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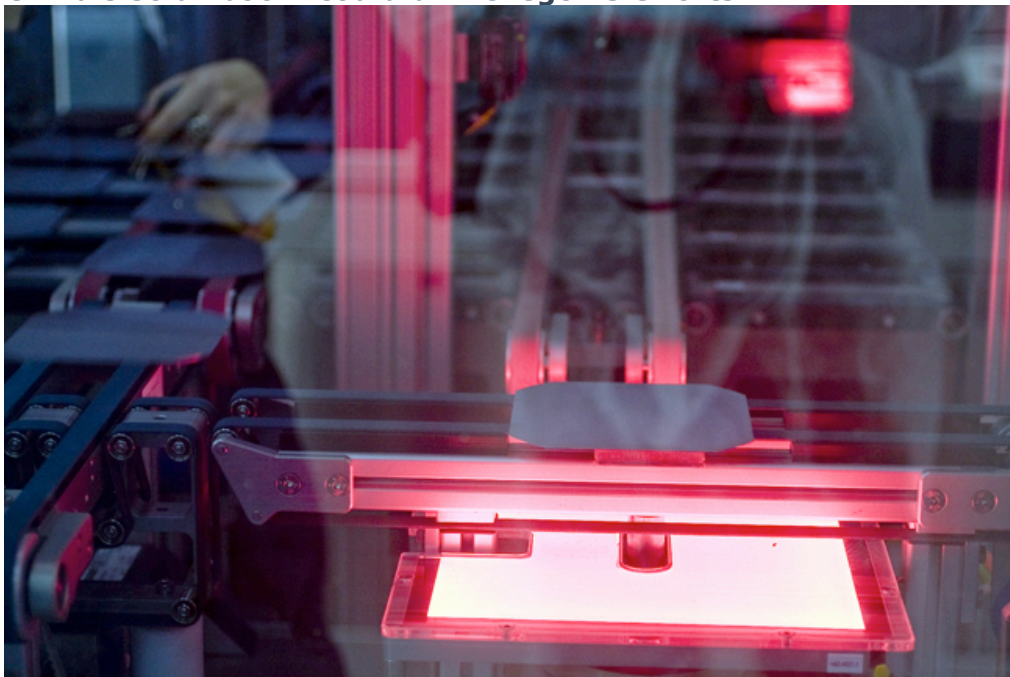


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Special reports and news features from around Oregon

Solar

China's solar boom could dim Oregon's efforts



SolarWorld's new plant in Hillsboro is a 480,000-square-foot plant that stood idle for years until Germany's SolarWorld renovated it to make solar crystals, wafers and cells. In the diffusion area, solar cells get coated with a chemical and then cleaned off. (Jamie Francis/The Oregonian)



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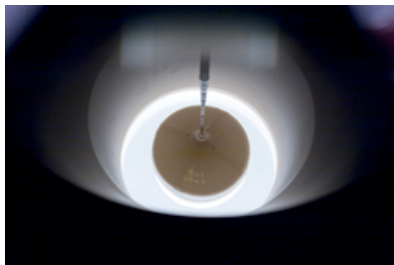
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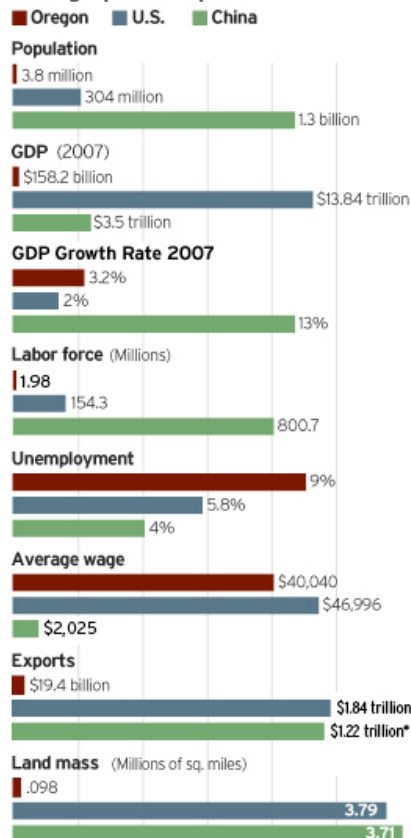
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Slideshow: China's solar ambitions shadow Oregon

Demographic comparisons



Sources: CIA, U.S. Census Bureau, Bureau of Labor Statistics, National Bureau of Statistics China, state of Oregon. *2007 figure

MICHAEL MODE / THE OREGONIAN

With cheap labor and rapid production, China's promise of solar rooftops at bargain-basement prices casts a shadow over Oregon's ambition of becoming a world leader in alternative energy

By Amy Hsuan

THE OREGONIAN

NANTONG, China — In a hollow factory so new it smells of plaster, Lynn Sha's lone assembly line is laying the groundwork for a global solar eclipse.

Every five hours, a silicon-coated panel rolls out of QS Solar, a company just eight months in the business. Sha, a stylish twentysomething vice president, expects within months to pump out enough panels for a quarter-million households.

Never mind that until last year, QS Solar was QS Latex, a glove manufacturer with no experience making silicon anything.

"Soon, we'll be able to sell to our customers for just \$1 per watt," says Sha, crossing the floor in towering heels. Little does Sha know her sky-high ambitions threaten to cast a shadow as far as Oregon.

At a buck-a-watt, solar — the world's most expensive energy — would beat today's cheapest power, coal-fired electricity. That would pave the industry's way to the rooftops of the masses, giving it a surefire edge in the world's race for affordable clean energy.

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And, with next-to-nothing overhead and abundant cheap labor, Chinese companies are almost sure to get there first. More than any others, China's factories hold the promise of delivering solar energy at Wal-Mart prices, spawning a glut of panels worldwide.

But their zeal could dim Oregon's own solar boom, the pillar of the state's hope for economic recovery. Oregon officials are betting big with taxpayer dollars to snag solar manufacturers and their pledge of high employment — just as global prices are expected to plunge.

"I see more overcapacity coming out of Asia than anywhere else," says Christopher Dymond, a senior energy analyst with the Oregon Department of Energy. "We will see quite a few companies go out of business."

Over the past decade, China's unprecedented rise has elicited awe from across the world while stoking fears among competitors. There's little question that the world's fastest-developing nation means new possibilities for Oregon: New wealth in the most populous nation germinates demand for Oregon fruit, trees and nursery products. The government's enormous cleanup efforts open doors for Oregon's green experts. High-tech companies reap higher profits with a Chinese work force, reinvesting in American technology.

China's global shadow at times becomes a spotlight. A nation that not long ago seemed exotic and distant now looms close enough to shape Oregon's economy during a time of crisis and opportunity.

Solar energy's costs

Solar, which produces less than 1 percent of the world's energy, costs up to five times that of conventional sources. It's the most expensive form of electricity, even before the cost of installation, which runs about \$22,000 for a 3,000-watt residential system in Oregon. That generates about a third of the needs of a typical single-family detached home.

That high cost helps explain why solar has never gained traction without heavy government subsidies. Lowering the price is a driving force for the industry as it ramps up production.

Solar's ability to compete with conventional energy sources — called grid parity — will open new markets and allow it to survive without subsidy. Though there are regional variations, most experts peg that cost at about \$1 a watt.

"The solar industry is like a high school basketball player," says Christopher Dymond, an energy analyst for the Oregon Department of Energy. "If you just tossed them in the NBA now, they would get clobbered."

Starting this year, a federal tax credit covers up to 30 percent of a residential system's cost. In addition, Oregon also offers a tax credit of up to \$1,500 each year for four years. The Energy Trust of Oregon offers a \$6,000 rebate for solar installers.

Combined, those credits can reduce the cost of a \$22,000 residential solar system by nearly 85 percent, bringing the installation cost down to about \$3,400.

A solar system will save you about a third of your energy bill, which, in the long run, will pay for the system. In addition, Dymond points out, having a solar system will add value to your home. The life span of a solar system is typically more than 25 years.

But you'll have to pay several thousand dollars upfront because tax credits will be paid out over a number of years.

For more information, go to www.oregon.gov/energy/renew/solar

Booms and busts

Even with its damp climate, Oregon has appeal for the solar industry. California, the nation's biggest solar customer, is right next door. Oregon also boasts a high-tech work force with expertise in silicon, the essential ingredient to turn sunlight into electricity.

Its biggest sell: millions of taxpayer dollars to subsidize solar companies, expected to create thousands of jobs in the coming years. So far, the state has snagged photovoltaic giant SolarWorld, which unveiled the nation's largest solar plant, in Hillsboro, and other brands, including Sanyo and Solaicx.

But Oregon's much-hyped foray comes just after a historic boom for solar. With concerns over global warming and oil prices driving big investments in clean energy, worldwide production of solar products exploded by an average of 48 percent a year starting in 2002.

Venture capital poured in. Germany and Spain doled out incentives to consumers. Solar companies basked in a record \$15.9 billion in profit in 2008.

Suddenly, dark clouds gathered. Germany and Spain cut consumers off. Tightened credit markets blocked

financing for costly systems. Analysts predict that a stockpile of modules worldwide will drive prices down by 20 to 30 percent.

Already, Oregon officials say the promised employment boom won't be as big or easy as they'd once trumpeted as companies brace for a crash.

"We are entering a very dynamic and turbulent period in the solar industry," says Edwin Koot, CEO of SolarPlaza, a Dutch consultancy firm. "Everyone will be affected. But never underestimate the Chinese."

The Chinese boom

Three hours by car from Shanghai, Jiangsu province is China's new golden powerhouse. Here, in the marine-layer fog of the Yellow Sea, an estimated 500 companies have ignited in just a few years — a cluster of businesses similar to what Oregon officials hope for, only on a scale to match China's ambitions.

Already, companies here dominate the global landscape: Six of the top 15 solar manufacturers are Chinese, exceeding the numbers from solar stalwarts in Germany and Japan.

Analysts predict world demand for solar this year to be roughly 4.2 gigawatts, according to iSuppli, a research firm that tracks solar trends. Manufacturers across the globe plan to pump out nearly three times that, or 11.1 gigawatts.

Last year, China made up more than a quarter of the world's production, nearly matching all of Europe. Already, smaller factories in China are sputtering out. But the big Chinese companies show few signs of slowing.

"We aren't going to stop," says Thomas Young, investment relations director with Jiangsu-based Trina Solar, the world's 14th-largest producer. "We're going to put our foot on the gas and sometimes coast and sometimes brake. But we can handle lower prices because we have such low overhead."

China has no domestic solar market despite its surging energy needs, so it ships almost everything overseas. That's likely to be the case until prices crash.

"The Chinese tactic has been to scale up production and sell it to the Europeans at European prices," says Koot, the Dutch analyst. "Once the prices begin to plummet, they'll use it themselves for their domestic market. It's a smart strategy."

Most companies in China start like QS Solar, without much expertise or technology. But they know the formula for running a tight-ship factory — and can build one practically overnight. Not to mention, workers are a dime a dozen — and cost about that much.

"Chinese companies have been able to grow their capacity very quickly, faster than European companies," says Rory MacPherson, investor relations director with Suntech Power, a Jiangsu-based company that is the world's second-largest solar manufacturer. "And it's because they have such low manufacturing costs."

At Solarfun, nearly 15,000 modules are practically handcrafted each month. Founded in 2004 in Jiangsu and now the world's seventh-largest solar module producer, the company's campus houses more than 2,000 workers. In teams of 100, they solder cells, lay thin films of plastic and apply bar codes, one by one.

"Asian factories are much more disciplined than Western factories," says Harold Hoskens, Solarfun chief executive officer. "Where mechanization would outweigh the benefits of manual labor, it's a long way off, and we still have very good quality."

Worker productivity is meticulously recorded on whiteboards. A notation next to every worker's name indicates how many cells he or she has made — and broken. A perfect production record means a green smiley-face sticker next to a worker's name — and a \$10 bonus, a hefty sum for workers who average about \$150 a month. Workers who break five in a month get a red face and risk losing their job.

At the end of every month, each team produces 1.6 megawatts of energy, enough to provide 533 Oregon households a third of their energy needs. Their record of success: 96 percent.

"That is the human potential," says sales manager Yizhong Li.

Oregon competitors

SolarWorld's new Hillsboro factory is strikingly devoid of people. In an enormous production area, floor-to-ceiling machines hum, while robotic arms sort and move wafers. Computers control almost every step.

Mechanization, says Vice President Bob Beisner, is better because computers are more precise than people.

"You can set up a robot to handle the wafers gently and repeat it at high volumes," Beisner says. "To teach

that to a human and have them repeat it is very, very difficult."

Still, the German company expects to eventually employ more than 1,000 people, in maintenance, administration or engineering. By early 2011, SolarWorld will pump out 500 megawatts of electricity-generating cells. And, despite the economic gloom, Chief Operating Officer Boris Klebensberger doesn't see downshifting expansion.

Still, he can't ignore China's meteoric ascent.

"We would be foolish if we didn't admit Chinese companies are our competitors," Klebensberger says. "So you have to be better, or you aren't going to survive."

For SolarWorld, survival rests on a tactic almost identical to that of the Chinese factories: scaling up production to bring down costs. The difference at SolarWorld is that the average salary is \$3,200 a month for production workers, not the \$150 paid in China.

Lower profit margins will be the wave of the future for solar companies. And those with lower costs will live to compete another day.

"The solar industry in the past four years has never had to face a competitive market," says Travis Bradford of the Chicago-based Prometheus Institute, which tracks renewable-energy industries. "The era of easy profit in this business has passed. SolarWorld has been a beneficiary of that."

SolarWorld, one of Germany's fastest-growing companies last year, counts on a loyal customer base and a 25-year warranty. It also banks on a brand that's far from China's image as a maker of cheap goods.

American-made is also a selling tool for John Sedgwick, co-founder of California-based Solaicx, which opened a Portland plant in late 2007.

"The whole theory is that we're providing a superior product," Sedgwick says. "The Chinese are competitors in that they make a similar product. But our technology is highly differentiated from the technology they use there."

But Chinese companies' quality is as high as their American and European competitors, Bradford says.

"So far," he says, "I have not heard of any substantiated quality issues from the top five companies in China."

Tough decisions

The world's largest trade show, in Munich last April, featured just one U.S. state with its own booth: Oregon.

That's where Nikolaus Meyer, CEO of Sulfurcell, a German solar manufacturer, first heard about Oregon's generous tax credits.

"I heard that if you build a factory in Oregon," Meyer says, "the government will pay for it."

He isn't entirely off. Oregon offers companies tax credits, job training and cheap loans. That's not including the tax rebates individual communities can throw in.

Sulfurcell plans to build a new factory within the next two years. The question for Meyer is where: Oregon or Asia?

Oregon could be a winner if the U.S. solar market takes off, says Meyer, who plans to visit the state this year. But China is cheaper.

"The Chinese are going to be my competition for a long time," says Meyer, on a tour of Chinese factories in November. "I need to know who my competition is."

It may all end the same: If Meyer can't beat the Chinese, he may have to join them.

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 NO IMAGE Posted by **nativepdx**
February 22, 2009, 9:33AM

This is what happens when the government tries to pick the winners and losers with tax breaks. Politicians have a hard enough time, just doing their job let alone trying to get into the job of creating businesses and jobs.

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 NO IMAGE Posted by **arresteddevt**
February 22, 2009, 2:49PM

"Dim" is certainly true. Maybe "eclipse" could be inserted. How China approaches business opportunities is much different than in the U.S. Oregon operates "handicapped" to start with compared to many other states.

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 NO IMAGE Posted by **barack666**
February 22, 2009, 3:06PM

Meyer appears to be a sharp CEO (where's Oregon?). Play Oregon against China until you get the competitive leverage you need to decide. The capital investment is significant, but not a barrier. Labor and energy (mfg) costs are the key deciders. Guess who wins hands down? No stimulus is needed on deciding where to land a new factory. I'm sure Meyer would get pushback just on including the name "sulfur" by our environmental advocates of this state.

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 NO IMAGE Posted by **vonstern**
February 23, 2009, 8:37PM

We can't keep buying stuff from China forever without them buying anything back, so at some point the balance will have to be restored.

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Posted by **billii**
February 27, 2009, 4:19AM

I would like to share with you the email I wrote to my daughter about this article series:

"This financial meltdown, in my mind, is ushering in a new world order. A seismic shift of economic power is underway. Look not at what is happening this year or next, but 5 to 8 years from now. The US may still be on top of the pecking order in the coming decades. But gone are the days where the US position in technologic advances, political doctrines and economic power go unchallenged. The US will have to be more consultative. We alone cannot and no longer have the ability to go our own way even if another Bush pops up.

China is surging on an explosive growth path at a rate even way faster than what I imagined possible. What does that mean to young folks like you? Try to position your corporation, or your career, to harness this shifting new world order. I would suggest you keep an eye on China, not only as an avenue for career/corporation advancement, but also as a competitor/collaborator you have to deal with, like it or not. Think not only of your language, culture, but how you or your corporation will have to position yourself to stay ahead. Ignoring China is like a French who does not care about learning English, or trading with America. He is OK. He just wants to sell croissant."

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Posted by **iflyoveryou**
May 19, 2009, 1:25PM

I am involved with a small start-up company here in Oregon that is going to produce an energy saving product for the transportation industry. We have looked at China and Mexico as a source of "cheap" labor. In our estimation, neither would save enough money to make it worth while. Yes, the company might make a little more profit but, is profit all there is to a company? Having a loyal workforce that is really interested in the companies success has more importance to us than a little extra profit. Besides, quality is a major factor with us and that can be better controlled right here in Oregon. And, we all speak the same language.

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Posted by **holyrider81**
September 11, 2009, 3:31AM

You have got to be kidding me? The CEO and Founder of Suntech just stated twice in an interview with the NY Times that he is selling his panels on the US market below the production, shipping, and distribution cost. Both Conergy and SolarWorld, in Germany, are going after Chinese manufacturers for dumping, yet here we're supposed to welcome them with open arms? Germany is far ahead of US when it comes to implementing solar, perhaps we should learn from their mistakes. According to our president we're supposed to become a global competitor in renewable energy. Perhaps he just meant the largest global consumer of renewable energy? This is just another walmartization of industry administered and operated by the Chinese.

What is Oregon supposed to gain from a few vulnerable assembly jobs? New Chinese solar companies are starting up in Oregon, and announce extravagant promises of hundreds of jobs. I'm sure they'll save a bundle on shipping costs, and from having to assemble them in China. Has anyone else here noticed that China announces huge solar implementation agenda in their own country, yet they've hardly managed to fulfill 1/8th of what is projected? Sounds to me like excuses to overproduce beyond their own capacity so they can dump their products on US. I would really like to meet the genius analyst in Oregon who has foreseen this as a positive effort on Oregon. That person has a LOT of explaining to do.

Let me also add that it seems the writer for this article suffers from pro-China bi-polar with the immense ups and downs of her articles, as if cheering on a football team, but isn't sure which team she wants to win.