

**EnergyBiz** Do you like plug-in hybrid vehicles?

**Khosla** I don't think plug-in hybrids make a lot of sense as climate change solutions. They're not economical. According to recent studies, they're among the most expensive ways to reduce carbon emissions. But they are attractive markets and we are investing in the area.

**EnergyBiz** On your Web site, it mentions that when you started out in your career, your dream was to develop a soymilk product for India. Is this energy field, now, your life's work?

**Khosla** I'm very passionate about it. Carbon emission is a worldwide problem. It's a global problem. In fact, it's the worst global problem we have. It is also a great economic opportunity.

**EnergyBiz** And the solution?

**Khosla** The best way to predict the future is to invent it. In the meantime, we have to count on predictable unpredictability. I am absolutely optimistic. Whether our ventures succeed or not doesn't matter. Somebody will succeed.

(GUEST OPINION)

# The U.S. Seizes Leadership Role

## Next-Generation Thinking for Next-Generation Energy

BY GREGORY MANUEL

### New challenges require new

solutions. Decoupling economic growth from carbon emissions is no small challenge. It requires nothing less than reorienting the way we design our policies, build our businesses, and prioritize our research. In early March, the United States achieved an important milestone in meeting this challenge by hosting the world's largest gathering of public- and private-sector participants focused on the singular goal of scaling renewable

energy around the world.

The Washington International Renewable Energy Conference brought together more than 8,600 participants from government, industry, scientific, and NGO communities across 119 countries. This integrative and multidisciplinary approach represents the DNA of new energy solutions — in which the sheer breadth and complexity of issues require finance, energy, and environment ministers to comingle with financiers, private sector leaders, and entrepreneurs. To be sure, the exchange of lessons learned, case studies, and inspiring success stories informed many decision makers on how to implement their renewable energy strategies faster, better, and more cheaply. Importantly, however, these discussions uncovered a number of emerging global patterns around renewable energy development and deployment in which we each have a stake.

First among these is R&D acceleration and alignment. Participants discussed the importance of increasing and consolidating basic R&D efforts around key breakthrough technologies, such as portable and large-scale energy storage. Enhanced portable energy storage could help shift the transportation sector from liquid fuels to more efficient grid power. Likewise, large-scale energy storage would mitigate intermittency concerns for renewable energy and provide needed capacity to meet peak demand. Participants noted that global R&D efforts needed to be increased by an order of magnitude with more equitable burden sharing. Currently, the United States and Japan contribute more than 80 percent of global renewable energy R&D while representing 35 percent of global GDP.

Second, it was noted that regulatory consistency within and among countries and regions was critical to the diffusion of renewable energy technology. Harmonizing standards and codes around buildings, biofuels, and grid interconnectivity would contribute to a “build once — distribute everywhere” model, lowering costs and accelerating the adoption of renewable energy technology.

Third, participants noted that the places where renewable energy technology is being innovated, scaled-up, and distributed are often occurring in different geographies. An enzyme company in California, for example, might want to scale operations in Brazil at a fraction of the cost and time, but ultimately deploy in China or the United States where market demand for cellulosic biofuels will likely be strongest. This global renewable energy continuum of innovation, scale-up, and mass deployment is missed by many companies and investors who tend to be focused on a single country or region.

Fourth, participants discussed the unique financing needs of renewable energy — large sums of capital needed over longer time horizons with relatively high technology risk. It was noted that while venture capital may have the risk appetite, venture capitalists rarely have the balance sheet to scale emerging renewable energy technology, which often requires tens of millions of dollars to build commercial sized facilities. Private



Gregory Manuel

equity firms, on the other hand, may have the capital, but are unlikely to invest in commercially unproven technology or technology they don't understand. Finally, debt providers are largely absent, which raises the relative cost of capital, and makes it more difficult for renewable energy projects to compete with conventional solutions. In an effort to address this challenge, the United States has committed \$38.5 billion in loan guarantees for the 2008–2009 budget to scale promising renewable energy technologies.

Finally, participants discussed the sustainability of biofuels. While many debated the facts, there was a broad consensus that there are good and bad ways to produce biofuels. Food versus fuel concerns was a central theme. It was noted that fuel prices increased the cost of transport and fertilizer, and that changing diets of emerging market countries toward more protein-intensive foods may be contributing far more than biofuels to the pricing pressure on food.

These five global themes will be the focus of follow-on work across nations and with key institutions such as the International Energy Agency and the Renewable Energy and Policy Network for the 21st Century. WIREC was an important milestone in that it identified key challenges; integrated decision makers from government, industry, scientific, and NGO communities to find solutions; and laid a path to action to convert words into watts.

*Gregory Manuel is special advisor for alternative energy to the U.S. Secretary of State.*



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