Center for American Progress

We Must Seize the Energy Opportunity or Slip Further Behind

A Primer on Global Competition in Green Technology Investments

By Ben Furnas April 2009

China's leaders are investing $12.6 million every hour to green their economy.[1] Other countries are equally energetic in their embrace of alternative energy technologies; they are setting targets and investing billions of dollars to spur the development of entirely new markets in wind, solar, geothermal, biofuels, energy efficiency, high-speed rail, and other clean and innovative solutions to global warming.

The United States, too, is poised to transform its economy to create millions of new jobs and help create a cleaner, safer planet by investing in a green, renewable-energy based economy. The Obama administration wants to unleash the ingenuity of our private sector to rein in pollution and put millions of Americans back to work.[2] Yet China is spending twice as much as the American Recovery and Reinvestment Act spends to lay the foundations for a green energy economy, despite the U.S. economy being 1.5 times as large as China's. And across Europe and Asia, other governments have diversified their energy portfolios and encouraged entrepreneurs to start and expand clean and renewable energy companies.

As venture capitalist John Doerr recently pointed out in his testimony before the Senate Committee on the Environment and Public Works, "If you list today's top 30 companies in solar, wind and advanced batteries, American companies hold only 6 spots. That fact should worry us all."[3]

Indeed, when it comes to preparing our country to compete in the new energy economy of the future and create millions of new jobs, we lag behind most of our competitors in the rest of the world in a four key ways.

- We have no national energy portfolio standard that encourages clean, renewable power and shifts away from dirty and dangerous energy.

- We have an outdated electrical grid unsuited for the task of carrying energy from regions rich in wind, solar, and geothermal potential to the people who need the energy.[4]
- We don't make dirty energy companies pay for the pollution they pump into the air; in fact, we give them billions every year in tax breaks.[5]
- And we don't invest enough in research, development, and deployment to inspire our entrepreneurs and leverage their discoveries by helping bring their bold new technologies to market.[6]

As Doerr explained in his testimony, "What is at stake is whether America will be the worldwide winner in the next great global industry, green technologies."

This analysis explores the current international terrain on which the United States is competing and asks three questions:

- Why is America losing the "green stimulus" competition?
- Why are we trailing Europe and Australia in renewable energy?
- Why are we clinging to the dirty, dangerous, job-killing energies of the past?

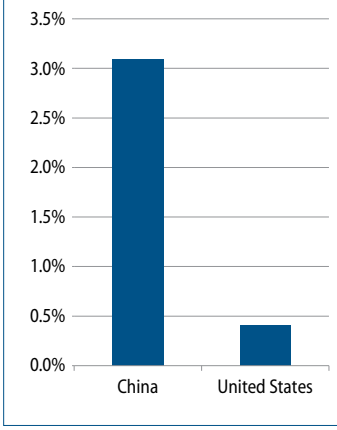
Why is America losing the "green stimulus" competition to China?

A February analysis by HSBC Global Research in Hong Kong projects that nearly 40 percent of China's proposed $586 billion stimulus plan—$221 billion over two years—is going toward public investment in renewable energy, low-carbon vehicles, high-speed rail, an advanced electric grid, efficiency improvements, and other water-treatment and pollution controls.[7] This stimulus is on top of historic levels of government spending and private investment in renewable technology, energy efficiency, and low-carbon growth all across China. The upshot: China, according to a recent analysis, is "the largest alternative energy producer in the world in terms of installed generating capacity."[8]

This massive stimulus plan will spend over 3 percent of China's 2008 gross domestic product annually in 2009 and 2010 on green investments—more than six times America's green stimulus spending as a percentage of our respective economies. This is about $12.6 million every hour over the next two years. In the United States, the American Recovery and Reinvestment Act invests $112 billion in comparable green priorities over the next two years, about half as much as China, according to HSBC.[9] This represents less than half of one percent of our 2008 gross domestic product.

China, however, has adjusted its stimulus spending slightly since the HSBC analysis was conducted. The country's leaders trimmed spending on water treatment and environmental cleanup, but maintained huge investments in upgrading China's existing power infrastructure, and more than doubled investment in technical upgrading and research and development.[10] These numbers may change again in the future, but they nonetheless

Green portions of stimulus as percent of 2008 GDP



Source: Center for American Progress analysis of HSBC research.

are emblematic of China's focus on using this economic crisis to position itself to be the world leader in efficiency, green transportation, and clean and renewable energy. As Zhang Lijun, a Chinese vice-environment minister told reporters in March, "It's an opportunity to restructure, and we must use this opportunity well."[11]

China's renewable energy industries are already huge and expanding rapidly. China is a leading manufacturer of photovoltaic (solar) cells, second only to Japan, and is set to be the world's leading manufacturer of wind turbines by the end of 2009.[12]

Unlike China's government economic planners, who have laid out these priorities in a five-year plan, the United States should address these challenges in our uniquely American way, by harnessing and channeling the vitality of our entrepreneurs. [13]

This would mean investing in a new 21st-century energy grid, just like President Eisenhower built the interstate highway system, in order to leverage the energy innovations of the private sector and help bring them to market. It would mean smartly investing in research and development, like President Kennedy did with the space program, to spur new innovations and discoveries to inspire entrepreneurs.[14] And it would mean reining in dangerous pollutants by charging dirty energy companies for filling the atmosphere with global warming gasses, just like the first President Bush did when he made polluting companies pay for acid rain.[15]

President Barack Obama has proposed additional public investment in renewable energy research of $15 billion annually, paid for by charging dirty energy corporations for their pollution.[16] While this would amount to just one tenth of one percent of America's 2008 GDP, it would be a good start. With this money, the United States would finally join China and dozens of other nations across the world in providing public investment for renewable energy, including Japan, Germany, Canada, France, South Korea, Denmark, and Spain.[17]

Why are we trailing Asia, Europe, and Australia in renewable energy?

Spending that $15 billion would be an important start to helping U.S. companies regain their leading edge that they've lost over the last decade. As other nations set rigorous energy targets, establish common-sense regulations that spur innovation, and plow money into research and development and deployment, America lags behind. Closing this yawning gap would help create millions of new jobs in the clean and renewable energy sectors and revitalize businesses across the economy.

Take the photovoltaic (solar power) industry. In the 1990s, the United States led the world in the development of solar energy technology. From 1994 to 1998, our burgeoning solar energy industry produced more photovoltaic cells than Japan, China, or all of Europe. But then, in the early 2000s, as the Bush administration stifled global warming data and blocked a renewable energy portfolio standard, America stumbled and fell staggeringly behind.[18]

The United States is falling behind in green regulations and investments in renewable energy

	Cap and trade system	Renewable energy portfolio targets	Investments in renewables (rank, 2007)
Germany	YES	YES	1st
China	NO	YES	2nd
United States	NO	NO	3rd

Note: German cap and trade system through the EU and their obligations under the Kyoto treaty; renewable energy portfolio targets through the European Union.

Source: Renewable Energy Policy Network; Center for American Progress Action Fund.

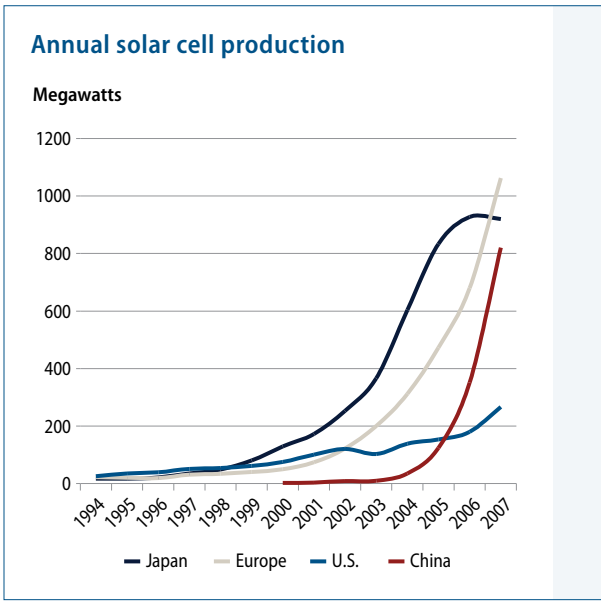
In a series of energy bills in 2001, 2003, and 2005, the Bush administration plowed billions of dollars into dirty energy—oil, coal, and nuclear—while neglecting clean renewable energy industries. The 2001 energy bill gave 80 percent of its value to tax breaks for oil, gas, nuclear, and coal companies.[19] The 2003 energy bill, drafted in secret with Vice President Dick Cheney and members of the oil, gas, coal, and electric industries, gave $23.5 billion to dirty energy and loosened environmental regulations.[20] Finally, while the 2005 bill contained a token level of investment in renewable energy, it also provided even more support for dirty energy, offering $27 billion in subsidies for coal, oil, and nuclear energy.[21]

But as the Bush administration doubled down on the energy of the past, nations across the world invested in the future. Japan, China, and European countries zoomed past the United States, with a combination of dirty energy regulations, public investments, and private market incentives.[22]

This same pattern has repeated itself across the entire renewable energy industry. Due in no small part to our regulatory vacuum at the federal level on renewable energy portfolio standards, which would require a certain percentage of our electricity to come from renewable sources, our deployment of new clean energy has lagged. The European Union has committed to 20 percent of final energy coming from renewable sources by 2020.[23] China is working to have 16 percent of its primary energy come from renewable sources by 2020.[24] Sixty-six other countries worldwide have committed to nationwide standards. But in the United States, the federal government has set no national standards.[25]

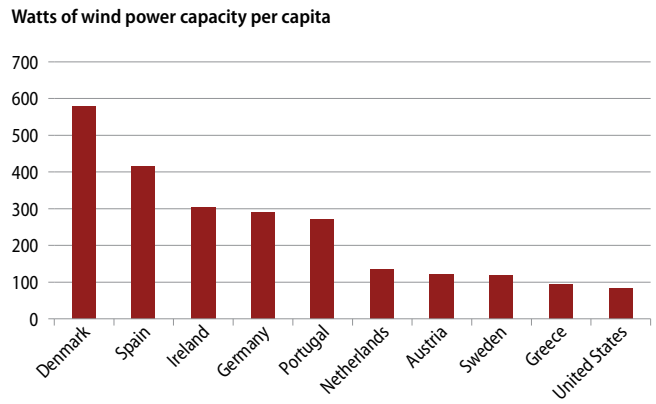
In this absence, many state governments stepped in to fill the void, but the resulting patchwork of regulation and targets hinders widespread nationwide deployment of clean and renewable energy. According to energy analyst and environmental sustainability lawyer David Petersen, a uniform national standard adopted by other countries across the world would "be good for the renewable energy industry as a whole,

Annual solar cell production



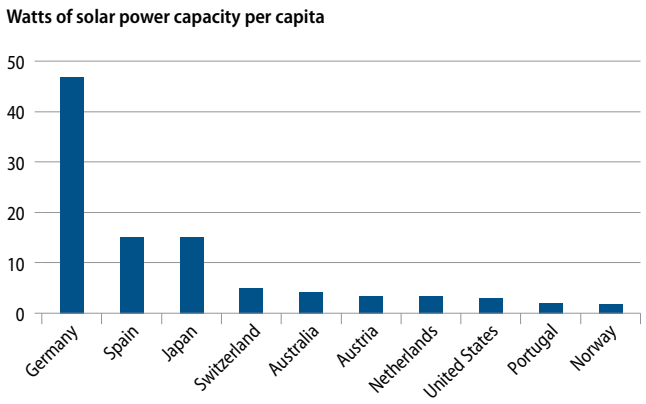
Source: World Watch Institute.

United States lags other large developed nations in wind power capacity



Source: Center for American Progress Action Fund analysis of World Wind Energy Association.

United States lags other large developed nations in solar capacity



Source: International Energy Agency.

providing long-term predictability, attracting more investment capital and allowing manufacturing of renewable energy technologies to achieve economies of scale."[26]

Indeed, renewable energy deployment in the United States lags far behind many European and Asian nations. While the United States has made great strides in recent years, in 2006 (the most recent internationally comparable data), the United States had less solar power capacity per capita than Germany, Spain, Japan, Switzerland, Australia, Austria, and the Netherlands, and less wind power capacity per capita than Denmark, Spain, Ireland, Germany, Portugal, the Netherlands, Austria, Sweden, and Greece.

In capacity per capita terms, this lag is particularly pronounced. But even in absolute terms, the public and private sectors in the United States have been strikingly slow to embrace renewable energy. As of 2006, the United States has less absolute renewable power capacity than either China or the 25 member nations of the European Union. And while America's solar and wind capacity increased by an impressive 40 percent in 2007 (international comparison unavailable), China, Japan, and Europe are rapidly expanding their capacity as well.[27]

In 2006, according to the most recent data from the Renewable Energy Policy Network, the United States, the world's largest economy, invested *less* in new capacity for renewable energy than either the EU-25 or China.[28] In fact, according to the most recent data, the entire United States invests less in renewable energy per year than the country of Germany, which boasts less than one-third the population of the United States and an economy less than one-fourth our size.[29]

Smart climate change regulations, including a renewable portfolio standard and a carbon cap-and-trade system for greenhouse gasses like the one we have for emissions that cause acid rain would spur technological development in green sectors and help drive innovation across the U.S. energy industry. A 2009 study of inventions among developed countries by the CERNA Research Program on Technology Transfer and Climate Change found those developed nations which were signatories to the Kyoto protocol (and thus set targets to clamp down on their carbon emissions) saw their share of patents in green-tech innovation increase by over 33 percent.[30] Those nations that weren't initial signatories (Australia and the United States) saw no change in their share of total green tech patents.[31]

New technologies can be developed, leveraged, and deployed with revitalized investment in federal research, development, and demonstration, as detailed in Peter Ogden, John Podesta and John Deutch's "New Strategy to Spur Energy Innovation." These measures include a doubling of the federal R&D budget, an interagency Energy Innovation Council to develop a multiyear National Energy RD&D strategy, and the establishment of an Energy Technology Corporation to manage demonstration projects.[32]

Why cling to the dangerous, dirty, job-killing energies of the past?

The failed energy policies of the past decade represent an enormous job-creating potential gone to waste. A report by the Center for American Progress in conjunction with the Political Economy Research Institute shows that investments in the renewable energy industry create four times as many jobs as investments in the oil industry.[33]

The imperative for renewable sources of energy, energy efficiency, and green transportation and power infrastructure is clear. And yet, we continue to neglect these priorities while plowing tens of billions of dollars of subsidies into polluting and wildly profitable oil and gas companies that create far fewer jobs and exacerbate global warming.[34]

President Obama's energy plan would eliminate $30 billion in giveaways to oil and gas companies and make polluting energy companies pay for their global warming pollution in order to invest in renewable energy infrastructure and cut taxes for 95 percent of working American families. This is the way to go.

Conclusion

There is no reason why the United States shouldn't lead the world in renewable energy. Start-up companies across our country should be developing the solar panels of the future for deployment in the Southwest and on rooftops with good exposure to the sun nationwide. Wind turbines should be sprouting across our Great Plains and our coastlines. Thermal energy captured beneath our mountains and beneath our homes should be part

of our alternative energy mix. And as a nation we should be developing and deploying the battery technologies needed to power the hybrid cars built in auto factories in the Midwest and elsewhere—alongside a smart electric grid capable of helping all Americans save on energy costs and combat global warming.

The rest of the world is seizing this opportunity. If we seize it with them, then together we can save the planet and develop China, the European Union, and the rest of the world as our customers.

Endnotes

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