



Global Solar

Pathway to 500GW

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Global

- ◆ We materially raise solar demand estimates; value chain now fully supplied for 500GW of annual installations (by 2026e)
- ◆ Supply bottlenecks have unwound, bringing falling module prices
- ◆ Efforts to incentivise solar manufacturing in the US and Europe, driven by energy security concerns

Solar supremacy is building

Solar's stellar rise continues apace. The IEA predicts investments in solar energy in 2023 will surpass spending on oil production for the first time. Unlike other low carbon technologies, we expect solar to meet and even exceed many government rollout targets – not bad considering that in 2010 new solar demand totalled 20GW.

Poly supply bottleneck has unwound – falling prices to drive further growth

Underlying this confidence is a new wave of Chinese polysilicon (poly) supply, which has removed a key supply bottleneck. Spot poly and module prices are -67%/-25% YTD, which is driving strong demand. Feedback from meetings at the Intersolar 2023 trade fair on 14-15 June is for poly prices to stabilise at low levels and panel prices to continue to fall through H2. With further capacity expansion in 2023, we see no end to overcapacity in sight. Efforts to incentivise solar manufacturing in the US and Europe, driven by energy security concerns, should further increase capacity and are helping drive a decoupling of poly prices inside and outside China.

This is a Free to View version of a report with the same title published on 03-Jul-23. Please contact your HSBC representative or email us at AskResearch@hsbc.com for more information.

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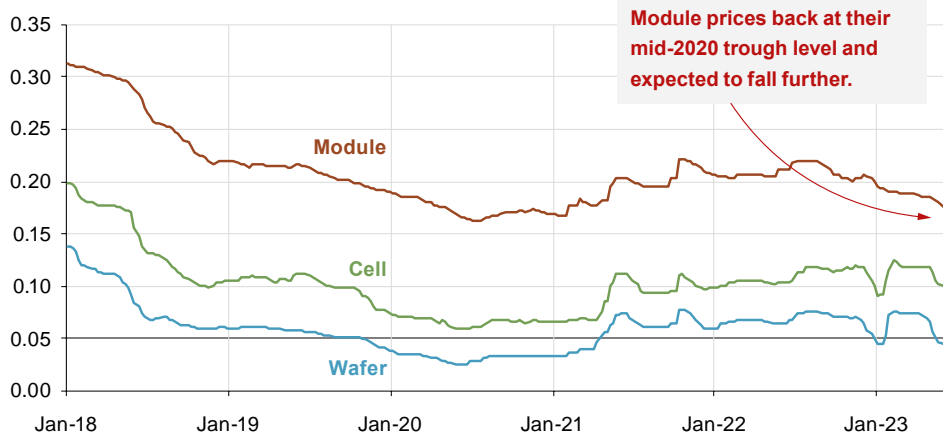
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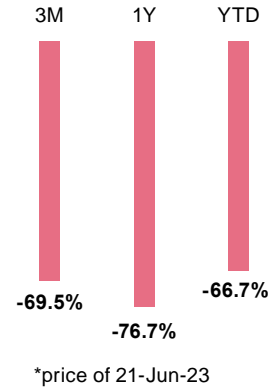
What's powering solar growth?

Falling prices drive optimism on demand growth ...

Solar value chain spot price (USD/W)

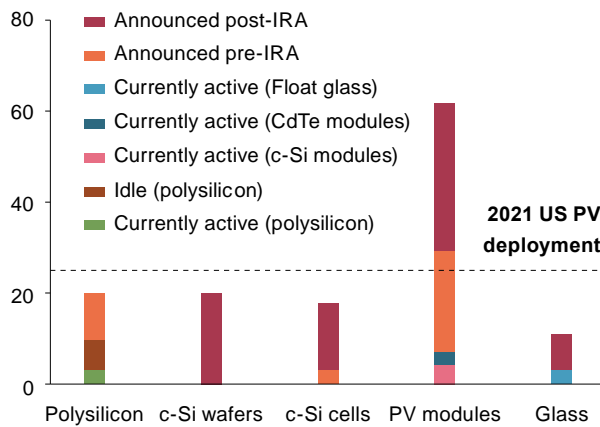


Spot price for polysilicon below cash costs for many suppliers (USD/kg)

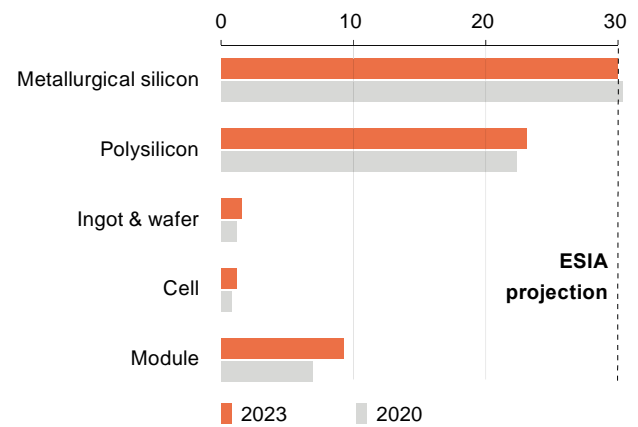


... while efforts to incentivise solar manufacturing in US and Europe should add more capacity

US solar manufacturing announcements (Jan. 2023, GW)



Production capacity by segment in Europe (GW)



Source: International Energy Agency, SolarPowerEurope, PVInsights, US DOE, Fraunhofer ISE, HSBC

Solar flying high

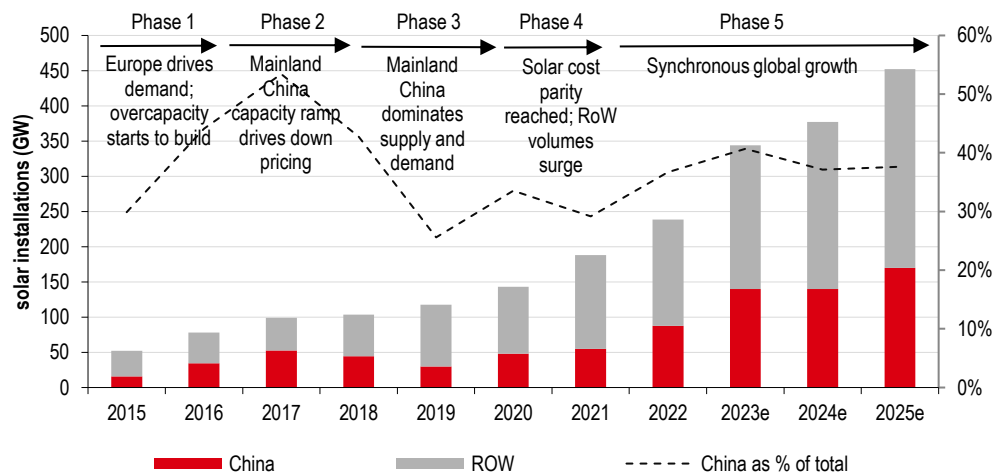
- ◆ Poly glut opens a path to a rapid increase in annual supply
- ◆ Crucially, supply bottlenecks have dissipated
- ◆ Falling prices in H2 to drive growth in 2023e

Solar is the star of global energy investment

Solar is increasingly a critical component of national long-term decarbonisation plans and solar demand continues to surprise. We expect another record year for solar. We foresee growth in all segments and across all regions. China continues to outstrip solar volume installations in other markets.

The scale of global investment is remarkable. The International Energy Agency (IEA) predicts total investment of USD382bn in solar in 2023e, exceeding for the first time the total expected to be spent on oil production (USD371bn). The figure is also 70% higher than the IEA's forecasts for investments in wind (USD225bn) in 2023e.

In Phase 5 – solar growth is accelerating



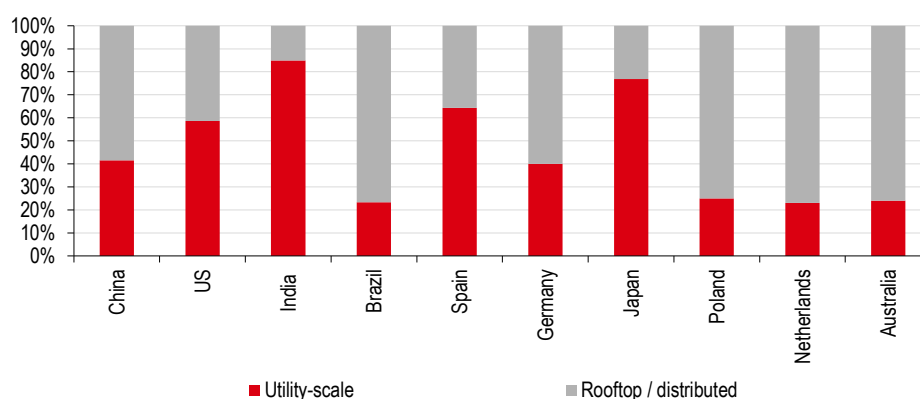
Source: SolarPowerEurope, HSBC estimates

Rooftop segments have been booming – utility-scale rebound in 2023e even stronger

High electricity prices and a newfound urgency to lower reliance on grid and on Russian gas drove strong growth in 2022 in residential and commercial rooftop solar. Rooftop / distributed solar demand was as much as 75% in four out of the top 10 markets and c60% of total demand in China in 2022.

We note that the urgency for consumer installations in Europe has started to fade as power prices fall and post-COVID incentives (eg, the 'superbonus' in Italy) expire, potentially slowing the pace of European rooftop solar growth. This contrasts with China, where rooftop solar is booming. Utility-scale projects, on the other hand, were more affected by rising equipment costs and look to rebound more strongly with falling prices.

Top 10 markets in 2022, by segment



Source: SolarPowerEurope

Yet supply is racing ahead of demand – oversupply building

We have previously argued that the bottleneck for polysilicon (poly, the raw material ...) which had driven high module prices would ease, thanks to new supply from China flooding the market. Overcapacity is fuelling a solar price war in China and, as a result, spot poly prices are - 67% YTD and -49% over the past month, with reports of inventory dumping (source: PVInsights) leading to prices at or below cash costs (USD5/kg).

Spot price for solar supply segments

	Poly 9N/9N+ (USD/kg)	Multi wafer (USD/piece)	Mono wafer (USD/piece)	Multi cell (USD/W)	Multi module (USD/W)	Mono module (USD/W)
21-Jun-23	7.7	0.18	0.35	0.08	0.16	0.17
% change						
1W	-8.5%	0.0%	0.0%	-8.0%	-1.9%	-1.2%
1M	-48.9%	-18.7%	-31.3%	-20.6%	-12.2%	-15.4%
3M	-69.5%	-49.1%	-58.0%	-31.4%	-16.0%	-20.7%
1Y	-76.7%	-43.3%	-61.3%	-22.1%	-25.1%	-33.5%
YTD	-66.7%	-24.6%	-42.1%	-19.0%	-21.0%	-27.6%

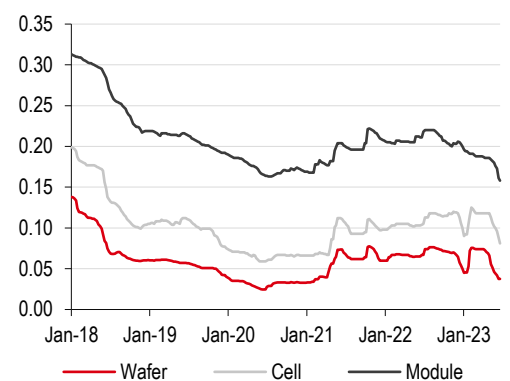
Source: PVInsights

After a price spike in 2022 driven by poly shortages, module prices are down 20-25% YTD and are back at their 2020 lows. Wafer and cell prices are also falling closer to 2020 lows.

Our view is that they will continue to fall through H2 as a supply glut drives module inventory build and places downward pressure on PV panel pricing through H2. While we would expect some solar installations to slip into early 2024 as customers with flexible purchasing wait for lower prices, we expect projects will go ahead as planned. Furthermore, many projects being built to deadline (ie, won via auction) will stick to procurement plans in any case.

PV grade polysilicon spot price (USD/kg)


Source: PVInsights

Solar value chain spot price (USD/W)


Source: PVInsights

The solar industry is now well supplied for 500GW per year

The industry continues to increase capacity, with the leading 7-8 suppliers alone having 500GW of capacity. The collective plans of the five main Chinese PV module suppliers globally today (LONGi Green Energy, JinkoSolar, Trina Solar, JA Solar and Canadian Solar) outstrip everybody else.

In 2023, these five companies alone will spend a record USD7.5bn on new ingot/wafer and cell/module capex, with almost all this going to new fabs in China and Southeast Asia. The ingot-to-module capex from these five companies alone between 2018 and 2023 totals USD25bn.

Greater poly supply means that 500+GW of module capacity looks well supplied. From a supply perspective, there is no reason why 500GW of annual solar additions cannot be reached earlier than 2026 (HSBCe: 501GW in 2026e).

This is a Free to View version of a report with the same title published on 03-Jul-23.

The full note contains a further discussion of the overall solar panel market and supply chains, how policy (e.g. US IRA) is driving adoption and investments, and why Europe is lagging.

The note also contains feedback from our client tour to Intersolar 2023, Europe's largest solar trade fair, where we met with value chain participants over the two-day event, where over 2,400 exhibitors registered to present and a record of over 106,000 trade visitors in attendance.

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