

# Solar Valley Rises in an Overcast Land

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**THALHEIM, Germany —** This sad stretch of eastern Germany, with its deserted coal mines and corroded factories, epitomizes post-industrial gloom. It is a place where even the clouds rarely seem to part.

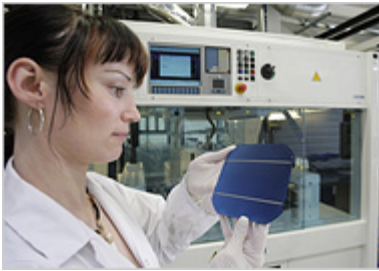
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Matthias Rietschel for The New York Times

Anton Milner, the chief executive of Q-Cells, on the headquarters roof at his solar company.

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Matthias Rietschel for The New York Times

A solar cell is checked on the assembly line at Q-Cells in Thalheim, Germany. More than 40,000 people work in the photovoltaic industry in Germany, helping to revive once-blighted areas.

**Yet the sun was shining here the other day — and nowhere more brightly than at Q-Cells, a German company that surpassed Sharp last year to become the world's largest maker of photovoltaic solar cells. Q-Cells is the main tenant among a flowering cluster of solar start-ups here in an area known as Solar Valley.**

Thanks to its aggressive push into renewable energies, cloud-wreathed Germany has become an unlikely leader in the race to harness the sun's energy. It has by far the largest market for photovoltaic systems, which convert sunlight into electricity, with roughly half of the world's total installations. And it is the third-largest producer of solar cells and modules, after China and Japan.

Now, though, with so many solar panels on so many rooftops, critics say Germany has too much of a good thing — even in a time of record oil prices. Conservative lawmakers, in particular, want to pare back generous government incentives that support solar development. They say solar generation is growing so fast that it threatens to overburden consumers with high electricity bills.

Solar-energy entrepreneurs warn that reducing incentives will deprive Germany of its pole position in an industry of the future. As proof, they point to the United States and Japan, which were once solar stars but have faded as their government subsidies became less enticing.

The debate over solar subsidies is a test of how an environmentally minded country can move from nurturing a promising alternative energy sector to creating a mass-market industry that can compete with conventional energy sources on its own footing. It is a tricky transition, even with a sympathetic population.

“Germany's law has basically been a turbocharger,” said Anton Milner, the chief executive of Q-Cells. If the proposals being floated by the Christian Democratic Union, the party of Chancellor [Angela Merkel](#), were adopted, he predicted, “you'd kill the industry.”

Germany's surging market has lured investors from Canada, Norway and the United States. More than 40,000 people work in the photovoltaic industry, helping to revive blighted regions like this one. On Wednesday, Q-Cells reported a 63 percent jump in its first-quarter operating profit, showing the riches to be reaped from sunshine.

Leading a visitor past gleaming rows of solar panels on the roof of Q-Cells' headquarters, Mr. Milner, a British-born former executive at [Royal Dutch Shell](#), said Germany could not afford to blow this chance. Surely, he says, the naysayers are aware that the cost of electricity will spike along with the price of fossil fuels?

Joachim Pfeiffer, a member of Parliament who is drafting the plan to cut incentives, said: "We don't want to slaughter the solar industry; we think photovoltaic technology will have a great future. But to have that future, we can't have overkill now."

At the heart of the debate is the Renewable Energy Sources Act. It requires power companies to buy all the alternative energy produced by these systems, at a fixed above-market price, for 20 years.

This mechanism, known as a feed-in tariff, gives entrepreneurs a powerful incentive to install solar panels. With a locked-in customer base for their electricity, they can earn a reliable return on their investment. It has worked: homeowners rushed to clamp solar panels on their roofs and farmers planted them in fields where sheep once grazed.

The amount of electricity generated by these installations rose 60 percent in 2007 compared with 2006, faster than any other renewable energy (solar still generates just 0.6 percent of Germany's total electricity, compared with 6.4 percent for wind).

This, in a country that gets an average of only 1,528 hours of sunshine a year, less than a third of the total daylight hours. That figure is comparable to London's but it is one-third fewer sunshine hours than in Florence, Italy, and only half San Diego's, making German solar installations less efficient, and their growth all the more remarkable.

With wind, biomass and other alternative energy also growing, Germany derives 14.2 percent of its electricity from renewable sources. That puts it ahead of a [European Union](#) target for countries to generate 12.5 percent of electricity from alternative sources by 2010.

Spain, France, Italy and Greece have copied Germany's solar incentives. In California, Gov. [Arnold Schwarzenegger](#) pushed a plan in which utilities pay rebates to customers with solar panels, though only up to the amount of electricity they would have otherwise used from conventional energy sources.

"Germany is a driving force worldwide," said Hermann Scheer, a member of Parliament who helped write the law. "It is very important that the driving force not become a lame duck."

Christian Democrats, however, say the law has been too successful for its own good. Utilities, they note, are allowed to pass along the extra cost of buying renewable energy to customers, and there is no cap on the capacity that can be installed — as exists in other countries to prevent subsidies from mushrooming.

At the moment, [solar energy](#) adds 1.01 euros (\$1.69) a month to a typical home electricity bill, a modest surcharge that Germans are willing to pay. That will increase to 2.14 euros a month by 2014, according to the German Solar Energy Association.

But the volume of solar-generated energy is rising much faster than originally predicted, and critics contend that the costs will soar. Mr. Pfeiffer, the legislator, said solar power could end up adding 8 euros (\$12.32) to a monthly electricity bill, which would alienate even the most green-minded. With no change in the law, he says, the solar industry will soak up 120 billion euros (\$184 billion) in public support by 2015.

The conservatives would like to accelerate the rate at which the feed-in tariff declines, now set at 5 percent a year. Under a draft proposal, the tariff would fall 30 percent in 2009, and 9 percent a year after that. The law's term might also be shortened to 15 years from 20.

Mrs. Merkel, who boasts of her green credentials, has yet to enter the debate. Her party must win over its coalition partner, the Social Democratic Party, which might be tough, given that the law was strengthened in 2004 by the last government, led by the Social Democrats.

Meanwhile, solar advocates are testifying before Parliament and publishing articles defending the law.

Eicke R. Weber, a prominent physicist, said the estimate of 120 billion euros in subsidies was too high because it did not take into account the rising price of conventional electricity. That, plus a gradual decline in the cost of solar, will close the price gap between conventional and solar-generated electricity by 2014 or 2015, he predicted.

The actual subsidy, Mr. Weber said, will be 40 billion to 60 billion euros, a third of what the German state is paying to prop up its superannuated coal industry.

“If we’re willing to burden the population with 180 billion euros of support for a dying industry, who do we worry about taking one-third of this to make Germany the world leader in photovoltaic technology?” said Mr. Weber, director of the Fraunhofer Institute for Solar Energy Systems in Freiburg.

Defenders of solar energy see the hand of Germany’s power companies behind the effort to change the law. Reducing incentives for solar would favor wind, which is a more natural fit for the utilities, since the cost of building wind farms is too high for the average homeowner with an empty roof and an urge to generate electricity.

“Solar energy is more decentralized, so the industry sees more competition from solar than from wind,” said Carsten Körnig, the managing director of the German Solar Energy Association.

In the former East Germany, where scores of state-subsidized industries were shuttered after reunification in 1990, the solar industry is a welcome tonic for a depressed region. Signet Solar, an American maker of photovoltaic modules that use thin-film technology, chose to build its first factory and research center near Dresden.

“We decided right from the beginning to have our main R&D in Germany,” said Gunter Ziegenbalg, Signet’s managing director.

Still, there are constant reminders of how quickly Germany could lose its status. Signet is building its next factory in Madras, India; Q-Cells is building one in Malaysia. Other German companies are exploring the Mediterranean markets, particularly Spain.

With more sunny days a year, Spain is likely to have a competitive solar industry that can stand on its feet before Germany's does. And now it has put in place its own German-style incentives.

"To develop a technology, you've got to create an industry," said Mr. Milner, the chief executive of Q-Cells, referring to the German success story. "You can wait and wait and wait for costs to come down, but it takes too long."