SSX Morning Ray

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1 EUR = 1.173USD | 1 USD = 110.66JPY | 1 USD = 6.56CNY | 1 USD = 73.22 INR

PLM**-Polysilicon Marker	13.550	USD/kg	
Price change WoW	0.350	2.652%	▲
Price change (Since Jan 2021)	5.110	60.545%	▲
Average Mono grade in China	**127.000**	**RMB/kg**	
Price change WoW	5.000	4.098%	▲
Price change (Since Jan 2021)	39.825	45.684%	▲
Average Multi grade in China	**68.000**	**RMB/kg**	
Price change WoW	2.000	3.030%	▲
Price change (Since Jan 2021)	18.775	38.141%	▲
CMM*- Chinese Module Marker	**0.219**	**USD/wp**	
Price change WoW	0.000	0.00%	–
Price change (Since Jan 2021)	0.006	2.82%	▲

****Average price of Non-Chinese polysilicon (3:1 weight for Non-US polysilicon volumes not subjected to the Chinese AD)**
***Average Price of Multi and Mono Perc modules prices FOB China (20:80 weightage based on multi and mono modules estimated market share)**

MARKET HIGHLIGHTS

Polysilicon:

Spot Mono grade polysilicon at RMB127/KG, 4.10% growth WoW
RMB68/Kg for multi-Si, 3.03% growth WoW.

Wafer:

Mono G1 wafer at RMB3.60/Pc, unchanged.
Mono M6 wafer at RMB3.70/Pc, unchanged.
Multi wafers at RMB1.75/Pc, increase by 9.38% WoW.

Cell:

Multi cells at $0.0928/wp, 7.91% growth WoW
Mono Perc G1 at $0.125/wp down by 1.57% WoW
Mono Perc M6 at $0.116/wp, down by 1.69% WoW.

Module:

Mono PERC module at an average of USD0.227/wp
Multi USD0.188/wp, unchanged from last week.

SSX Spot & Forward Pricing

Forecasts are based on Industry players' market sentiment.

Polysilicon	High	Low	Average	Change	Next week	Next Month	In 3 months
PLM (USD/kg)	16.750	6.500	13.550	+0.350	▲	▲	-
China Multi Grade (RMB/kg)	72.000	40.000	68.000	+2.000	▲	▲	-
China Mono Grade (RMB/kg)	132.000	95.000	127.000	+5.000	▲	▲	-
Wafers (USD/pc)	**High**	**Low**	**Average**	**Change**	**Next week**	**Next Month**	**In 3 months**
Multi	0.240	0.170	0.237	+0.020	-	▲	-
Mono G1	0.495	0.460	0.490	0.000	-	-	-
Mono M6	0.510	0.490	0.504	0.000	-	-	-
N-type	0.580	0.500	0.550	+0.050	-	-	-
Cells (USD/wp)	**High**	**Low**	**Average**	**Change**	**Next week**	**Next Month**	**In 3 months**
Multi	0.095	0.078	0.093	+0.007	-	▲	-
Mono Perc G1	0.132	0.121	0.125	-0.002	-	-	-
Mono Perc M6	0.140	0.113	0.116	-0.002	-	-	-
Modules	**High**	**Low**	**Average**	**Change**	**Next week**	**Next Month**	**In 3 months**
Multi (USD/wp)	0.210	0.186	0.188	0.000	▲	-	-
Multi (RMB/wp)	1.550	1.380	1.400	0.000	▲	-	-
Mono Perc (USD/wp)	0.240	0.216	0.227	0.000	-	-	▼
Mono Perc (RMB/wp)	1.750	1.620	1.680	0.000	-	-	▼

***Overseas polysilicon not submitted to Chinese Anti-Dumping.**
Prices in RMB include VAT but exclude the 4% import duty since these are domestic polysilicon production.
A grade based.
Multi High Cell eff: > 18.8% (> 4.62w)/ Mono PERC High Cell eff: >22.2% (>5.59 w)
Modules prices incoterms: RoW FOB China
Average module output: Multi 335wp / Mono PERC 435wp

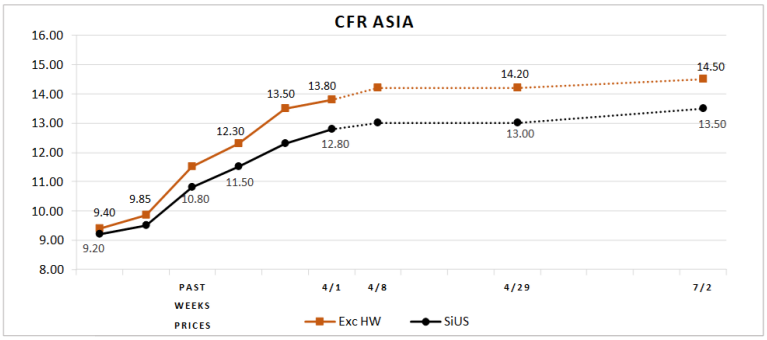
Polysilicon

CFR Asia excluding Hemlock and Wacker-US (USD/kg)
Non SiUS - Polysilicon not subjected to AD in China

High	Low	Average	Price change
16.750	7.000	13.800	0.300

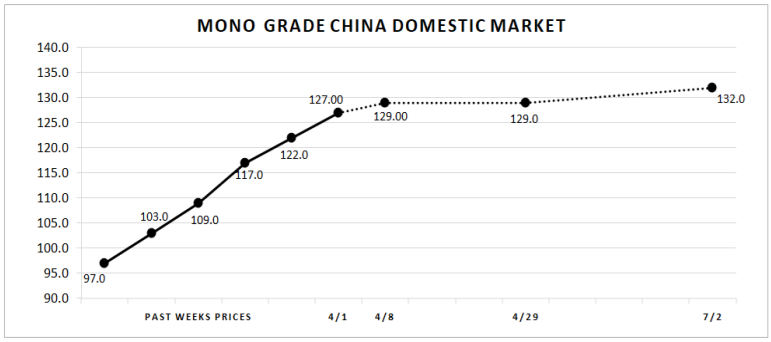
CFR Asia Hemlock and Wacker-US (SiUs) (USD/kg)
SiUS - Polysilicon subjected to AD in China

High	Low	Average	Price change
16.750	6.500	12.800	0.500



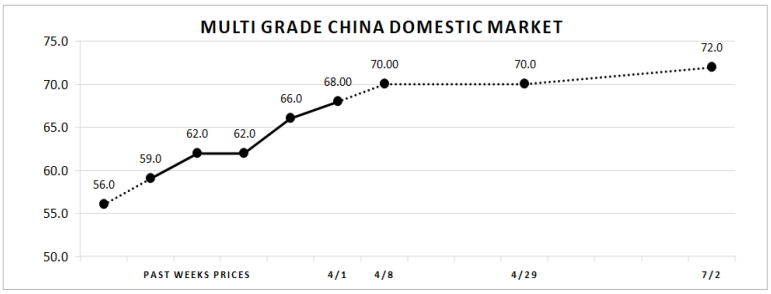
Mono grade China domestic market (RMB/kg)

High	Low	Average	Price change
132.000	95.000	127.000	5.000



Multi grade China domestic market (RMB/kg)

High	Low	Average	Price change
72.000	40.000	68.000	2.000



Source: SSX Survey

Polysilicon weekly Insights:

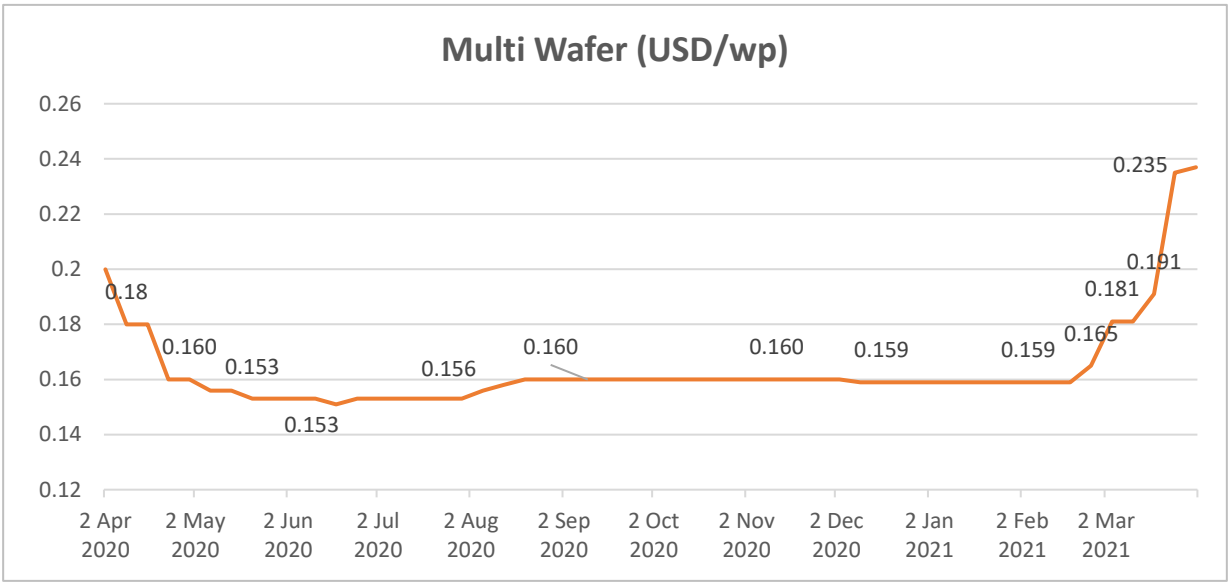
The polysilicon prices rose at a steady rate in the China domestic market this week.
With a WoW increment of 4.10% for mono-Si prices, bringing the spot price of mono-Si to RMB127/Kg.
More specifically:

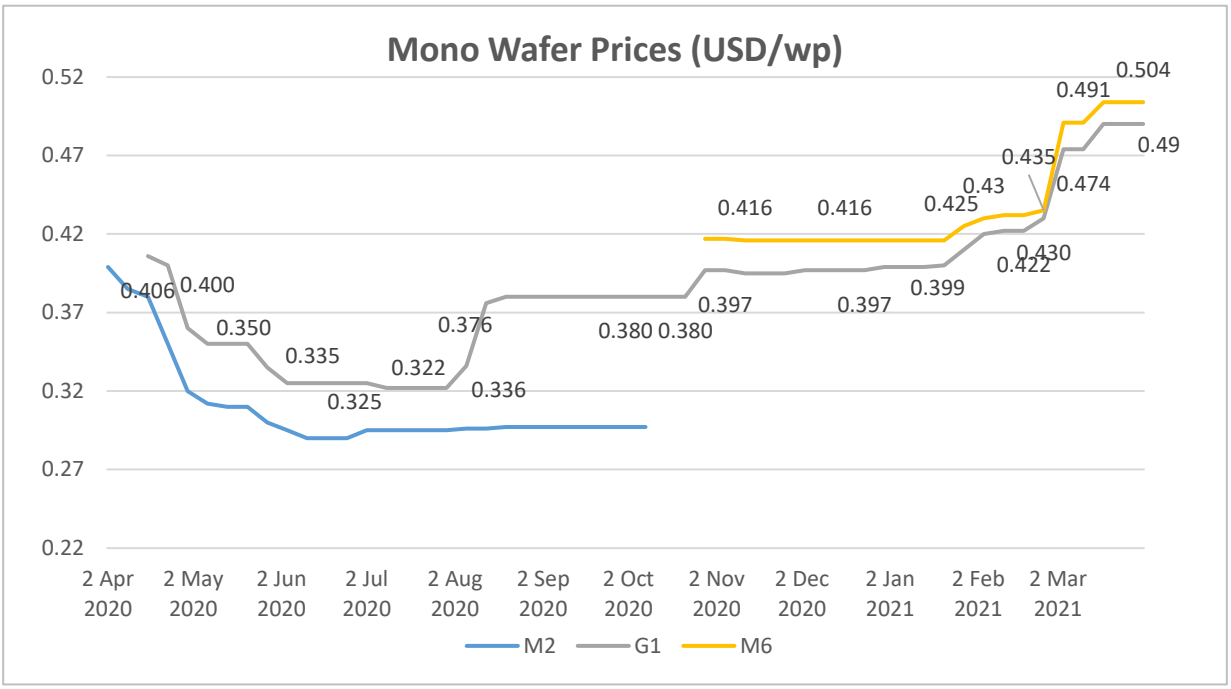
- Chip-sized mono-Si price rose to RMB129/Kg and we've also heard a few spot purchase orders being transacted at prices above RMB130/Kg.
- Chunk-sized mono-Si reached RMB124/Kg this week.

Likewise, the multi-Si were reported at RMB68/Kg this week, representing a growth of 3.03% WoW.

According to the China Silicon Industry Association, the total output of polysilicon in China in Q1 2021 is about 109.10KTs, an increase of 4.3% compared to the production output in Q4 2020.
However, production capacity in April is not expected to go higher due to the routine maintenance at two main Chinese polysilicon manufacturers, the industry believes that polysilicon prices will continue its upward trend in April. It's also expected that the polysilicon price hike may slow down after Q2, when the polysilicon production capacity gradually increases.

Wafers





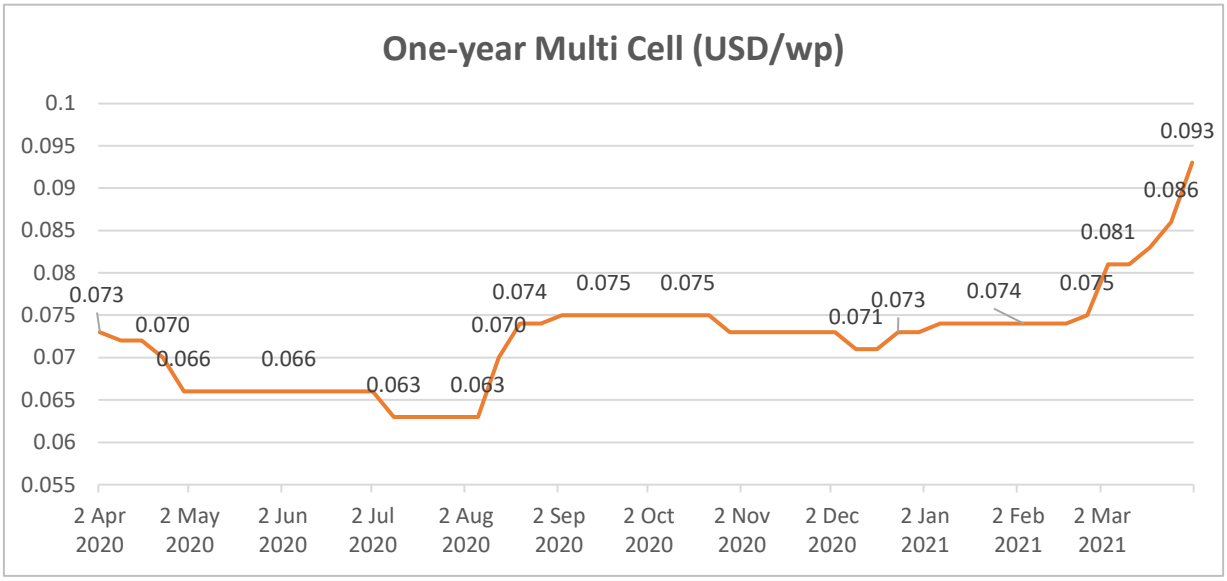
Source: SSX Survey

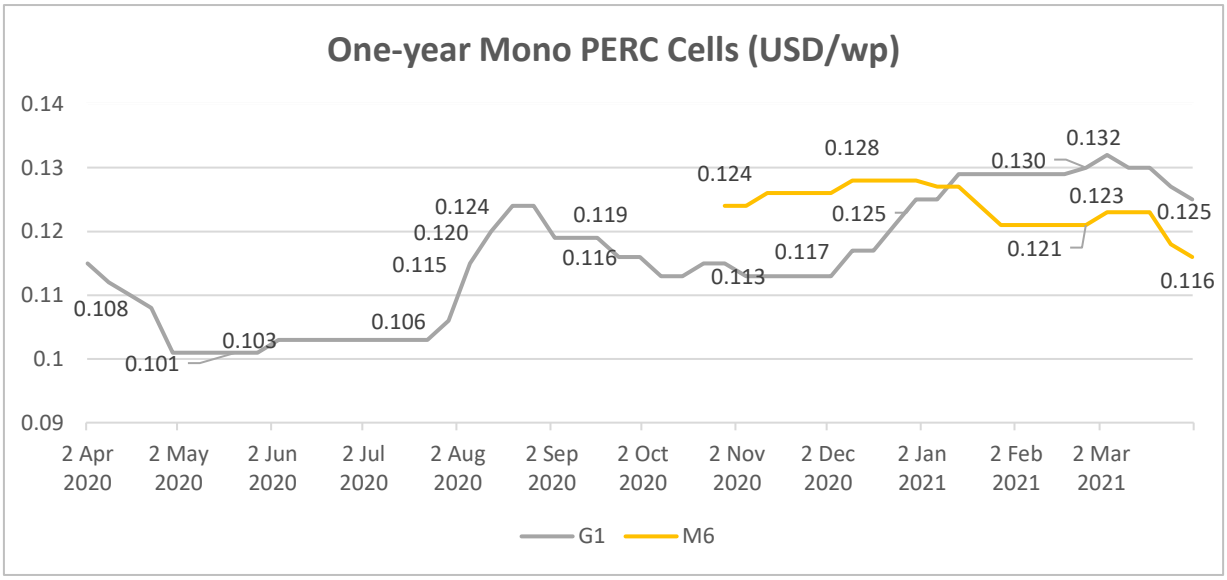
Wafer weekly insight

The mono wafer prices remain flat this week in China domestic market, reported at RMB3.60/Pc for mono G1, RMB3.70/Pc for mono M6, RMB4.56/Pc for mono M10 and RMB6.25/Pc for M12.

The demand for mono wafers from downstream remain strong with mono wafers makers running down their inventories with no overstocked wafers left. Despite this, mono wafer prices have temporarily halted their upward trend as current selling prices are already profitable and thus no immediate needs to further increase in prices that might dampen demand. In addition, we hear that mono wafer makers are accelerating their transformation to larger-sized wafers' to save costs.

From the trading market, we noticed that the mono M6 wafers' sales volume is now better than G1. We are waiting to see if the peak price of polysilicon in Q2 will affect the profitability of mono wafer manufacturers, which will then determine whether the Q2 wafer prices remain stable or increase due to upward cost pressure. With regards to the market for multi wafers, it is remains hot driven by the strong demand from the cells makers, especially in India. The prices have hiked up to RMB1.75/Pc, a growth of 9.38% WoW. Industry players anticipate that the multi wafers prices are still in an upward trend at least in April.





Source: SSX Survey

Cell weekly insights:
Multi cells price hiked up again this week to $0.0928/wp, increased by 7.91% WoW.
For the short delivery time (1 week after payment), we got the price as high as $0.09524/wp. Mono PERC G1 decreased again to $0.125/wp, down by $0.002/wp (1.57%) WoW.
Mono PERC M6 dropped to $0.116/wp, down by $0.002/wp, a decreased of 1.69% WoW.

As the multi demand is led by India and the announced increase in duties from April 2022 onwards, the trend will continue in the next few months to fulfill the project needs.

For the mono PERC pricing, some argue that the price is stable as opposed to decreasing. The perceived decrease in price is due, according to some, to the adjustment of an over-inflated price that a major mono PERC cell maker published a few weeks ago.
That said, SSX trading desk reports high availability of mono PERC cells, and a delivery timeframe that suggests high level of stock.

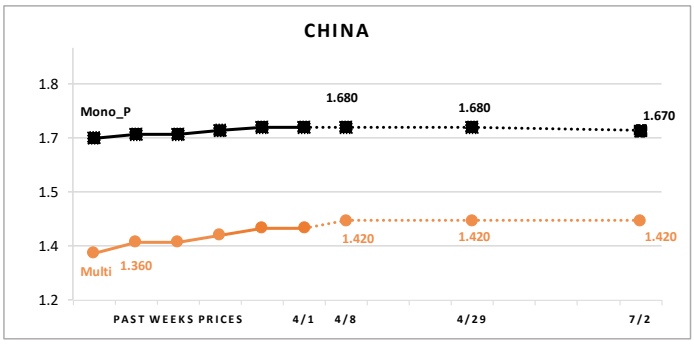
Modules

CHINA

RMB/wp, EXW

Category	High	Low	Average	Price change
Multi	1.550	1.380	1.400	0.000
Mono Perc	1.750	1.620	1.680	0.000

China prices are VAT-inclusive.



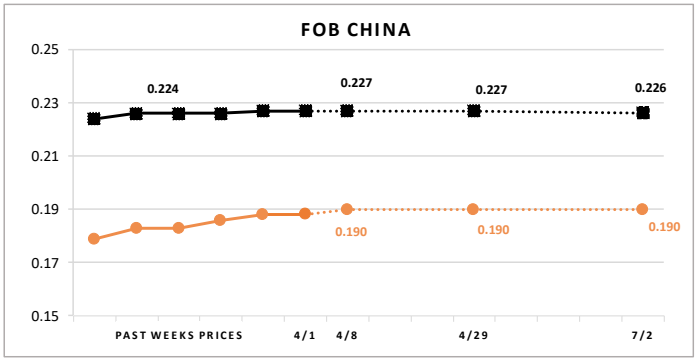
FOB China

USD/wp, FOB

Category	High	Low	Average	Price change
Multi	0.210	0.186	0.188	0.000
Mono Perc	0.240	0.216	0.227	0.000

The ROW refers to FOB China prices for following regions:

South East Asia, Australia Latin America, and the Middle East.

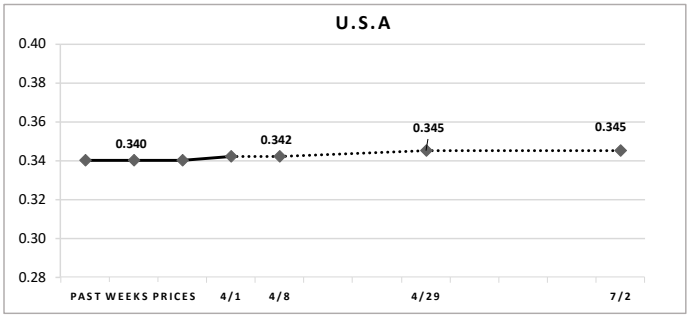


U.S.A

USD/wp, CIF

Category	High	Low	Average	Price change
Mono Perc	0.360	0.330	0.342	0.002

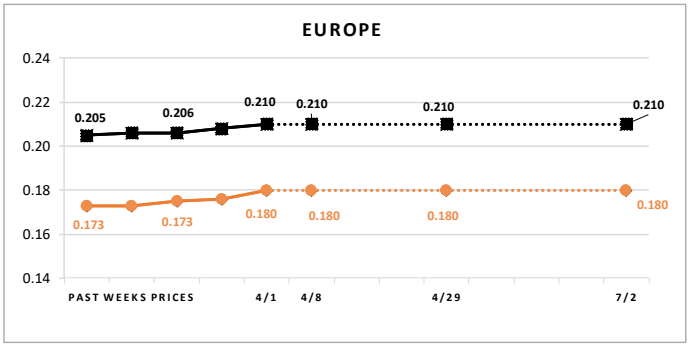
Prices are inclusive of the Section 201 Tariff.



EUROPE

EURO/wp, CIF

Category	High	Low	Average	Price change
Multi	0.189	0.173	0.180	0.004
Mono Perc	0.217	0.200	0.210	0.002

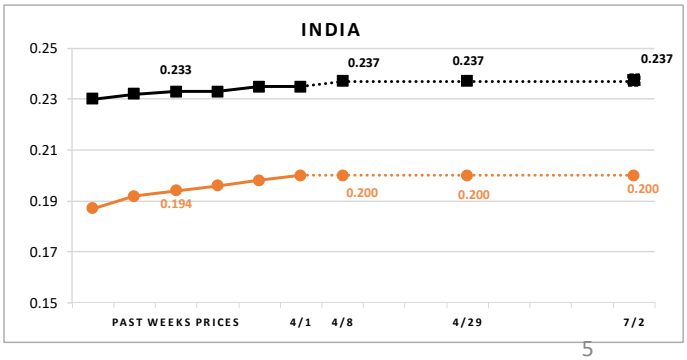


INDIA

USD/wp, CIF

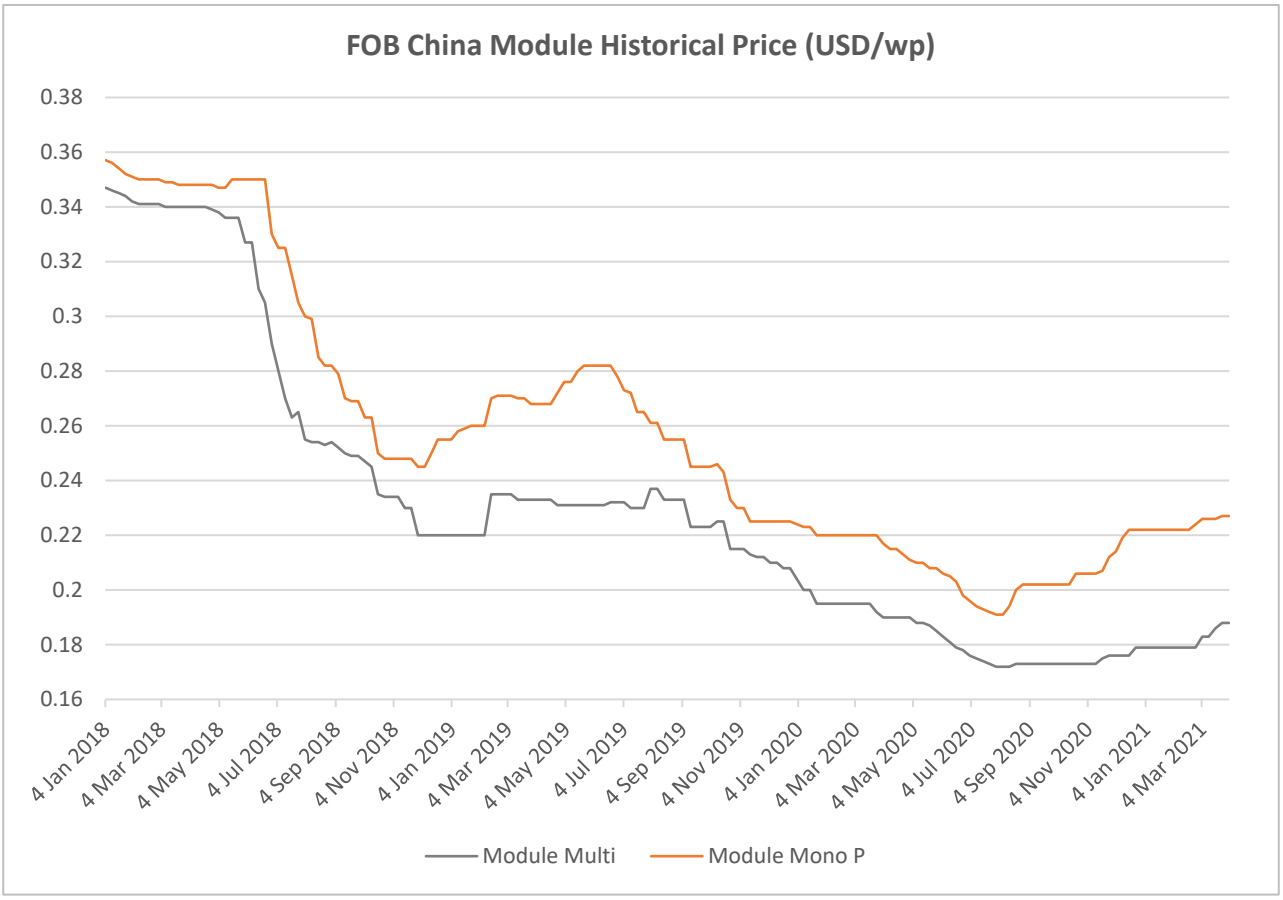
Category	High	Low	Average	Price change
Multi	0.215	0.187	0.200	0.002
Mono Perc	0.242	0.217	0.235	0.000

*Prices are not inclusive of the 15% Safeguard Duty applied to developped countries, China and Malaysia.



Source: SSX Survey

Modules



Source: SSX Survey

Module weekly insights:
The average FOB module prices remained the same as last week.
$0.227/wp for Mono PERC and $0.188 for Multi.

Although the prices for PV glass in April have reduced significantly (from RMB40/m2 to RMB28/㎡, a 30% decrease MoM, for 3.2mm; from RMB32/m2 to RMB22/㎡ , a 31.25% decrease MoM, for 2.0mm) and reflecting a lower production cost by 0.5 to 0.7 US cents per watt, the industry understands that the reduction will not impact much on the module price. This is because the polysilicon price will continue its upward trend this month and, at the same time, the BOMs price-cut was expected and has already been priced in.

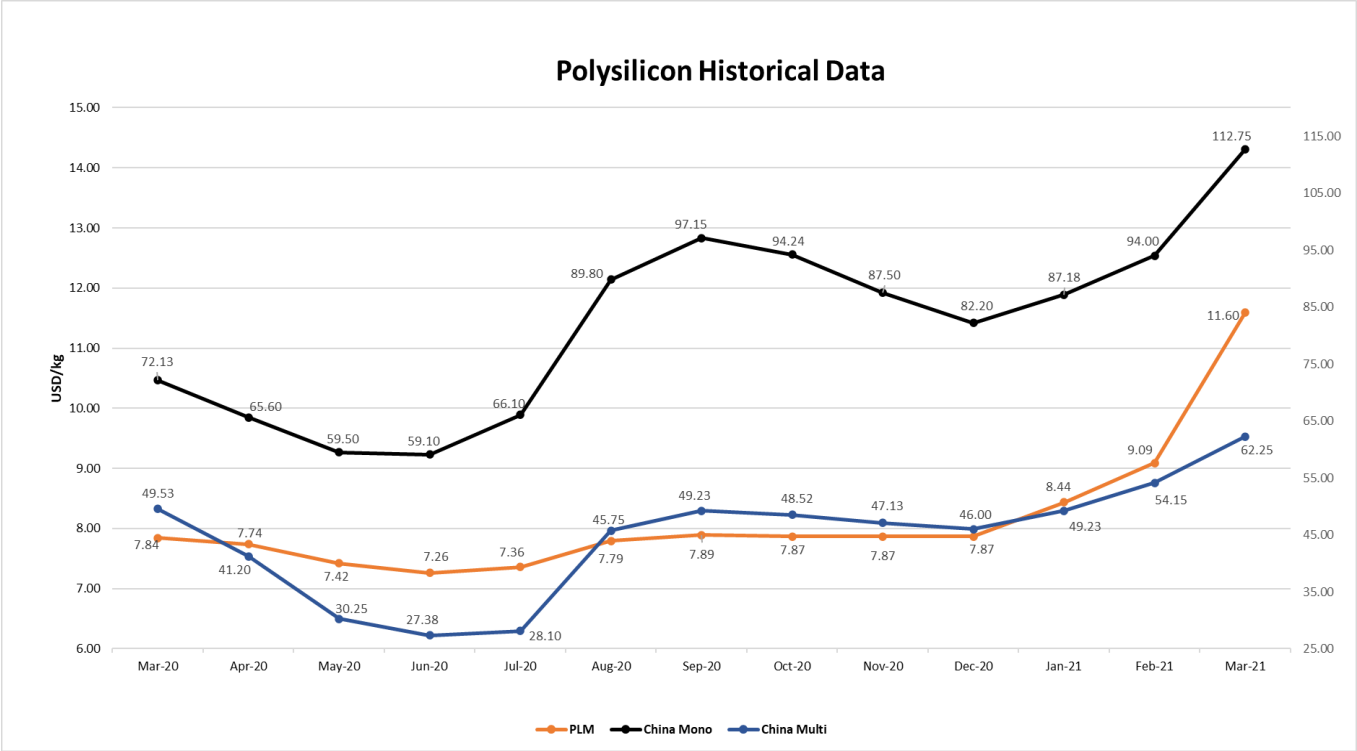
We have been told that Q2 overseas demand (except US) will be still heavily affected by the high module price and ocean freight rate. The market players estimate that the demand will pick up after the summer holiday at the soonest, as the polysilicon production capacity increases and the wafer and cell segments undergo further price reductions.
On the other hand, we have noticed that Multi-crystalline and B grade products are relatively popular nowadays, multi modules transacted at ~0.193/wp (FOB) for spot deals and quotes can be as high as 0.210/wp (FOB).

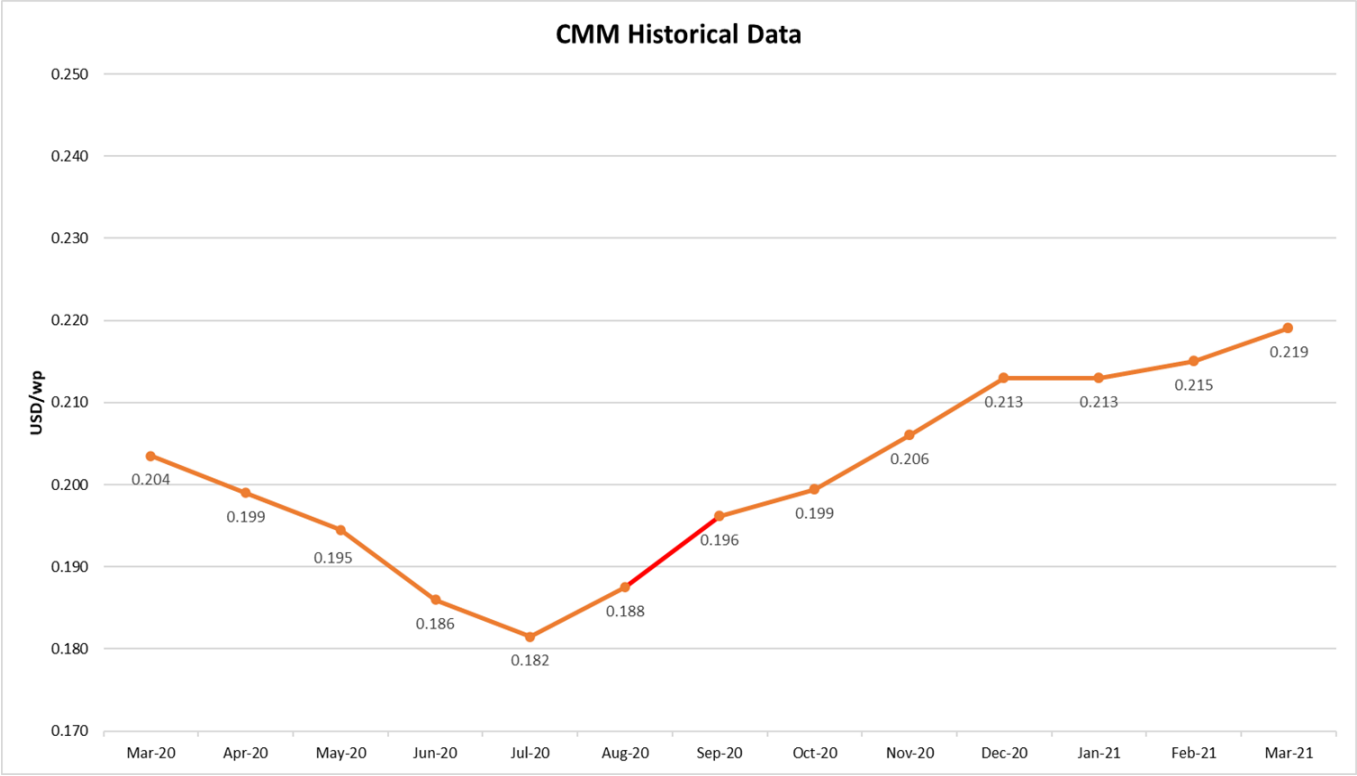
“The US pricing has been moving up past two weeks, 34-35 DDP for monofacial modules, 35.5 (405/410 -37 (>500 W) for bifacial modules. 2nd tier players are probably 1.5 cents below that.” According to a US-based top-tier module maker.

On the shipping front, our partners advised that ocean freight rates in Q2 will increase at least 20% for Asia to Europe route and 35%-50% for Asia to US route, due to shipment delays from the recent Suez Canal incident, rising fuel price and strong demand before the summer holidays in those markets.

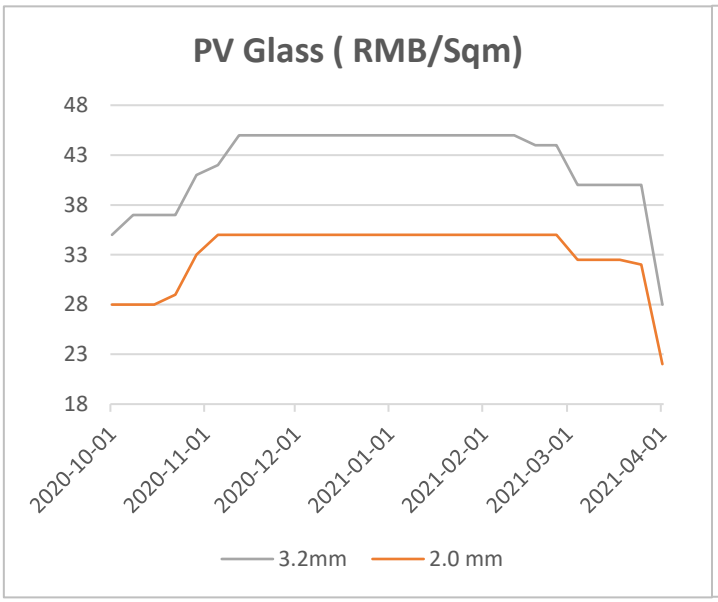
Historical Data

PLM and CMM

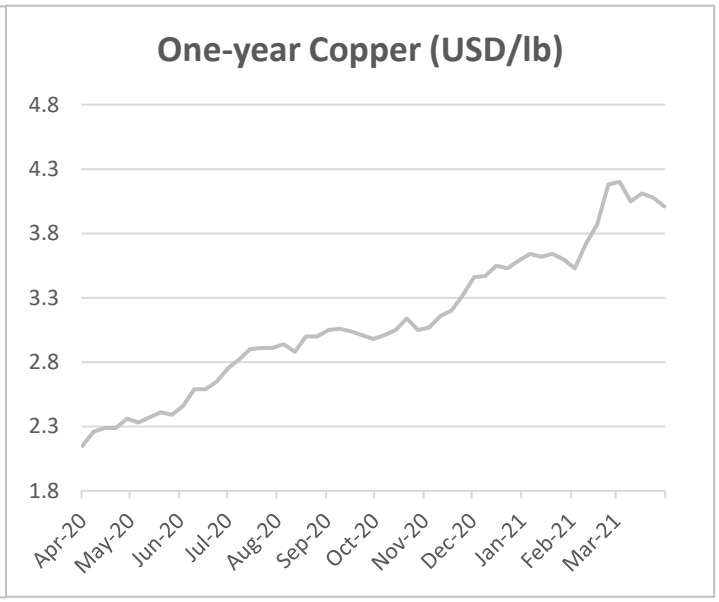




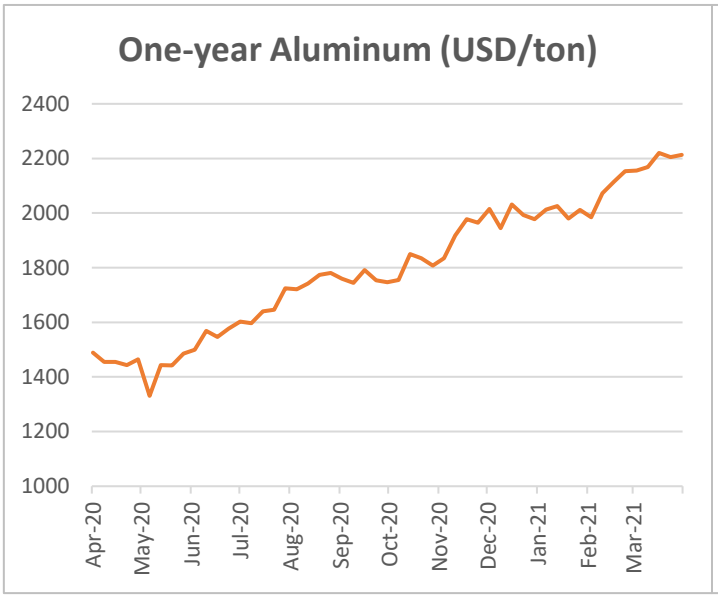
Average Price of Multi and Mono Perc modules prices FOB China
(Adjustment has been made in Sep 2020, 20:80 weightage based on multi and mono modules estimated market share)



Source: Solarzoom



Source: KITCO



Source: mining.com

Source: MONEX

BOMs Weekly insights:

Glass – […] this week glass price slashed, large supplier's 3.2 mm glass prices decreased from 40 yuan / ㎡ to 28 to 30 yuan / ㎡, 2.0 mm glass prices are down from 32 yuan / ㎡ to 22 yuan / ㎡ […] . 01/04 (Source: Solarzoom)

Aluminum – While aluminium continues to trend higher, the other metals are either looking weak or are consolidating off the highs. Last week we saw dip-buying into the price weakness, but except for aluminium, there has been little follow-through buying. [29th Mar]. https://www.metalbulletin.com/Article/3981787/MORNING-VIEW-Base-metals-prices-mixed-regionally-cross-currents-flowing-through-broader-markets.html

Copper – Copper prices fell on Tuesday as investors are waiting for details later this week of a large US infrastructure bill that could boost metals demand. Copper for delivery in May was down 1.47% by midday, with futures at $3.97 per pound ($8,734 a tonne) on the Comex market in New York. [30 Mar] https://www.mining.com/copper-prices-fluctuate-on-china-demand-us-bill/

Silver – Silver price is see-sawing around $24.50 as the market reacts to the surge in US treasury yields. On Tuesday, the precious metal was trading lower by 0.54% at 24.51 [1 Apr] https://www.investingcube.com/heres-why-silver-price-is-falling-commodities/

Other Index

Solar Average Spot Prices (USD)

PVinsights http://pvinsights.com/
EnergyTrend http://pv.energytrend.com/
PV InfoLink https://pvinfolink.com/

Product (US$)	04-Feb	11-Feb	18-Feb	25-Feb	04-Mar	11-Mar	18-Mar	25-Mar	01-Apr	w/w
Polysilicon (/kg)	11.470	12.060	12.060	13.280	15.630	15.630	15.630	15.630	16.070	▲
	11.567	11.567	-	11.813	13.206	13.559	14.143	14.808	15.433	▲
	8.950	8.950	-	9.700	10.600	10.950	11.300	11.900	12.300	▲
Multi Wafer (/pc)	0.157	0.172	0.172	0.172	0.186	0.186	0.186	0.185	0.183	▼
	0.193	0.193	-	0.193	0.198	0.198	0.205	0.210	0.216	▲
	0.175	0.175	-	0.175	0.188	0.188	0.200	0.220	0.238	▲
Mono Wafer M6/ 166mm (/pc)	0.422	0.448	0.448	0.448	0.503	0.503	0.511	0.508	0.503	▼
	0.438	0.438	-	0.438	0.500	0.500	0.505	0.513	0.527	▲
	0.439	0.439	-	0.461	0.504	0.504	0.518	0.518	0.518	-
Multi Cell (/w)	0.066	0.068	0.068	0.068	0.070	0.069	0.069	0.068	0.068	-
	0.073	0.073	-	0.073	0.078	0.078	0.078	0.078	0.080	▲
	0.074	0.074	-	0.075	0.077	0.078	0.080	0.084	0.086	▲
Mono PERC Cell M6 (/w)	0.113	0.117	0.117	0.117	0.119	0.116	0.116	0.114	0.113	▼
	0.121	0.121	-	0.121	0.131	0.131	0.131	0.131	0.115	▼
	0.116	0.116	-	0.116	0.118	0.118	0.118	0.117	0.116	▼
Multi Module (/w)	0.168	0.178	0.178	0.178	0.183	0.181	0.180	0.179	0.178	▼
	0.180	0.180	-	0.180	0.185	0.187	0.188	0.188	0.188	-
	0.174	0.174	-	0.174	0.174	0.180	0.180	0.180	0.180	-
Mono PERC Module (/w) M6 / 425-445W	0.201	0.203	0.203	0.203	0.206	0.203	0.202	0.200	0.197	▼
	0.226	0.226	-	0.226	0.226	0.226	0.226	0.226	0.226	-
	0.213	0.213	-	0.213	0.215	0.216	0.217	0.218	0.218	-
Other Key Indices										
Nymex Crude Oil [Front Mth] (US$/bbl)	55.09	58.26	61.95	62.35	60.88	64.92	64.21	60.72	60.35	▼
Coal [API2] (US$/t)	65.55	68.05	65.35	65.85	66.15	66.05	67.55	68.45	70.00	▲
EU CO2 Credits [EUA Spot] (€/t)	36.69	38.90	38.00	38.40	37.53	41.54	42.52	40.79	42.03	▲
HSI	29,307	29,995	31,979	29,718	29,880	29,325	29,581	27,918	28,378	▲
S&P500	3,826	3,909	3,931	3,881	3,870	3,898	3,974	3,936	3,959	▲

Renewable Energy Certificates Key Markets Spot Prices

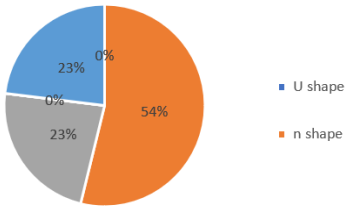
Data provided by our partners listed below - Specialists in EACs trading
US – SRECTrade https://www.srectrade.com/
Europe – Origo http://origo-renouvelable.com/
Asia – Monsoon Carbon http://monsooncarbon.com/
Singapore – LYS Energy https://www.lysenergy.com/

Region	Technology	Price/MWh						M/M
		Oct	Nov	Dec	Jan	Feb	Mar	
PA, US [SREC] (US$)	Solar	16.50	18.00	21.00	22.50	23.00	28.00	▲
OH, US [SREC] (US$)	Solar	10.50	11.00	10.25	10.75	9.00	12.00	▲
NJ, US [SREC] (US$)	Solar	227.00	228.00	229.00	230.00	230.00	234.00	▲
Germany [GO] (€)	Hydro	0.66	0.65	0.65	1.45	1.35	1.37	▲
France [GO] (€)	Hydro	0.15	0.13	0.13	0.29	0.27	0.21	▼
France [GO] (€)	Wind	-	-	-	0.41	0.37	0.31	▼
Netherland [GO] (€)	Wind	0.90	0.82	0.82	1.05	1.10	1.10	-
Italy [GO] (€)	Solar	-	-	-	0.38	0.30	0.27	▼
China [iREC] (US$)	Solar	0.25	0.25	0.25	0.25	0.22	0.22	-
India [iREC] (US$)	Solar	0.90	0.80	0.80	0.80	0.77	0.77	-
Singapore [iREC] (SGD)	Solar	25.00	25.00	25.00	25.00	25.00	25.00	-
Vietnam [iREC] (US$)	Solar	0.40	0.40	0.40	0.40	0.37	0.37	-

SSX Survey

March

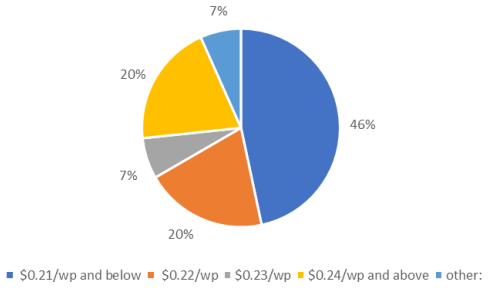
I. What do our readers think will be 2021 shape of panel prices from Q2 onwards?



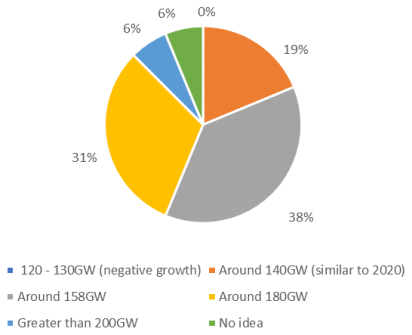
Other opinions:

1) Relatively flat as module suppliers have locked in polysilicon deals but probably a small spike in Q4. They have been several announcements about price increase. I believe it will stable until the end of the year.
2) Stable high towards the end of the year and start decreasing by the end of the year/beginning of next year
3) A dip (valley) in 2-3 weeks (early Q2), flat during Q2/Q3, then in September it will start going up.

II. What do our readers think will be the average FOB price (USD) for mono PERC panels by the end of Dec:



III. What do our readers think will be the global new solar installations in 2021?



SSX conducts a survey every month among our readers and partners, below are the questions for April:

1) Where do you currently see the pricing for end of Q2 2023 (in two years)? FOB China, mainstream modules, >1MW order.
   a. >$0.23/wp
   b. $0.21-0.22/wp
   c. $0.19-0.21/wp
   d. $0.17-0.19/wp
   e. <$0.16/wp

2) Which technology will become mainstream after mono PERC?
   a. Mono PERC will remain as mainstream for at least the next 5 years (~2026)
   b. HJT (including Perovskite HJT tandem)
   c. TOPcon
   d. IBC

To participate, simply just click above box or reply to the weekly newsletter email.

Result will be published in the following month's SSX Morning Ray Newsletter, thanks for participating!

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- Solar, Geothermal, Electric Heating, OH MY!
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- Webinar: Pure Solar Freedom - in cooperation with Solar Supply Sweden
- Webinar: How to profit from using modules with high-power and large wafers?
- TEDxKiteInsights presents COUNTDOWN : Climate & Me: innovation mindsets
- Stationary Energy Storage India (SESI 2021)
- Webinar: Concerns and solutions - reliability in large-wafer modules
- SolarRoofs North Africa: Policies, Business & Market Trends

Market Information

Solar eases as strong cover glass dips, dollar weighs

[31 Mar] Mono PERC module prices tumbled in volatile trade in a broad market retreat, touching a more than one-month low as investors reassessed expectations that the Chinese module makers would retrieve its price easing program at the current pace of nose-diving cover glasses. Non-China polysilicon rose higher amid the chase buying of Chinese wafer makes, as major non-Xinjiang players raised their price quotes for April, while Germany, France, other European states, and the US suspended the use of the products made in Xinjiang. Mono wafer index slipped lower with focus on the speculation of cell production reductions in April, 166mm mono wafer prices inched lower as players grew wary about the demand outlook on legacy products following a new round of 182mm adoptions and oversupply concerns hit the Chinese market. Mono PERC cell fell for a second straight week, hurt by 166mm prices weakening to the lowest since February.
http://pvinsights.com/Report/WReportDisplay.php

New global solar PV installations to increase 27% to record 181 GW this year: IHS Markit

[29 Mar] Global solar photovoltaic installations are expected to grow by 27% this year to a record 181GW, led by China, the US and India, a report by data provider IHS Markit showed on Monday. New solar PV installations were at 142GW last year. Even though prices for solar PV modules are higher than last year, along with long delivery times and rising freight costs, demand should grow in the second half of this year.
"In 2021, the strong growth is mostly coming from the top three markets - China, U.S. and India," Edurne Zoco, executive director, clean energy technology at IHS Markit, told Reuters.
IHS Markit expects China to install 60 GW of solar PV this year, while the United states will add 27 GW.
India could see a surge in demand for modules from August, when a duty-free import window opens until April 2022.
https://www.reuters.com/article/solar-capacity/new-global-solar-pv-installations-to-increase-27-to-record-181-gw-this-year-ihs-markit-idUSL8N2LR2P5

Go-Ahead Singapore rolls out 6-month trial of public buses with solar panels

[30 Mar] The first public buses fitted with ultra-thin solar panels started plying the roads on Tuesday (March 30), in a six-month proof-of-concept trial by bus operator Go-Ahead Singapore. This is the first time such solar panels, which are 1.6mm-thick, flexible and shatterproof, have been installed on buses in Singapore.
The panels are expected to help Go-Ahead Singapore save 1,400 litres of diesel per bus per year. This is about 3 to 4 per cent of the fuel that is typically consumed by the Man A22 buses and translates to a reduction of 3.7 tonnes of carbon emissions per bus per year.
https://www.straitstimes.com/singapore/transport/first-public-buses-with-solar-panels-hit-the-road-in-six-month-trial-by-go-ahead

Image: KUA CHEE SIONG

US solar generation surges in January

[25 Mar] Solar plants in the US produced 21.7% more electricity in January this year than they did in 2020, accounting for 2.4% of the country's entire electricity mix.
That's according to data released by the Federal Energy Regulatory Commission and the US Energy Information Administration, which both showed a rapid scaling up of renewable energy's contribution to the electricity mix at the start of the year. The figures show that solar and wind are "on track to provide a quarter of the nation's electrical generation and possibly a third of its capacity within the next five years", said Ken Bossong, executive director of the non-profit trade association the Sun Day Campaign, which published its own analysis of the data this week.
Bossong said the strong growth of solar and wind shows "no sign of abating with the start of a new year."
https://www.pv-tech.org/us-solar-generation-surges-in-january/

India's rooftop solar installation still dismal at 3.9 GW

[26 Mar] India has installed a cumulative rooftop solar capacity of 3.9 GW as of February 28, against the 40 GW by 2022 target, according to the latest data shared by the power ministry. The capacity is only around 10% of the nation's cumulative grid-connected solar installation (39.1 GW).
The need to approach multiple agencies was identified as one of the major reasons deterring customers from rooftop solar plant installation under the first phase of the Rooftop Solar Programme.
https://www.pv-magazine-india.com/2021/03/26/indias-rooftop-solar-installation-still-dismal-at-3-9-gw/

East Australian gas-fired power demand may extend fall

[29 Mar] Gas demand for power generation in eastern Australia is expected to extend its decline from a 13-year low last year to a new long-term low, with forecasts of up to a 41.7pc fall in gas consumption this year from 2020.
The downward trend in gas consumption for power generation in eastern Australia over recent years is projected to be extended and accelerate in the next five years as more renewable energy projects from solar PV and wind sources come online to meet various state renewable energy targets, Aemo said in the 2021 Gas Statement of Opportunities report.
https://www.argusmedia.com/en/news/2200266-east-australian-gasfired-power-demand-may-extend-fall?backToResults=true

Total signs 1GW Iraq solar deal

[30 Mar] Total has signed an agreement with Iraq's Ministry of Oil to develop a host of energy projects in the country, including 1GW of solar PV. The memoranda will see Total proceed with four major energy projects in the country. While gas treatment units take up the majority of the works, up to 1GW of solar, spread across projects in central and southern governorates of the country, will be pursued under the agreement. Principles of agreement regarding the solar projects were signed by Total and Iraq's Minister of Electricity, Majid Mahdi Hantoush.
https://www.nsenergybusiness.com/news/total-iraqi-oil-ministry-energy-deals/

South Korea deployed 4.1 GW of solar in 2020

[25 Mar] South Korea's Ministry of Trade, Industry and Energy (MOTIE) has estimated that around 4.1 GW of new PV systems were grid connected in the country last year. If confirmed by official statistics, this result would compare to 3.8 GW in 2019 and 2.4 GW in 2018 and would make 2020 the most successful year ever recorded by the country.
At the end of December, South Korea's cumulative installed PV capacity should have reached around 15.6 GW.
https://www.finanznachrichten.de/nachrichten-2021-03/52401703-south-korea-deployed-4-1-gw-of-solar-in-2020-451.htm

IRENA: Albania's cost-effective solar and wind potential is estimated at more than 7 GW

[26 Mar] By unlocking its vast solar and wind power resources, Albania could significantly improve its energy security and resilience to climate change impacts, diversify its energy mix, and achieve important socio-economic benefits.
Albania's cost-effective solar and wind potential is estimated at more than 7 GW, which is more than three times the country's total installed electricity generation capacity.
When it comes to solar energy potentials, Albania is among European countries with the highest number of sunshine hours per year, which can be used to generate electricity from solar photovoltaic installations PV, and heat water with solar thermal panels, IRENA notes.
https://balkangreenenergynews.com/irena-albania-cost-effective-solar-wind-potential-estimated-at-more-then-7-gw/

Tunisia's latest tender for 70 MW of solar gets even better prices

[26 Mar] Tunisia's Energy Ministry has received 57 proposals in its fourth tender for solar PV capacity, the winning bids in which fell as low as TND 0.1149 (USD 0.0399/EUR 0.0337)/ kWh, according to preliminary results.
In the slot covering the construction of six solar farms of 10 MW each, the top six tariff proposals averaged TND 0.118 per kWh, falling from an average of TND 0.128 in the third round. Meanwhile, the selected offers in the category for 10 smaller plants with individual capacities of up to 1 MW will sell power at an average price of TND 0.180/kWh, against TND 0.202/kWh and in the previous call.
https://renewablesnow.com/news/tunisias-latest-tender-for-70-mw-of-solar-gets-even-better-prices-735905/

Image: foxbat/Shutterstock.com

Policy / Incentives

DOE to Cut Cost of Solar Energy 60% Within 10 Years

[26 Mar] The US Department of Energy has announced a new target to cut the cost of solar energy by 60% within the next 10 years, in addition to nearly $128 million in funding to lower costs, improve performance, and speed the deployment of solar energy technologies. Lowering the cost of solar energy is essential to accelerating deployment and achieving President Biden's goal of a 100% clean electricity grid by 2035. To reach that goal in the next 15 years, the country will need to add hundreds of GWs of solar energy to the grid at a pace as much as five times faster than current installation rates. To that end, DOE is accelerating its utility-scale solar 2030 cost target by five years—setting a new goal of driving down the current cost of 4.6 cents per kWh to 3 cents/kWh by 2025 and 2 cents/kWh by 2030.
https://www.environmentalleader.com/2021/03/doe-to-cut-cost-of-solar-energy-60-within-10-years/

Australians could be charged for solar exports under plans to ease grid 'traffic jams'

[25 Mar] A draft determination released by the Australian Energy Market Commission includes plans to let networks offer two-way pricing to address the issue of 'traffic jams' on the network. This would give networks pricing options that they don't currently have, such as rewarding solar and battery system owners for sending power to the grid when it is needed and charging them for sending power when it is too busy. Millions of Australian households fitted with rooftop PV could be charged for exporting electricity to the grid under new proposals that critics have warned could curb the uptake of solar systems and slow the country's energy transition.
https://www.pv-tech.org/australians-could-be-charged-for-solar-exports-under-plans-to-ease-grid-traffic-jams/

Haryana announces subsidy on rooftop solar power plants

[26 Mar] To promote solar energy in Haryana, the Dakshin Haryana Bijli Vitaran Nigam in Thursday announced a scheme with subsidy of 40 per cent for a three kilowatt plant in homes as per the guidelines of the Ministry of New and Renewable Energy. A subsidy of 20 per cent subsidy will be for four to 10 KW for installing solar system from listed firms.
https://energy.economictimes.indiatimes.com/news/renewable/haryana-announces-subsidy-on-rooftop-solar-power-plants/81698922

Par panel asks MNRE to increase solar capacity target under CPSU scheme

[28 Mar] A parliamentary panel has asked the Ministry of New & Renewable Energy to increase the capacity addition target under the scheme for setting up grid-connected solar projects by CPSUs and to take pro-active steps to encourage more participation from these units.
MNRE is implementing the scheme for setting up grid-connected solar PV power projects by central public sector undertakings and government organizations with Viability Gap Funding. As per the scheme, these projects are implemented with domestically manufactured solar cells and modules.
https://www.business-standard.com/article/current-affairs/par-panel-asks-mnre-to-increase-solar-capacity-target-under-cpsu-scheme-121032800291_1.html

Company News

JA Solar's PV module shipments increased over 54% in 2020

[30 Mar] JA Solar has reported PV module shipments of 15.88GW in 2020, up from 10.26GW in 2019, a 54.8% increase YoY, setting new records for total shipments and shipment growth. The shipment figures were almost 1GW higher than some market research firms had forecasted.
The company reported overseas shipments accounted for 68.3% (10.84GW) of total shipments in 2020. As of the end of 2020, the company said it had a module nameplate production capacity of 23GW.
https://www.pv-tech.org/ja-solars-pv-module-shipments-increased-over-54-in-2020/

New rooftop solar PV module tailored for C&I makes a market entrance

[26 Mar] JA Solar launched its DeepBlue 3.0 Light high-efficiency rooftop solar PV module tailored for C&I installations at the16th China (Jinan) Solar Utilization Convention and Exhibition. The mass power production of the module is up to 415W. The modules successfully passed certification testing conducted by TÜV SÜD to the standards for IEC 61215 and IEC 61730 certification.
https://www.esi-africa.com/industry-sectors/generation/solar/new-rooftop-solar-pv-module-tailored-for-ci-makes-a-market-entrance/

JinkoSolar Announces Residential 415W Tiger Pro Solar Panel

[31 Mar] JinkoSolar is launching a new line of Tiger Pro solar panels it says are suitable for use on residential, commercial and industrial rooftops. Yesterday, Jinko unveiled smaller and lighter solar panels based on the Tiger Pro 182mm, 54-cell design (but half-cut solar cells) that deliver a maximum power of 415W. Other features of JinkoSolar Tiger Pro panels include Tiling Ribbon Technology (TRT) that eliminates inter-cell gaps and the use of circular ribbon to boost light absorption and increase energy generation.
https://www.solarquotes.com.au/blog/jinkosolar-tiger-pro-mb1935/

Jinergy Supplies Its Latest HJT Module to East Asia and Europe

[30 Mar] Recently, Jinneng Clean Energy Technology Ltd. (Jinergy) announced that the company is supplying M6-size(166mm) half-cut HJT solar modules to East Asia and European market. Jinergy's M6 wafer HJT module received TÜV NORD Certificate last December. In his speech entitled Progress on HJT mass production at Jinergy, Dr. Yang reveals that the latest HJT module Jinergy offers deploys M6 wafer, MBB as well as half-cut technology. According to Jinergy, the average HJT cell efficiency in mass production has reached 24.3% while efficiency of champion cell in mass production has reached 24.7%.
http://www.pvtime.org/jinergy-supplies-its-latest-hjt-module-to-east-asia-and-europe/

Axitec releases 540 W solar panels

[29 Mar] Axitec, a German solar module supplier and battery manufacturer, has launched two new modules with power ratings of 410 W and 540 W. The two half-cell modules feature 182 mm wafers and will be available from Q2 2021.
The company said that its AXIpremium XXL HC modules – featuring 108 cells and a glass area of less than 2 square meters – are ideal for installations on top of buildings in Germany. Its 144-cell modules, on the other hand, cannot be installed on rooftops in Germany, but they are suitable for ground-mounted PV systems, it said.
https://www.pv-magazine.com/2021/03/29/axitec-releases-510-w-solar-panels/

Karpat Solar to launch Romania's first PV module factory

[25 Mar] Karpat Solar has signed an agreement with Spain's automation and assembly solutions provider Mondragon Assembly to supply a production line for photovoltaic solar modules with a capacity of 100 MW per year.
The 100 MW in modules is the first phase of a large-scale project that will initially secure the production for the local market, but with an ambition to expand in the European Union. Csömör Károly, CEO of Karpat Solar, says he expects the capacities to be in full production before summer. It will allow the company to tackle the Romanian market in autumn 2021, in the first phase, he said.
https://balkangreenenergynews.com/karpat-solar-to-launch-romanias-first-pv-module-factory/

BayWa r.e. profits from renewables 'megatrend' to post record financial results

[26 Mar] German agriculture group BayWa is forecasting a significant revenue rise at its renewables unit this year, thanks to a strong project pipeline and growth in PV component trading. The company has also announced that as of this year, renewable energy trading will operate under a newly established IPP business, which will manage around 600MW of solar and wind plants by the end of 2021 and 2.5GW of projects in the "medium term", helping the company generate stable cash flows.
https://www.pv-tech.org/baywa-r-e-profits-from-renewables-megatrend-to-post-record-financial-results/

Image: BayWa r.e.

ReneSola (SOL) Beats on Q4 Earnings, Misses on Revenues

[30 Mar] Solar developer ReneSola returned to net profit last year despite struggling with declining revenues throughout 2020. The small-scale solar specialist recorded a net profit of US$3.3 million in its annual results statement last week, having closed 2020 with US$73.9 million in revenues, US$45.2 million less than it secured in 2019. Although revenues were higher in 2019, the company did also make a net loss of US$8.8 million the same year.
ReneSolar sold a number of smaller solar project rights in Poland, Hungary, Romania and the UK towards the end of the year, providing its revenues with a significant boost, but two sales in Europe were delayed to the first half of 2021.
https://finance.yahoo.com/news/renesola-sol-beats-q4-earnings-110611184.html

Non-Crystalline/Science/Technology

What can organic solar cells bring to the table?

[25 Mar] Like traditional silicon solar technology, organic solar cells (OSCs) turn the sun's energy into usable electricity. While additional funding and research are needed to bring OSCs to the commercial market, experts agree they will play an important role in the future of solar technology. Two unique features of OSCs are their thinness and flexibility. While a typical silicon solar cell is about as thick as the average width of a human hair, most OSCs are roughly a thousand times thinner. Because of their thinness and flexibility, OSCs can be fabricated on curved surfaces and flexible backings. For example, they can be patched or integrated into the fabric of tents, backpacks and even clothing.
https://www.greenbiz.com/article/what-can-organic-solar-cells-bring-table

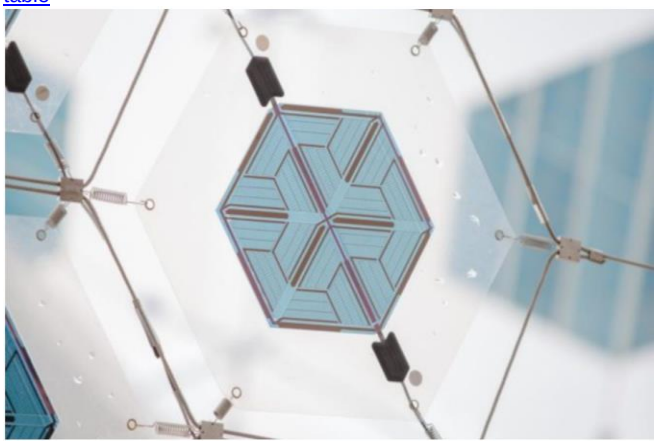

IMAGE: Greenbiz

LPKF hit by thin film solar customers delaying orders

[25 Mar] Thin-film laser systems equipment supplier LPKF suffered from delays in receiving new expected orders from two long-stand customers last year. Both its long-standing CdTe solar module manufacturing customer delayed orders and payments from its first CIGS manufacturing customer based in China were disrupted because of the impact of COVID-19. LPKF reported 2020 revenue in its solar business unit of €24.3 million, down 45% from €44.1 million in 2019. Solar accounted for 25.3% of total revenue in 2020.
https://www.pv-tech.org/lpkf-hit-by-thin-film-solar-customers-delaying-orders/

Image: LPKF

Support

Nextracker Bags 125 MW Solar Tracker Order In Spain

[30 Mar] Nextracker Inc., the US based solar tracker manufacturer and supplier, has secured an order for 125 MW of solar trackers from Spain based PV developer Solaria Energia y Medio Ambiente.
To complete this order, Nextracker will supply its smart solar tracker technology NX Horizon to be deployed by its Spanish counterpart for numerous project sites in Spain. Solaria said it chose single-axis trackers from Nextracker for their 'proven wind design, engineering, and testing expertise'.
http://taiyangnews.info/business/nextracker-bags-125-mw-solar-tracker-order-in-spain/

Spain's Soltec lands solar tracker order for 359-MW project in Brazil

[25 Mar] Spain's Soltec Power Holdings SA announced that it has received an order to supply solar trackers for a 359-MW solar PV project in Brazil. The company's participation in the project is the fruit of a contract signed with Spanish infrastructure builder Elecnor SA. Soltec is to supply trackers for bifacial panels.
https://renewablesnow.com/news/spains-soltec-lands-solar-tracker-order-for-359-mw-project-in-brazil-735752/

Image: Soltec

Finance

New joint venture to develop 3.4GW Spanish PV

[29 Mar] Renewable Power Capital (RPC) has entered into a joint venture with Benbros Solar to develop 14 solar energy projects across Spain totalling 3400MW. The 50:50 joint venture marks RPC's entry into the Spanish renewables market. RPC is a renewables investment platform backed by the Canada Pension Plan Investment Board.
Spain is a "key target" for investment alongside the Nordics, where RPC acquired a portfolio of onshore wind projects earlier this year, due to the attractiveness of its renewable energy market in general and solar PV in particular.
https://renews.biz/67542/new-joint-venture-to-develop-34gw-spanish-pv/

JSW Energy arm plans to raise $750 million via green bonds

[26 Mar] JSW Energy on Friday said its board has approved a proposal for issuance of green bonds by its arm for raising $750 million (around Rs 5,443 crore) from international markets. The board approved issuance of green bonds by JSW Hydro Energy Ltd, the company said in a BSE filing. Funds up to $750 million will be raised through issuance of non-convertible, senior, secured, fixed rate green bonds in the international markets, subject to market conditions and receipt of necessary approvals by JSWHEL, it added.
JSWHEL is a 100% subsidiary of the company and owns and operates the Karcham-Wangtoo (1000 MW) and Baspa II (300 MW) hydro-electric power plants in Himachal Pradesh.
https://energy.economictimes.indiatimes.com/news/renewable/jsw-energy-arm-plans-to-raise-750-million-via-green-bonds/81710975

NextEnergy hits 150MW UK PV target

[25 Mar] NextEnergy Solar Fund has reached its development target of 150MW of subsidy-free solar in the UK, through approving two projects totalling 85MW. Both projects being prepared for construction and are expected to be energised in early 2022. The assets have an investment value of £45m and comprise Whitecross, a 35.3MW project in Lincolnshire and Hatherden, a 50MW project in Hampshire.
Next Energy Solar Fund has selected Whitecross and Hatherden from its development portfolio based on the assets' "attractive forecast financial returns" and their relative near-term energisation.
https://renews.biz/67473/nextenergy-hits-150mw-uk-pv-target/

Power Generation /Installations /Corp.PPA

Neoen wins approval for 350-MW Aussie solar-plus-storage project

[29 Mar] France's Neoen has been awarded planning consent for an up-to-350-MW solar project in New South Wales, Australia, to be coupled with battery storage.
The company intends to build a solar complex in the state's Riverina region comprising up to 1.1 million PV panels with single-axis trackers mounted on steel frames. The installation will have a total direct current (DC) capacity of 402.5 MW. The project also includes a climate-controlled energy storage system that will house battery units totalling 100 MW/200 MWh.
Neoen expects that the construction phase will last around 18 months. Once the solar farm is up and running, it will produce more than 800,000 MWh of electricity per year.
https://renewablesnow.com/news/neoen-wins-approval-for-350-mw-aussie-solar-plus-storage-project-736063/

Orsted commits to 518MW hybrid giant in Texas

[30 Mar] Orsted has taken a final investment decision on a 518MW hybrid wind and solar project in the US state of Texas with an expected operational date in the first half of 2022.
The Helena Energy Center consists of the 268MW Helena wind farm and 250MW (AC) Sparta solar PV farm.
https://renews.biz/67564/orsted-green-lights-518mw-texas-pv-wind-giant/

O&G major Galp to begin work on maiden solar project in Portugal

[26 Mar] Oil and gas company Galp has contracted a consortium to start construction work on its first large-scale PV plant in Portugal next month.
Portuguese energy solutions firm Jayme da Costa will carry out electrical and mechanical works for the 144MW solar complex in Alcoutim, in the southern Algarve region, while conglomerate Visabeira will execute civil construction works.
Consisting of four plants installed on an area of 250 hectares, the project is expected to be completed in the first quarter of 2022 and have an annual production capacity of 250,000MWh.
https://www.galp.com/corp/en/media/press-releases/press-release/id/1205/galp-starts-building-its-first-large-scale-solar-pv-project-in-portugal

Adriatic Sea to host 100 MW offshore PV plant

[26 Mar] Italian energy solutions provider and gas contractor Saipem has teamed up with Italy-based renewable energy company Qint'x to build a 100 MW offshore solar farm in the Adriatic Sea off the coast of Ravenna.
The plant will be built with a modularized approach and may include a 50 MW battery to balance the grid demand peak.
The permitting process is ongoing and the concession request for the offshore area and permit for the construction should be finalized within the end of 2023。
https://www.pv-magazine.com/2021/03/26/adriatic-sea-to-host-100-mw-offshore-pv-plant/

Anesco secures planning permission for 50 MW solar farm in Lincolnshire

[30 Mar] A 50 MW solar farm developed by Anesco has been given the green light by East Lindsey District Council, with the company gearing up for its latest wave of large-scale solar projects.
As well as contributing to the UK's drive towards net zero emissions by 2050, the project also supports East Lindsey District Council's Carbon Reduction Plan and associated recent commitment to becoming net zero by 2040.
https://www.renewableenergymagazine.com/pv_solar/anesco-secures-planning-permission-for-50-mw-20210330

Solar Kraft Kft. Developed 3 Solar Plants in Hungary

[26 Mar] Solar Kraft Kft., a clean energy developer, announced that it has developed 3 solar power plants in Hungary recently. Spread over Marcali, Tiszafüred and Háromfadoba, totally 17.39MW in size, which added another landmark for Solar Kraft in the Hungary market.
The 17.39MW project includes 3 projects, there are 4.5MW, 11MW and 1.89MW separately. "We use high efficient bifacial solar modules provided by Phono Solar, one of the Tier 1 solar product brand, in 2 projects, and Mono Perc solar modules in the other. About 38,192 solar panels will be installed in 3 projects. "Norbert MAJER, managing directors of Solar Kraft Kft said.
https://www.pv-magazine.com/press-releases/solar-kraft-kft-developed-3-solar-plants-in-hungary/

8MW Solar PV power plant to be built in Mauritius

[29 Mar] An 8MW Solar PV power plant is set to be built at Tamarind Falls, Henrietta (Phase II), Mauritius by Bharat Heavy Electricals Limited (BHEL). BHEL has been awarded the EPC contract by CEB Co. Ltd, Mauritius, a wholly owned subsidiary of Central Electricity Board, Govt. of Mauritius.
The PV power plant will be executed by BHEL's Solar Business Division, Bengaluru and International Operations Division, New Delhi. Notably, the solar project in Mauritius marks the consolidation of BHEL's presence in Africa, where it has been active for more than four decades with electricity generation projects (approx. 2,100 MW) and equipment supplies in 23 African countries.
https://constructionreviewonline.com/news/8mw-solar-photovoltaic-pv-power-plant-to-be-built-in-mauritius/

Floating PV

MP Quantum to Deploy Ocean Sun's Floating Solar Tech in Greece and Cyprus

[30 Mar] Ocean Sun, a Norway-based developer of floating solar technology, has signed an agreement with MP Quantum Group to deploy Ocean Sun's floating solar solution in Greece and Cyprus. Being two of EU's most southern countries, Greece and The Republic of Cyprus have excellent solar irradiance which provides good yield for solar power investments, Ocean Sun said.
As cited by Ocean Sun, according to HELAPCO, a non-profit organization representing the major Greek PV companies, this implies an average of 400-500MW of installed PV capacity per year until 2030. With long coastlines, islands, and inland water reservoirs, this provides an excellent fit with floating solar.
https://www.oedigital.com/news/486463-mp-quantum-to-deploy-ocean-sun-s-floating-solar-tech-in-greece-and-cyprus

Image: Ocean Sun

AGL to leverage floating solar at Loy Yang for hydrogen project

[31 Mar] At AGL Energy's Investor Day the energy giant revealed plans for a potential floating solar project on the site of its Loy Yang power station in Victoria. AGL, which is currently in the application process for a 200 MW battery at the site and is already producing brown hydrogen for export to Japan, is looking to leverage unused space to reduce emissions.
https://reneweconomy.com.au/agl-mulls-floating-solar-farm-at-loy-yang-and-electrothermal-solar-storage-pilot/

Storage / Battery

CEP to build 150MW big battery at former Holden plant in South Australia

[30 Mar] The company behind plans to build 2GW of big battery capacity around Australia, including a 1,200MW project in the New South Wales Hunter Valley, has announced a new grid-scale battery for South Australia, to be built on the site of the former Holden car manufacturing plant on the outskirts of Adelaide. CEP.Energy, a company chaired by former NSW Labor premier Morris Iemma, said on Tuesday that the newly announced big battery project, known as the Lionsgate Energy Storage System, would have a capacity of 150MW, with a storage duration as yet unspecified, pending a decision on the technology to be used.
https://reneweconomy.com.au/cep-to-build-150mw-big-battery-at-former-holden-plant-in-south-australia/

Azelio wins commercial order in Sweden for its energy storage TES.POD®

[29 Mar] Azelio wins domestic order for two of its TES.POD units from Swedish-based Industrisupport i Åmål AB. Azelio's TES.POD will store surplus energy from a 446kW rooftop solar PV system and supply electricity and heat from the storage, on demand around-the-clock. With this installation, Azelio's storage units will increase the share of renewable energy supply by 24% and reduce CO2 emissions from energy use by 168 tonnes per year.
https://www.prnewswire.com/news-releases/azelio-wins-commercial-order-in-sweden-for-its-energy-storage-tespod-301257341.html

MIT study shows plunge in lithium-ion battery cost over the last 10 years

[25 Mar] According to new analysis by MIT researchers, the overall cost of rechargeable lithium-ion batteries has fallen dramatically over the last 30 years, however. It's fallen by 97% since the commercial introduction of the lithium-ion design, which is a comparable drop to that of the cost of photovoltaic cells used in solar panels. But more importantly, the price decline was faster than previously estimated, which could explain why many automakers have started producing electric vehicles. Some like Volkswagen are also scrambling to build battery factories and experiment with new battery formats.
https://www.techspot.com/news/89042-mit-study-shows-plunge-lithium-ion-battery-cost.html

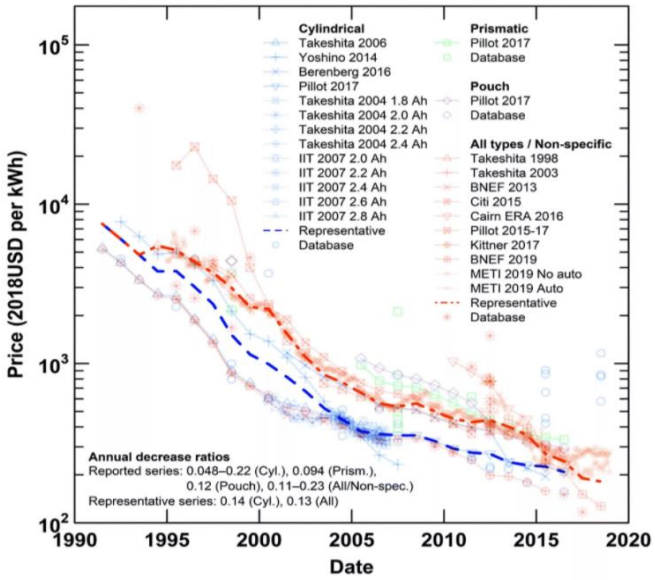

Image: MIT

Interesting News / Comments

5 reasons roofing contractors are moving into solar now

[30 Mar] Demand for home solar soared in 2020, according to recent BloombergNEF research, with U.S. residential solar installations jumping 21% in the first seven months of this year compared to the same period in 2019.
In the coming years, we expect that to change.
With all the money being left on the table by contractors with an allergic reaction to solar, there are plenty of reasons why now is the time to get ahead.
1. 75% of roofs in the US are made of asphalt shingles, and the average life of an asphalt shingle roof is 15-20 years.
2. In fact, 20% of residential solar system jobs don't go through because they need a new roof at the time of install.
3. EagleView reports support the transition from roofing to solar, so you only need to order one.
4. There are several ways for roofers to enter the solar market, meaning you can start small and work your way up.
5. When you go to the site of a potential roofing project, you're not able to get the age of the roof, so selling and installing yourself is a much more effective solution.
https://www.solarpowerworldonline.com/2021/03/5-reasons-roofing-contractors-are-moving-into-solar-now/

Why 2021 is the year you should invest in solar power

[29 Mar] The world is moving away from fossil fuel resources like coal and gas to produce electricity, as we transition towards more sustainable models that use renewable energy sources.
For homes and businesses, this means turning towards solar installations instead of grid power.
Over two million Australian homeowners have already made his transition.
Now, as the world moves faster towards a renewable energy future, 2021 presents the best opportunity to switch to solar – with so many reasons to transition, including:
1. Solar is more affordable than ever before.
2. Panels are more efficient than ever, so you are getting more bang for your buck.
3. Panels are more efficient than ever, so you are getting more bang for your buck.
4. You will save enormous amounts of money.
https://www.energymatters.com.au/renewable-news/why-2021-is-the-year-you-should-invest-in-solar-power/

Image: Energymatters.com

Webinar / Conference

We're Not Fooling -- Solar Saves!
Time: 12:00am – 1:00am, 2nd April 2021, SGT
Organizer: Sustainable Newton
https://zoom.us/webinar/register/WN_ow5aijmOSxa6ODxmEBFCeg

[Webinar] Unveil the Secret Sauce of Product Management in Renewable Energy
Time: 9:00am – 10:00am, 2nd April 2021, SGT
Organizer: Energy Innovation Network
https://www.energyinnovation.network/upcoming-events

Green Building - A Live online course
Time: 2:00pm 3rd April – 6:30pm 4th April, 2021, SGT
Organizer: Solar Study® 🚀
https://www.linkedin.com/events/6773153895154798592/

Solar, Geothermal, Electric Heating, OH MY!
Time: 10:00pm – 11:30pm, 5th April 2021, SGT
Organizer: lisabeth Balachova
https://www.eventbrite.com/e/146897707999

Webinar: Energy storage optimization and valuation
Time: 9:00pm – 10:00pm, 6th April 2021, SGT
Organizer: KYOS Energy Consulting B.V.
https://www.kyos.com/courses-events/webinar-energy-storage-tuesday-6-april-15-00-cet/

Webinar: Pure Solar Freedom - in cooperation with Solar Supply Sweden
Time: 3:00pm – 4:00pm, 7th April 2021, SGT
Organizer: Tigo Energy
https://event.on24.com/eventRegistration/EventLobbyServlet?target=reg30.jsp&referrer=https%3A%2F%2Fwww.tigoenergy.com%2F&eventid=3059050&sessionid=1&key=CF6A9F6AE86DAD5CE4081F39B1D653FB&regTag=&V2=false&sourcepage=register

Webinar: How to profit from using modules with high-power and large wafers?
Time: 5:00pm – 6:00pm, 7th April 2021, SGT
Organizer: pv magazine
http://register.gotowebinar.com/register/5292100785210932 4?source=scm

TEDxKiteInsights presents COUNTDOWN : Climate & Me: innovation mindsets
Time: 8:00pm – 9:30pm, 7th April 2021, SGT
Organizer: Kite Insights
https://virtualapproval.zoom.us/webinar/register/WN_gsGzcv5dSPCtNNgtiS-9Gw

Stationary Energy Storage India (SESI 2021)
Time: 11:30am – 8:30pm, 8th April 2021, SGT
Organizer: India Energy Storage Alliance (IESA)
https://stationaryenergystorageindia.dreamcast.in/

Webinar: Concerns and solutions - reliability in large-wafer modules
Time: 4:00pm – 5:00pm, 8th April 2021, SGT
Organizer: pv magazine
https://register.gotowebinar.com/register/4140303807166718990?source=scm

SolarRoofs North Africa: Policies, Business & Market Trends
Time: 5:00pm – 7:00pm, 8th April 2021, SGT
Organizer: SolarQuarter
https://events.firstviewgroup.com/SolarRoofsNorthAfrica#/?lang=en