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The Global Sustainable Energy Islands Initiative (GSEII)

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

The story of Iceland - A World Leader in Renewable Energy

Iceland, an island country that edges up against the Arctic Circle, is the leading candidate to become a carbon-free economy. President Olafur Ragnar Grimsson told the remarkable story of his country in his keynote address at the Summit for Climate Stabilization in Washington DC organized by the Climate Institute.

President Grimsson recalled what he saw as a small boy when the capital Reykjavik was covered with smoke from the coal fires, and the harbor was then full of ships bearing coal from London and other ports. Iceland ran totally on coal 50 years ago. He pointed out that in one generation his country moved from being a coal nation to a global leader in renewable energy.

Iceland is one of the most active volcanic regions in the world, and has the Earth's highest concentration of readily available renewable energy resources – mostly in the form of hydroelectric and geothermal power. These two renewable energy sources alone provide over 95% of the heat and electricity used by Iceland's 300,000 residents. And though Iceland satisfies almost all of its electricity and heating demands with its renewable resources, less than 20% of the renewable resources on the island have been tapped. The country plans to become a hydrogen economy by 2050.

A waterfall in Iceland

President Grimsson of Iceland

He listed seven areas the country has worked on in recent years. 1) Geothermal energy, which now runs power stations and aluminum smelters. 2) Hydro dams, which provide 18 percent of the nation's energy. 3) Using hydrogen to power buses and a few private cars. "I was told I had the distinction of being the first person to break the speed limit in a hydrogen car," he said. 4) Pumping carbon dioxide into the ground. Iceland is doing experiments in conjunction with universities to remove C02 from the air and pump it into the basalt layers. If it succeeds, in collaboration with India, Iceland may pump exhaust from their smelters undergroud. 5) Participation in the international debate. Iceland led the group of Arctic nations to produce a report about the effects of climate change up north. 6) Iceland's banks are making the global financing of clean energy a part of their portfolios. 7) Creating partnerships with other countries including China, India, Russia, and California, he joked, and many European countries.

An International Leadership Alliance for Climate Stabilization was also launched at the Summit to build on the GSEII model and expand aggressive climate protection efforts among other nations and states/provinces within bigger developing countries. President Grimsson was optimistic and encouraged to see increasing efforts by the international community for stabilization of greenhouse gases and presented Iceland as a partner in the International Leadership Alliance, ready and willing to show the world how to get its energy from renewable sources.

Training for Sustainable Design and Reconstruction

The post-Hurricane Ivan reconstruction in Grenada presents an opportunity to introduce sustainable building practices to the Caribbean. The Climate Institute and Energy and Security Group organized a workshop in Grenada on September 12th, 2006 in collaboration with Grenada's Agency for Reconstruction and Development (ARD): "Rebuilding a Sustainable Housing Infrastructure in Grenada."

Besides hurricanes, there are other issues that need to be considered as Grenada rebuilds. First is the rising cost of energy. All energy in Grenada is imported and subject to the fluctuations in the world market for oil. Electricity cost in Grenada is among the highest in the world due to its dependence on imported oil. The second is the shortage of building materials like imported cement.

Without cement and concrete, construction on the island stops as was experienced in December 2005. The good news is that Grenada is blessed with abundant renewable energy resources and excellent low cost building materials that can reduce or even eliminate the need for many imports.

John Spears of the Sustainable Design Group provided a variety of tested alternatives in construction methods and materials, waste water recycling and management, composting, solar energy and other environmentally friendly practices. Mr. Spears outlined how to build the complete "earth home" constructed with compressed earth brick walls, complete with solar oven and electricity, rain water collection, and other natural systems.

The workshop was attended by 35 people including contractors, electricians, plumbers, architects, engineers, contractors and representatives from the Ministry of Communication, Works and Transport, the Ministry of Health and the Environment, the Housing Authority of Grenada, the Grenada Bureau of Standards, the Contractors Association of Grenada and the Grenada Electricity Services Ltd., as well as students from the T.A. Marryshow Community College.

John Spears in Grenada

Bio-Energy Study in St. Kitts & Nevis

In the summer of 2005 the nation's sugar industry operated by the St. Kitts Sugar Manufacturing Company (SSMC) ceased operations, leading to a complete collapse of the industry. Due to low global sugar market prices and high operational costs, the sugar company's operation had become financially unviable. The Government of St. Kitts and Nevis instituted a Sugar Transition Team to investigate alternatives of revitalizing the sugar industry with a focus on possible use of the sugarcane for electricity and/or bio-fuel production.

The Global Sustainable Energy Islands Initiative (GSEII) partnership has committed to assist with the execution of a biomass energy systems assessment. This assessment will outline the commercial feasibility of converting the available biomass to electricity and/or bio-fuels. The study will be used as a benchmark for identifying key criteria to facilitate efforts by the Government of St. Kitts and Nevis to attract competitive project proposals for the sustainable development of a sound bio-energy business.

The bio-energy assessment takes into account the diversity of biomass to energy conversion options, end use, and applications involved. In the case of St. Kitts and Nevis, there are two main sources of biomass, one is sugarcane and a second source is the organic fraction of municipal solid waste. This biomass has to either be cultivated or collected, transported and if necessary pre-treated and/or stored. It can be converted to energy by a large variety of processes. The primary energy outputs to be considered by this study include biomass to ethanol (for use as a transportation fuel) and biomass to electricity. The choice of a process depends on the type and quality of the available biomass feedstock, the desired end use application, environmental standards, economic conditions and other socio-ethical factors.

Fertile Land in St. Kitts

The report will provide an overview of the available quantities and quality of the biomass sources on St. Kitts and Nevis, relevant biomass energy systems will be described, and the technical, economical, socio-environmental characteristics of these scenarios will be provided. The results will be used for the evaluation and selection of commercial and sustainable biomass energy system for St. Kitts and Nevis.

The Maldives Moving Forward—by The Hon. Tom Roper

The Maldives has been one of the most forceful advocates on combating climate change. As you stand in the capital, Male, or in a village the vulnerability of being a meter above sea level is obvious. The Tsunami was a century of sea level rise in an afternoon causing half a billion dollars of direct damage and damaging village agriculture and fisheries. Eighteen months later, in July, I visited a village where the wells were still salty and unusable, tanks had been put in and most gardens were still dead because of salination – only the coconut trees survived.

Electricity costs are huge (25 to 35 US cents per kWh) and little has so far been done to introduce renewable energy. With Government and UNDP encouragement renewables are now being considered for a number of outlying villages and one of the Red Cross post tsunami developments (Raa Atoll – Dhuvaafaru) is likely to be solar.

A real barrier is the lack of public awareness and of people with the necessary technical skills. One off demonstration projects like the solar-diesel hybrid project on Mandhoo Island and the Red Cross rebuilding need to be expanded. For a brief time a containerized Western Australian solar desalination plant provided village water.

The **SMILES project** (**S**trengthening **M**aldivian **I**nitiatives for a **L**ong-term **E**nergy **S**trategy), by the Asia Pro Eco Programme, proposes reducing fossil fuel consumption by 33% and by 2020 meeting 25% of energy demand from indigenous resources.

While Male has cheaper power the utility, Stelco, is not allowed to charge its full costs, hasn't carried out vital scheduled maintenance, and is heading towards financial difficulty. Almost nothing has been done so far to promote energy efficiency and the growth of office air conditioning has produced a daytime peak. Energy efficient globes are US$12 plus. The World Soccer Cup caused a spike in demand.

Coco Palm Resort, The Maldives

On the other hand many of the resort islands have invested heavily on energy and water efficiency and on solar hot water. Villa Shipping and Trading spent US $4m introducing energy saving equipment including solar hot water, power saving devices, heat recovery systems, efficient lighting, water and waste management and recycling. The Coco Palm Resort is world's best practice.

I found an enthusiastic response from Government Ministers and officials and at a public meeting chaired by the Minister for Environment, Energy and Water, the Honorable Ahmed Abdulla. The decision to create this new combined Ministry is a demonstration of a more active policy as is the completion of a "Draft Energy Policy – Maldives 2006" which we discussed and I was asked to make comments on. The Maldives is certainly taking action similar to those of our Global Sustainable Energy Islands Initiative (GSEII) partners.

After my latest visit I'm looking forward to close cooperation between the Maldives and GSEII.

Barriers to Energy Efficiency Investments

At the annual CEO's conference of the Pacific Power Association held in Fiji in July 2006, the focus of Tom Roper's message was energy efficiency. A brief excerpt from his presentation is given below:

In these times of escalating diesel prices and the resulting threat to Small Island Developing States' (SIDS) energy security and economies utilities need to become far more efficient. Every gallon or litre of diesel wasted in unnecessary generation puts up already extremely high consumer prices and makes it harder for utilities to maintain government and community support.

"There is no cheaper or cleaner power than the power you don't produce. I call it negawatts" - Amory Lovins, Rocky Mountain Institute, Colorado, USA

Island utilities are small (the 24 PPA members between them have a maximum peak demand of 905.6MW) and often lack key skills. There are few energy efficiency programmes run by SIDS Governments or utilities and policy is non existent or weak. Many utilities have their charges capped by government, are sometimes not allowed to raise rates to cover existing costs and are falling behind on basic maintenance. Indeed the incentives are often to sell more power with no regard to the economic impact of additional expensive diesel imports. Utilities don't reward energy conservation by providing advice or offering concessional rates.

There is little awareness by utilities or consumers of the benefits of energy efficiency or knowledge of possible opportunities. On the supply side the lack of local businesses with product and suppliers information adds to the waste. Education and awareness information isn't readily available. Government procurement repeats what has been purchased before. Governments themselves compound the problem by often charging high import duties without regard to product efficiency.

There is a need for more energy audits, energy service companies, qualified technicians, installers and trained professionals who are experienced in design and energy efficient building practices and products. Performance standards for appliances are essential. These are win-win opportunities that can produce environmental benefits as well as good business opportunities.

Progress in the Marshall Islands

A donation of 10,000 energy efficient light bulbs from Oxford, UK based Climate Care is aimed at helping Majuro residents reduce their power bills. Hon. Tom Roper, Project Leader of the GSEII was in Majuro in July, 2006 to launch the GSEII program in the Marshall Islands and presented this donation to President Kessai Note.

The Marshalls Energy Company (MEC) will be installing these compact fluorescent light bulbs (CFLs) in houses from Rita to about Kirt Pinho's house in the Uliga area. MEC has two substations in the area so it can monitor how much actual energy is used, and that can be translated to how much carbon is saved as a result of less fuel being used to produce power. It is estimated that the use of these bulbs could reduce fuel usage by MEC, saving the company about $150,000 annually in fuel costs. The performance of these bulbs will be monitored by assessing the electricity bills for the next few months to see how the use of the energy efficient bulbs helps to reduce power consumption and reduce costs to the consumers.

President Note and Tom Roper

The RMI received four different types of lights, which are also being used to assess which brand is better. MEC will also be keeping track of which households have which brand. The CFLs last 20 times longer than regular incandescent light bulbs and use 80 percent less energy.

The Marshall Islands Outer Island Electrification Project

GSEII is also assisting the Marshall Islands in development and implementation of its outer island electrification project. The project's aim is to provide a practical tool for the Marshallese authorities to establish priorities and prepare actions to ensure successful and sustainable access to electricity in the country's outer islands and rural areas - most islanders depend on kerosene and batteries.

The first island Namorik now has access to solar home systems. Additional projects are currently underway. The Mejit Island solar electrification was completed in 2006. The island is supplied with 88 systems with a standard household system size of 160 Watts. Systems for two additional projects on Wotho and Wodmej (Wotje) are underway.

Further assistance is being provided by EU, the Republic of China and the United States. The government also plans to develop a renewable energy center.

PV for village power in the Marshalls

THE GSEII CONSORTIUM

- **Climate Institute**
  www.climate.org
- **Counterpart International**
  www.counterpart.org
- **Energy and Security Group**
  www.energyandsecurity.com
- **International Network for Sustainable Energy**
  www.inforse.org
- **Organization of American States**
  www.oas.org/reai
- **United Nations Industrial Development Organization**
  www.unido.org

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