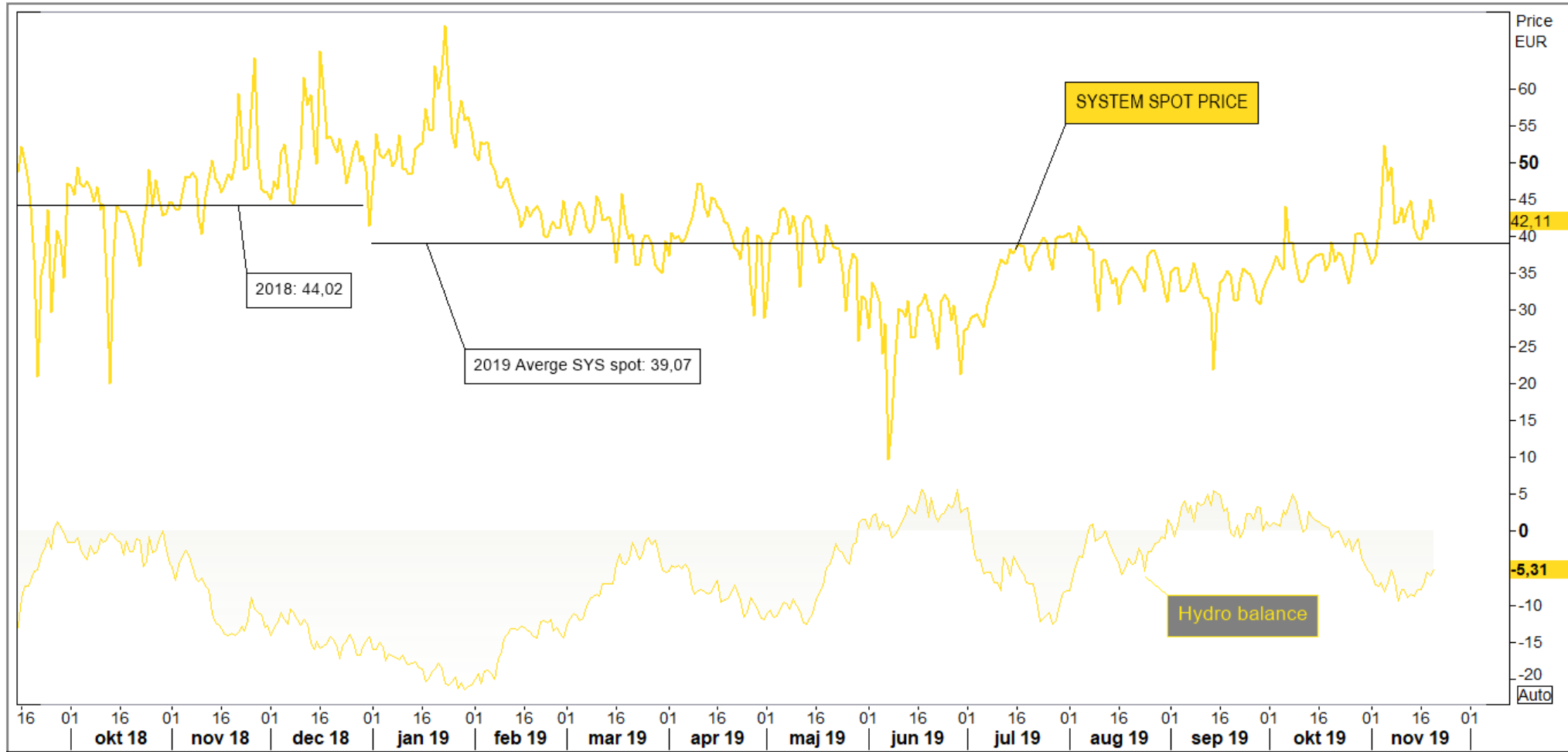


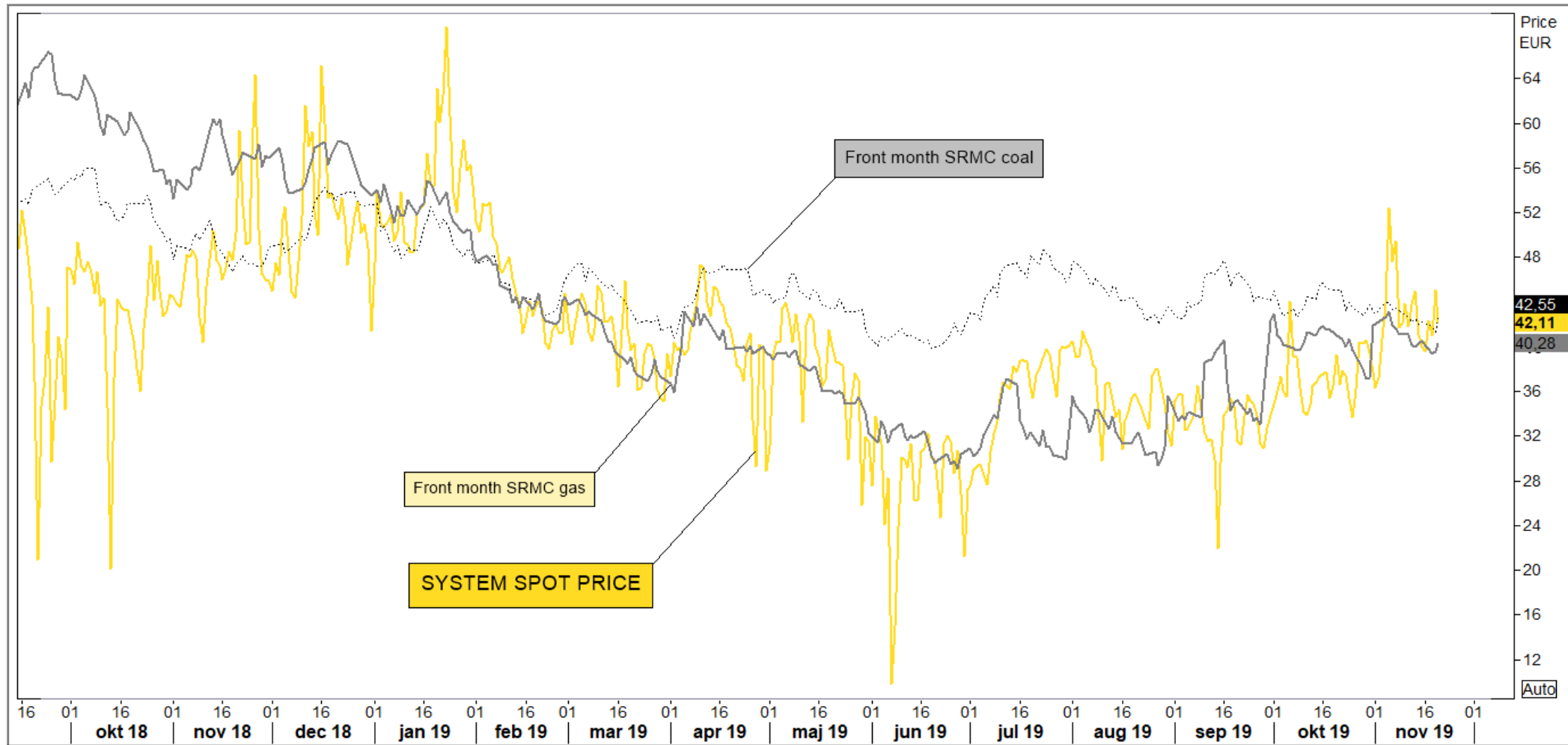
Nordic Power Prices

What are the key developments for Nordic power in 2019?

Spot lower than last year, hydro main driver



... but this year gas power production is in the drivers seat



German lignite use plunges 21.7% Jan-Sep

(Montel) Germany's use of lignite fell 21.7% during the first nine months this year amid production cuts, power plant closures and displacement by other energy sources, statistics group Ageb said on Tuesday.

Lignite recorded the largest drop in percentage terms among energy sources in Germany, followed by a 18.4% fall for hard coal consumption.

The figures are up from drops of 18.4% and 15.1% respectively for [the first half of the year](#).

For lignite, the reductions stemmed from cuts to mining operations at RWE's Hambach site and from fewer deliveries to power plants as the country aims to curb CO2 emissions.

The use of hard coal for power and heat generation plummeted more than 30% year on year, owing to stronger output from renewables and gas-fired plants, Ageb said.

Spot price drivers of increasing importance #1

New cables will increase possibility of exporting the Nordic power surplus...



...or?



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Denmark is net importer in Cobra link's first month

(Montel) Denmark has been a net importer of electricity during the first month of operation of the new 700 MW Cobra link to the Netherlands, according to figures from Nord Pool.

The Nordic nation had a net import of 25 GWh between 11 September and 8 October, even though prices in the western Denmark (DK1) bidding zone were around EUR 1/MWh lower than the Dutch price of EUR 37.63/MWh.

This is contrary to market expectations of flows mostly going towards the Netherlands, as on the 723 MW NorNed cable from Norway, because power prices have been typically lower in the Nordic region.

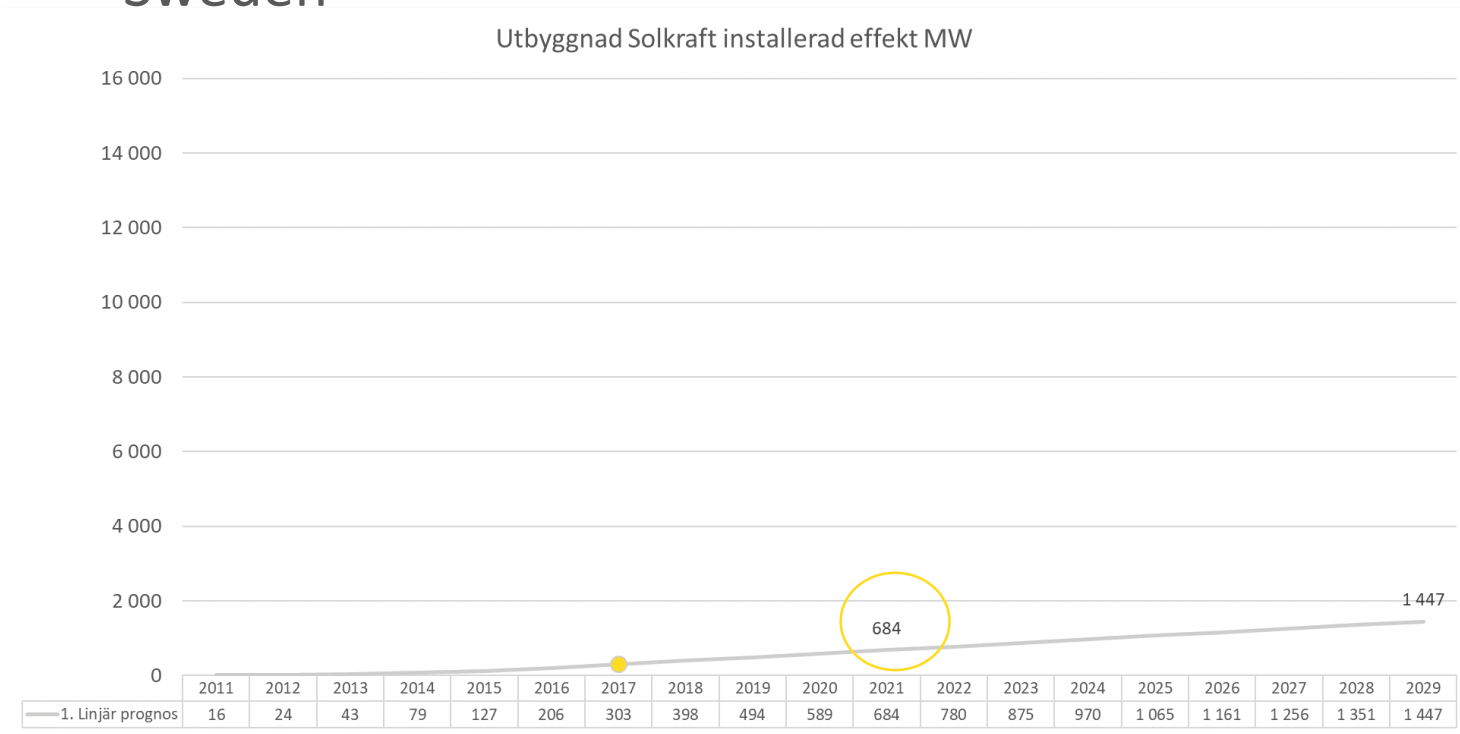
Figures from power exchanges Nord Pool and Epex Spot show DK1 has had lower spot prices than the Netherlands on average every month back to January 2011.

Last month Storm Geo analyst Sigbjørn Seland [estimated](#) Denmark would see net export of 1 TWh in the interconnector's first six months of operation.

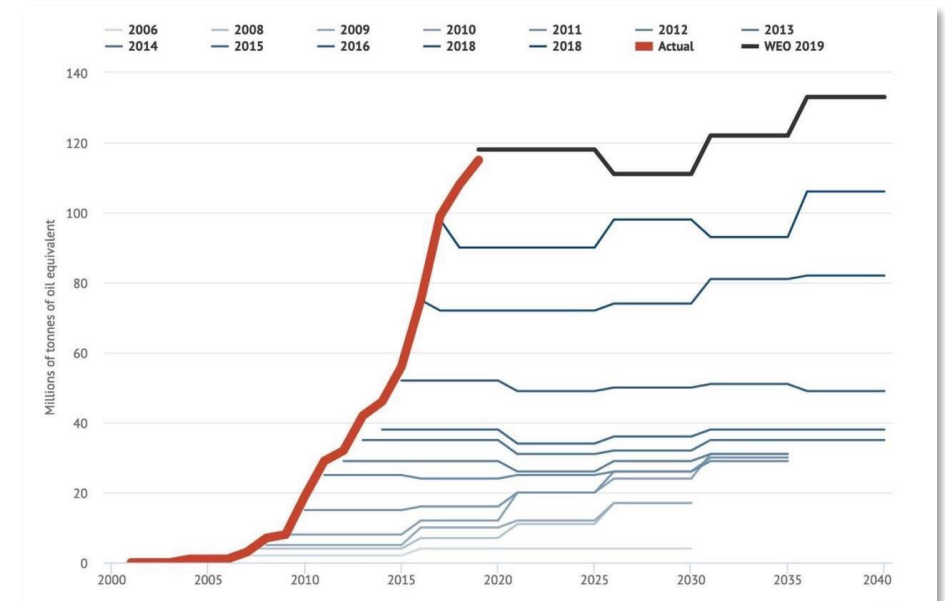
The profitability of the cable – which cost EUR 600m – is based on Denmark exporting more than it imports, said TSO Energinet.

Spot price drivers of increasing importance #2

Solar: let's start with an analysis we did in 2017 regarding the forecasted build out of solar in Sweden



...fairly in line with WEOs (repeated) linear observations

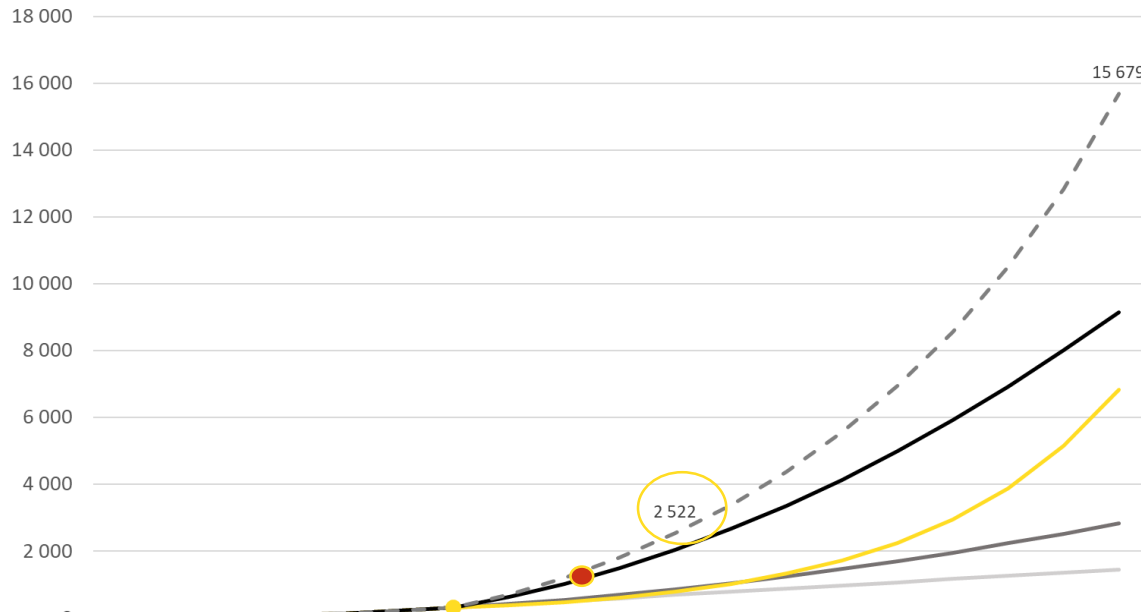


Spot price drivers of increasing importance #2

...accounting for non-linearity in key input factors allows modelling exponential scenarios

...and has now 2 years later proved better so far..

Utbyggnad Solkraft installerad effekt MW



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1. Linjär prognos	16	24	43	79	127	206	303	398	494	589	684	780	875	970	1 065	1 161	1 256	1 351	1 447
2. Icke-linjär regression utifrån trend över tid	16	24	43	79	127	206	303	410	539	686	851	1 035	1 237	1 456	1 695	1 951	2 226	2 518	2 830
3. Icke-linjär regression utifrån kostnad solcell	16	24	43	79	127	206	303	367	474	611	789	1 020	1 323	1 720	2 247	2 947	3 883	5 138	6 829
4. Icke-linjär regression utifrån solcellsstöd	16	24	43	79	127	206	303	627	1 020	1 490	2 036	2 658	3 357	4 132	4 984	5 911	6 916	7 996	9 153
5. Kombinerad produktionsökning (2) och (4)	16	24	43	79	127	206	303	691	1 191	1 798	2 522	3 376	4 377	5 550	6 928	8 556	10 495	12 831	15 679

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Energimyndigheten: Svensk solkraft på väg mot 1 TWh

(Montel) Den nätan slutna solkraften kommer gott och väl att tiodubblas mellan åren 2016-2021, visar en färsk prognos från Energimyndigheten, som även visar att produktionskapaciteten på årsbasis når 1 TWh inom de närmaste åren.

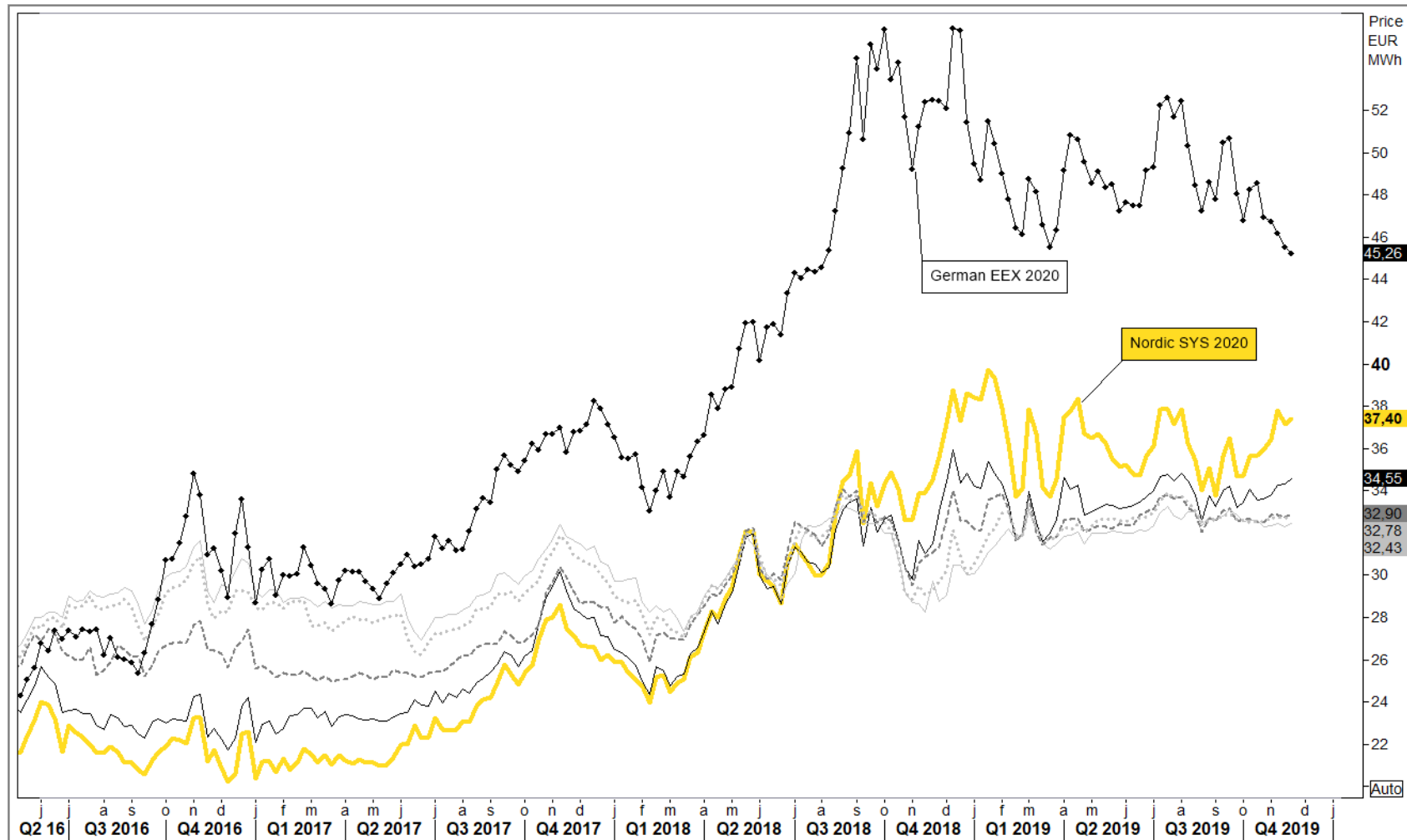
Enligt myndighetens [beräkning](#) når den installerade effekten 690 MW vid utgången av år 2019 och fortsätter att stiga till 1.660 MW vid utgången av år 2021. Det är en ökning med 1.100 procent sedan 2016 års 140 MW och en kraftig uppgång jämfört med fjolårets 440 MW.

Samtidigt beräknas produktionen från solkraftsanläggningarna öka från 278 GWh i fjol till 484 GWh i år och 1.220 GWh år 2021.

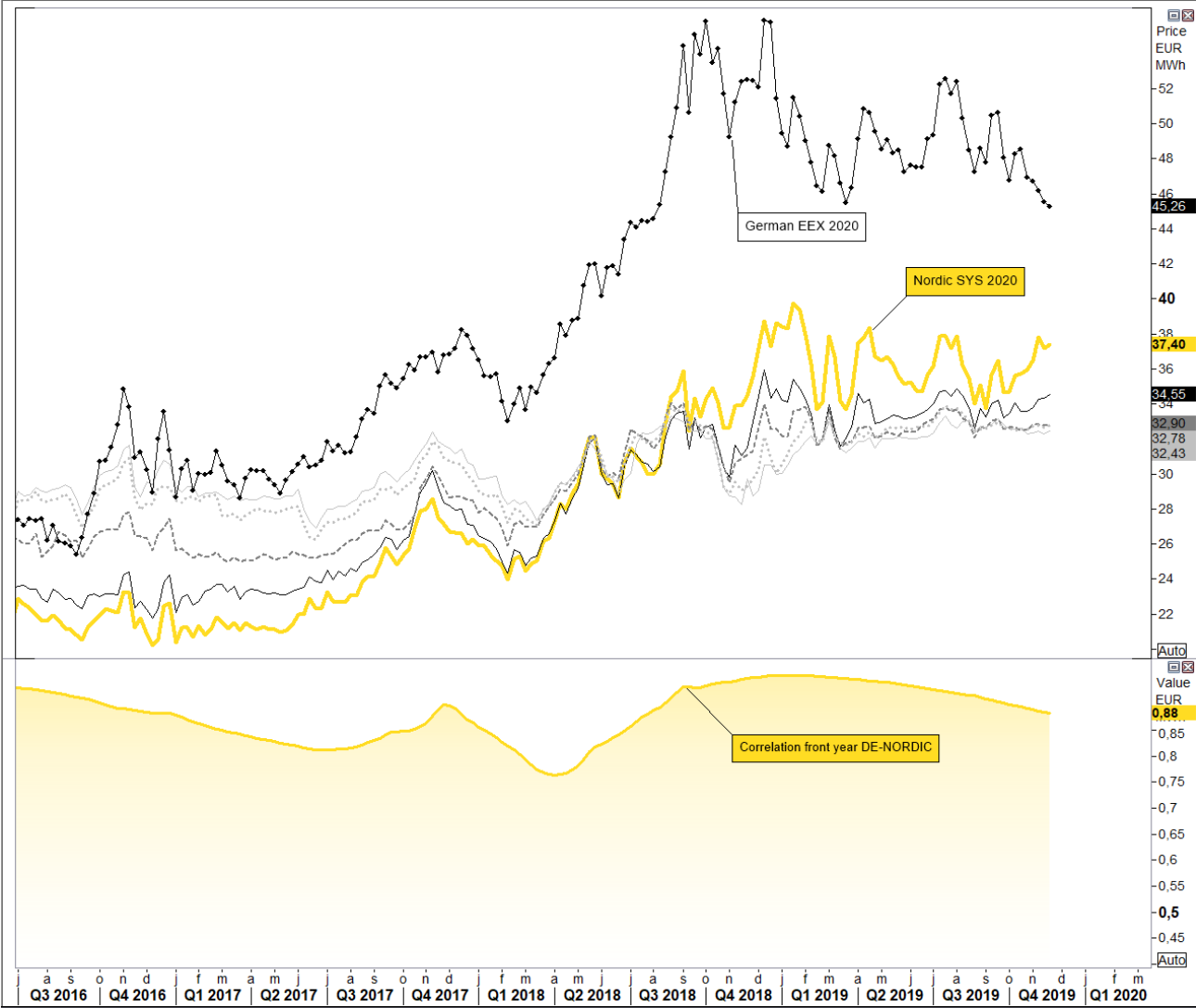
– Ökande intresse bland allmänheten och energiföretag, sänkande modulpriser, och förenklande regelverk leder till att utbyggnad av solcellsanläggningar fortsätter vara stor. Styrmedel riktade till sol och ökad miljömedvetenhet är också två anledningar till raska utvecklingen, säger analytiker Jeffrey Berard på Energimyndigheten i ett pressmeddelande.

Forward Power Prices

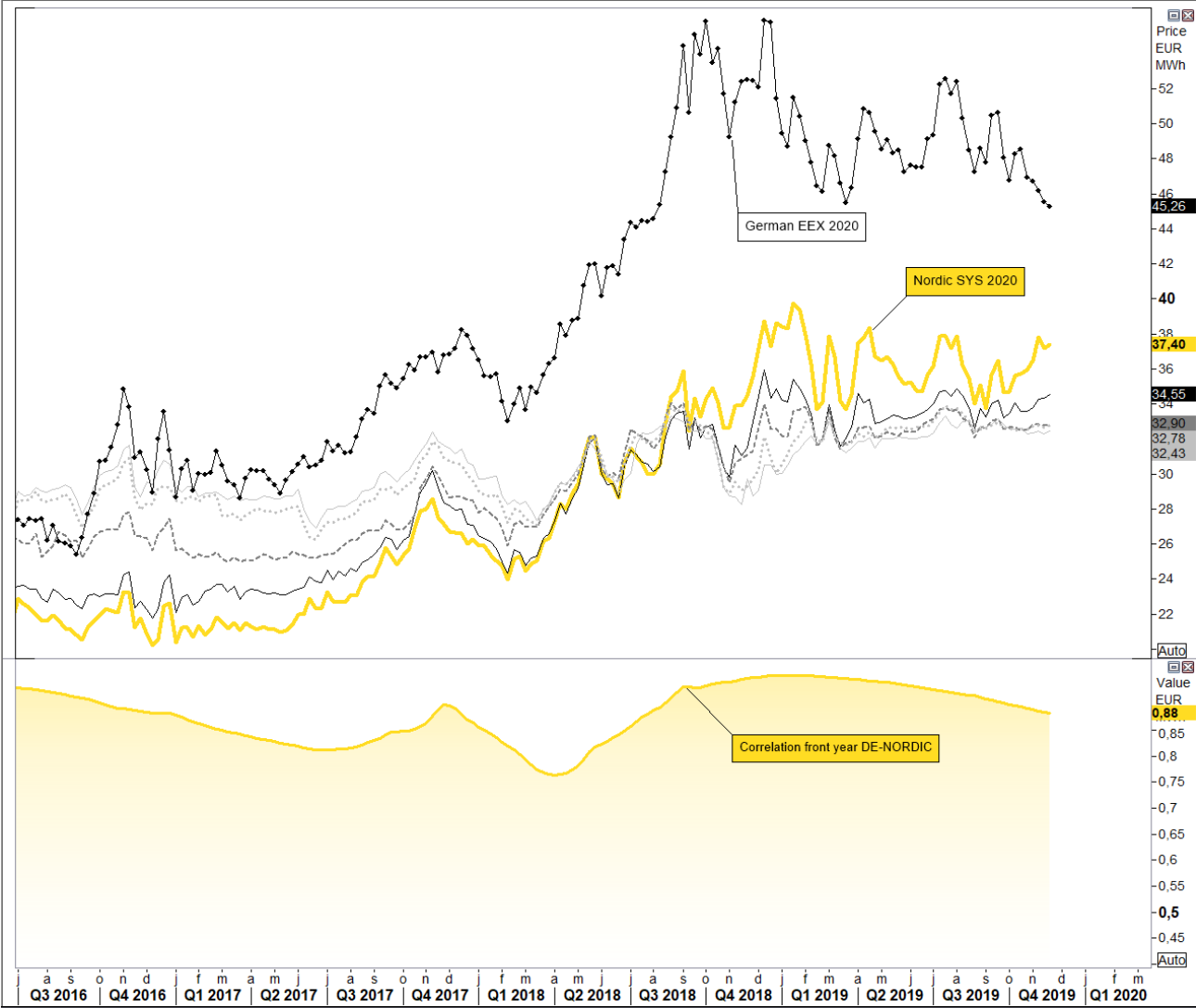
The Nordic front year futures are still in a rising trend!



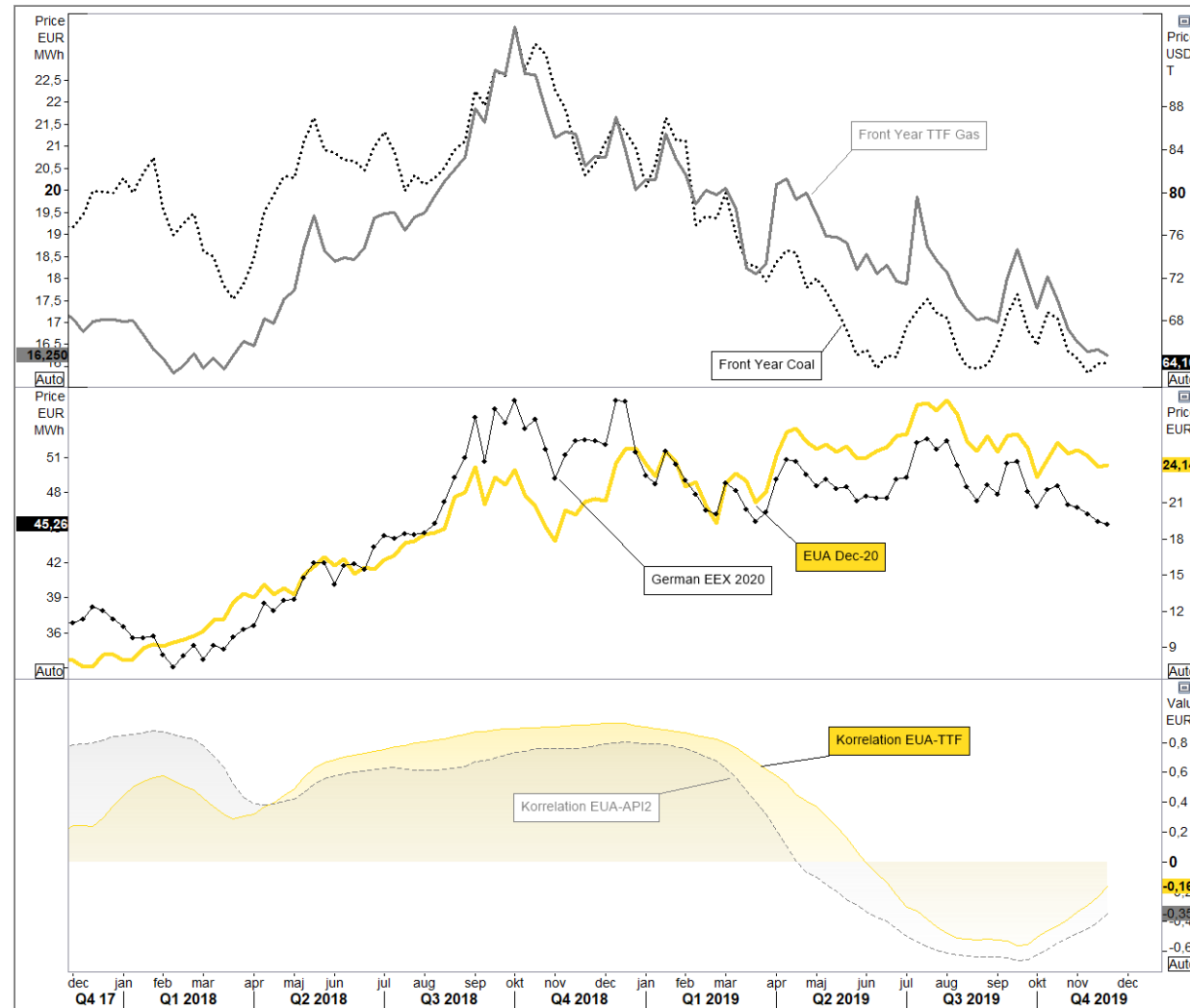
...and correlation with German/EEX futures still strong



...and correlation with German/EEX futures still strong



As for the spot prices, gas and EUAs are in the drivers seat

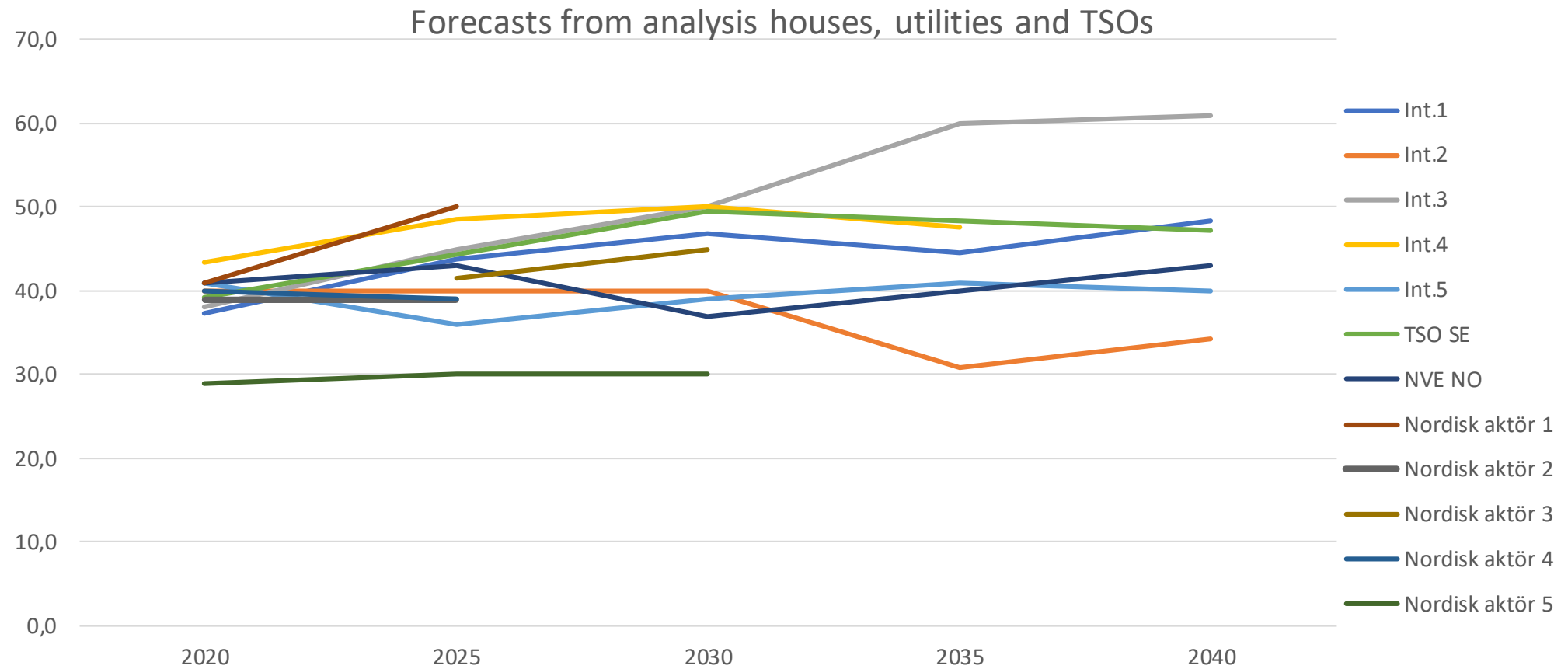


Trend as seen in 2018 still valid

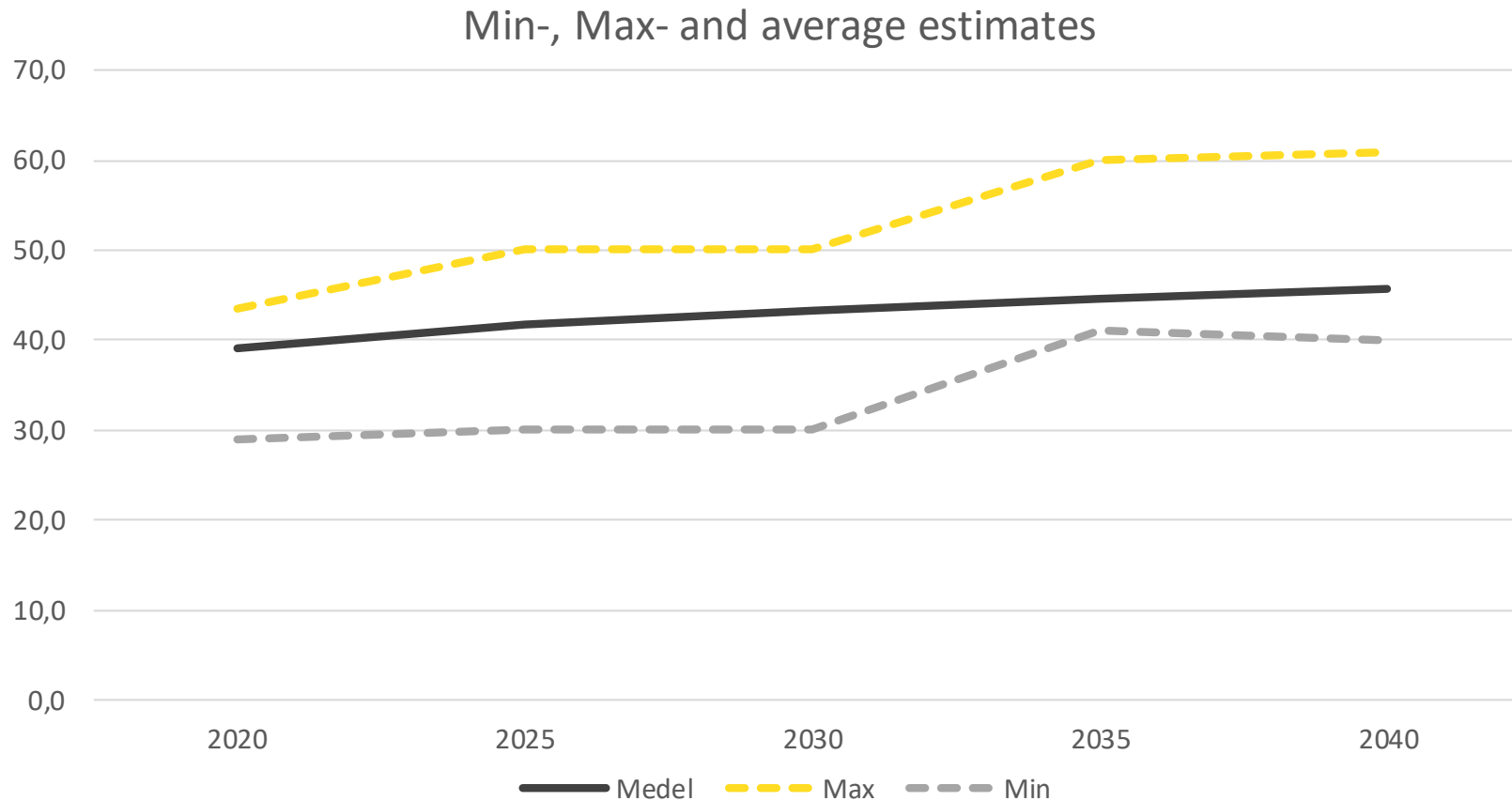
- Högre korrelation sedan Q2-18 vid högre CO₂-pris, dvs ökad hedging/handelsaktivitet
- Ökad korrelation redan vid EUA kring €12-14/ton
- Långtidsstrategier för hedging kolkraft kan visserligen vara "noise", men viktig hållpunkt för nordisk prisbildning

So, where are the prices going?

A summary of external price forecasts



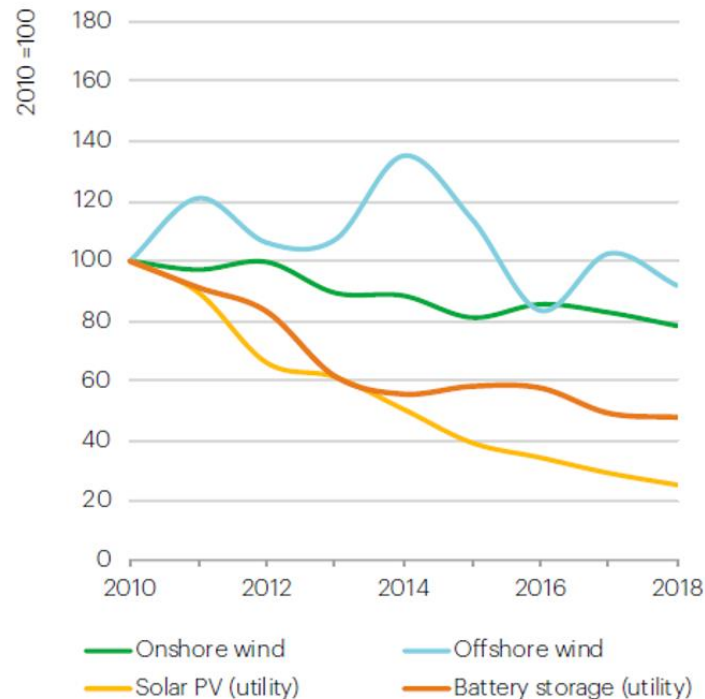
...quite a bandwidth of expectations



Upper: fuels and EUA will continue to be the predominant price setting mechanism – and given current climate agenda, EUAs are likely to be high

Lower: fuels and EUAs will only marginally set the price. Predominant factor will be the LCOE of wind around €30-35/MWh

What if utility battery costs continue down at the same pace?



With 4 to 8-hour battery storages at the large wind parks, we remove cannibalization and get plannable “baseload-like” windproduction!

=>The wind producers can act like hydro producers and tactically “hold back their wind” to achieve better prices.

So what do we believe?

Summary

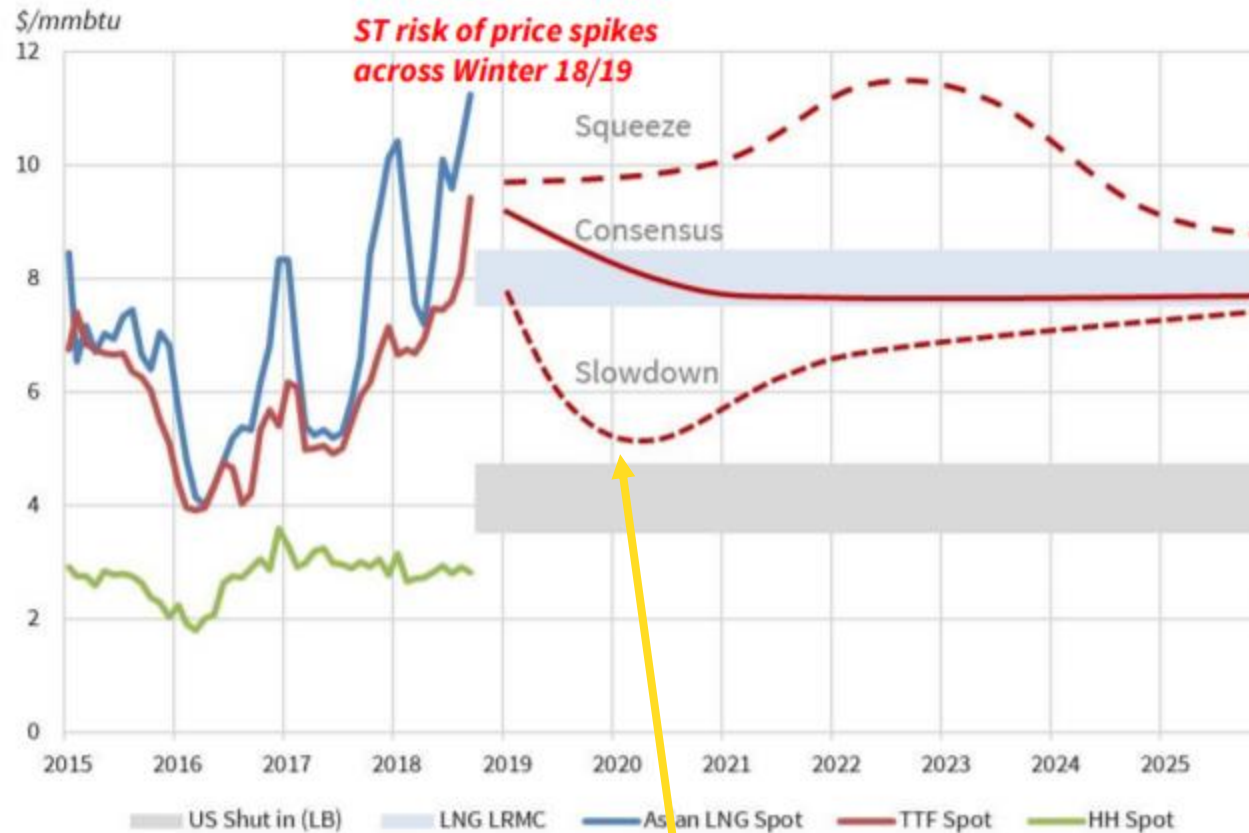
1. Hydro still (of course) sets the tone for spot prices, but clear shift towards marginal price setting by SRMC gas
2. Cables to the Continent are beginning to come online, but not always doing what they're supposed to...
3. Rapid technology shifts and transmission restrictions pose significant downside risk 2020-2025
➔ increased volatility in SYS spot annually 19EUR – 36EUR
4. Post 2025 we believe LCOE wind to be the predominant price setting factor
5. ...but keep your eyes on utility battery costs => wind plannable => higher prices
6. Summer is the new Winter!

Thank you!



B
P

Prisprognos gas och påverkan Norden



➔ Nedsida 2-4 EUR Nordisk el 2020