

Powering the Future Together: What America Can Learn from a Scandinavian Friend

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The challenges of energy availability and climate change loom ever larger for the international community, with our nation's security and the world's environment hanging in the balance. As diplomats, we must help our nation and its partners find solutions to these challenges. Part of our job is to assume the bully-pulpit and enlighten others of the many things America is already doing in these areas, to overcome the global impression that America is not doing its part. But my time in Europe has convinced me that an even greater use of our diplomatic time and resources is to seek out and support innovation, collaboration and partnership between America and those abroad who are pioneering ways to lower greenhouse gas emissions, develop alternative energy resources, and increase energy efficiency.

During the past three years as US Ambassador to the Kingdom of Denmark, I have come to appreciate how much the United States can learn from the experiences of this small, yet industrious nation of just five and a half million people. I have been fortunate to witness Denmark's spirit of energy innovation firsthand, visiting all corners of this country to learn how Denmark achieved "energy independence," and how it became a world leader in alternative energy. As the President's representative, I also have made it my mission to share the good news of US advances in energy and climate change, including our significant diplomatic efforts to advance the UN process that will culminate in next year's summit meeting in Copenhagen.

My direct knowledge of what Denmark can offer stems from my 37-day, 1,500-mile bicycle tour through Denmark, which I dubbed the "ReDiscovery Tour": to rekindle the bonds of friendship between our two countries that were nurtured when Thomas Jefferson signed our first treaty in 1792. Along the way, I encountered countless examples of Danish innovation in energy: from the world's largest solar array on the island of Aero, to the world's longest wind turbine blade manufactured in Kolding; from the most advanced Wave-Energy prototype at Nissum Bredning on the North Sea, to the industry-leader in the production of enzymes for second-generation biofuels at Kalundborg; from the headquarters of the global leader in tire recycling, to the headquarters of the global leaders in energy-efficient skylights, thermostats, water pumps and insulation products; I have come to understand why Denmark, for the past generation, has been at the forefront of energy innovation.

Danish energy policy since the 1970s has focused on cultivating alternative and renewable sources of energy, and since then Denmark has achieved "full energy independence" and high economic growth, while keeping its energy use level. Over the last 25 years, Denmark's economy has grown by around 75 percent—with nearly stable energy consumption, while reducing carbon emissions. Of course Denmark's manufacturing base

has declined during that time while its service-based economy has thrived. But the country has done so in great part by using its tax policy to add the costs of environmental externalities associated with the production, use and disposal of alternative fuels to the price of energy to the consumer. It has worked, and the consumers have, so far, been willing to pay the price.

Today, renewable energy provides over 17 percent of overall energy use and nearly 30 percent of electricity production in Denmark. With limited solar resources and a topography not well-suited for hydropower, Denmark first focused its efforts on recycling waste heat for district heating and tapping abundant wind resources. Research and development of wind turbines began in the late 1970s, and with government support, risk was reduced, costs were spread, and an infant industry nurtured. Consistent national policy in support of wind power was key to Denmark's success. Under policies begun in the 1970s, Danish utilities were required to pay a premium above market prices for wind-generated electricity. That premium rate was required for up to 20 years after installation. In the early years of wind power development in Denmark, risk was shared among investors, with most early wind power plants owned cooperatively or by municipal governments. Government incentives, eventually including a combination of mandatory price premiums and rebates on energy taxes, created conditions for individual ownership of turbines, attracting Danish private sector financing for new development, and Danish wind power flourished in the 1990s. In 1990, two percent of Denmark's electricity consumption was supplied by wind power. Today the figure is 24 percent. As Danish expertise in wind technology grew, Denmark became the world's leading exporter of wind energy technology, earning approximately \$2.5 billion in 2001, with companies like Vestas, L.M. Glasfiber and Siemens Wind, formerly a Danish company, leading the way.

In early March 2008, I had the honor of joining Vestas CEO Ditlev Engel and Colorado Governor Bill Ritter to cut the ribbon on Vestas' new \$60 million blade manufacturing plant in Windsor, Colorado. Just a few days earlier, I had visited the President's ranch in Crawford, Texas where President Bush was hosting Danish Prime Minister Rasmussen. After the bilateral meeting, the President invited us on a 'windshield tour' of the ranch in his pickup truck, during which we passed what is reputed to be the oldest windmill in Texas. The President remarked, "America needs more windmills."

Vestas' new plant in Colorado will enable the United States to add to our growing wind capacity. In addition to the Colorado facility, where 600 people will be employed and the blades for approximately 600 turbines will be produced per year, Vestas has announced the construction of a tower manufacturing plant and a research and development center in Colorado. Vestas is the kind of innovative partner that America needs. It is no accident that Vestas' blade factory in Nakskov was on the itinerary for Day One of my ReDiscovery Tour. At the factory, we witnessed the fabrication of the longest wind turbine blades that remarkable company makes.

Denmark's pursuit of alternatives to fossil fuels has concurrently raised its energy efficiency (energy consumption relative to GDP)—today it is among the highest in the European Union—and it continues to rise each year. Measures taken to increase energy

efficiency include widespread deployment of heat and power cogeneration. Others include: high energy standards for buildings, energy labeling schemes for electrical appliances, public campaigns for energy savings in households, energy savings agreements with industry and not least, taxes on energy consumption, and incentives for public transportation and bicycle use.

Denmark's example highlights the importance of technological innovation to address today's energy challenges. Responding to government incentives, Danish industry has made great progress pursuing that innovation. But to help solve the problem of global warming and global energy insecurity, Danish innovation must become even more global, and overcome problems of scale. Doing so presents many challenges. These include overcoming the traditional reluctance of universities and the public sector to facilitate technology transfer, the hesitance of American venture capitalists to invest in Scandinavian markets, and the uncertainty among innovators about how to go about identifying US partners. I have met many Danish inventors with great ideas who wanted to get their products to the US market, but had no clue where to go or what to do.

In our Embassy, we are working hard to encourage American capital and American companies to come to Denmark, to seek out collaborations with Danish innovators. Last year my Nordic colleagues and I travelled to Chicago, Minneapolis and Silicon Valley to introduce American venture capitalists to the remarkable opportunities emerging in Scandinavia in the area of energy innovation. We found that investors are intrigued with what is happening here, but they are uncertain whether these cultures truly welcome foreign investment. They have seen recent tax decisions as creating uncertainty in the investment market and an inhospitable environment to private equity. Venture capitalists also are concerned whether their investments will have adequate liquidity given the size and recent track record of Scandinavian security markets.

To respond to these challenges, we have teamed with the American Chamber of Commerce in Denmark and the Danish American Business Forum to push an agenda more hospitable to foreign investment, and to offer workshops on opportunities in America for emerging innovative Danish companies. Our US Department of Commerce has worked with the Danish government to build a US/Denmark Entrepreneurial Forum with the goal of sharing best practices in entrepreneurship. Our Embassy has also worked closely together with a new initiative called, "COPENMIND," an attempt to create the world's first true 'marketplace of ideas' based on academic research and technology development. The idea is to bring the world's leading universities and global companies together in the development and application of new technology. In 2008, the focus was on green technology or 'cleantech;' next year it will be on energy. By creating a space where the world's universities and research institutions can demonstrate and sell their knowledge to global industry, this effort attempts to stimulate cooperation between universities and global industries. In doing so, we hope to overcome practices that limited these collaborations to national and regional markets in the past.

Learning from our friends in Denmark and other countries, and helping to bring them into partnership with American companies, investors or partners, is vital to the US

interest in achieving energy security and addressing carbon-emissions reduction. I urge all of my colleagues in America's embassies and consulates around the globe to seek such opportunities for partnership; to consider the proactive facilitation of these relationships to be a core mission of America's diplomats overseas.

On Day One of my ReDiscovery Tour, as we left the blade factory, we rode our bicycles the short distance to the wind turbine test site where Vestas has erected one of the largest land-based wind turbines in the world. It is a monster standing 260 feet tall. There, I did something that I will never forget as long as I live.

After putting on a suit that made me look like an astronaut, I ventured inside the turbine tower, measuring almost 20 feet in diameter, latched on with my safety strap to the hand ladder, and started climbing up, with an American Flag and a Danish flag tucked inside my suit. After climbing 250 steps with one of my bodyguards up the hand-held ladder, in full sweat, and after catching our breath, we popped the hatch open, threaded our way through the wiring and pipes overhead, and pulled ourselves up on to the top of the turbine. Standing atop that turbine, holding on to a leather strap in 20 mph wind, with the braked-blades slowly turning, and no railing to stop a fall, I looked out over the beautiful landscape of southern Denmark, waving the Danish and American flags for the cameras far below, and had a vision. It was a vision of limitless power to propel America into the 21st century.

I believe America can rise to the challenge of energy security and environmental threat. The significant accomplishments of the small nation of Denmark in the field of renewable energies remind us that overcoming such great challenges ultimately depends on the spirit of innovation alive in our people, our most creative companies, and our universities, supported by the enthusiastic and constructive partnership of our public sector. As diplomats, we can help to bring that spirit alive, and in so doing, we can help propel America's power for the future.