

Wind Energy for Rwanda

Rwindalelectric Inc



Background

In 1994, war and genocide in Rwanda left almost one million people displaced. Resettlement villages were constructed in the rural areas to shelter refugees and provide basic necessities.

Half of the population living in the villages still lacks basic amenities such as a water supply and energy sources, which their government cannot afford to furnish. Additionally, these villages and their surrounding areas are subject to unexpected power outages and low service reliability. There is not sufficient electricity to power homes, schools, businesses or hospitals.

Rwindalelectric Inc is a newly developed non-profit organization which seeks to address Rwanda's energy



Wind Turbine: Photograph of Kirkheaton Wind Farm.

deficit. Having investigated all affordable solutions, we propose wind energy as Rwanda's best option. It is an economically sound, renewable resource which produces no environmentally harmful waste or emission and works well in conjunc-

tion with Rwanda's current hydroelectric power.

In Lee County, Illinois, a 63 turbine wind farm produces 50 Megawatts of electricity. This is enough to provide energy to 15,000 American homes. Rwanda's minister of energy estimates that this same amount would generate a surplus for the entire country.

Rwindalelectric's ultimate goal is to construct similar wind farms in the villages. The first step is to measure wind speeds in both mountains and valleys in order to determine what types of wind turbines are best suited for Rwanda.

Our Vision

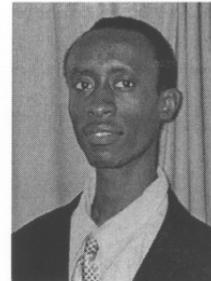
Rwindalelectric Inc aspires to be the most innovative and environmentally responsible firm in the Rwandan renewable energy sector.

Our Mission is to exploit wind resources in strategic locations in the nation of

Rwanda and provide wind-generated energy services to both rural and urban areas for intellectual and economic growth and improved health services.

Rwindalelectric's headquarters are located in the United

States of America where we intend to obtain support and funding. We are registered to do business in the state of Pennsylvania.



Jackson J. Ndizeye
President and Founder

Mr. Ndizeye is a graduate of La Roche College with a B.S. in Information Technology with a background in Mathematics, Physics and Leadership.

Board of Directors

- Jackson J. Ndizeye, *Chairman*
- Monsignor William A. Kerr, *Executive Director of Pope John II Cultural Center*
- Philippa DeCuir, *Member of Rwandan Convention Association*
- Kenneth P. Service, *Vice President of La Roche College*
- Brother Rene D. Roy, *Principal of Donahue High School*

Contact Info:

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Project Title: Wind Energy for Rwanda (WER)

Contact Information

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Last Name:

Ndizeye

First Name:

Jackson

Secondary Email:

ndizeyejackson@yahoo.fr

Position at Organization:

President

Unit Within Organization:

Executive

Organization:

RWINDALECTRIC, INC

Organization Website:

www.rwindalectric.org

Organization Type:

Non-Governmental Organization (NGO)

Telephone:

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Fax:

+1 (775) 618-4891

Address:

646 Grandview Ave #202

City:

Pittsburgh

State/Province:

PA

Postal Code:

15202-2255

Country:

United States

Describe your Organization and include Date Established (50 words):

Rwindalelectric is a US-based, non-profit organization, which aspires to be the most innovative and environmentally responsible firm in the Rwandan renewable energy sector. Our mission is to exploit wind resources in the nation of Rwanda and provide wind-generated energy services to Rwanda's rural communities for intellectual and economic growth and improved health services.

Project Profile

Title of Project Proposal:

Wind Energy for Rwanda (WER)

Project Duration using DM Funds (in number of months only)

12

Implementation Region:

Africa

Implementation Country:

Rwanda

Sector:

Energy

Sub-Theme:

Environment

Primary Partner

Last Name:

Simkins

First Name:

David

Primary Email:

dauids@nrgsystems.com

Second Email:

Position at Organization:

NRG Sales Representative - US Accounts

Organization:

NRG Systems

Organization Website:

www.nrgsystems.com

Organization Type:

Private Business

Telephone:

802-482-2255

Fax:
802-482-2272

Address:
110 Riggs Road

City:
Hinesburg

State/Province:
VT

Postal Code:
05461

Country:
United States

Describe the Partner Organization, including the Date Established:

NRG Systems has been in business for more than 20 years and holds industry reputation for accurate and best-price wind energy specific assessment products. It sells exclusively to the wind energy industry.

Duration of Partnership? New or pre-existing? Indicate number of years:

New

Describe Partner's Responsibilities:

First, NRG Systems will provide the needed wind assessment products that will be installed onsite in Rwanda. NRG Systems will also provide a technician who will train our team in Rwanda during the 14 days of the implementation of the wind measuring equipment.

Project Details

Question 1. Objective: What is/are the specific problem(s) that you are trying to solve and why is it important (include estimated number of people currently affected by the problem in the project area)?

ELECTROGAZ, the sole energy company in Rwanda, serves urban areas close to the national grid, which are comprised of approximately 10% of the population. The remaining 90% stay outside the range of the national development program. A letter written in the favour of our project by the current Minister of Energy, Albert Butare, says that, in January 2004, the country suffered “a loss equivalent to 40% of the total electricity production” because the waters of the largest rivers in the country had gotten lower and lower. At Rwindalelectric, we believe that Rwanda can benefit from wind-generated electricity, and we intend to focus on the rural communities—the 90% of the population.

Question 2. Idea: What is your idea to address the problem(s) described above?

Our mission is to exploit wind resources of the nation of Rwanda and provide wind-generated energy services to rural communities for intellectual and economic growth and improved health services. Our challenge is to collect accurate wind data for any specific region. Minister Butare has confirmed that the current weather stations, located at only four sites, have never provided reliable measurements for the fact that they have low-level equipment. Rwindalectric intends to work with NRG Systems to install a 60m weather station capable of collecting accurate wind data at three levels: 30m, 50m, and 60m.

Question 3. Implementation: How will you implement your idea? Describe the activities your project will undertake to realize its objective(s).

A twelve-month feasibility study needs to be done in order to determine how much electricity can be generated from any particular wind site. The feasibility study will start as soon as the equipment is installed. During the twelve months, data collected from the site will be sent on a regular basis to our headquarters in the USA where our two engineers will analyze it. A strategic plan is also in place to work with local college students and the national research center (IRST). Rwindalectric's intention is to employ nationals.

Question 4. Innovation: How is your idea truly innovative or unique? Describe the extent to which it uses a novel approach.

Wind energy for Rwanda is a new idea. While there are many sources of electricity (biomass, hydro, solar, etc.) in the world, Rwanda has always been dependent on only one source: hydro energy. The government recently signed a 10-year contract with a private company to exploit the Methane Gas of Lake Kivu, another source of electricity. Currently both the hydro-energy source and the Methane Gas have been privatized and are being operated by foreign contractors. Rwindalectric, however, was founded and is run by Rwandans, who obviously take Rwanda's development problems as their own—needless to say that we understand our country's situation better. Our approach is unique in that we are the only not-for-profit company in the energy sector of Rwanda, which will break the financial barrier that has prevented rural communities (schools, hospitals, small businesses and farmers) from reaching their potential.

Question 5. Outcomes/Results: What are the expected outcomes/results of your project? Whom will it benefit? How will you measure the impact of these outcomes/results?

After the political crisis of 1994, life in the main cities started faster than in the other parts of the country, which made large number of people migrate from rural areas to the cities. It is estimated that the population in the capital city, Kigali, has increased by nearly 100,000. Seventy percent (70%) of the new urban population are from rural areas. With the arrival of affordable electricity, rural communities will become a new frontier of opportunities for employment and a better quality of life. Schools will be able to use computers and the Internet, and more schools will be built. Health centers in rural areas will finally have refrigerators to store vaccines. Furthermore, rural health centers will equip themselves for emergency services. Farmers will enjoy improved veterinarian services and the arrival of new processing plants for tea and coffee. Businesses in rural areas will open for

longer hours. Needless to say that Television and Radio are essential for rural communities—or any community for that matter.

Question 6. Financial Viability: How will your project continue beyond the phase funded by Development Marketplace? Describe the project/organization's projected expenses and revenue/income stream (from grant and non-grant resources such as user fees, sales revenues, community contributions, etc.) over the next 3 to 5 years. If relevant, provide an estimate of when you expect to cover your operational costs through revenues.

During the twelve-month feasibility study, we will implement our financial and marketing plans. Locally, our marketing plan is to disseminate the idea of wind energy through radio, television and local newspapers. Our financial plan is to work with local financial entities to create community-banking systems, which will give loans to rural communities for wind-generated electricity. On the international level, our marketing plan has already started. Rwindaletric is a partner of Global Village Energy Partnership (GVEP) and a member of the African Wind Energy Association (AfriWEA). We have also appeared under the title Wind energy for Rwanda in the ESI Africa issue 3 of 2005, produced by Spintelligent, which is read by more than 5000 suppliers in Africa and around the world. We also intend to improve our website and to produce articles and newsletters that will be distributed to companies in the wind energy industry and to donors and grant makers in the international community. Financially, the World Bank has already expressed interest in our projects if we can prove, with data from our feasibility study, that there are enough winds to produce electricity in Rwanda. Financial support from the international community is also expected from the UNDP, the USAID and other organizations that are helping in the development of the nation of Rwanda.

Question 7. Sustainability: Describe any major challenges that your project/organization faces and how you will overcome them. Describe the extent to which your project has local participation/support. If relevant, describe the extent to which your project addresses environmental problems or generates environmental benefits.

Wind energy is an economically sound, renewable resource, which produces no environmentally harmful waste or emission and works well in conjunction with Rwanda's current hydroelectric power. After our feasibility study has been conducted and there is proof of good winds for electricity generation, our biggest challenge would be in trying to provide electricity at an affordable price to rural communities while trying to meet the costs that go with purchasing, installing and maintaining wind turbines. Our strategy is to use international funding for purchasing and installing wind turbines and to let community banks pay for maintenance. Having our headquarters in the USA is part of the strategy of attracting funding and gaining trust from the international community. Rwindaletric enjoys strong support from Rwanda's government through the Minister of Energy. Please contact our headquarters to get a copy of the Minister's letter in support of our project.

Question 8. Replicability and Scaling-Up: What is the possibility of implementing your idea/project elsewhere (in a different region/country)? What is the potential for this idea to be expanded/ applied on a large scale? Be specific on opportunities and constraints, and define the scale that the project could achieve in the short to medium-term timeframe under favorable circumstances.

Wind energy technologies are replicable. Wherever there is proof of good wind resources, there will be the potential of generating electricity, whether in the North-west Mountains of Rwanda, on the banks of Rwanda's rivers and lakes, or in the flat landscape on the East. For scalability purposes, Rwindaletric's wind energy plan is twofold. Rwindaletric will provide small-scale wind turbines to communities located far from the national grid. Large-scale turbines will be installed in wind farms close to the national grid and integrated into the grid, which will give the nation utility company more electrical power to distribute. If the necessary funding is available, the production and distribution of wind-generated electricity will help the country diminish the money spent on electricity purchased from neighboring countries. The money saved could be redirected to other development programs. Also, rural communities will enjoy improved health services, an introduction to modern technologies, the growth of all kinds of businesses, and more.

Project Costs

Personnel

\$5,000

Materials and Equipment

\$20,000

Training

\$500

Travel

\$5,000

Evaluation / Information Dissemination

\$500

General Administration / Overhead

\$0

Other Expenses (explain below)

\$0

Total Expenses

\$31,000

Other Funding Sources

\$1,000

Total DM Funding Requested

\$30,000

Estimated Total Revenues, if applicable

\$0

If applicable, please describe expenses in "Other" category:

Please enter comments/explanations regarding project costs:

Rwindalelectric has currently received a US\$1,000 grant from its founder. These funds will reduce the amount of support needed from Development Marketplace.

Additional Information

Check the box if you have ever received a grant from any World Bank Grant Program or the Global Environment Facility:

No

If yes, please list the grant program:

Check the box if your proposal is a translation from Arabic, Chinese, French, Portuguese, Russian or Spanish, and you would like to upload the original version for reference:

No

Attached File:

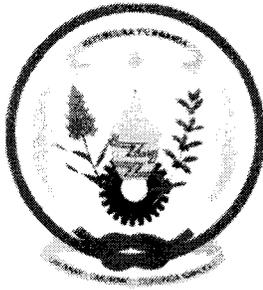
Proposal ID:

00928

Date Submitted:

11/29/2005

REPUBLIC OF RWANDA



MINISTRY OF INFRASTRUCTURE
P.O. BOX 24, KIGALI
TEL: (250) 582619
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19 May 2005

TO Whom It May Concern

In mid January 2004 the energy crisis broke out in Rwanda and resulted into a loss equivalent to 40% of the total electricity production. The very low level of Lakes Bulera and Ruhondo caused ELECTROGAZ to reduce the generation from Ntaruka (from 11.25 MW to 2.5 MW) and Mukungwa (from 12.5 MW to 5 MW) hydro power stations and to implement a comprehensive load shedding programme. New thermal stations were installed in late 2004 and early 2005 to alleviate the gap of 25 -30 MW.

Despite this additional thermal generation, it is clear that the Country is still in deficit and there is pressing need to conclude public-private partnership agreements and avail electricity if we want to market Rwanda as an investment destination.

Therefore, the Government of Rwanda is committed to secure future energy supply by strengthening development of domestic renewable resources (methane gas, mini-hydro, geothermal, wind, etc..).

As I am glad and proud to see young Rwandans overseas engaged in the construction of their homeland's economy, I am also pleased to reaffirm the support of my government to Rwindalectric wind projects with the objective of promoting economic growth and poverty reduction in Rwanda.

I look forward to establishing a rural energy programme framework in the near future.

Eng. Albert BUTARE
Minister of State in charge
of Energy and Communications

