Bringing New Energy to the Nordic Electricity Market

Executive Summary. Suggestions for actions

Nasdaq has for a long time been of the view that the Nordic National Energy Regulators (NRAs) and Transmission System Operations (TSOs) need to clearly include a well-functioning futures (exchange derivative) market as a fundamental part of the Nordic electricity market design. Not only is it essential for utilities and large consumers' price volatility risk management, it is also essential to secure an efficient end-user market, where a transparent and liquid exchange derivative market allows for competitive fixed prices for consumers.

In 2021 we witnessed a historic "bull" run on Nordic and Euopean electricity prices that hurt end-user- and household economy. At one stage, area prices in south of Norway were the highest in all of Europe.[1] The soaring electricity prices affected utilities and large consumers' (market participants) ability to manage price volatility risk at commercially acceptable terms on the Nordic exchange derivative market. National policies that are designed to shield end-users, in particular households, from excessive price volatility is commendable, but not sustainable in the long term.

Further, a well-functioning Nordic exchange derivative market is fundamental in securing the green energy transition, where transparency and liquidity impacts cost and ability to manage risk. The green transition and electrification will require large investments, where long-term hedging is essential to attract capital and secure needed investments at reasonable costs. The public trading venues contribute to transparency and price discovery as well as establishing important price signals for market participants that operate outside the public trading venues. For example, parties that enter into Power Purchase Agreements (PPAs) may use price signals from the Nordic exchange derivative market for valuation purposes.

With the last months volatility in mind, Nasdaq would like to work with the key stakeholders, the NRAs and the TSOs on the following steps to establish a Nordic power market for the future:

- Require the TSOs to establish agreement to auction EPADs that are fungible with the existing secondary market to improve liquidity in the Nordic area. The NC FCA[2] Article 30.5 (b) gives the NRAs the legal basis to require the TSOs to support hedging possibilities in the existing futures market. This will contribute to a reliable price formation, transparency and broader accessability than LTTRs. This solution is recommended in the Merlin & Metis report[3] written on behalf of the Swedish Energy Regulator Energy Market Inspectorate to improve the hedging opportunities in the Swedish market. A

[1] https://www.nasdaq.com/articles/southern-norway-power-price-hits-record-amid-europe-wide-surge
[2] The Commission Regulation 2016/1719 on establishing a guideline on forward capacity allocation
[3] The report is available here: https://ei.se/bransch/eu-direktiv-och-forordningar/kommissionsforordningar-natkoder/forhandstilldelning-av-kapacitet-fca and scroll down to *"Underlag"*.

market maker scheme could also be established to further improve liquidity in the existing futures market.

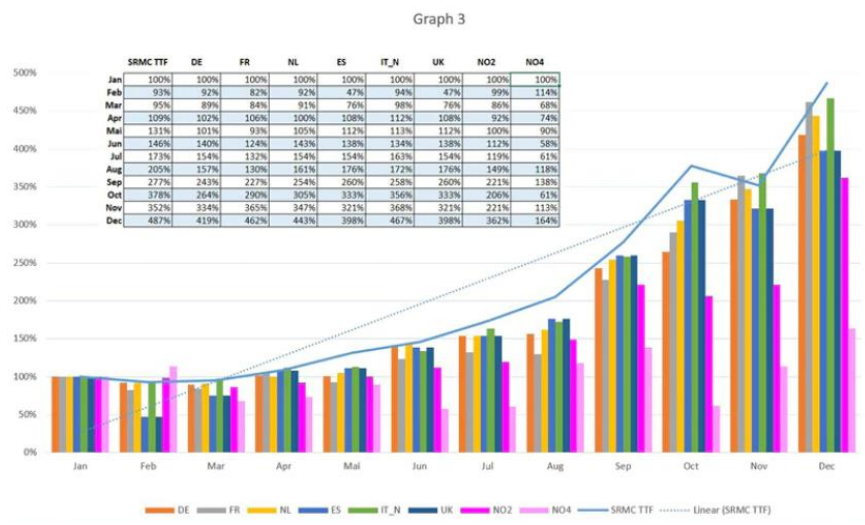
- Require the TSOs to establish a countertrading practice to ensure an efficient and secure use of the transmission infrastructure to reduce the price difference between price areas in each country.[4] The TSOs have a too narrow view on short term price signals from the physical market when assessing the socio-economic benefit of allowing differing prices between price areas, and are, as underlined by the current market situation, ignoring the distributional effects on end users and the negative effects on market participants' ability to manage price volatility risk.
- Requiring the TSOs to reduce the number of price areas to improve liquidity, transparency, and competition in the Nordic exchange derivative market.
- The TSOs need to invest in transmission capacity which will lower the high price differences between the price areas, so that the price difference between Nordic system price and the price areas are reduced. This is perhaps particularly urgent for the transmission grid that transports electricity from north to south of Norway and Sweden, respectively.
- Lastly, Nasdaq also supports a strenghtening of the collaboration between Energy regulation and Financial regulation, to drive regulatory change on a Nordic and European level that better balances the need to monitor and regulate systemic risks with the needs of the Nordic exchange derivative market. One example would be to allow a more flexible use of guarantees in case of stressed market conditions, whilst ensuring resilience. This measure could be a permanent measusure, or as one of many tools in the toolbox available to the market participants when there is a need to shield the end users from excessive volatile prices.

These proposals would promote improved liquidity, transparency and competition and benefit all market participants while supporting the green transition and better infrastructure. Below, we elaborate on our concerns and suggestions for actions.

Background

The Electricity market is a complex market with high price volatility. Key price drivers that are impacting production and consumption are: weather, fuel prices, EUA prices, storage of gas and hydro balance and grid capacity. In 2021, the average costs of electricity in the Nordic Spot market soared 470 % from 2020. In EU the average cost of electricity in Q4 2021 was more than four times as high as the 2015-2020 average. The surge was a result of increased global energy demand, shortage of natural gas, increased CO2 prices, lower than normal renewable energy production in Europe and a low hydro balance in the Nordic area.[5] [6]

[4] German TSOs use remedial actions (which covers both countertrading and redispatch) to alleviate congestion.
[5] See also ACER Report on High Energy Prices, October 2021.
[6] See also IEA, Electricity Market Report, January 2022, p 2.



The graph shows the spot monthly base development in percentages in Europe and in Norway.

Source: Volue, 2021: The Year of Power Market Records

Power exchange derivatives traded at Nasdaq are subject to clearing with Nasdaq Clearing AB. In accordance with regulatory requirements for risk management under EMIR, market participants that trade exchange derivatives at Nasdaq must put aside additional funds – known as margin requirements – to cover the value of the open position until delivery. Depending on the size, price movements, liquidity and volatility, the margin requirements can be substantial. Consequently, the past months have resulted in soaring hedging- and clearing costs for many market participants.[7] This affects participants ability to hedge, including end-consumers' ability to enter fixed electricity purchase agreements at competitive rates.

Further, it seems that the average cost of electricity in Germany is expected to be high in 2022 and possibly reaching into Q1 2023.[8] [9] It is likely that a continued high average cost of electricity in Germany will have spill-over effects to the Nordic markets.

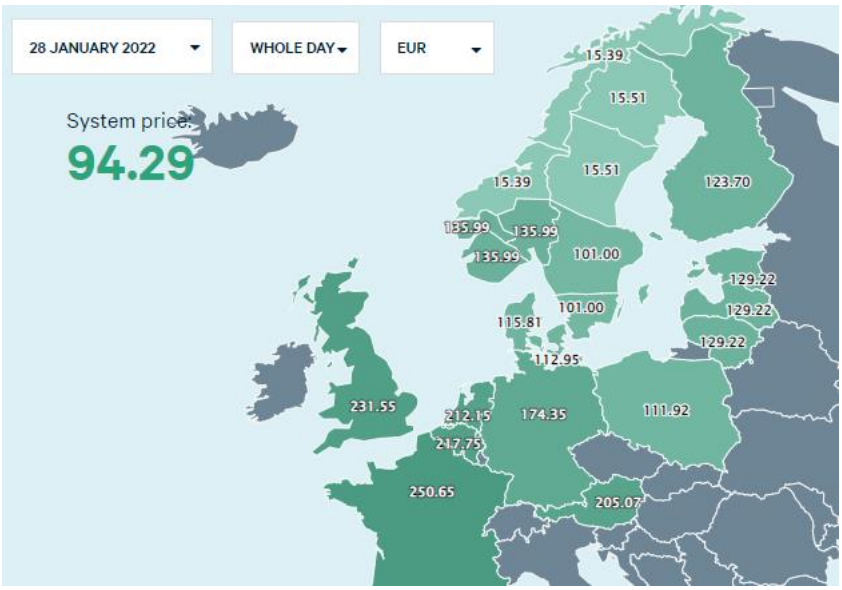
Challenges with the Nordic electricity market design and regulatory limitations

The Nordic electricity market design is different than the rest of Europe and consist of 12 bidding zones (price areas) resulting in 12 different electricity prices.[10] Because of lack of sufficient investments in transmissions grids, there is, however, an increasing deviation and low correlation between the Nordic system price[11] and the 12 price areas. This being especially true and visible between northern Sweden and Norway vs Southern Sweden and Norway during Q4 2021 and into 2022. Consequently, market participants that wish to manage the price volatility risk must enter both a Nordic exchange derivative with Nordic system price as an underlying and an Electricity Price Area Differentials (EPADs) for a specific price area.[12] The issue is, however, with the high number of price areas coupled with a limited number of fundamental players in the EPAD-market, the overall EPAD-market has become less liquid with a lack of depth. Moreover, the clearinghouses need to take account for low trading volumes, price levels and volatility. Consequently, the clearinghouse will apply margin add-ons in accordance with financial regulations under EMIR to account for additional close-out costs in the event of a default. This leads to higher hedging- and clearing costs for EPADs, and all things equal,

[7] See table 1 in Appendix.
[8] See table 2 in Appendix.
[9] See table 3 in Appendix
[10] See table 4 in Appendix.
[11] The Nordic system price is the calculated price for a common Nordic bidding area.
[12] EPADs are financial instruments that allows market participants to manage the average price difference between a specific area price and the Nordic system price.

put further pressure on the trading volume on EPADs.[13] The above trend is exaggerated by the recent surge in the electricity prices for short- and long-term delivery.

Further, the Nordic market design also gives less predictability for energy consuming business. The current situation is that a price area with low prices today, e.g., north of Norway and north of Sweden, can be a high price area tomorrow. In most European countries the end-users have the same electricity cost price regardless of where they are located.



The overview of European price areas clearly demonstrates the north/south congestion in Norway and Sweden respectively. In comparison, Germany has a single price.

Source: Nord Pool

Finally, Nordic market participants have for decades had a strong preference for trading Nordic power derivatives on the regulated market. However, after the introduction of MiFID II and EMIR the overall liquidity in the Nordic exchange derivative market has decreased as compliance- and hedging costs have increased. Previously, EMIR acknowledged the need for non-financial players to access cost efficient type of collateral for hedging by allowing non-fully backed bank guarantees. This access was removed in March 2016. Since 2016 more than 198 clearing members have terminated their membership with Nasdaq Clearing AB, with a corresponding decrease in overall trading volume and liquidity in the Nordic exchange derivative market.[14] A decline in market liquidity and reduced market depth means that it takes more time and effort to execute trades, with risk that smaller volumes move market pricing by larger amounts.

Consequences for the Green transition

Without a liquid hedging market, the Green transition will be challenging. The Nordic power market, as other power markets, needs massive investments during the next decades to secure the net-zero targets. Not only do we need to invest in new reneweable production to meet increasing demand, but also new technologies and infrastructure.[15]

The key to succeed with the green transition to a net-zero economy is to secure efficient markets that allows the market to hedge against price volatility and counterparty risks. Liquid and transparent financial markets

[13] See table 5 i Appendix.
[14] See table 6 in Appendix.
[15] According to IEA, Electricity Market Report, January 2022, p. 104 and 108, EU has a projected compounded average annual electricity demand of 0.6 % in 2022-2024, of which 7 % of total demand is projected covered by reneawebles.

secure and attracts funding of renewable project from capital markets. Long term PPAs (10-20 years) use long term price formation in financial market as reference. Also, PPAs are hedged via complementary trading in the financial market closer to delivery (2-3 years) to reduce price risk and counterparty risk. The increase in use of PPAs as an enabler for renewable investments must be linked with liquidity in financial markets.

Consequences for end-consumers

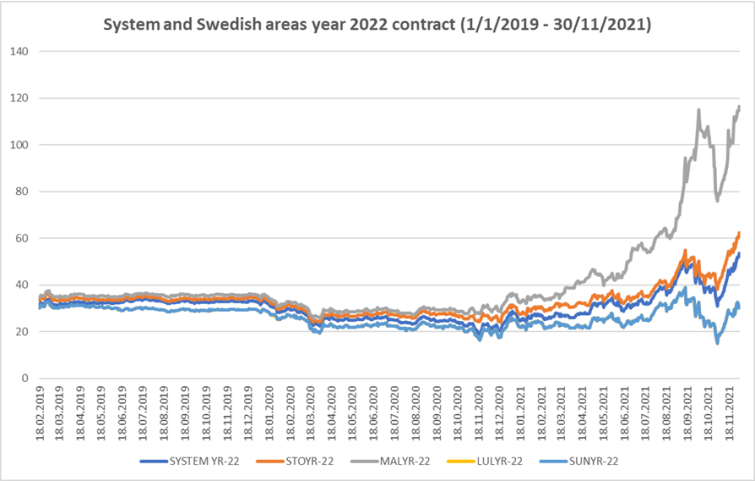
The Nordic exchange derivative market play a crucial role in enabling market participants to hedge against risks stemming from a renewable system, such as price volatility and counterparty risk. When trade volumes decrease, the reduced trading may induce a spiral that ends up having a significant negative effect on competition, on transparency, and on price discovery in the underlying, physical electricity market.

The market situation of winter 21/22 has shown us that it is not desirable for all end-users to face the full price volatility risk. The soaring electricity prices and hedging costs have prompted bankruptcies and/or market exits among several retailers leaving end users being supplied through last resort entities. EU has acknowledged the need to shield end-users from excessive price volatility that impacts affordability. Price signalling to drive desired behaviour (e.g, greater efficiency) and/or incentivize new investments in low-carbon power generation is, however, also important. Therefore, a reformed market design with larger price areas allowing for increased liquidity and competition will have significant positive impact on end-users' ability to enter fixed rates at competitive terms. The end-user market needs assurance that they pay a fair price when entering a fixed price. This starts with assuring a competitive market with a high level of transparency and security. Given correct presentation and efficient liquidity, prices in the Nordic exchange derivative market can also serve as a tool for consumer interest organisations when advising consumers on which fixed price contracts they should agree to.

END

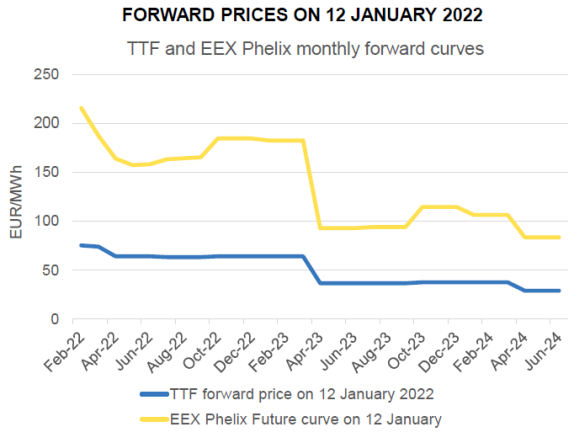
APPENDIX

Table 1 shows the historical future prices of the front year System contract and the four Swedish price areas. We see historic high price differentials between north (SE1 Luleå) and south (SE4 Malmø) in 2021



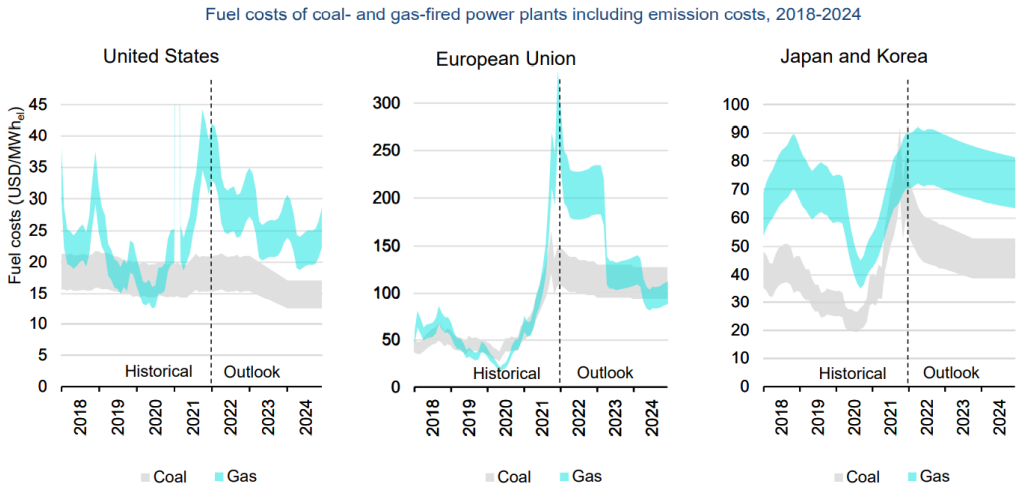
Source: Nasdaq

Table 2 shows the TTF futures curve and the EEX Phelix futures curve on 12 January 2022.



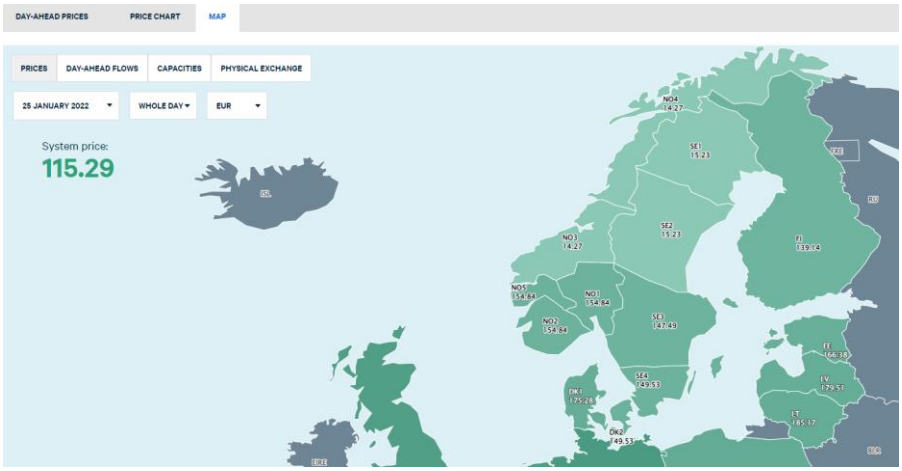
Source: ACER (with further reference to TTF/EEX)

Table 3 shows the historic- and the projected gas- and coal prices in the European Union, 2018-2024.



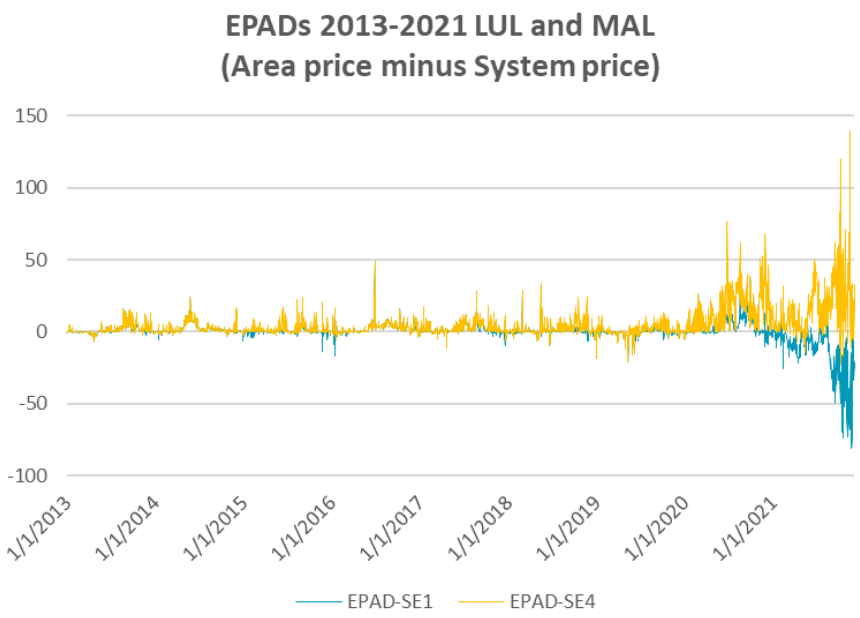
Source: IEA, Electricity Market Report, January 2022, p. 19-20.

Table 4 shows the Nordic market design with 12 price areas.



Source: Nord Pool

Table 5 shows historic high price differentials between the EPADs in SE1 and SE4 in 2021.

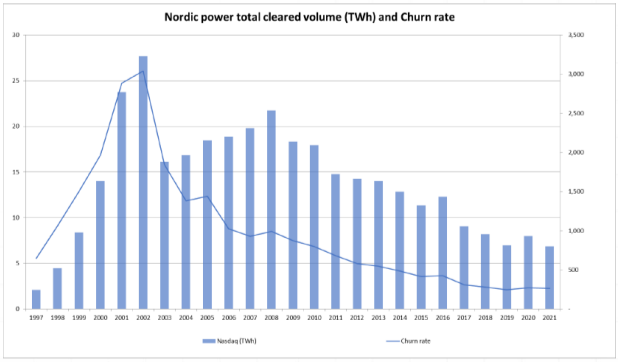


Source: Nasdaq

Table 6 shows overall decrease in traded volume on the Nordic/Baltic exchange derivative market from 2008-2021.

Nordic electricity total volume (TWh)

	Year	Nasdaq (TWh)	NP Spot (TWh)	Churn rate	
	1997	244	44	5.55	
	1998	519	57	9.11	
	1999	975	76	12.83	
	2000	1,635	97	16.86	
	2001	2,769	112	24.72	
	2002	3,232	124	26.06	
	2003	1,882	119	15.82	
	2004	1,964	166	11.85	
	2005	2,156	175	12.33	
	2006	2,200	250	8.80	
	2007	2,310	291	7.95	
	2008	2,535	298	8.52	
	2009	2,136	286	7.48	
	2010	2,090	305	6.85	
	2011	1,723	294	5.85	
	2012	1,663	334	4.98	
	2013	1,637	349	4.69	
	2014	1,497	361	4.14	
	2015	1,325	374	3.54	
	2016	1,432	391	3.66	
Bank g. removal	2017	1,059	398	2.66	
	2018	956	397	2.41	
	2019	814	388	2.10	
	2020	932	402	2.32	
	2021	800	353	2.27	As of Dec 31 2021



Source: Nasdaq