

THOMAS L. FRIEDMAN ■ THE NEW YORK TIMES

You're gonna love it

Appplied Materials is one of the most important U.S. companies you've probably never heard of. It makes the machines that make the microchips that go inside your computer. The chip business, though, is volatile, so in 2004 Mike Splinter, Applied Materials' CEO, decided to add a new business line to take advantage of the company's nanotechnology capabilities — making the machines that make solar panels. The other day, Splinter gave me a tour of the company's Silicon Valley facility, culminating with a visit to its "war room," where Applied maintains a real-time global interaction with all 14 solar panel factories it's built around the world in the last two years. I could only laugh because crying would have been too embarrassing.

Not a single one is in America.

Let's see: Five are in Germany, four are in China, one is in Spain, one is in India, one is in Italy, one is in Taiwan and one is even in Abu Dhabi. I suggested a new company motto for Applied Materials' solar business: "Invented here, sold there."

The reason that all these other countries are building solar-panel industries today is because most of their governments have put in place the three perquisites for growing a renewable energy industry: 1) any business or homeowner can generate solar energy; 2) if they decide to do so, the power utility *has* to connect them to the grid; and 3) the utility *has* to buy the power for a predictable period at a price that is a no-brainer good deal for the family or business putting the solar panels on their rooftop.

Regulatory, price and connectivity certainty, that is what Germany put in place, and that explains why Germany now generates almost half the solar power in the world today and, as a byproduct, is making itself the world-center for solar research, engineering, manufacturing and installation. With more than 50,000 new jobs, the renewable energy industry in Germany is now second only to its auto industry. One thing that has never existed in America — with our fragmented, stop-start solar subsidies — is certainty of price, connectivity and regulation on a national basis.

That is why, although consumer demand for solar power has incrementally increased here, it has not been enough for anyone to have Applied Materials — the world's biggest solar equipment manufacturer — build them a factory in America yet. So, right now, our federal and state subsidies for installing solar systems are largely paying for the cost of importing solar panels made in China, by Chinese workers, using high-tech manufacturing equipment

invented in America.

Have a nice day.

"About 95 percent of our solar business is outside the U.S.," said Splinter. "Our biggest U.S. customer is a German-owned company in Oregon. We sell them pieces of equipment."

If you read some of the anti-green commentary today, you'll often see sneering references to "green jobs." The phrase is usually in quotation marks as if it is some kind of liberal fantasy or closet welfare program (and as if coal, oil and nuclear don't get all kinds of subsidies). Nonsense. In 2008, more silicon was consumed globally making solar panels than microchips, said Splinter.

"We are seeing the industrialization of the solar business," he added. "In the last 12 months, it has brought us \$1.3 billion in revenues. It is hard to build a billion-dollar business."

Applied sells its solar-panel factories for \$200 million each. Solar panels can be made from many different semiconductors, including thin film coated onto glass with nanotechnology and from crystalline silicon. At Applied, making these complex machines requires America's best, high-paid talent — people who can work at the intersection of chemistry, physics and nanotechnology.

If we want to launch a solar industry here, big-time, we need to offer the kind of long-term certainty that Germany does or impose the national requirement on our utilities to generate solar power as China does or have the government build giant solar farms, the way it built the Hoover Dam, and sell the electricity.

OK, so you don't believe global warming is real. I do, but let's assume it's not. Here is what is indisputable: The world is on track to add another 2.5 billion people by 2050, and many will be aspiring to live American-like, high-energy lifestyles. In such a world, renewable energy — where the variable cost of your fuel, sun or wind, is zero — will be in huge demand.

China now understands that. It no longer believes it can pollute its way to prosperity because it would choke to death. That is the most important shift in the world in the last 18 months. China has decided that clean-tech is going to be the next great global industry and is creating a massive domestic market for solar and wind, which will give it a great export platform.

In October, Applied will be opening the world's largest solar research center — in Xian, China. Gotta go where the customers are. So, if you like importing oil from Saudi Arabia, you're going to love importing solar panels from China.