



Cover image

Highly efficient multijunction cells can be used in concentrator photovoltaic systems to bring down the cost of solar power.

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EDITORS: NADYA ANSCOMBE,
OLIVER GRAYDON

PRODUCTION EDITOR: CHRIS GILLOCH

COPY EDITOR: ANNA DEMMING

ART EDITOR: TOM WILSON

naturephoton@nature.com

Playing catch-up

Considering how abundant the Sun's energy is, it is surprising that only 0.1% of the world's electricity is made using solar power. Even in Germany, the most enthusiastic supporter of solar power, this figure is only 0.2% (page 281). The reason for this huge disparity is that at present the cost of producing 1 kWh of electricity using solar power is much higher than using oil, coal or nuclear power. But times are changing.

The solar-power industry is experiencing growth rates that other industries can only dream about. Compound annual growth rates of around 30% until 2013 have been predicted by one market research company (page 290), and these predictions match the results of several key players in the market, with one even reporting an annual sales growth of more than 50%. Let's hope this growth continues because the industry has some serious catching up to do if it wants to become competitive. To become economical and therefore take a significant slice of the electricity market, the price per kWh must become comparable to that of a typical clean coal power station. Winfried Hoffmann, president of the European Photovoltaics Industry Association, believes that, despite healthy growth, this will still take around 20 years (page 292).

So what can the solar-power industry do to speed up this process? New technologies are helping to make solar cells cheaper, thinner and more efficient, thus bringing down the cost per kWh. Silicon-based solar cells dominate the market now, but will in the future lose market share to other technologies. Compound semiconductor systems are reporting record efficiencies of more than 40% (page 284), and developers of flexible polymer-based cells claim their technology has what it takes to bring costs down to a competitive level (page 287).

Only time will tell which technology will win in the end, but with such a lucrative market at stake, there will probably be room for everyone to have a slice of the cake.

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