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GLOBAL SUSTAINABLE ENERGY ISLANDS INITIATIVE

RENEWABLE ENERGY DEVELOPMENT IN ST. KITTS & NEVIS

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INSIDE THIS ISSUE:

The Global Sustainable Energy Islands Initiative (GSEII) was launched in November 2000 by a consortium of international organizations, to assist the small islands states in their efforts to transform their energy base from fossil fuels to a system based on renewable and energy efficiency technologies.

The prospects for the development of multiple renewable energy systems in St. Kitts & Nevis continue to improve. With an international petroleum price of about US $140 per barrel, renewable energy and energy efficiency systems are no longer viewed as costly endeavors with distant payoffs.

Biomass Energy

After the closure of the sugar industry in St. Kitts in the summer of 2005, the GSEII helped to set the baseline for the development of a biomass-to-energy system. In 2005/06 the Organization of American States (OAS) as part of a GSEII-UNIDO program, conducted a pre-feasibility study focusing on finding alternatives for the abandoned sugarcane lands on the island of St. Kitts. The findings were promising and follow up activities evolved into cooperation with the US-Brazil Biofuels Initiative. A comprehensive land use mapping and assessment conducted in 2007 concluded that some alternative uses of the remaining agricultural lands (about 4,500 acres) for energy and other by-products were financially feasible. At present, negotiations are being held between the Government of St. Kitts and Nevis and a private developer for a 10 MW Pyrolysis System that can convert a wide range of crops and waste into syngas (to generate electricity in gas turbines), bio-oil and char. GSEII will continue to assist St. Kitts & Nevis in defining sustainability criteria within the government's decision making process, focusing on reducing environmental costs and ensuring economic benefits to all its citizens.

Geothermal Energy

Nevis has been the focus of geothermal exploration and development in the Federation. In 2007, the Nevis Island Administration (NIA) entered into a Memorandum of Understanding (MOU) with a private developer, West Indies Power Ltd. The MOU provides the developer with the exclusive rights and responsibilities for geothermal exploration and development.

West Indies Power Ltd. has incorporated the surface based analysis that was conducted by the GeoCaraïbes project into its understanding of the resource and, as of 2008, is conducting exploratory well drilling in Nevis. Preliminary results indicate that there is at least 35 MW of near-term potential available for the first set of possible geothermal sites.

The OAS/GSEII has responded to several requests from the NIA for information and documentation related to the development of geothermal policies and regulations. GSEII legal experts have, in conjunction with the NIA, drafted a Geothermal Resource Bill and a draft Power Purchase Agreement (PPA) for the legal arrangements between the Geothermal Energy Developer and the NIA. Presently, technical assistance needs around the review and supervision of the planned geothermal energy production system and its integration into the national grid are being discussed. GSEII plans to provide continued support of the geothermal power development process in the Federation.

St. Kitts electricity department team visiting the geothermal drilling project at Spring hill on Nevis

Wind Energy

The Federation Government of St. Kitts & Nevis is committed to the development of one or more wind farms. There have been recent discussions regarding the potential for the development of 10 MW of installed wind capacity on the island of St. Kitts. On Nevis, a private wind developer has been negotiating with the NIA the details of a PPA for the development of a proposed 1,100 kW Wind Park. The OAS Energy Team has conducted and verified a wind resource assessment based on a 1-year wind database collected with an anemometer at the proposed wind park site.

The Federation of St. Kitts and Nevis is leading the Caribbean nations in the assessment, development, and implementation of renewable energy. The OAS-GSEII partnership remains committed to assist the government in its efforts to shift away from a fossil fuel based energy sector to one that is more sustainable and diversified.

FIRST GRID-CONNECTED SOLAR SYSTEM IN THE PACIFIC

Funatolli Atol, the capital city of Tuvalu, has become the site of a major breakthrough. One of the smallest nations in the world now boasts the Pacific's first grid-connected solar power system. The project undertaken by the e8, a non-profit international organization composed of nine leading electricity companies from the G8 countries, and the Pacific Power Association (PPA) was commissioned in February 2008. Kansai Electric Power of Japan took the lead in this project.

Tuvalu, with a population of about 11,000 people, consists of nine coral islands in the South Pacific. Although its CO_2 emissions are negligible on the world scale, it was ranked as extremely vulnerable by the South Pacific Applied Geoscience Commission's Environmental Vulnerability Index, particularly to global warming and climate change. It is estimated that an 8-16 inches sea level rise could render the islands uninhabitable. It is thus in the vital interest of the nation to try to lead the world by example in sustainability efforts.

Solar power is a much needed alternative to expensive, diesel-based, power generation available on the island. As diesel prices rise, electricity generated from imported fuel is becoming too expensive for a large part of the Tuvalu population. Apart from the cost advantage, solar power is also a step towards lowering greenhouse gas emissions, as agreed to in the Kyoto protocol.

The 40kW solar power system now accounts for about 5% of the peak demand of the Tuvalu Electric Corporation (TEC) which supplies electricity to the islands and provides relief from soaring diesel prices. Over the next two years, the system is scheduled to undergo a monitoring phase during which the e8 will ensure the maintenance, sustainability, and local ownership of the project.

The Honorary Tom Roper, a board member at the Climate Institute, was instrumental in bringing the e8 and the PPA together to work on renewable energy solutions for the small islands of the Pacific. He also contributed to the discussion about the Tuvalu solar project.

It is expected that the success of the project will provide momentum for Tuvalu to shift away from full reliance on diesel generation to a hybrid system based on renewable energy sources. The project is a major accomplishment of GSEII and will be an important signal for the rest of the world to join in finding innovative solutions to reduce their own greenhouse gas emissions.

Solar panel system

CFLS COMBAT ELECTRICITY PRICES IN THE MARSHALLS

The Marshalls Electric Company (MEC) is expected to further raise the already soaring electricity prices by another nine cents per kilowatt hour. With global fuel prices at record highs, energy costs for the Marshall Islands have nearly tripled in the last four years. However, the Marshallese's paychecks have remained almost unchanged during this time period, placing an ever greater strain on the local inhabitants.

Private sector workers in the Marshalls will now spend 37% of their salaries on electricity, up from 15% in 2004. If you add to that the trend toward greater use of air-conditioning, the average Marshallese private sector worker will spend 59% of his salary on electricity alone in 2008.

The need for energy efficiency solutions and renewable energy sources is now stronger than ever. In an effort to cut electricity costs for islanders and realize greenhouse gas reductions, the MEC along with the Climate Institute and Climate Care, a UK-based group specializing in the sale of carbon emissions offsets, have begun installing 10,000 compact fluorescent light bulbs (CFLs) this May.

Already over 1,000 CFLs have replaced energy inefficient incandescent light bulbs in homes and other buildings on the Marshall Islands. A power monitoring system was installed and became operational late last year to track changes in energy consumption. While data are still being collected and processed, the estimated savings for the islanders resulting from the installation of these energy efficient CFLs are around $56,000 annually.

Bikini Atoll, Marshall Islands

GEOTHERMAL BREAKTHROUGH IN DOMINICA

Dominica has made a major step forward toward securing its future energy needs. On April 11, 2008 Dominica's Minister for Energy, Honorary Charles Savarin, signed an agreement on the commencement of activities under an EU funded geothermal energy exploration project.

Possessing 9 out of 17 potentially active volcanoes in the Lesser Antilles, Dominica has an excellent potential for geothermal development. It is estimated that 1,390 MWe can be harnessed from Dominica's geothermal sources. Considering that the actual energy peak load demand on the island is only 14 MWe, Dominica has a significant export potential.

Dominica was the only Caribbean country to have successfully bid under the European Commission's Energy Facility which was open to all of the seventy-eight countries comprising the African, Caribbean and Pacific States. GSEII's guidance in the region was instrumental to this significant achievement.

The project is funded under the INTERREG IIIB program of the European Union's Caribbean Space Initiative, and is a multipartite arrangement with the following partners: the Regional Council of Guadeloupe, the Regional Council of Martinique, the French Agency for Environment and Energy Management (ADEME), the French Geological Survey (BRGM), and Dominica. It is expected to cost at least Euro 4 million. The European Commission will provide Euro 1.5 million and its grant will be supplemented with Euro 500,000 from the Agence Francaise de Developpement (AFD) and Euro 2 million from Fonds Francais pour L' Environment Mondial.

The project now underway is meant to determine the exact chemical nature and quantity of the geothermal potential in Dominica. In addition, a feasibility study on the possibility of exporting energy to Guadeloupe and Martinique and an environmental impact assessment will be undertaken.

In the ideal case, at least 100MWe of geothermal power will be developed in the next 5 years. Over and above satisfying all of its energy needs, Dominica could initially export about 40 MWe to Martinique and Guadeloupe each. If successful, Dominica would provide Martinique and Guadeloupe with approximately 20% of their peak load demand to start with. A study of the legal issues associated with connecting Dominica with its neighbours through submarine cables is being conducted as part of the project.

Apart from obvious energy security benefits—Dominica currently produces 60% of its energy from imported fuels and Martinique derives 100% of its energy from imported fuels—geothermal energy should also be significantly cheaper than current electricity production. As electricity prices on the islands are 2 to 3 times higher than average US prices, this would come as a welcome relief to the local population. In addition, geothermal energy will significantly reduce Dominica's, Martinique's, and Guadeloupe's carbon dioxide emissions.

Dominica has 9 active volcanoes

ICELAND OFFERS SUPPORT

Iceland announced its increased emphasis on development cooperation with Caribbean Small Island Developing States (SIDS) at the High-Level Roundtable on International Cooperation for Sustainable Development in SIDS held 25-27 March 2008.

The roundtable highlighted increased hardships that SIDS face due to globalization, trade liberalization, high fuel prices, and volatile exchange rates. It provided SIDS representatives with the opportunity to identify common points of concern, share their knowledge, and form a basis for future cooperation with each other and the government of Iceland.

Iceland, a recently developed small island state, is in a unique position to advise SIDS as it has faced many of the same challenges that they face today. It has pursued a successful development strategy over the past few decades and has risen from one of the most disadvantaged countries in Europe to the highest position on the UN Human Development Index, mainly through the application of modern technologies and the sustainable use of its resources including geothermal and hydro.

Iceland has developed significant expertise in the realm of sustainable fisheries, renewable energy and energy efficiency, and the fight against climate change. In order to pass this knowledge on to SIDS, Iceland has initiated the Island Growth Initiative—a framework for Iceland's development cooperation with SIDS.

Mark Lambrides, on behalf of GSEII, presented the geothermal sector's progress in Dominica and St. Kitts & Nevis at the geothermal energy section of the conference.

ISLANDS' ENGINEERS RECEIVE TRAINING

In August 2007, the Pacific Power Association (PPA) held its annual CEO's meeting in Majuro, Marshall Islands. Recognizing that engineers of many of the Pacific utilities are poorly educated especially in areas such as renewable energy and energy efficiency, most of the workshops focused on these topics. The Climate Institute, in cooperation with the Alliance of Small Island States, has arranged educational sessions focusing on efficiency.

Honorary Tom Roper, a board member of the Climate Institute, gave two presentations titled "Making Utilities And Their Customers More Efficient" and "The Impact of Climate Change on Pacific Nations". The presentations focused on encouraging utilities to become more sustainable and efficient, noting that best practices will lead to reduced imports of fuels, lower prices of electricity, and more jobs for the economy. Good building design and the switch to energy star appliances was also emphasized. Finally, examples of successful sustainability measures by island nations were presented including the "green" Coco Palm Resort on the Maldives, efficiency initiatives in Timor, Cuba and Guadeloupe, and the remarkable achievement of one of the Spanish Canary Islands which now runs 100% on renewable energy.

Ultimately, the 2020 targets for the Pacific were identified as:

- Generating 25% renewable energy
- Improving existing generation and transmission efficiency by 20%
- Reducing consumption in public building by 10-15% immediately
- Reducing oil use for transportation by 20%
- Setting efficiency targets for motors, air conditioning, appliances, and lighting
- Doubling village and outer island access to electricity

Given the recent training, the islands' engineers are now better prepared for utilizing many of the available resources from the EU Energy Initiative, World Bank, and others.

The Coco Palm Resort, Maldives

THE GSEII CONSORTIUM

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- INTERNATIONAL NETWORK FOR SUSTAINABLE ENERGY www.inforse.org

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