

## **Community Based Renewable Energy Development**

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**An Initiative Sponsored By  
The Canadian Environmental Network – International Program**

**Developed by Pete Sundberg, Falls Brook Centre in collaboration with  
other members of the CEN and their international partners**

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**The Canadian Environment Network - International Program** is a network of Canadian environmental non-governmental organizations (ENGOS) that do international work. The CEN-IP provides a forum to work together on policy issues as well as national and international environmental issues. The CEN International Program also works with Southern NGOs on policies and practices that achieve results that will protect the Earth and promote ecologically sound ways of life.

**The technologies to bring renewable energy to the world's poor exist**

**The implementation strategies to bring renewable energy to the world's poor exist**

**The financing strategies to bring renewable energy to the world's poor exist**

**Send your comments, recommendations and questions:**

Please send all input, comments, questions and recommendations to Jean Arnold, the Falls Brook Centre Executive Director at (506) 375-8143 or [ja@fallsbrookcetnre.ca](mailto:ja@fallsbrookcetnre.ca).

## Preface

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Access to basic, clean energy services is one of the main hurdles confronting rural communities in the developing world. Access to sustainable energy is essential for reducing poverty, malnutrition and hunger, improving health, increasing levels of literacy and education, and significantly improving the lives of women and children. The United Nations Commission on Sustainable Development has called access to renewable energy a 'prerequisite' for halving poverty by 2015. However, in the absence of a strong emphasis on community participation, bold new policies to rewrite the energy rules, and creative financing – current steps to meet this goal will not bring renewable energy to the people who need it most. The good news is that technologies and strategies exist to address the two main energy challenges confronting the world's poor - energy for cooking and renewable electricity for the rural and urban poor.

To document and promote the solutions to these challenges, the Canadian Environment Network International Program (CEN-IP) is compiling ideas, strategies, and policy recommendations from communities, non-governmental organizations, development agencies, researchers, private industry, and development workers. The CEN-IP will use this Renewable Energy Policy Paper to build momentum and support for the delivery of community-based sustainable energy initiatives in the developing world.

The world is facing two major energy challenges at the beginning of the 21<sup>st</sup> Century.

1. To slow the rate of climate change and preserve the world's environmental quality by transforming the global energy system away from one dependent on fossil fuels, large hydro and nuclear power to one that is based on decentralized renewable energy technologies and energy efficiency.
2. To bring sustainable energy to all the world's citizens as one of the key tools for achieving the Millennium Development Goals. The United Nations (UN) launched the Millennium Development Goals (MDGs) in December 2000. These goals, endorsed by the international community, set minimum targets to reduce poverty, hunger, illiteracy, discrimination against women and environmental degradation by 2015.

Specific goals of this paper include:

- To build awareness about the sustainable energy challenges confronting the developing world – focusing on sustainable energy sources for cooking and rural electrification.
- To show how addressing these challenges can help the World meet Millennium Development Goals and global climate change objectives.
- To provide policy recommendations which support the development of renewable energy for communities and economies in the developing world.
- To outline how CEN members and their partners can play a role in promoting community-based renewable energy as an integral part of the CEN's domestic and international policy agenda.

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## 1. The Sustainable Energy Challenges:

### 1.1. Renewable Electricity for Rural Communities

The majority of the 1.6 billion people who currently have no access to electricity live in rural areas. Millions more are connected to the grid but suffer from poor power quality and frequent power outages. There is a direct correlation between access to electricity and poverty; electricity is a key factor in eliminating poverty. Without electricity rural people and communities have limited options to power small industry and cottage enterprises, light schools, homes and run health clinics.

Given the relatively low energy needs of many rural communities that are far from existing transmission grids, conventional centralized generation options are, in many cases, not economically viable. In addition, expanding electrical transmission grids to supply energy to these communities from new centralized fossil fuel, large hydro or nuclear power plants would significantly increase the already massive damage electricity generation and transmission have caused worldwide to water, air, climate, land, and wildlife.

Rural and remote communities in many countries of the world have a unique opportunity to sustainably develop their electricity services, without having to consider the standard investment in the development of extensive electrical grids.

#### Benefits of Renewable Electricity:

Decentralized renewable energy options, including solar photovoltaic (SPV) power, wind, pico/micro hydro and biogas have multiple benefits for rural electrification initiatives geared towards reducing poverty. The benefits of renewable energy technologies for rural communities include:

**Access to Reliable and High Quality Power:** Local renewable energy powered mini-grids and home power systems provide clean, reliable (if limited) power with a predictable voltage and frequency. Large grids are often unstable (even in North America) and voltage levels in rural areas are often low. Renewable electricity sources can substitute for or complement grid power very effectively.

**Improved Quality of Life:** Renewable energy systems improve living conditions, quality of life and local economic development. Benefits include improved indoor air quality, dramatically improved quality of lighting for education, entertainment, and income generation purposes.

**Mitigate Climate Change:** Renewable energy systems reduce energy related carbon dioxide and other emissions. Every household installation of a solar energy system makes a moderate but important contribution to climate change mitigation.

**Revitalizing Rural Communities:** In many countries migration from rural to urban areas is creating tremendous social and ecological problems. Rural electrification with renewable energy technologies can reduce this migration by providing rural villages with access to electricity and corresponding amenities as well as economic and social opportunities.

**Local Entrepreneurship and Income Generation:** Socio-economic impact studies have found that a significant percentage of small rural renewable energy systems provide power and light for cottage industries, farm-related activities, and rural stores. The utilization of technologies that can be fabricated, installed and managed locally also supports the creation of employment and the development of small and medium sized enterprises.

**Minimal Land Use Impacts:** Since decentralized renewable energy systems provide electricity with minimal use of power lines, their use in protected forest areas and buffer zones can be particularly valuable for ecosystem preservation. In contrast, power-line corridor construction and maintenance can open access for the destruction of forested areas, change the diversity of species within ecosystems, and cause ecosystem fragmentation.

**Increased Energy Diversity and Security:** Drawing their energy from indigenous sources, renewable energy technologies protect consumers from fossil fuel price shocks and supply shortages, decrease outflow of financial resources to pay for fuels and electricity and allow for a more efficient use of local resources.

## 1.2. Sustainable Energy for Cooking

It is estimated that 2 billion (52 per cent of the population in developing countries) rely on biomass fuels (wood, animal dung, charcoal and crop residues) for cooking and heating. It is estimated that 2.5 million people die each year from illnesses related to indoor cooking smoke.<sup>1</sup> Beyond the staggering cost in human lives, the use of these fuels also has an enormous economic and environmental toll on communities in developing countries.

Rural people, in particular women and children, spend between one and seven hours a day collecting, processing and using fuel for cooking, often walking great distances with heavy loads. In urban areas people can spend up to a third of their income on energy related to cooking food. The time and resources utilized to secure fuel for cooking directly reduces the amount of time that could be spent on income generation, childcare, education, or other community activities.

Deforestation due to the collection of wood fuel contributes to desertification, drought, floods, and the lack of biodiversity that cripples rural communities that depend on agriculture and forestry for their livelihoods. Wood fuel related deforestation reduces forest cover, significantly contributing to the reduced availability of drinking water in rural and urban communities and a decreased capacity for local forests to absorb carbon dioxide and stabilize the climate. In addition to industrial forestry, wood fuel related deforestation is at crisis levels in many developing countries.

### Benefits of Improved Cooking Technologies:

Improved cooking technologies can reduce the amount of firewood, charcoal and Liquid Petroleum Gas (LPG) used which subsequently increases household income; improves household air quality; reduces the firewood-collecting burden on women, slows deforestation and reduces greenhouse gas emissions.

While a wide range of affordable solutions<sup>2</sup> that rely on appropriate technologies and the skills of local peoples already exist to address this challenge it is imperative that all initiatives focused on sustainable energy alternatives for cooking include reforestation programs. A focus on reforestation will support the regeneration of indigenous forest for multiple uses, including sustainable wood fuel supply, watershed protection, agro forestry, analog forestry, and non-timber forest products. Forest regeneration initiatives provide for the wood fuel needs of local populations, improve local environmental conditions, restore biodiversity, provide income generation opportunities for local peoples, and play an important role in tackling the global problem of climate change. Healthy growing forests absorb carbon dioxide and play a central role in stabilizing the climate.

**Sustained improvements in cooking technologies will require:**

- Significant work with communities to identify and develop appropriate, locally accepted cooking technologies suitable for the diverse range of cultures and cooking practices.
- Support for local businesses, cooperatives, and organizations to fabricate, supply and promote well-designed and affordable cooking technologies.
- Sufficient donor support to initiate participatory community work, technology development, technology testing, training program development, technology transfer and community based promotion programs.
- Development of marketing strategies, including micro-credit and revolving loan fund schemes, to expand access to improved cooking technologies.
- Development and support for women to women promotion of cooking technologies and techniques to empower women and accelerate user acceptance of technologies.

## **2. Sustainable Energy and Development**

## 2.1. Sustainable Energy and Millennium Development Goals

The United Nations (UN) launched the Millennium Development Goals (MDGs) in December 2000. These goals, endorsed by the international community, set minimum targets to reduce poverty, hunger, illiteracy, discrimination against women and environmental degradation by 2015.

### **Sustainable Energy is Central to Meeting Millennium Development Goals**

Numerous organizations, including the Intermediate Technology Development Group and GreenPeace, have outlined how the implementation of sustainable energy supports the achievement of the Millennium Development Goals.

**Halving Extreme Poverty:** Sustainable energy provides electricity for productive applications (small industry, home businesses, workshops, etc), and reduces the amount of time spent gathering fuel, providing increased opportunities for income generation activities.

**Halving the Number of People Living with Hunger:** Approximately 95 percent of the food we eat has to be cooked, and many foods need some energy for processing. Hunger is related to poverty, so efforts to eradicate poverty should help eradicate hunger. Energy is needed to process food (such as grinding cereals) and to produce food (energy for irrigating agricultural land).

**Achieving Universal Education:** Electricity allows for study opportunities in the evening (especially important for people who work in the fields during the day) and improved access to communication technologies and information.

**Promoting Gender Equality:** Sustainable energy increases opportunities (education, small business) for women and reduces the drudgery associated with collecting fuel and manual tasks related to food preparation.

**Reducing Mortality / Improving Health:** Sustainable energy reduces the indoor air pollution associated with household cooking smoke. Providing health facilities with access to electricity for improved equipment and refrigeration for vaccines can significantly improve health care.

**Ensuring Environmental Sustainability:** Sustainable energy technologies are the least polluting energy technologies currently available.

## 2.2. Community-Based Renewable Energy for the World's Poor

Central to the success of sustainable energy projects is the need to engage and empower impoverished peoples. When primary stakeholders are involved in the design and implementation of energy initiatives there is a much higher chance that these initiatives will meet community energy needs and bring sustained economic and social benefits to a larger number of people.

Community-based strategies to address the sustainable energy challenge should include:

- A high degree of **community participation** in the selection of technology and identification of methods to finance projects and collected of revenue.
- Utilization, when possible, of **locally produced** and/or fabricated renewable energy technologies.
- Effective mechanisms to create the **local capacity** to install, repair, and maintain the renewable energy systems.
- Activities that link rural electrification to end-use **income generation** opportunities that support sustainable livelihoods and community economic development.
- **Partnerships** between communities, government, private industry and non-governmental organizations to both facilitate project implementation and meet multiple economic, social, and environmental goals.
- Mechanisms to ensure that appropriate entities are created to **locally manage** energy initiatives. Community management can be achieved, in different degrees, through the involvement of village committees, local energy co-operatives, non-governmental organizations, local small to medium private enterprises, or community-owned utilities.

### 2.3 Financing Community Based Energy Initiatives at the Micro-Level

An important element in facilitating the implementation of community-based energy initiatives is the adoption of appropriate financing strategies that will allow for sustainability and self-sufficiency. Self-sufficiency is achieved through the ability of the community, with appropriate assistance, to plan, design, build, operate, and maintain the project themselves. Sustainability is achieved with the ability of the community to sustain the projects over time with their own resources.

#### Community Power or Village Power Systems

The local community organizations, plan, develop, manage, and administer the decentralized energy projects, with facilitation and capacity building support from a local NGO or other organization. The NGO/service provider assists in securing funds to implement the project. Local stakeholders provide equity (both financial and labour) to the project and the rest of the start up capital is sourced through grants, subsidies, or loans from various sources. The community of beneficiaries provides all funds required for the on going management and maintenance of the electricity system. This approach is suited to low-income groups and is particularly useful for very remote areas, which do not normally attract electricity providers or entrepreneurs.

#### Networking or Entrepreneur Facilitating Approach

The implementing agencies/organizations operate like a facilitator; identifying local entrepreneurs and training them, establishing suitable operational systems and developing functional networks so as to render Renewable Energy Technology (RET) dissemination a commercial and viable entrepreneurial activity. Training and material costs for initial products and services are available from donor and national programs. The approach is highly replicable as it depends on local manufacturers and a

decentralized network of dealers to carry the product, install and maintain the energy systems.

### **Community/Consumer Financing**

Renewable energy systems are purchased on credit and paid in instalments over a definite period, with an appropriate interest tacked onto the original cost. Revolving loan funds and/or local financial institutions can provide the up-front user loans and establish a low rate of interest. The capital costs for equipment purchase, technical and marketing training can be sourced from grants, loans, or supplier credit. Financing projects can maintain community control by having the community select the financing options, manage both the system maintenance and the collection of tariffs or monthly payments/contributions. This approach is particularly suited to solar photovoltaic systems as it responds to the high capital costs of purchasing SPV, which is the largest barrier to its promotion in rural areas.

### **Leasing or Lease-To-Own Schemes**

The Lessor retains ownership of the RETs obtained through bulk procurement, and markets them either through a straight lease or lease-to-own agreement with retailers or end-users. Leasing is a more convenient arrangement for the end user as the demand on liquidity is low. Leases often have longer terms than most loans, so the periodic payment is lower. However, achieving financial stability under this approach is more challenging because of the longer term of leases and lower periodic repayment. Maintaining community participation and local management can be complicated with leasing schemes and requires the definition of specific parameters and mechanisms for community input and/or ownership. This financing strategy also entails large capital requirements for product purchase available from start-up grants and soft loans from donors, local credit sources and supplier credit.

### **Fee for Service Approach**

A service provider installs and maintains a renewable energy system for an end-user who agrees to make period payments for the energy service. Although there is less strain on the rural household's budget because it doesn't incur major expenses for repair or repayment of system components, the end-user never assumes ownership of the technology. Special consideration needs to be given to how the Fee for Service Approach can meet community participation criteria. In most cases, this approach requires some form of subsidy or incentive from the government. Similar to leasing approach, large capital requirements for product purchase will need to be available from start-up grants and soft loans from donors, local credit sources and supplier credit.

### **To achieve long-term financial sustainability, community based energy projects need to:**

- Include a sound business plan in which sources of revenue cover the on-going costs of the project.
- Establish appropriate community management and organizational structures.
- Maximize cost recovery through sales and service.
- Take advantage of grants and subsidies that are available, but do not make the project dependent on the expectation of future grants and subsidies.

- Make sure loans do not contribute more than 50% of cost costs, and that cash flow allows regular repayment of these loans.
- Integrate income generation activities into project development, such as small industry, commercial enterprises, or agricultural processing.

A community-based approach to providing sustainable energy will:

- Provide the most economical means of meeting Millennium Development Goals.
- Provide both economic growth for private industry and local economic revitalization and development for impoverished communities.
- Reduce community dependency on centralized government services and support local capacity to manage rural electrification and sustainable energy initiatives.
- Support a more human-scale and decentralized development pattern, actively supporting traditional structures and values.
- Raise awareness of the need for a long-term ecological perspective on development, for development based on self-reliance and self-respect.

### **Two Examples of a Community-Based Approach:**

The **Barefoot College** in India has, over the last 20 years, successfully demonstrated their 'Barefoot Approach' to integrating communities into all aspects of rural electrification projects. The Barefoot Approach creates the foundation for community energy self-sufficiency by involving village communities in the entire process, including the planning, the choice of technology, the installation of systems and the collection of revenue from the community of users. Over 300 rural youth have been selected by their communities to receive training in the fabrication, decentralized installation, repair and maintenance of solar energy systems. If adopted on a large scale in India, this approach could provide self-employment opportunities to about 50,000 unemployed youth, spark the creation of thousands of small renewable energy enterprises in rural areas, and bring clean, carbon free rural electrification to over 18,000 un-electrified villages.

**Association Fenix** in Nicaragua, has over the last 8 years, developed a range of activities to support community renewable energy initiatives and develop a 'solar culture' in Nicaragua. Working in coordination with the National Engineering University, Fenix provides RET training to students and other rural people from across the country. Fenix also provides support to community entrepreneurs who fabricate and install solar energy systems, works with women's groups on developing a variety of sustainable cooking technologies, and through the implementation of RET projects, including decentralized PV systems and community solar battery charging station systems, is providing community based models for the Nicaraguan renewable electrification strategy. A key factor in the evolution of Association Fenix has been the integration of rural impoverished people at all levels of the organization.

## **2.4 Financing Community Based Energy Initiatives at the Macro-level**

Financing strategies that respond to local capacity are key to ensuring that solutions for local communities remain appropriate, responsive and sustainable. But more can also be done at the larger international financial institutions, such as export credit agencies (ECAs), to promote RET. According to the Global Environmental Facility, “less than 2% of the energy investment being made annually in developing countries is currently in renewable energy technologies”<sup>3</sup>. Instead, ECAs continue to bias their financing towards conventional energy use – oil and gas, coal, and nuclear. In fact, according to the OECD, 36 percent of OECD member projects (18 out of 50) that required full environmental reviews in 2002 were energy projects, and these projects accounted for 48 percent of ECA financing.<sup>4</sup>

And although ECAs, such as Export Development Canada (EDC), have recognized the potential of this new market, barriers to financing it still remain. These include:

- **Institutional obstacles:** lack of experience amongst financial institutions with renewable energy technologies and projects, and knowledge of associated risk profiles and financing requirements; lack of support for smaller community based projects;
- **Obstacles inherent to the industry:** higher up-front capital costs that require longer term financing; lack of awareness, and hence capital, from the venture capital and investment community; high risk.
- **Obstacles particular to developing countries:** high transaction costs and currency convertibility, relative to the size of the project; competition in developing countries with cheaper (subsidized) alternatives, such as coal; lack of credit worthiness in the recipient country;
- **Company obstacles:** lack of awareness of financial institutions and their requirements, ineligibility for potential international finance support due to the (small and medium) size of the company;
- **Political obstacles:** lack of domestic regulatory and fiscal incentives to develop the industry.<sup>5</sup>

EDC states that in 2003, it supported 1 billion in environmental business with some 275 environmental companies, 88% of which were Small and Medium-sized Enterprises.<sup>6</sup> Although this support is directed towards a large spectrum of environmental businesses, including, water purification, waste disposal, and oil spill containment; the EDC also supported RETs, such as solar cell production, thermo-electric energy systems, and ethanol and hydrogen generators), signaling that it is ready to support renewable energy exports.

A first step towards making the RET sector a more explicit target at EDC would entail increasing equity investments, tasking people in their energy sector to monitor renewables, and integrating renewable energy into business development objectives as a promising area of future growth. Next steps might include developing products that are tailored to specific RET requirements, and setting longer term quantitative targets for the RET sector as part of EDC’s energy portfolio. EDC’s US equivalent, Ex-Im, for example established a Renewable Energy Exports Advisory Committee in 2002 to develop policies to expand the Bank’s commitments to renewables, and set a target of 5% of its energy portfolio<sup>7</sup>.

## 2.5. Climate Change and Development

Perhaps the most tragic element of the growing impacts of climate change is that while the poorest people in developing countries have only contributed a small fraction of the greenhouse gas emissions, these same people are among the most adversely affected by, and the least able to cope with, the impacts of climate change.

Poverty increases vulnerability to the extreme weather events associated with climate change. Untold numbers of people have lost their lives and homes due to floods, cyclones, storms, hurricanes, forest fires and other extreme weather events caused by climate change.<sup>8</sup> Other impacts have been much more gradual but no less devastating – reduced levels of water for drinking and irrigation purposes, changing eco-system habitat and biodiversity, increased unpredictability of agricultural yields, melting snow and ice in alpine and Arctic regions, rising sea levels and changes in ocean temperature and increased air pollution.

### 3. Canada's Domestic Opportunities and International Responsibilities

The Kyoto Protocol enshrines the principle that industrialized countries like Canada should be among the first to act to reduce climate emissions, as these countries are largely responsible for the negative impacts of climate change due to excessive energy use.

For example, among the Organization for Economic Cooperation and Development (OECD) countries, a 2001 report ranked Canada 27<sup>th</sup> out of 29 in terms of energy use per capita. Canada in fact consumes almost double the OECD average, or 6.19 tonnes of oil equivalent per capita.<sup>9</sup> The same report found that energy use was the source of 90% of Canada's 515,375,000 tonnes of carbon dioxide emissions, 55% of sulphur dioxide emissions, 90% of nitrogen oxide emissions, and 55% of volatile organic compound emissions. Consequently, Canada also ranks 27<sup>th</sup> in terms of greenhouse gas emissions per capita (48% above the OECD average) and 28<sup>th</sup> in terms of energy efficiency. Even though efficiency has increased by 21% since 1980, greenhouse gas emissions are up 13.5% since 1990, and consumption has risen over 20% since 1980.<sup>10</sup>

As a country with one of the highest rates of per capita energy use in the world, Canada has a lot of room to reduce energy use and increase the share of renewable energy domestically. Besides having real environmental and economic benefits for Canada, this would demonstrate that Canada is a serious partner in the worldwide movement to reduce pollution, reduce greenhouse gas emissions, and establish a sustainable energy supply for future generations.

#### Benefits of taking action now include:

**Achieving Millennium Development Goals:** Increased support and investment for sustainable energy technologies can make a significant contribution to reducing global poverty.

**Climate Change Benefits:** Increased use, investment, and support for renewable energy technologies will allow Canada to achieve and surpass reductions in GHG emissions as set out in the Kyoto Protocol.

**Economic Development:** Renewable energy is one of the fastest growing sources of energy in the world. Investments and support for renewables offers incredible

environmental and economic opportunities, including economic diversification and employment opportunities, particularly in rural areas.

**Sustained Improvements in Global Human Health and Environment:** Sustainable energy technologies produce virtually none (or significantly less) of the harmful emissions and air pollution that are directly related to many human health problems and global climate change.

### 3.1 Domestic Opportunities - Canada's Record on Renewable Energy

Renewable energy is increasingly capturing the imagination of the Canadian public and Canadian industry, and today, renewable energy technologies are increasingly available in Canada. In the past decade, Canada's renewable equipment and service industry has grown to over 250 companies, creating 3,700 jobs and accounting for \$1.4 billion in goods and services, including \$400 million in exports.<sup>11</sup> Employment in renewable heating and electricity generation, while modest, also increased by 1500 people between 1993 and 1998. Revenues from Canada's environmental goods and services industry have grown from \$10.2 billion in 1995 to \$14.3 billion in 1998.<sup>12</sup> And the Canadian renewable industry now contributes over 6% to Canada's energy needs, displacing 36 million tonnes of CO<sub>2</sub> annually as a result.<sup>13</sup>

But despite its growth, Canada's green power sector is still very small compared to several other industrialized countries (as the figures above indicate). This is for two obvious reasons: primarily because federal and provincial governments have not yet adopted the policies that have been implemented in support of green power elsewhere;<sup>14</sup> and because of continuing subsidies to hydro, gas, and nuclear energy over renewable energy. For example, in 2003 in Canada, fossil fuel subsidies total \$1,300 million compared with just \$12 million for renewables.<sup>15</sup>

Canada has recently implemented several new policies that support the development and use of renewable energy resources in Canada as part of Action Plan on Climate Change in 2002. Some of these policies include Renewable Energy Production Credits, Renewable Energy Portfolio Standards, and Green Energy Procurement Policies. Many provinces have matched federal policies with policy initiatives of their own, including Net Metering.

Several industrial and NGO coalitions and associations are advocating significantly for more domestic support for renewables. These include:

- The Clean Air Renewable Energy (CARE) Coalition – a coalition of corporate, environmental and non-governmental organizations and municipal organizations created to accelerate the development of Canada's renewable energy industry.
- The Canadian Association for Renewable Energy (C.A.R.E)
- The Canadian Wind Energy Association (CanWEA)
- Canadian Solar Industries Association
- Independent Power Producers Association

See The CARE Coalition website for their vision of a low impact renewable energy future for Canada (<http://cleanairrenewableenergycoalition.com>).

Canada needs to take bold action both domestically and internationally, to support the implementation of a new global energy system based on sustainable energy technologies. In acting decisively, Canada will demonstrate international leadership by significantly contributing to reducing global poverty, meeting global climate change objectives, and tapping into the new energy economy.

### **3.2 International Responsibilities - Canada's Record on Renewable Energy**

The plan of action endorsed by Canada at the World Summit on Sustainable Development (WSSD) included support for renewable energy as a tool to meet the Millennium Goals. Canada has also endorsed statements from the International Energy Agency<sup>16</sup> and the G8<sup>17</sup> supporting expansion of the use of renewable energy. However, in recent years Canada has all but dropped any Official Development Assistance to support community-scale renewable energy and does not participate in the Global Village Energy Partnership (GVEP) or any community-supportive renewable energy initiative that came out of the WSSD.

Other G8 and OECD countries such as the UK, Germany and the Netherlands continue to support international renewable energy development. It is no coincidence that the domestic use of renewable energy and development of domestic renewable energy industries are also more advanced in these countries.

As shown above, advocacy in support of increased use of renewable energy in Canada is now being well handled by various coalitions, associations and organizations working in the field, but there is no equivalent advocacy in support of using more of Canada's bilateral and multilateral official development assistance or trade and project finance for promoting renewable energy as a tool for community development.

The International Caucus of CEN plans to fill this gap. The next section of this paper outlines a strategy for Canada to act internationally – supporting new initiatives, like the GVEP, and helping developing countries leapfrog fossil fuel based energy systems and make the transition towards renewable energy technologies. A section outlining the role that CEN and its members can play follows this.

## **4. A Path Forward – Canadian International Renewable Energy Policy and Development Support**

### **4.1 The Role of the Canadian Government: Establishing the Policy Framework for Renewable Energy**

**Canada should support international agreements, programs and policies that:**

- Mandate transparency to the public regarding discussion, negotiation, and implementation of international energy projects that directly or indirectly use public funds, making sure that renewable energy projects are given priority.
- Support policy frameworks that encourage voluntary global commitments to procure and use renewable energy.
- Phase out subsidies and lending to non-renewable energy sources, with a transition plan and flexible time frames to avoid undue hardships on developing country economies that currently rely on non-renewable energy sources.

- Redirect trade policy towards supporting renewable energy technologies (for example reducing import duties on renewable energy equipment).
- Rally international support for the implementation of the Kyoto Protocol and work with other signatories on a permanent equitable treaty to address climate change.

### **At home, Canada should:**

Phase out subsidies and lending to non-renewable energy sources, and enhance the domestic support directed to RETs.

Set a national target for renewable energy supply and generation. The European Union has set a renewables target of 12% of energy supply and 22% of electricity generation by 2010.

Create a favourable investment climate for renewable technology by providing increased tax incentives to companies, equity funds and actively promote the use of renewable technology.

### **Using Official Development Assistance (ODA) to Support Community-Based Renewable Energy**

Canada should increase its support for community-based renewable energy through the use of bilateral, multilateral, and partnership Official Development Assistance (ODA). By supporting renewable energy projects and initiatives, ODA activities will help achieve Millennium Development Goal targets and Climate Change objectives.

The following are suggested means by which Canadian International Development Agency (CIDA) could incorporate community-based renewable energy into its programming frameworks:

- Support the financing and cooperation necessary to deliver sustainable energy to impoverished communities.
- Target funds to the key components required for community-based renewable energy projects, including: community consultation, technology development, technology training programs, small business support, end user financing, technical assistance initiatives/technology transfer (especially South-South initiatives), and community organizational capacity building for system management, and complementary income generation initiatives.
- Strengthen and give priority to programs that encourage sustainable forest management and sustainable use of firewood and other traditional resources.
- Support micro-finance mechanisms and other alternative funding mechanisms that facilitate the dissemination of sustainable energy technologies.
- Revising the Projects Outside Canada (POC) legislation to harmonize it with the Canadian Environmental Assessment Act.
- Support government capacity building in other countries in the areas of community-based renewable energy and the environment.
- Focus on developing standardized plug-and-play systems that would greatly reduce the complexity and cost of designing and installing solar-energy systems.
- Support well-defined subsidy programs for renewable energy, particularly 'smart subsidies' that are transparent, temporary, competitively administered and performance based.

Additional recommendations for Canadian ODA activities are included in the Annex.

## Breaking down the Barriers to Financing Renewable Energy Technology Initiatives Abroad:

Canada should also increase its support for community-based renewable energy by providing the appropriate incentives to Canadian companies to export their technology abroad. Although Export Development Canada (EDC) argues that the very small Canadian renewable energy sector lacks the capacity to export currently, this should not preclude EDC from developing measures to encourage the growth of this sector. EDC itself has said that there is room to do more and that it will be more aggressive in championing opportunities to assist environmental exporters, particularly in support of renewable energy exports. That time has come.

The following are some suggested steps by which Export Development Canada (EDC) could genuinely champion the RET sector at home and support community-based renewable energy abroad:

EDC should:

- Begin training existing staff and recruiting new staff with experience in the RET sector.
- Track greenhouse gas emissions as a result of its support to the energy sector as a whole. The US Overseas Private Investment Corporation currently does this.
- Change its environmental review directive to ensure that all energy projects, including RET sector projects, are also subject to its Environmental Review Directive.
- Begin actively networking with Canadian companies who are experienced in community-based RE, and with Canadian RET exporters, project developers and non-governmental organizations. EDC has said that they have made a commitment internally to visit or speak with all of the Canadian firms - an estimated 120 companies - who offer potential in this area. This is a positive start.
- Work with groups such as Globe-Net or the Canadian Renewable Energy Network (CanREN), and RET companies to determine how to better tailor EDC products and financial services to RETs. Such products might include developing more streamlined, standardized procedures for smaller projects; giving greater flexibility in repayment, for example, through a mortgage style repayment that takes RETs upfront capital costs and their modest revenue streams better into account; encouraging RET project sponsors to bundle multiple projects when looking for ECA financing; or developing instruments to promote joint ventures that nurture local producers and suppliers.
- Work with the RETScreen International Renewable Energy Decision Support Centre to identify clients and projects for which EDC could provide financing, and potentially identify partners they could work with in a more systematic way to deliver financing to community based RETs (for example, micro-finance institutions or project bundlers).
- Begin making Canadian RET companies a more explicit target in the design and marketing of SME products.
- Set a specific quantitative target for supporting community-based energy projects, energy-efficiency improvements to conventional power, and small-scale

RETs. Dedicating 10% of EDC's total energy portfolio to this would be a good first step. At the World Summit on Sustainable Development, GLOBE called on Canada, the UK, Germany, Japan and the United States to devote 10 percent of their energy export lending portfolios to renewable energy by the year 2010.

- Phase out their support for unsustainable sources of energy, i.e. fossil fuels, nuclear power and hydroelectric dams that do not meet the standards set by the World Commission on Dams and the Extractive Industries Review.

### **Internationally, the Canadian government should also:**

- Work actively to support a special sector arrangement for RETs under the Arrangement on Guidelines for Officially Supported Export Credits at the OECD. Nuclear power plants currently enjoy special sector provisions with minimum interest rates and a repayment term of 15 years (compared with 12 years for non-nuclear power plants). Granting special sector arrangements to RETs would provide some parity (or better) with the nuclear sector arrangement. It would also help on-grid RET projects compete more effectively with fossil fuel projects by enabling them to lower their per kilowatt costs.
- Press for a change to the current local cost and content limit of 15%, also at the OECD. To build the capacity of local economies in developing their own technological solutions, export credit agencies (ECAs, such as EDC, should increase the limit to 25-30%, or even higher, to meet with growing requirements for local production by developing country governments.<sup>18</sup>
- Urge the World Bank to adopt the recommendations of the Extractive Industry Review with regards to renewables. In particular, this would mean increasing the Bank's renewable lending to 20% of the total energy portfolio.

### **Using the Clean Development Mechanism (CDM) to Support Sustainable Energy Initiatives:**

- National delegates and nongovernmental participants in the climate change negotiations should advance streamlined Clean Development Mechanism (CDM) policies conducive to renewable energy technology participation, in particular small scale decentralized initiatives aimed at poverty reduction.
- Establish a Canadian mutual fund to purchase emissions credits for Canada from small-scale community renewable energy projects at higher than market prices.
- Support the development of these projects through capacity building and project development support.
- Establish an approval regime for Canadian company participation in the CDM that applies Canadian domestic environmental impact assessment criteria and sets sustainable development criteria.

## **4.2 The Role the CEN and Non-Governmental Organizations (NGOs)**

While centralized national agencies and organizations can help initiate and implement policies and financial mechanisms to promote the use of energy efficiency, renewable

energy technologies and sustainable cooking alternatives in the developing world, the on-the-ground implementation of these projects should be decentralized to increase efficiency, take advantage of local knowledge and to create local employment and business opportunities.

The CEN-IP, in collaboration with its Southern partner organizations, has a key role to play in supporting the implementation of sustainable energy projects, including:

### **Energy Advocacy and Education**

- Energy Advocacy: Promoting renewable energy technologies through the education system, consumer awareness initiatives, and partnerships with government and private industry.
- Leading through example – purchase green power and provide vocal and financial support for renewable energy technologies.
- Coordinating advocacy to increase the level of Canadian ODA support for community based renewable energy through the CEN or a new body that includes international development NGOs.
- Monitoring and evaluating sustainable energy programs and goals set by local, regional, and national governments.
- Spearheading research into best practices, funding mechanisms and community based financial networks to support sustainable energy projects.

### **Formation of Renewable Energy Networks**

- Supporting the establishment of a special agency with a mandate of developing and promoting the use of renewable energy technologies domestically. This agency could include links with federal and provincial departments, utilities, local municipalities and industry and would allow Canada to work collaboratively on developing the opportunities offered by renewables<sup>19</sup>
- Supporting the development international networks addressing sustainable energy, Millennium Development Goals and global climate change objectives.
- Supporting community representation in all levels of policy making related to sustainable energy.

### **Linking Renewable Energy to International Development Goals**

- Linking sustainable energy initiatives to ongoing community development initiatives that target poverty eradication and social and economic development.
- Actively involving women in the service delivery and procurement, including through productive use and income generation activities
- Work at the grassroots level, both domestically and internationally, to help communities realize energy sustainability. Including community consultation regarding the choice of technology and capacity building support for communities to develop the leadership for ownership & management of their renewable energy system.
- Facilitating technology transfer, in particular South-South, through promoting best practices and networking for information exchanges.

### **Capacity Building**

- Establishing national, regional, and international non-governmental networks to provide financial, technical, and organizational support to sustainable energy initiatives.
- Offering training workshops for Canadian International Development Agency (CIDA) desk officers on the value of incorporating renewable energy components into their community development, climate change, environmental and resource conservation programming.
- Supporting communities, NGOs, small and medium-sized businesses and other potential project hosts to prepare submissions for, and successfully implement CDM and other energy projects.

## 5. Concluding Thoughts

Clearly meeting Millennium Development Goals and tackling global Climate Change is an enormous task. It is also, however, an opportunity to showcase Canadian leadership and innovation. To meet this challenge, domestic and international policy and action should reflect the need for a global transition towards the use of sustainable energy technologies, towards meeting millennium development goals and towards taking decisive action on climate change. Politicians, policy makers, development organizations, financiers and donor organizations, entrepreneurs and the general public need to know about the multiple benefits of sustainable energy technologies for both Canada and the non-Western World. We feel that the Canadian Environmental Network – International Program has a role to play in assisting this transition.

## Annex:

### Additional Recommendations for Canadian ODA Activity Include:

- Increased support for clean cooking strategies: As cooking is the principal energy need of the poor, specific support should be provided for clean cooking strategies

- linked both to health sector development, reducing deaths from indoor air pollution, and to environmental initiatives linked to regenerating local forests.
- More active Canadian participation in the Global Village Energy Partnership (GVEP)<sup>20</sup>, and more vocal and financial support for its goals, including:
    - Financial assistance to NGOs to play an active role in the GVEP allowing them to assess the type of support that Canada could provide in different regions and countries.
    - Establishment of a Canadian community renewable energy trust fund at the GVEP, UNDP or other multilateral organization supporting community based renewable energy that could be used by that organization to hire Canadian NGOs and consultants to develop new projects and build capacity.
  - Provision of financing for community renewable energy projects through dedicated regional or country based financial facilities that could be managed by Canadian NGOs with local partners.
  - Support research and development and capacity building programs with partners in developing countries.
  - Establish a special agency with a mandate of developing and promoting the use of renewable energy technologies domestically. This agency could include federal and provincial departments, utilities, local municipalities and industry and would allow Canada to work collaboratively on developing the opportunities offered by renewables.<sup>21</sup>
  - Support the development of local, regional, national and international networks addressing sustainable energy, Millennium Development Goals and global climate change objectives.

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<sup>2</sup> 1. Fuel efficient wood burning stoves and a wide range of alternative biomass fuel stoves can reduce the amount of firewood, charcoal and liquefied petroleum gas (LPG) used, which subsequently decreases household expenses; improves household air quality; reduces the firewood-collecting burden on women and reduces greenhouse gas emissions. Often these stoves can be built out of materials found locally at a low cost.

2. Simple and affordable solutions to reducing indoor smoke pollution have already been designed and tested, including retrofitting chimneys to existing stoves, smoke hoods, stoves designed for complete combustion, switching to cleaner fuels, and improving ventilation.

3. Effectively designed initiatives utilizing solar cooking technologies can provide zero-fuel alternatives to complement fuel efficient stoves for household cooking.

4. Local people can be trained to fabricate, construct, retrofit and maintain these appropriate technologies, generating local employment and small business opportunities.

<sup>3</sup> Volpi, g. and L. Salter, "Renewables and exports - How Export Credit Agencies could help develop markets" in *Renewable Energy World*, March – April 2002.

<sup>4</sup> United States General Accounting Officer, "Export Credit Agencies – Movement toward common environmental guidelines, but differences remain", GAO, September 2003, p. 23.

<sup>5</sup> Ibid and K. Hampton "Beyond Business Principles!" Friends of the Earth-UK Paper for UK Seminar on Export Credit Agency Reform, House of Commons, May 23, 2002.

<sup>6</sup> Personal communication between Paul Stothart, Business Development Advisor responsible for renewal energy technology (RET) sector, EDC, and the NGO Working Group on EDC, March 16 2004.

<sup>7</sup> Export-Import Bank Charter

<sup>8</sup> "Global warming is killing about 150,000 people a year, mostly in deprived and tropical areas, and the toll could rise dramatically if efforts are not made to combat climate change, the World Health Organisation (WHO) warned yesterday." <http://www.ran.org/news/newsitem.php?id=859&area=oil>

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<sup>12</sup> Ibid.

<sup>13</sup> CANMET, 2003. "Renewable Energy Technology R&D." Online:

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<sup>15</sup> New Internationalist, June 2003. "Climate Justice."

<sup>16</sup> [www.iea.org/news/releases/2003/commueng.htm](http://www.iea.org/news/releases/2003/commueng.htm)

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<sup>19</sup> Idea promoted by the Canadian Association for Renewable Energies. [www.cleanairrenewableenergycoalition.com](http://www.cleanairrenewableenergycoalition.com)

<sup>20</sup> [www.gvpe.org](http://www.gvpe.org)

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