CLEAN ENERGY FOR TOMORROW

Paula Dobriansky

The world needs affordable and clean energy to fuel economic growth, development, and democracy without harming the environment. The United States is confronting this challenge with transformational technologies, creativity of entrepreneurs, and support for local initiatives in the developing world.

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AP/Wide World Photo

President Bush talks about energy at the California Fuel Cell Partnership laboratory.

Ensuring access to ample, affordable, clean, and sustainable sources of energy is unquestionably one of the greatest challenges facing the modern world. The U.S. government and America's private sector and nongovernmental organizations are confronting it by building on a long tradition of clean energy research to develop transformational technologies that will reduce our reliance on oil and have far-reaching benefits for the entire world.

By embracing the energy challenge, the United States is working to promote energy security, reduce poverty, reduce harmful air pollution, and address climate change. These efforts often strengthen self-governing societies by building a culture of democracy at the grassroots level.

THE ENERGY CHALLENGE

Rarely does a day pass without an energy-related issue making the headlines. Whenever world leaders meet, energy is an important and urgent topic of discussion. From the 2002 World Summit on Sustainable Development to the 2005 Gleneagles Group of Eight (G8) Summit to the 2005-2007 energy cycle of the UN Commission on Sustainable Development, energy is front and center.

And for good reason. Supply disruptions and rising prices loom large in day-to-day decisions about how we fuel our vehicles, heat our homes, and power our businesses. What's more, approximately 2 billion people—nearly one-third of the world's population—lack access to the modern energy services that are essential for bringing schools into the 21st century, driving industry, moving water, and boosting crop production, as well as for lighting, heating, and cooling health facilities.

The integrated goals of energy security and poverty alleviation are also inextricably linked with the need to reduce harmful air pollution and address climate change. The World Health Organization estimates that 4,400 people die every day from indoor air pollution, much of which is associated with unhealthy cooking and heating practices.

DEVELOPING CLEAN AND AFFORDABLE ENERGY TECHNOLOGIES

The United States believes that the best way to promote energy security and help nations develop, while protecting the environment and improving public health, is to promote clean and affordable energy technologies. We will need a diversified approach that includes conventional, advanced, and renewable energy and energy-efficiency technologies.

The U.S. government, frequently in partnership with the private sector, is pursuing both domestically and internationally a suite of technologies that should be incrementally deployed by the second half of this century. These include new biofuels from nonfood crops; clean coal technology; commercialization of plug-in hybrid autos; hydrogen fuel cell technology; more efficient, proliferation-resistant nuclear systems; and fusion technology. And these are just the highlights.

In his January 2006 State of the Union address, President George W. Bush outlined a strategy to reduce America's dependence on oil. The president's Advanced Energy Initiative proposes a 22 percent increase in funding for clean energy research at the U.S. Department of Energy. This includes greater investment in solar and wind technologies, zero-emission coal-fired power plants, clean nuclear technology, and ethanol.

It is important that we not only develop clean energy technologies but also work to make them more affordable and accessible. That is why the U.S. government has spent more than $11.7 billion since 2001 to develop alternative energy sources. This funding has contributed to a dramatic reduction in the cost of renewable energy. As the costs of conventional energy rise, the private investment community is responding. In 2005, we saw $44 billion of new capital investment in renewable energy technologies in the electricity sector. Renewables now comprise approximately 20 to 25 percent of global power sector investment.

As we strive to develop new sources of energy, we are also working hard to reduce our energy consumption. A leading example of this effort is Energy Star, a U.S. government-backed program that helps businesses and individuals protect the environment through superior energy efficiency. With the help of Energy Star, Americans saved enough energy in 2005 alone to avoid greenhouse gas emissions equivalent to those from 23 million cars—all while saving $12 billion on their utility bills, or 4 percent of the United States' total annual electricity demand.

Disseminating Technologies Through Public-Private Partnerships

Multi-stakeholder partnerships with governments, civil society, and the private sector are critical to addressing the energy challenge. The United States participates in a broad spectrum of partnerships, with groups ranging from small American nongovernmental organizations building and demonstrating the use of simple solar cookers in African refugee camps to broader regional alliances such as the recently launched Asia-Pacific Partnership on Clean Development and Climate. This voluntary partnership with Australia, China, Japan, India, and South Korea—countries that together with the United States represent over 50 percent of global energy use and greenhouse gas emissions—has as its goal the accelerated deployment of cleaner, more efficient technologies and the meeting of partners' respective national pollution reduction, energy security, and climate change objectives. The Asia-Pacific Partnership will engage stakeholders from key economic sectors as full partners in addressing clean development and climate issues in an integrated manner.

In order to foster public-private alliances, the U.S. Agency for International Development (USAID) created the Global Development Alliance in 2001. Through this innovative program, USAID has funded programs with nearly 400 alliances, with more than $1.4 billion in government funding leveraging more than $4.6 billion in partner resources.

The ultimate measure of the partnerships' success is whether they deliver concrete, on-the-ground results. When we talk about measurable results, a really positive story is emerging from some of the partnerships launched almost four years ago at the World Summit on Sustainable Development in Johannesburg. One example is the

Joerg Boethling/Peter Arnold Inc.

Women working below wind turbines in India.

Partnership for Clean Fuels and Vehicles, one of the four performance-based, market-oriented partnerships under President Bush's Clean Energy Initiative, a multifaceted approach to addressing access to energy and improving energy efficiency and environmental quality. In 2002, leaded gasoline was used in all but one country in sub-Saharan Africa. By the end of 2005, with the assistance of the Partnership for Clean Fuels and Vehicles, all 49 sub-Saharan African countries had stopped refining and importing leaded gasoline. This change will have a significant health impact on many of the 733 million people living in these countries.

The United States is committed to transparent reporting on the partnerships in which we participate. Toward that end, we have created a Web site—www.SDP.gov—to provide continuously updated information on U.S. sustainable development partnership efforts.

Building Effective Policy and Regulatory Frameworks

One of the keys to disseminating clean-energy technologies is ensuring the development of markets to receive them. Effective policy and regulatory frameworks at the local and national levels are absolutely necessary to encourage the level of private sector investment that will be needed in the coming decades.

The U.S. government is making significant progress to build capacity throughout the developing world. From our work on providing reliable energy services in poor slum areas in India to setting rules for power trading in Southern Africa to improved public participation in energy sector decision making globally, we are working with developing country ministries, utilities, and end-users to build the kind of institutional and market structures that will encourage investment in the energy sector.

The United States is also proud to work with its G8 colleagues and a number of other partners on the Extractive Industries Transparency Initiative (EITI). The EITI supports improved governance in resource-rich countries through the full publication and verification of company payments and government revenues from oil, gas, and mining.

Fostering Democratic Habits at the Grassroots Level

Increasing access to modern, clean, healthy, and efficient energy services can help lift people out of poverty and protect the environment. Perhaps equally important, the very act of providing energy services offers tremendous opportunities for communities to come together to learn and practice the fine art of democratic decision making.

AP/Wide World Photo

Eurelios, an experimental solar power plant of the European Union, in Sicily.

The roots of strong democracies reach much deeper than the act of voting, resting on a foundation of social cohesion and participatory institutions. For the individual rural villager or urban slum dweller, the quest for energy services hinges on whether or not the institutions that serve the community are accountable to their constituency. Far too often, citizens' needs are not fully incorporated into political decisions about who gets what, when, where, and how.

A number of innovative electrification initiatives across the globe are addressing this problem by fostering local community structures that can bridge the gap between households and service providers. For example, USAID supported an alliance in Ahmedabad, India, in which local nongovernmental organizations served as intermediaries, assisting slum dwellers with financing and acquiring the appropriate documentation regarding land ownership to make them eligible for legal electricity service. The results are impressive. In the pilot project, 820 households were upgraded from illegal and unreliable service to regularized electricity. The utility is now rolling out the program to an additional 115,000 poor urban households. In Salvador, Brazil, the utility COELBA has hired local "community agents" to work with the local citizens and community leaders to identify and resolve problems, as well as to provide education on energy conservation practices. Thus far, COELBA has electrified more than 200,000 households. Building on this success, USAID and the

U.S. Energy Association are supporting a South-South exchange between COELBA and Angolan electric utility EDEL.

By involving community intermediaries in electrification efforts, these programs are strengthening democratic habits at the grassroots level. They build trust, form social capital, and allow people to voice their concerns. In so doing, they not only connect customers to electricity but also enable citizens to learn what it means to participate in democratic processes. This experience and these newly formed skills can easily be applied to other aspects of social and political life, ultimately contributing to a stronger, more robust, and more secure democratic culture.

MEETING THE CHALLENGE

The United States is pursuing a clean energy future that rises to the significant challenge before us. Our approach draws upon the best scientific research, harnesses the power of markets, fosters the creativity of entrepreneurs, and works with the developing world to meet our dual aspirations for vibrant economies and a clean environment. ■

PENNSYLVANIA
Changing the Way America Thinks About Energy

Kathleen A. McGinty

Pennsylvania is home to one of America's most progressive alternative energy portfolio standards, ensuring that 18 percent of all energy generated by 2020 comes from clean, efficient, and advanced resources. The clean energy law puts our state in the vanguard of a growing movement by state governments to ensure wide distribution and use of zero-pollution solar power, and it builds substantially on our leadership in wind production east of the Mississippi River. Pennsylvania Governor Edward G. Rendell personally led a campaign to attract the Spanish wind-energy company Gamesa Corporation, which is investing $84 million to locate its U.S. headquarters and four manufacturing facilities in Pennsylvania.

AP/Wide World Photo

Entrepreneur John Rich at a future plant in Gilberton, Pennsylvania, where waste coal will be converted into low-emission diesel fuel.

The state, traditionally known for its coal heritage, is using its purchasing power to stimulate the market for alternative energy projects by investing in advanced technologies that make these resources more competitive. Over the next decade, Pennsylvania will replace 3.4 billion liters of transportation fuel with locally produced alternative resources, such as ethanol and biodiesel, or with fuels derived from coal liquefaction. The 3.4 billion liters represents the forecasted amount of fuels to be imported from the Persian Gulf to Pennsylvania 10 years from now. The state will invest $30 million over the next five years to build refueling and production infrastructure to support wide distribution of the alternative fuels.

Pennsylvania very well could soon be the nation's leading producer of biodiesel, going from practically nowhere in early 2005 to a projected 151 million liters of annual production in the next 12 months. The state already is home to the East Coast's first state-of-the-art biofuels injection facility, which opened in late 2005 with $219,908 in state aid. The plant will help replace 12.1 million liters of imported oil with domestically produced biodiesel and keep at home $6 million by reducing the state's need to purchase fuels from other countries.

America's first coal gasification-liquefaction plant is being built in northeastern Pennsylvania. The facility will use waste coal to produce 151 million liters of clean-burning diesel fuel each year. What Pennsylvania is doing to support the project is unprecedented—creating a fuel consortium with private industry to purchase nearly all of the output. Pennsylvania will lock in its supply for some 10 years at prices well below current market values to ensure a long-term, viable market for the plant.

Pennsylvanians now spend some $30 billion per year on imported energy fuels. Instead of spending overseas, we are investing at home and putting Pennsylvanians to work. Brought back to life after years of inactivity, the Pennsylvania Energy Development Authority has awarded $15 million in grants and loans for 41 clean energy projects that will leverage $200 million in private investment. The projects will create 1,558 jobs in start-up construction and ongoing operations. The Pennsylvania Energy Harvest Grant Program has awarded $15.9 million and leveraged another $43.7 million in private funds since its inception in May 2003 for projects using sources such as wind, solar, biomass, waste coal, and recycled energy.

Advanced energy technology is about achieving both environmental protection and economic development. In Pennsylvania, we are changing the way America produces fuel and thinks about energy, attracting investments that stimulate the economy and create jobs, putting indigenous resources to work to enhance domestic security, and realizing significant improvements in environmental protection. ■

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The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.