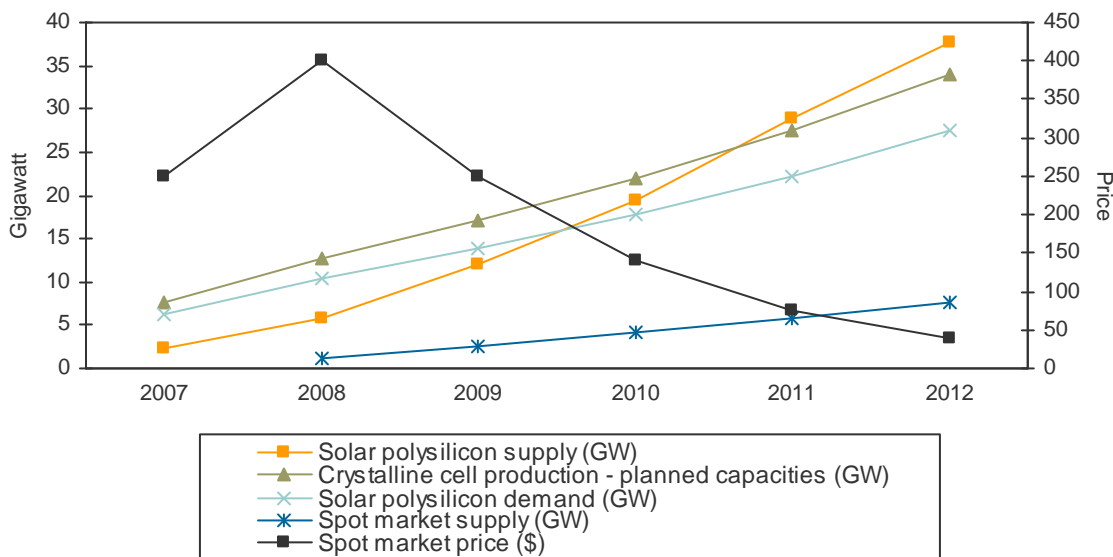


## Photovoltaics Raw Materials Market Tracker

By Henning Wicht, Senior Director and Stefan deHaan, Senior Analyst

Photovoltaics Research

### Polysilicon Pricing Peaks and Supply Chain Immaturity and Inflexibility Induce Significant Supply/Demand Imbalances in 2009



iSuppli's deep electronics supply chain experience alerted us to the strong possibility that the photovoltaic supply chain will experience extreme price and cost pressures up to a year before supply actually meets any demand. Although solar cell headline capacity exists to absorb the 112% growth of solar polysilicon (p-Si) supply iSuppli expects to occur in 2009, we project that significant p-Si volumes will show up on the spot market already that year. This is due to solar cell producers not being able to ramp actual production as fast as p-Si will be delivered on inflexible take-or-pay contracts. As a consequence, the spot market price will become volatile and could drop by 50% over the course of 2009.

This report is a biannual series and examines the current status—and offers an outlook on the future—of polycrystalline silicon and solar-grade wafer supply for photovoltaic cell production. This report and the forecast database provide analysis of the market by:

- Polysilicon product breakout by technology, quantity, market shares, average selling prices, and location of production sites.
- Assessment of silicon and wafer activities by company - planned capacities, realized capacities, capacity utilization, and production output.
- Price and production estimates for 2007, and five-year forecast from 2008 to 2012.

#### Critical Questions Answered

- How much solar polysilicon will come on the market?
- Will the shortage of silicon feedstock come to an end?
- Shall we invest into own polysilicon production facilities?
- What will happen in 2009? Will polysilicon spot prices fall or continue to rise?
- Who are the suppliers to offer the most freely available polysilicon in 2009?

#### Who Should Subscribe to This Service?

- Polysilicon/ solar polysilicon manufacturers
  - Executive
  - Marketing and strategy
- Silicon and wafer manufacturer
  - Procurement
  - Strategy
- Financial community

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2008

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## Forecast

- Frequency, Time Period
  - 5-year annual
- Measures
  - Polysilicon capacities (metric tons)
  - Polysilicon production (metric tons)
  - Solar polysilicon supply (gigawatt)
  - Solar polysilicon demand (gigawatt)
  - Spot market supply (gigawatt)
  - ASP (\$/kg)
  - Solar wafer capacities (gigawatt)
  - Solar wafer production (gigawatt)
- Regions, Markets
  - Worldwide
- Detail Level
  - Production technique (Siemens, FBR, UMG)
  - Manufacturer experience
  - Country

## Technologies Covered

- Siemens Process
- Fluidized Bed Reactor
- Upgraded Metallurgical Process
- Thin wafer production
- Kerf loss reduction

## Applications/Products Covered

- Polysilicon
- Solar wafers

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**Henning Wicht, PhD, Senior Director**

A well-respected technology expert and business leader, Henning Wicht has performed numerous syndicated and custom research assignments in microelectronics and photovoltaics. He was the founder and president of WTC - Wicht Technologie Consulting, acquired by iSuppli in April 2008. At iSuppli, Henning is responsible for directing the MEMS and photovoltaics service areas.

Henning has been working in marketing of microsystem technology and electronics since 1993 when he joined CEA-LETI in Grenoble. In 1996, he tasked with establishing CEA Germany. WTC - Wicht Technologie Consulting was created in 2000, specializing in services for companies with high-tech products specialized in the commercialization of high-tech products in the field of microelectronics, nanotechnologies or photovoltaics.

Henning's skills range from strategic analysis and planning to device and application market forecasting. Aside from working with hundreds of companies and institutes, his market forecast expertise is also sought by country-based and European-based working groups. Henning is the co-author of the NEXUS Market Report and coordinates the NEXUS User-Supplier Club for MEMS Packaging. Within SEMI he is member of the SEMI International MEMS Industry Forum and guides the technical program.

Henning received his diploma in Industrial Engineering at the Technical University in Darmstadt. His doctorate thesis – *Microsystems? Innovation and Industrial Evolution* – was published in 1999. He speaks German, English and French.

**Stefan de Haan, Senior Analyst**

Stefan de Haan is senior analyst for photovoltaics and is the author of several PV related consulting and market research studies. Complementing his knowledge in photovoltaics, he has in-depth experience in nanotechnology, semiconductor physics, and clean room technology.

In his prior post at WTC - Wicht Technologie Consulting, acquired by iSuppli in April 2008, he was senior analyst for photovoltaics and nanotechnology. Leading the nanotechnology research team at WTC, he was the project manager of European Commission-funded nanotechnology road mapping activities and headed a variety of market studies in nanoelectronics, nanomaterials, sensor technology, and quantum information technology. Before joining WTC, Stefan de Haan worked as a senior researcher in the semiconductor and nanophysics group of the Ludwigs-Maximilians-University of Munich developing quantum mechanical nanoelectronic devices implemented in low dimensional semiconductor systems. During his studies he worked at Siemens, VLSI Technology, and at the German National Research Center for Environment and Health.

Stefan de Haan graduated with distinction from Munich University with a degree in Physics. He speaks German, English, and Spanish and has a basic knowledge of French.