renewable Energy and Energy Efficiency Partnership (REEEP) but has not yet joined other partner governments like the UK, Italy and Ireland in providing significant funds for renewable energy and energy efficiency development in developing countries. Canada is not a member of the Global Village Energy Partnership, nor does Canada participate in International Energy Agency discussions about innovative renewable energy and efficiency-certificate markets.²²

When the new federal government cut many energy efficiency and renewable energy programs in May 2006, it set back investment in this energy source in Canada considerably.

2. Best practices

The European community has already issued directives on energy efficiency and Green Power and is working on one for Green Heat. This will establish a sound long-term investment environment for renewable energy and energy efficiency. In the US, state level policies are leading the way in encouraging investment.

Policies that Leverage Investment in Renewable Energy and Energy Efficiency

Countries such as Spain, Germany, India, Italy and the United Kingdom as well as some US States are leading the world in the implementation and manufacturing of renewable energy systems, such as wind turbines and solar systems. These efforts provide clear examples of what can be quickly achieved when the right policy mechanisms are in place. Their leadership and success is based on a set of common factors:

- very active political commitment to renewable energy;
- supportive education initiatives for R&D, training and public awareness;
- strong incentive systems to achieve wide public participation; and
- the implementation of supportive policies such as renewable energy standing-offer contracts or feed-in tariffs, renewable energy obligations and financial incentives.

The strong leadership in these countries is reflected in the Ernst and Young Renewable Energy Country Attractiveness Index. Table 1 summarizes some of the policies used to maximize investment.

Table 1: Renewable Energy Best Practices

Country	Index	Policies
Spain	1	<ul style="list-style-type: none"> • Carbon penalties on fossil fuels • Option of fixed (standing offer) or market-based tariffs for renewable power sources • Solar thermal incentives
United States	2	<ul style="list-style-type: none"> • Renewable Energy Production Tax Credit • State Renewable Portfolio Standards and renewable energy certificate markets
Germany	3	<ul style="list-style-type: none"> • 20-year guaranteed feed-in tariff/standing offer • National targets for 2010 and 2020
United Kingdom	4	<ul style="list-style-type: none"> • Certificate-based Renewable Obligations
India	5	<ul style="list-style-type: none"> • Regional (state) feed-in tariffs/standing offer • State level renewable obligations
Italy	6	<ul style="list-style-type: none"> • Renewable obligations and green certificates program (with long-term value)

In **Germany**, the renewable energy sector plans to invest 200 billion euros in renewable energy by 2020—15 times the announced investment in new coal power plants.²³ Germany's goal is to have more than 20% of its energy consumption from renewable energies by 2020. The long-term nature of Germany's commitment to a strong target and a variety of ownership models is responsible for these high investment projections. Successful policy approaches for encouraging investment in Germany have included legislation that guarantees access to the power grid and fixed tariffs over 20 years for private investors in renewable energy generation. Germany has also introduced an energy tax to reduce energy consumption, and it provides subsidized loans for investments in energy efficiency.

The **California** Solar Initiative²⁴ is a comprehensive set of policies designed to leverage investment in 3GW of solar photovoltaic power systems on new buildings. The initiative includes a public-benefits charge to raise public funds that will provide rebates to builders. The remaining costs will be passed on to building owners through mortgages and leases.

Italy, France, the UK and several US states have been successful in using renewable energy obligations or portfolio standards, coupled with a tradable-certificates program, to internalize the benefits of renewable energy in the market. The certificates programs ensure not only that targets are met, but that they are met at the least cost.

Experience in the UK and in a number of leading US jurisdictions—such as California, Vermont and New York—reveals that successful energy efficiency strategies:

- Demonstrate leadership by making **energy efficiency a priority in energy policy.**
- **Treat energy efficiency as a resource.**
- Provide a **permanent funding mechanism and tax regime.**
- Co-ordinate efficiency programs through a **dedicated independent agency.**
- Pursue **aggressive review cycles for building-code and vehicle and equipment standards** to consolidate gains made through incentive programs and complete market transformations.
- Offer a **comprehensive set of efficiency programs** designed to transform efficiency markets rapidly.
- Are **proactive in the marketing and delivery of programs**, taking customized solutions directly to residential, commercial, industrial and institutional customers, and providing financial incentives for high-efficiency products to accelerate the turnover of existing inefficient stock.
- Provide **training and infrastructure building**—in particular, energy efficiency training and certification of retrofit and new-building contractors, program managers and outreach “circuit riders.”

New Energy Finance has summarized the policies needed to maximize investment in energy efficiency and renewable energy:

General macro-economics for innovation & entrepreneurship:

- Taxation / bureaucracy / labour laws
- Intellectual property transfer from universities
- Legislative stability

Ensure access to markets for clean energy providers

- Reduce/remove taxation on clean products & services (fuel tax, stamp duty, sales tax etc)
- Remove regulatory/legislative barriers (building codes, energy markets etc)
- Establish clear standards (ISO, DIN, TUV etc)
- Reduce subsidies for non-clean energy
- Net/smart metering

Use public sector to create markets, not to pick winners

- Public procurement
- Consumer & business education

Decouple incentive programs from social/political goals

- Limited, targeted, professionally-run funds
- Design grant programs around start-ups

The Role of International Finance and Partnerships

International Financial Institutions (IFIs) are providing dedicated loans to help finance renewable energy and energy efficiency projects in developing countries. The most high profile of these was the loan to China by the World Bank that enabled it to adopt its Renewable Energy Law in 2004. Another good example of World Bank financing of renewable energy is a US \$50 million loan to Peru for sustainable rural-energy services.²⁵ Both of these loans were managed in conjunction with grants from the Global Environmental Facility (see above). Individual countries are playing a role in increasing the renewable energy and energy portfolios of IFIs. For example, Germany has entered into a strategic partnership agreement with the IDB that directs 10.6 million euros for a series of energy-related initiatives, including a study on biofuels in Mexico, a study on incentives for renewable energy systems in Chile, and a plan for energy efficiency and greenhouse gas mitigation in Central America.²⁶

Giving renewable energy and energy efficiency portfolios a higher profile relative to conventional energy in IFIs may not be enough and a new multilateral bank could be dedicated to this purpose—a global renewable energy and energy efficiency investment bank. This initiative could be a function of the International Renewable Energy Agency (IRENA) being proposed by the World Council on Renewable Energy. IRENA would be a truly independent international body that could provide reliable data on reserves of non-renewable energy, develop market structures for renewable energy, measure the potential of renewable energy, encourage investment in renewable energy, and promote technology transfer.

Existing global partnerships such as the Renewable Energy and Energy Efficiency Partnership (REEEP) and the Global Village Energy Partnership (GVEP) are playing important roles in the financing of energy efficiency and renewable energy—especially the new infrastructure that will allow developing countries to leapfrog the fossil-fuel economy and meet community energy needs with clean, reliable resources. These partnerships provide a network of practitioners that can identify local needs, develop innovative financing mechanisms, and mobilize sources of finance.

Innovative Financing Mechanisms

Innovative approaches are needed at the national and regional level to allow the up-front costs of energy efficiency and renewable energy to be spread out over the lifetime of the technology, and to monetize the multiple benefits of renewable energy and energy efficiency. There are a number of ways to help spread upfront costs over a period long enough to provide a positive cash flow for renewable energy developers: providing revolving funds for micro-finance and renewable energy technology and service providers;²⁷ bundling programs into larger investments; offering guarantees to reduce loan risk; and providing long-term purchase agreements for renewable power, heat and fuels.

Innovative market mechanisms such as the issuing of certificates for verified renewable energy production (green certificates) are now being applied to energy savings (white certificates). France and Italy have had a white certificate program in place for a number of years, and several EU countries have set up the Euro White Certificate project.²⁸ The market for green or white certificates includes utilities that are legally required to meet renewable energy or energy efficiency targets as well as individuals, organizations and socially responsible corporations that want, voluntarily, to “green” their energy purchasing. Some companies are now also becoming investors—moving beyond purchasing green energy to also investing in it.²⁹

A new option for financing long-payback energy efficiency and renewable energy improvement in buildings is the use of local improvement charges. The cost of the renewable energy equipment or building upgrade is financed by the municipality and repaid through the property tax system. By associating the cost with the property and not the owner, the cost and benefits are passed from owner to owner, allowing equipment of a much higher cost to be installed. This option would be ideal for financing a distributed generation system (e.g. cogeneration, solar PV) that sells power to the grid under a long-term standing-offer feed-in tariff contract.

Risk reduction is another important practice for developers of renewable energy. Delays, cost overruns, resource uncertainty (in quantity and in price), technical risk, maintenance costs, sales price/volume, renewable energy premiums and tax environment are all risks that need to be identified and managed. Because investors and lenders typically have a low threshold for risk, renewable energy investments will only grow as low-risk projects become available.³⁰

3. Recommendations for Provincial Strategies

Provincial governments should put policies and programs in place that will maximize private, community and public investment in renewable energy and energy efficiency. These policies should be part of a politically-supported, comprehensive strategy which includes targets and milestones, financial incentives, new funding sources, regulations, capacity building and training.

At the provincial level, investment in renewable energy should be supported in the following ways:

- Provide incentive mechanisms such as feed-in tariffs, renewable portfolio standards (RPS), renewable energy certificates, as well as standards and codes that take into account the technology’s relative position on the cost curve and its social value.
- Make changes to the public support (tax breaks, subsidies, royalty reductions) of conventional energy to divert investments into renewable energy, especially at the local level.
- Provide training and other programs that build a provincial infrastructure to manufacture, assemble,

distribute, install, operate and maintain all types of centralized and distributed renewable energy technologies.

- Take action to remove all barriers to renewable energy investment and installation, including requirements for solar readiness in building codes; updates of electrical, plumbing and building codes; and training of inspectors.
- Support policies that encourage community investment in and ownership of renewable energy systems including community finance funds, training and legal framework.

Investment in energy efficiency should be supported in the following ways:

- Set legally binding Energy Efficiency Resource Standards with a tradable permit (white certificates) system that enables utilities to meet targets at least cost and involve third-party participation.
- Establish permanent funding sources through the budget process to support a review cycle for building code and equipment, and through a rate-based funding mechanism to finance energy efficiency programming.
- Introduce shared-savings DSM incentive mechanisms for energy utilities, technical support for smaller utilities, and co-ordination of DSM programs across the province.
- Kick start market transformation by targeting financial incentives to suppliers, users and contractors.
- Set up an infrastructure to deliver energy efficiency products and services through training/certification of DSM program managers, contractors, circuit riders and building operators.
- Make technical assistance available to energy users through circuit riders for buildings and internships for new graduates.
- Form partnerships with municipalities and First Nations to deliver community energy plans and community-based energy efficiency programs.
- Support innovative community-scale financing mechanisms such as micro credit, leasing and local improvement charges.

4. Recommendations for Federal Enabling Policies and Support

The federal government should play a leadership and enabling role to increase investment in and financing of renewable energy and energy efficiency as part of a national strategy so that Canada can become an attractive place to invest in these resources. Specifically, the objectives of the federal government should be to remove barriers, level the playing field, and maximize private and public investment:

Leadership

- Make a **strong political commitment** to renewable energy and energy efficiency and their many benefits such as economic development, job creation, energy security and reliability.
- Implement **ecological tax reform** in which financial incentives for conventional energy sources such as oil, gas, coal and nuclear are significantly reduced and diverted into incentives for renewable energy and energy efficiency. Mechanisms like fee-bates should be used make new technologies more appealing to users.

Financing

- Establish a national **renewable energy and energy efficiency investment facility** with major banks and credit unions through Finance Canada. Investment targets should be set for each technology and end-use.
- Encourage the private sector to establish more Canadian **venture capital funds** and revolving funds for investment in and debt financing of renewable energy and efficiency.
- Develop and implement a **national renewable energy industrial development and infrastructure action plan** through Industry Canada that includes financial support for commercialization and cost reductions in manufacturing; training and certification of the designers, installers, operators and inspectors of large and distributed systems; financial incentives for manufacturers, builders, suppliers, etc.; and risk-reduction strategies for project developers.
- Support innovative financing strategies such as a **national (or regional) tradable certificates system** for renewable energy and energy efficiency investments that would work with provincial portfolio standards and municipal financing using **local improvement charges**. Use established organizations such as the Federation of Municipalities, the Canadian Gas Association and the Canadian Electrical Association.

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International Co-operation and Assistance

- Take an active international role **in support of a global transition** to renewable energy by participating in and supporting international initiatives and finance forums as well as partnerships like the Renewable Energy and Energy Efficiency Partnership (REEEP) and Global Village Energy Partnership (GVEP) that promote the financing of renewable energy and energy efficiency, technology transfer and collaboration.
- Support the establishment of a **new international renewable energy agency and financial institution**.
- Commit the Canadian International Development Agency (CIDA) to precise and ambitious targets for **official development assistance for renewable energy**. Make sure this funding is made more accessible to community-level projects. Support capacity-building initiatives that focus on the financing of local energy needs as a way of meeting the Millennium Development Goals.
- Require the Export Development Corporation (EDC) to allocate a **large portfolio to renewable energy and energy efficiency technologies**.
- Work with stakeholders and provincial governments to **improve Canada's investment attractiveness** for renewable energy and energy efficiency. Sponsor an annual Canadian renewable energy Finance Forum.
- Take global action to **remove trade barriers** to renewable energy investments and to stop the trade in low-efficiency second-hand equipment to developing countries.

5. Select Recommendations for Other Actors

Other levels of government and organizations can also play an important role in financing the transition to sustainable energy:

- **Municipalities** can encourage community investment in energy efficiency and renewable energy through the establishment of community power corporations, green funds and the use of local improvement charges for project financing.
- **Renewable energy and energy efficiency industries** can join with NGOs and other stakeholders in holding finance forums, advocating more support for investment and local manufacturing. They can work with government and stakeholders to increase Canada's investment attractiveness.
- **NGOs** can work with all stakeholders to lobby for investment supportive policies in Canada. They can participate in North American and global networks that support the establishment of an International Renewable Energy Agency and Investment Bank.
- **First Nations** can establish sustainable energy funds and finance community energy planning and renewable energy production facilities (power, fuels and heat).
- **Socially Responsible corporations and institutions** can purchase green energy (power, fuels, and heat) and energy efficiency by buying tradable certificates and investing in community power and fuels projects.
- **International financial institutions** can set meaningful and ambitious renewable energy targets, with part of the funding allocated to the development of energy commodities export markets in least developing countries. A new Global Renewable Energy Investment Bank should be established, and the granting capacity of the Global Environmental Facility (GEF) should be increased. A renewable energy investment attractiveness index that includes sustainable and local development value in its metrics needs to be developed for all countries.

6. Conclusions

Financing is crucial to the maximizing of energy efficiency and a global transition to renewable energy. Investment and debt financing is significant and growing, but a five-fold increase is needed to meet expanding energy demand. Innovative financing mechanisms are needed because of the unique features of renewable energy and energy efficiency technologies. Government commitment and policies to leverage investment are the keys to success.

Canada lags behind the US, Europe, China and India in its support for renewable energy investment. Provinces play an important role in attracting investment through standing offers and Renewable Portfolio Standards. The federal government must show leadership at the national and international level by providing financial incentives, removing barriers and leveling the playing field.

For more information, contact Roger Peters at The Pembina Institute: rogerp@pembina.org

Endnotes

¹ New Energy Finance defines “clean energy” as renewable energy and low-carbon technologies (excluding nuclear): <http://www.newenergyfinance.com/index.html>

² *Renewable Energy World*. Vol. 9, No. 2 (March/April), p. 89.

³ http://www.emerging-energy.com/user/category_docs.aspx?catid=UtilityStrategiesinEurope923715978&docid=/user/UtilityStrategiesinEurope923715978_pub/Europe%20Utilities%20TOC%202004.pdf&cattype=MarketStudies

⁴ The Pembina Institute sells Wind Power Certificates on behalf of wind power developers in Alberta who use the income to help finance new wind farm capacity.

⁵ <http://www.theGEF.org/>

⁶ <http://www.gvep.org/>

⁷ <http://www.reeep.org/>

⁸ United Nations Environment Program. 2003. *Energy Subsidies: Lessons Learned in Assessing their Impact and Designing Policy Reforms*.

⁹ The Pembina Institute. 2005. *Government Spending on Canada's Oil and Gas Industry*, http://www.pembina.org/publications_item.asp?id=181

¹⁰ The Pembina Institute. 2006. *The Ontario Power Authority Supply Mix Report: A Review and Response*, http://www.pembina.org/publications_item.asp?id=210

¹¹ World Bank target: Commit to an average 20%/year growth of our renewable energy and efficiency investments over the next 5 years. Target applies to solar, biomass, wind, geothermal, hydro (up to 10 MW)

¹² European Investment Bank target: A doubling, from 7–15%, of the share of renewable energies in the overall EIB energy sector financing over the five years 2002–07. 50% of the Bank's total financing for new electricity generation capacity in the EU between 2008–10

¹³ Bankwatch Network and others. 2004. World Bank Spins Renewable Energy Conference, June 3, <http://www.bankwatch.org/press/m2004.html>

¹⁴ <http://www.renewables2004.de/en/2004/outcome.asp>

¹⁵ Inter American Development Bank. 2006. "Experts Call for New Policies and Financial Support for Clean Energy Development," March 31, <http://www.iadb.org/NEWS/articledetail.cfm?Language=En&artType=PR&parid=2&artid=2962>

¹⁶ <http://www.bankwatch.org>

¹⁷ Leibreich, Michael. 2005. "Financing Renewable Energy." *RE Focus Magazine*, July/August, p. 18.

¹⁸ For other CanREA papers see: <http://www.canrea.ca>

¹⁹ Leibreich, Michael. 2005. "Financing Renewable Energy." *RE Focus Magazine*, July/August, p. 18.

²⁰ The Pembina Institute. 2006. *Using Local Improvement Charges to Finance Energy Efficiency Improvements*, http://www.pembina.org/publications_item.asp?id=197

²¹ Ernst and Young. 2006. *Renewable Energy Country Attractiveness Indices*, <http://www.ey.com/global/content.nsf/International/Industries - ECU>

²² <http://dsm.iea.org/NewDSM/Work/Tasks/14/WhiteCertificates.htm>

²³ **Press Release:** "Renewable Energy Branch wants to invest 200 billion Euros in Germany." *Information Campaign for Renewable Energy*, 20 March, <http://www.unendlich-viel-energie.de/index.php?id=239>

²⁴ *Renewable Energy World*, Vol. 9, No. 2, (March/April), p.22.

²⁵ <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/PERUEXTN/0,,contentMDK:20844969~menuPK:343642~pagePK:141137~piPK:141127~theSitePK:343623,00.html>

²⁶ Inter American Development Bank, op cit

²⁷ See WIVISIONS' new guide to micro-finance: <http://www.wisions.net/pages/Downloads.htm>

²⁸ <http://www.ewc.polimi.it/>

²⁹ Morrison, Jessica. 2006. "Moving Renewable Energy beyond Green Tags." *North American Wind Power*, April, p. 26.

³⁰ Leibreich, Michael. 2005. "Financing Renewable Energy." *RE Focus Magazine*, July/August, p. 18.

