Increased Nordic cooperation for competitive power prices and security of supply

On January 31st 2025, the Norwegian government presented a slate of new measures with the intention of reducing the power prices and price volatility. One of the measures proposed was to initiate a closer Nordic cooperation with the aim of considering different measures to reduce extreme power price peaks resulting from European power exchange, and to preserve the Nordic power system.

Nordenergi, the umbrella association of the Nordic electricity industry associations Finnish Energy, Green Power Denmark, Renewables Norway, Samorka and Swedenergy, has looked into how Nordic cooperation could be increased, rather than implementing national measures that might disrupt a well-functioning internal European electricity market.

Through the history of developing an integrated Nordic-, and in the later years European power market, we have seen how the different technologies in the connected countries complement each other and optimize the resource utilization and by this illustrate the socioeconomic gains with cross-border trade. The integrated market enables us to serve the consumption in a cost-efficient way, and to ensure secure power supply. The Nordics have historically had an advantage through competitive power prices. With the green shift the system is changing with increased power demand, more intermittent power production and increased price volatility. To cope with this, we now see a need to make the right adjustments to the power system and the market design. Meeting these changes with an efficient and well-functioning power market enables new investments in generation and flexibility. If this is handled well enough, the prices will be competitive, and volatility will be reduced. This calls for good coordination between the Nordic countries. Our suggested measures will be further described in paragraph 1 – 5.

Facilitating the best possible market design

- Coordinate relevant regulations across the Nordic countries to make sure all market participants may participate in the market under the same prerequisites.
- Preserve and improve the producers' and consumers' incentives to manage and respond to price signals. With more variable production in the system, flexibility solutions on both the production and the demand side will enable reduced price volatility and more competitive prices.
- Consider whether necessary capacity mechanisms should be introduced cross-border to reduce system costs.
- Bidding zones should reflect bottlenecks in the system, not national borders.

Increased grid- and power production capacity

- Consider effects on the Nordic power system holistically through Nordic TSO plans when evaluating, planning and prioritizing the need for new transmission- and interconnector investments.
- Share lessons learned between the Nordic countries when it comes to streamlining permitting processes and speed-up the development of energy infrastructure.
- Invest in new Nordic interconnectors and reinvest in old ones when they are socioeconomically beneficial.

EU legislation

- Meeting the deadlines for implementation of EU-legislation to avoid legal uncertainty and delayed investments.
- Improve Nordic coordinated input to the Council of Ministers and the European Parliament. A strongly united Nordic region will have increased power of influence and be able to play an active role in shaping European legislation.

State aid

- Be cautious when introducing state aid and apply the following principles: minimize impact on financial incentives by enable energy efficiency and demand-side flexibility, consider cross-border effects and support mainly innovative and emerging technologies. State Aid will generally be interfering with a well-functioning market and should be considered as a last resort measure.

Security

- Nordic cooperation on routines and security schemes to prevent disruptions and to minimize restoration time.
- Having a prepared and competent working force on restoration during a crisis.
- Information sharing on security and resilience amongst the Nordic countries.
- Share experience and knowledge regarding preparations for energy shortage and energy rationing.

1. An integrated power market

The Nordic and the Baltic countries have a long history of a well-functioning integrated power market, based on mutual trust and cooperation on efficient use of the Nordic power resources. We have been trading power across borders since before the Nordic power market was commercialized in the 1990s, starting with the Norwegian power market in 1991. Sweden, Denmark, Finland and the Baltic countries joined one by one in the following years. The Nordic power market has been an important example to follow, as the rest of Europe joined in an increasingly integrated power market in the later years. By exchanging power across borders, we can utilize advantages of the power system in different countries. After establishing the Nordic power market and later the integrated European market, we have achieved a more optimal resource allocation that prevents overinvestments with negative environmental consequences, keeps security of supply and provides price signals that incentivise optimal use of limited power resources.

Even though we have a liberalised power market, there are a lot of limitations and regulations that affect the marked design. This design is based on characteristics with electricity as a product, physical limitations (national grids and interconnectors), and politically decided regulations. With high political ambitions on electrification, green industry and decarbonization of the European power sector, both the Nordic and the European power system are changing. To meet these changes and facilitate a well-functioning power market for the future, we must make the right considerations and implement the necessary measures.

1.1. Harmonized regulations

With deeply integrated energy systems, neighbouring countries will be affected by national political choices and regulations regarding the power system in the respective countries. It is therefore important that we coordinate and harmonize relevant regulations, rather than having fragmented national approaches to different challenges. In this way we can optimize the design of regulations and new politic by considering costs and benefits for the entire system. Harmonized market design and regulations will also provide stability, predictability and more equalized terms. The introduction of Norgespris is an example of an uncoordinated initiative by one Nordic country that could have negative repercussions across the Nordic electricity market, by undermining price-signal led flexibility and driving up power prices. The lack of clear political commitment to reinvestment in interconnectors between Denmark and Norway further worsens the problem as capacity to transport electricity across borders in the Nordic region is a vital tool to combat price peaks. Furthermore, the decision/consideration to introduce capacity renumeration mechanisms in Denmark could be subject to Nordic discussions as well as the support framework for the decision/consideration of new nuclear capacity in Sweden and Finland.

1.2. Flexibility solutions

As we get more variable renewable power production into the system, to meet the increased power demand with increased electrification and more power intensive industry, we are expecting even more volatile prices. The preferred tool when handling volatile prices should be

improved financial hedging and available flexibility solutions for all market participants, but also physical grid investments. Rather than changing the market design or attempting to cover up price volatility through state aid, market participants and policymakers should focus on improving the market by strengthening producers' and consumers' ability to manage and respond to price peaks and negative prices. We need to investigate all different variations of flexibility solutions, such as demand side flexibility, energy storage and flexible production. When having flexibility on the demand side we are able to move consumption from periods with low power surplus to periods with higher power surplus. With flexible production or energy storage we are able to save energy when the energy surplus is high and sell it back to the market when the surplus is low. In that way, more flexibility in the system will serve us with a more efficient price formation and lower price volatility. Demand side flexibility needs to be encouraged with economic incentives and transparent price signals, whereas state aid with a fixed price such as Norgespris will discourage demand side flexibility.

1.3. Capacity mechanisms

In the past decade, capacity remuneration mechanisms (CRM) have been implemented in a range of countries in Europe, as a response to growing concerns about resource adequacy and security of supply. The comprehensive number of national CRMs across Europe raises the question not only of their necessity besides an Energy Only Market (EOM) but also their coordination, and of the possibility for greater cross-border participation where they are needed. Adequacy issues can often be solved in an EOM combined with low barriers for the introduction of new production. Recently the question of the potential for a more integrated regional approach towards adequacy has emerged. Diverging policy choices and intrinsic differences between national power systems in the Nordics have led to justified disparities in the choice to implement CRMs and their designs. Those differences include, for example: underlying labour and capital costs, electricity mix, regulatory framework, degree of interconnectedness, and wider national prerogatives such as decarbonisation or security of supply. In the coming years it is important that the EU rules on CRMs are implemented in the Nordic countries, in particular Regulation (EU) 2019/943, including requirements for cross border participation in capacity mechanisms where technically feasible.

1.4. Cross-border bidding zones

The Nordic and European power system is divided in bidding zones, where every market participant within a bidding zone is exposed to the same power price in the spot market. When bottlenecks occur between two bidding zones, meaning that the power flow is limited by the grid capacity between the two zones, there will be a price difference between the two areas. These price differences will create an incentive to new power producers to build their facilities in areas with high prices, and new consumers such as power intensive industry to start their businesses or move to areas with lower prices. If the power system was optimally designed the bidding zones would have been defined by where the persistent structural bottlenecks are located. In today's system bidding zones are mainly defined by the country borders. The Nordic countries have tried to optimise the system by defining bidding zones within each country based on persistent structural bottlenecks, but there are no examples today on bidding zones across country borders. Smaller bidding zones have the advantage to allocate resources optimally,

whereas larges bidding zones give more liquidity for hedging in the financial markets which is a fundamental tool to manage price volatility. We could benefit from looking into how the bidding zones can be more defined by grid capacity and bottlenecks in the system rather than country borders and open for cross-border bidding zones. This will generate market signals for investments in both production and consumption of electricity, but also for the need for grid reinforcements.

2. Investments in new production and grids

Through the EU directive on renewable energy, the Nordic countries are in the process of streamlining permitting processes of renewable energy projects. This will not prevent detailed environmental assessments or the possibility for local authorities to intervene in new projects. Also for grids, the EU has introduced new requirements through the electricity directive. Nordic countries have a strong history of building grids and interconnectors to ensure a robust power system. The Nordic contries should now systematically exchange experiences and establish best practises on permitting processes, both for new production and grids. If suitable, the Nordics could even pursue further harmonization of permitting processes to make it more predictable and meet the needs of new production grid and power intensive industry. Better coordination on area planning for new grid and production will also improve the decision base of the permits.

A particular challenge concerns charging infrastructure and a network for hydrogen availability for transport and industry. The Nordic countries should look into the need for cross-border cooperation in order to ensure that the transport sector and the industry has access to the use of emissions-free energy sources. This may concern ships, road transport, aviation and energy intensive industries.

2.1. Grid utilisation and interconnectors

Better utilisation of the grid and establishing and reinvesting in interconnectors when they are socioeconomically beneficial, will over time stabilise and reduce power prices for consumers and support security of supply.

In the Nordics we have a strong history for interconnecting and organising the market so that it gives the right incentives to investments in new grids. Both at EU and on national level there are attempts to reform grid tariffs to price capacity more than energy. Time-differentiated tariffs that reflect the true underlying savings (reduced build out of the grid) by flatting the peak consumption can be a supplement to price signals. This will only become more relevant when we electrify more of the economy.

We should now coordinate more of our grid operations to reduce the impact of bottlenecks and thereby ensure that customers do not experience a larger increase in tariffs than necessary. Again, we should make sure to exchange experiences to establish and adapt best practices.

Finally, there is need for the Nordics to continue to establish and reinvest in interconnectors where they are socio-economically beneficial. The Skagerrak interconnectors between

Denmark and Norway is an example of interconnectors that has been important for the integration of the Nordic countries. If the business case on reinvestments in the Skagerrak cables is positive, final investment decision should be made. It is the TSOs responsibility to investigate whether further investments or reinvestments in interconnectors are socio-economically viable. Investment decisions should continue to be based on the result of this socio economic business case.

3. EU-legislation

All the Nordic countries are subject to EU-legislation. Norway and Iceland are integrated in the internal energy market through the EEA-agreement, meaning that the energy market is regulated both at EU level and national. However, it should be noted that Iceland is not connected to the European grid, due to its geographical location. The history of the Nordic liberalised market of the 1990s being introduced in the whole of Europa is remarkable. To retain our role as frontrunners in the development of EU legislation we now need to meet the deadlines for implementation of new measures given by the EU directives. Fragmented regulatory framework might lead to legal uncertainty and delayed investments. Market participants need predictability. A case at hand is the Norwegian delay in implementing the clean energy package from 2019.

Even more important, a strongly united Nordic region will be able to play an active role in shaping European regulation, drawing on the Nordic experience with innovative and well-functioning markets. A united north can influence the European legislation such that the legislation also fits regions with smaller bidding zones and proactive balancing philosophy such as in the Nordic countries. The Nordics should improve their coordinated input to Council and Parliament meetings and input to Commission work streams. Nordic breakfast meetings before Energy Council meetings should be improved.

4. State Aid

Historically we have seen different use of State aid in the Nordic countries. In some cases, we have seen cross-border cooperation on support schemes, such as the electricity certificate scheme which was an example of a joint Norwegian-Swedish support scheme funding new renewable energy. However, most cases of state aid have been on national level, not only for production of renewable energy, but also for electrification, energy efficiency and support for consumption of energy. "Norgespris", which was presented by the Norwegian government in January 2025, is an example of a national support scheme.

The Nordic countries have a long and good tradition for cooperation on market solutions and so should also be the case when it comes to state aid. All support schemes will interfere in the market one way or another, and as we have an integrated Nordic power market it would be beneficial to also cooperate by designing joint support schemes or at least strive for Harmolize if possible. That way, the effects on the system as a whole may be taken into consideration. Exchanging experiences on what works, coordinating the design and the scope of support

schemes and investigating the long-term effect of different schemes, gives the best preconditions when using state aid. Cross-border cooperation on sharing experiences will give a wider perspective on unintended cross-border effects that might not be obvious from a national perspective. CO2-compensation measures is an example of a scheme that have not been coordinated to ensure a level playing field for industry in the Nordic region. When using state aid, the following principle must be carefully considered.

4.1. Financial incentives

We should strive to minimize the interference in financial incentives given by the market. Real-time price signals incentivise the market participants to demonstrate flexible behaviour. During the energy crisis in 2021-2022 the end users were exposed to historically high power prices. The price peaks and the volatile power prices is still a hot topic, even though price levels have returned to levels seen before the crisis. This leaves the politicians under a pressure to act on the prices consumers are being exposed to.

When designing support schemes, it is of great importance to enable energy efficiency and demand-side flexibility. Such measures strengthen system resilience, reduce peak demand, and improve price signals, thereby enhancing overall market efficiency. Carefully consider and analyse market adapted subsidy schemes or contracts, such as CfDs or flat-rate pricing, before introducing them. When the market participants are no longer exposed to price variation, they lose their ability and incentive to respond to market signals. This will result in a less efficient power system that is more prone to difficulties with security of supply.

4.2. Support innovative and emerging technologies

If State aid should be used it should be on innovative and emerging technologies where investment costs are too high for the projects to be commercially viable in this early development stage. A good support scheme can enable new projects by reducing risks on long-term investments. That way state aid can help establishing these technologies and as they mature and the costs come down, projects can prove profitable over time without support. Land based wind and solar power are good examples on technologies that have become more profitable as the technologies have matured. With a system more based on variable renewable power production we need to invest more in innovative flexibility technologies. In the case of immature technologies or market failures, support schemes might be considered as this could encourage the willingness to invest and will be beneficial to our power system by making it more efficient.

5. Security

Because of the high level of Nordic integration, disrupted interconnectors, mistakes in the submitted bids, fall outs or interferences in one part of the system could result in consequences like energy shortage and high power prices in other areas across country borders. The countries will therefore benefit from working together to ensuring power security all over the Nordics. According to Article 3 of the North Atlantic Treaty, all NATO-nations are responsible for ensuring a civil defence where their country's power demands are always met. After Sweden and Finland

joined NATO, we could look at this commitment more holistically as we are so codependent on each other through this integrated Nordic power system. Through common power system security, we will be able to fulfil this commitment more efficiently. With the dramatic changes in European geopolitics and security concerns seen over the last few years, new initiatives could warrant a further look when it comes to cross-border cooperation on power system and energy security between the Nordic countries.

First and foremost, we need to have the right routines and security schemes in please, both for physical installations and for cyber security, to prevent fall outs and disruptions from happening in the first place. To minimize restoration time during fall outs or disruption of physical installations or system services in a more cost-efficient way, we could investigate possible Nordic cooperation on security storage and component supply.

To restore we also need prepared and competent working forces. Sweden has established a specific program where they train civil electricians on restoring power installations and prepare them to be part of the civil defence. Such a program could potentially be adapted to the other Nordic countries as well. With a competent civil defence in all the Nordic countries we could help each other out during a crisis, making it more doable to get a sufficiently large working force prepared.

Information sharing with lessons learned on security and resilience is crucial as the Nordic countries share many of the same threats to security of the energy system. There are of course differences between countries that need to be carefully considered. However global threats such as cyber-attacks call for robust information-sharing and cooperation.

Power security will also include handling of energy shortages and energy rationing. A shortage situation in one country could affect the other Nordic countries through reduced power supply and high electricity prices. All the Nordic countries have their own plans and routines on how to handle a situation with energy shortage, but it could be beneficial to better coordinate these routines across the Nordic countries. As both Norway and Sweden have a lot of hydro power in their system, there will be similarities in how to best handle energy shortage. Prioritization of different power consumer group during power rationing could also be standardised across the Nordic countries.