

Unclassified

English - Or. English

7 November 2022

**DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE**

Working Party No. 2 on Competition and Regulation

Competition in Energy Markets – Note by Norway

28 November 2022

This document reproduces a written contribution from Norway submitted for Item 3 of the 74th OECD Working Party 2 meeting on 28 November 2022.

More documents related to this discussion can be found at
www.oecd.org/competition/competition-in-energy-markets.htm

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Norway

1. About the Norwegian energy supply system

Norway is in a unique position when it comes to access to renewable energy. Norwegian electricity production is largely based on hydropower with a share of 88,9 per cent so far in 2022, while wind power and thermal power represent 9,6 and 1,4 per cent respectively.¹ Apart from being a renewable source of energy, the main advantage of the Norwegian hydropower production is that power can be produced on demand. This implies that producers to some extent can choose to limit or postpone production by withholding water in the reservoirs.

In a normal year, total electricity production capacity is 154,8 TWh. The demand per capita for electricity is higher in Norway compared to most other European countries. The main reason is the use of electricity rather than gas for heating purposes. Nevertheless, Norway is a net exporter of electricity most years.² So far in 2022, the net export constitutes 8,8 per cent of the total electricity production.³

The Norwegian energy system is governed by regulations, and a significant amount of it is under state ownership. More than 90 per cent of the hydropower plants in Norway are owned by state or municipally controlled companies.

Hydropower producers in Norway have been subject to a resource rent tax since 1997. The effective tax rate is 37 per cent. An excess duty on onshore wind power was introduced in 2022.⁴ This combination of taxes ensures that a large proportion of the profits benefit society.

The Norwegian Government recently proposed several changes in the energy tax system.⁵ The proposals include introducing a resource rent tax on onshore wind power production and increasing the resource rent tax rate for hydropower production. This would set the effective tax rate at 40 and 45 per cent respectively. Taxing windfall profits is also a part of the overall proposals. Hydropower producers face an additional proposed 23 per cent tax on revenues when prices exceed 70 euro per MWh. The proposals are subject to parliament approval.

2. Competition and regulation in the electricity market

2.1. Electricity market structure

The Norwegian Energy Act is based on the principles that electricity production and -trading is market-based, while grid operations are strictly regulated. Market-based power

¹ <https://energifaktanorge.no/en/norsk-energiforsyning/kraftmarkeadet/>

² In recent years, Norway has been a net importer of electricity both in 2010 and 2019. https://www.nve.no/media/9095/q4_2019.pdf

³ https://www.nve.no/media/14469/2022_37_kraftsituasjonen.pdf

⁴ <https://www.regjeringen.no/no/aktuelt/avgift-pa-landbasert-vindkraft/id2919971/>

⁵ <https://www.regjeringen.no/no/aktuelt/overskuddene-fra-naturressursene-skal-fordeles-bedre/id2929123/>

trading ensures more efficient utilization of resources, better balance between supply and demand and better security of supply. The wholesale price is important both in the short term, for example in the planning of next days' generation or consumption, and in the long run, for example for seasonal planning of maintenance as well as for investment purposes.

The market is designed so that the competition is blind, meaning the producers only know their own costs and the market price when this is announced by the system operator. Import only occurs when the price of domestically produced electricity exceeds import price. In this way, the structure of the power market aims to facilitate effective use of resources - with competition as key component in achieving this - while ensuring that power needs are met at the lowest possible cost to society.

However, if producers have market power, prices could increase because of reduced production. Well-functioning competition is therefore a prerequisite to achieve an effective use of resources.

The following sections present the market structure of the distribution system operators, the wholesale electricity market, and the retail electricity market.

2.1.1. Distribution system operators

Electricity transmission and distribution is a natural monopoly. The fixed costs of grid development are high, and it is not rational to construct several competing grids, which are then used at less than full capacity. Because of this, the distribution system operators (DSOs) are not subject to competition, and the authorities have established extensive control of monopoly operations to prevent the DSOs from exploiting their position.

The Norwegian Energy Regulatory Authority (RME) sets an annual revenue cap for the DSOs. This is set at a level that over time covers the costs of grid operation and depreciation of the grid, and at the same time, gives a reasonable return on invested capital, given efficient grid operation and development. The design of the revenue cap regulation provides the DSOs sufficient incentives, while at the same time it is also ensuring that grid tariffs are set at reasonable levels.

The Ministry of Petroleum and Energy has established requirements of legal and functional unbundling of DSOs and other non-distribution activities, such as production or retail sale of electricity. The requirements for legal unbundling of DSOs and other non-distribution activities mean that the DSOs must be separated into companies that do not engage in other activities. Functional separation means that the grid company must operate independently of other activities. This means, among other things, that DSO management may not be in management positions in other companies in the corporation. Grid companies are natural monopolies and often organized in larger groups together with exposed business activities. Integration between grid operations and other business activities can impede competition because of a lack of neutrality and incentives for cross-subsidization of exposed business activities. The above requirements aim to safeguard competition considering these potential impediments.

DSOs with fewer than 10 000 customers are currently exempted from the functional separation requirements. Since there are relatively many small grid companies in Norway, the exemption applies to 60 out of 93 grid companies. The Ministry of Petroleum and Energy has proposed to increase the limit to 100 000, in which case the exemption will apply to 87 companies. The aim of this extension is reduced costs for the affected companies if they are given the opportunity to use the same persons in management throughout the corporation.

However, the introduction of exemptions has been disputed. The NCA has expressed that it does not recommend exemptions from the requirement of functional separation, as this may prevent the DSOs from carrying out profitable mergers that could reduce grid tariffs through economics of scale. The exemption may also increase the risk of anticompetitive and non-neutral behavior from grid companies that are vertically integrated with other business activities. The NCA's assessment is that the company-specific benefits of granting exemption from the requirement of functional separation do not exceed the socio-economic costs for the industry, grid customers and other markets.

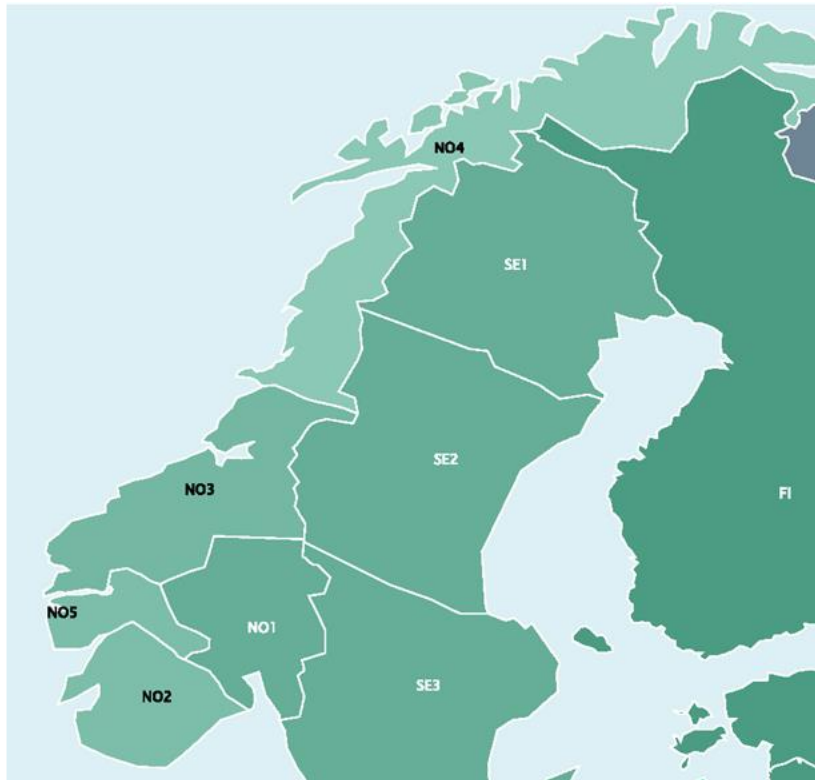
2.1.2. Wholesale electricity market

The purpose of The Energy Act is, among other things, to ensure that the production of energy takes place in a way that efficiently promotes the interests of society, which includes taking into consideration any public and private interests that will be affected. To achieve this, the sum of individual production decisions must give a socio-economical optimal result. This prerequisite, however, is not a given. The producers' decisions of whether to limit or postpone production by withholding water in the reservoirs are challenging decisions made in uncertain conditions. In addition, if the producers hold significant market power, they have the incentive to produce less than a socially rational amount in order to achieve higher prices and profits.

The Norwegian wholesale electricity market consists of a few large and several small or medium companies. Statkraft is the largest producer and E-CO Energi is the second largest producer in the market. Statkraft also has significant ownership interests in Skagerak Energi, Eviny and Agder Energi, which hold significant portions of the wholesale electricity market. The large extent of cross-ownership increases market concentration.

To investigate potential competition issues in the wholesale electricity market, the average annual production capacity can be used to calculate the market share of each company. The use of actual production figures could be misleading as these vary from year to year for the individual power producer, because of natural variations in weather conditions and annual inflow. To calculate the market concentration in the wholesale electricity market in Norway, it is necessary to define the appropriate market delimitation. In that regard, it is useful to know that the Norwegian power market is divided into five different bidding zones, as shown in the Figure below. The different zones reflect structural congestions in the power transmission grid.

Figure 1. Bidding zones in Norwegian power market



Source: Nord Pool

Differences in prices between bidding zones occur because of limited transmission capacity. Such differences lead to increased revenues for the transmission system operator (TSO), Statnett. The regulatory requirements associated with these revenues should provide consumers with lower transmission tariffs. In periods of below-capacity use, all bidding zones will have the same price. During these periods the market concentration will be lower and there is less reason to be concerned about the competition. On such occasions there are many different producers and few opportunities for the companies to achieve higher prices using market power.

The introduction of new interconnectors to Germany and the UK in 2020 and 2021 has increased Norway's total power trading capacity and could lead to even lower market concentration in periods of below-capacity use. In periods of maximum capacity use, however, the concentration will be higher, leading to more potential competition concerns in the wholesale electricity market. The production data shows that periods of below-capacity use are rare.

The factors outlined above give reason to take a closer look at the wholesale electricity market in Norway. As the power producers themselves may have incentives to ensure limited capacity in interconnectors to create temporary obstructions in the wholesale electricity market, the NCA considers it important that the TSO is responsible for the development and operation of interconnectors.

A temporary market occurs when prices are the same across certain price zones. A study of the frequency and duration of the temporary markets shows that there are especially two such markets where circumstances warrant further investigation. Those are southern Norway (NO1, NO2 and NO5) and northern Norway (NO3 and NO4), which act as separate

markets with 50,8 and 44 per cent of the total hours respectively. 2022 has seen significant price differences between southern and northern Norway, caused by limited transmission capacity between north and south as well as differences in weather conditions.

According to the Herfindahl-Hirschman-Index (HHI), the market in northern Norway, with a HHI of 2202, may raise concerns regarding the market concentration. In comparison, the HHI in southern Norway is 1279.

The calculation of market concentration provides useful information in the assessment of the wholesale electricity market, but these numbers are not sufficient to conclude on potential competition issues. Furthermore, market shares do not give a full picture; the largest producer must have opportunities and incentives for anti-competitive behavior.

The price in the power market is determined by the marginal producer. One method for estimating the largest producer's market power is therefore to investigate how often this producer is crucial in meeting aggregate demand in a certain market. If this occurs frequently, the producer has opportunities and incentives to reduce its production and thereby achieve higher prices. This incentive gives rise to a concern about the competition in the wholesale electricity market in Norway and is the reason why the NCA closely monitors the market in Norway, despite a lower market concentration in southern Norway.

The NCA may under Section 18 of the Competition Act order notification of transactions which fall below the notification thresholds. The NCA can impose such an extended duty to notify where it has reasonable grounds to assume that competition will be affected by the transaction or if other considerations indicate that the NCA should examine the case in more detail. The NCA may also order notification of acquisitions of minority shareholdings. Because of the concentration in the wholesale electricity market in Norway, and minority shareholdings being prevalent among the companies in the market, the NCA has decided to impose such disclosure requirements on individual firms. These requirements may prevent anticompetitive mergers and acquisitions that could affect the opportunities and incentives to use market power, for example through increased minority ownership

The wholesale electricity market is monitored by the Norwegian Energy Regulatory Authority (RME), who enforce regulations according to the Energy Act. In 2018 these regulations introduced a ban on market manipulation and insider trading, as well as requirements for the publication of inside information. The regulations reflect the rules in the Regulation on Wholesale Energy Market Integrity and Transparency (REMIT), which is an EU regulation designed to increase transparency and prohibit market manipulation and insider trading in the wholesale electricity and gas market.

The regulations ensure that RME has access to data from the system operator and marketplace. Additionally, the Regulations require routines and procedures for detecting potential violations of the Regulations. One of the issues that the Regulations seek to combat is producers holding back capacity to influence the price in the market. To detect this kind of behavior, the RME analyses bid data from the system operator and marketplace, mapping it against known maintenance or other temporary production stoppages. The NCA is notified if potential violations of the Competition Act are detected.

2.1.3. Retail market for electricity to households

On the surface, the market conditions in the retail market for electricity to households should indicate strong competition and a well-functioning and efficient market. Electricity is a homogeneous product, and price is the most important competition parameter. There are over 100 suppliers of electricity and market concentration is low. Furthermore, the switching rate in Norway is increasing and among the highest in Europe. Under these

circumstances, there should be fierce competition and we would expect prices close to marginal costs. Despite these conditions, the retail electricity market is not as efficient as could be expected. A major concern has been that customers lack access to adequate information or that the information provided is opaque. This makes it difficult to compare the products and prices from different suppliers. Adding to the opacity is that standard terms are not always used in a uniform manner in marketing of electricity tariffs. Thus, it might be difficult to compare prices and contract terms even within the same types of tariffs, as the total price in each tariff often consists of several different price elements and additional services and products.

A report commissioned by RME, describes in detail challenges and possible solutions to competition in the retail electricity market. The report recommends measures for direct implementation, none of which are specifically related to the enforcement of The Norwegian Competition Act. The recommendations involve clarification and/or stricter enforcement of already existing regulations. In addition, the recommended changes include requirements for standardized price information in marketing, an obligation to specify all price elements and to clearly outline promotional or time-limited offers.

From 1 November 2022, new and stricter rules for the marketing of electricity agreements and new requirements for what information consumers must receive on their electricity invoice will be introduced. The NCA provided its assessment in a consultation response to The Ministry of Children and Families and the Ministry of Petroleum and Energy. The NCA is positive to the measures directly aimed at solving the main challenges of information asymmetry in the market. Measures that contribute to the consumers receiving transparent, simple, and understandable information makes it easier to make informed choices before entering into binding agreements. The changes could increase competition in the market, since offering lower prices and/or better quality to a larger extent could be necessary to get new customers.

Despite a cautiously optimistic response to the changes outlined above, the NCA has previously stressed the importance of conducting thorough assessments of possible negative effects on future competition in the market when considering implementing more detailed sector regulation, such as prohibition of certain types of tariffs or price regulations.

2.2. Plans to increase investments in renewable energy

The Norwegian Government's ambitions and direction in energy policy include plans for increased investments in renewable energy. Even though the current high price levels lead to increased profitability on such investments and makes some previously unprofitable investments profitable, many projects still need subsidies. The high price level's positive effect on incentives for future investments will be partly mitigated by the recent proposal of an additional tax at particularly high prices. Parts of the renewable energy sector have expressed concerns that the proposed taxation structures will reduce the speed of renewable energy investments.

2.2.1. White paper on energy policy

In June 2021, The Government presented a white paper on energy policy and how to create long-term value from Norwegian energy resources.⁶ The white paper shows how Norway can use energy resources to create growth and new jobs. Norway's energy system will be further developed through investments in new industries, such as offshore wind, strengthening of the power transmission grid and a future-oriented oil and gas industry with

⁶ [*Meld. St. 36 \(2020–2021\) Energi til arbeid – langsiktig verdiskaping fra norske energiresurser*](#)

low emissions. In April 2022, The Government presented its supplementary white paper on energy policy⁷, which stresses the importance of energy security in times of uncertainty. The white paper shows how the Russian military invasion of Ukraine has affected world energy markets and underlines the importance of secure and stable energy access. The purpose of the Government's energy policy is to contribute to employment and a secure, green transition.

2.2.2. Offshore wind

In the floating offshore wind industry, the current high price level is not a sufficient incentive for investment. Bottom fixed installations are closer to being profitable, but some of these could still need subsidies. The current high price level will however contribute to the technology being profitable at an earlier stage. For floating offshore wind, the technology is still underdeveloped and operating on a small scale. In the next 5-10 years, we will likely see new and improved floating wind designs, larger turbines, and offshore wind farms, all of which could contribute to lower costs.

There are different types of subsidies that could be considered for offshore wind, for example investment support and contract for differences.

Investment support is a one-time subsidy, which is granted at the time of the investment, and reduces the investment cost of the project. This type of subsidy is suitable for projects with immature technology and greater technological risk, where foreign capital is not easily attracted. Even though the need for investment capital is reduced, the supplier risks fluctuating (low) future power prices, which still makes the investment uncertain.

A contract for differences gives the supplier a guaranteed price – higher than the expected market price – for the power produced over a given period. Contract for differences could be used when the technology is well-known, but the profitability of a project is highly dependent on uncertain future power prices. Bottom fixed offshore wind may be a candidate for such subsidies. The contract for differences reduces the risk of power price fluctuation for the supplier and makes the investment less vulnerable.

All types of subsidies should be limited to the amount that gives the investment a positive net present value. The net present value of the expected payments will be lower with contract for differences because the supplier also values risk reduction and predictability. However, this type of contracts is associated with long-term financial commitment which would put limitations on future public budgets. Regardless of the type of subsidy, ensuring good competition in tendering rounds of offshore wind-licenses will be important to make sure that Norway can implement investments in offshore wind as planned.

Recently, different constellations of companies in the oil industry and power producers have collaborated to develop new expertise in offshore wind. Such collaborations are not necessarily a violation of The Competition Act if the companies' products are complementary, but it could be problematic if they are actual or potential competitors, for example if the companies involved could have made the necessary investments to conduct the project on its own within a short period of time. The NCA has written a feature story that warns against such collaboration, as this may reduce the number of competitors. The feature story states that increased competition could lead to lower prices, higher quality, and increased innovation, which is the key to a successful development of new renewable energy.

⁷ [Tilleggsmelding til Meld. St. 36 \(2020 – 2021\) Energi til arbeid – langsiktig verdiskaping fra norske energiresurser](#)

2.2.3. Increased power transmission grid capacity

It takes up to twelve years to plan, develop and build new infrastructure that increases capacity in the transmission grid. A Norwegian Official Report⁸ has investigated how to reduce this. Because electricity transmission and distribution is a natural monopoly, this does not have direct impact on the competition in the energy markets. However, sufficiently high transmission capacity is important to ensure well-functioning competition.

The report recommends a socio-economic development of the grid, and includes measures on planning, design, licensing, and construction to reduce the time spent on grid development. The distribution system operators are also given more incentives to operate cost-effectively through a new revenue system.

2.3. Norwegian Energy Commission

In February 2022, the Ministry of Petroleum and Energy appointed an energy commission to map energy needs and propose increased energy production. The aim is that Norway will continue to be a net exporter of energy and that Norwegian electricity customers will continue to have access to renewable power.

The Commission's mandate covers 1) how Norway is affected by rapidly changing energy markets, including medium- and long-term effects of changes caused by climate policy objectives, technological development, and a restructuring of energy use and production in other countries. 2) Perspectives on developments in power consumption, including the factors that influence developments in Norwegian energy and power consumption today, and in the coming decades. 3) Describing what factors are important for triggering new power production and assess the potential and opportunities for development of economically profitable new production capacity in Norway. 4) Perspectives on supply security, including how increasing electrification and consumption growth may increase the need for secure access to power, particularly in periods of high demands on the power system. 5) Investigate the key conflicts of interest in energy policy, including what trade-offs must be made for a socially sound long-term development of the Norwegian power supply. The Commission will also assess how different energy policy choices affect the overall cost development in the Norwegian power supply, and how this affects the electricity retail market.

3. Actions in response to rising electricity and gas prices

3.1. List of measures in response to rising electricity prices

The Norwegian Parliament has enacted several measures in response to the high electricity prices. In addition, The Government has proposed measures awaiting parliamentary approval. Most of the policy measures imply subsidization of electricity consumption. There are currently no measures enacted or proposed by the Government that involve an intervention in the market. The different measures are listed in the Table below.

Policy measure	Status	Estimated cost (mill. NOK)
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<https://www.regjeringen.no/contentassets/9dabbb7fb58e4bb297f4388696570460/no/pdfs/nou202220220006000dddpdfs.pdf>

<p>Electricity subsidy scheme for households The Norwegian Government covers X per cent of household electricity costs⁹ exceeding 0,70 NOK per kWh.</p> <p>2021, Dec: X = 55 2022, Jan to Aug: X = 80 2022, Sep to Dec: X = 90 2023, Jan to Mar: X = 80</p> <p>The Government has proposed to extend the measure until the end of 2023, and to increase X Jan to Mar 2023: X = 90, Apr to Aug: X = 80 Sept to Dec: X = 90.</p>	<p>Enacted: Dec 2021 Extended until: Mar 2023</p>	<p>79 500</p>
<p>Reduced electricity consumption fee 2022, Jan to Mar: 47 per cent reduction 2022, Apr to Dec: 9 per cent reduction</p>	<p>Enacted: Dec 2021</p>	<p>2 900</p>
<p>Support for citizens receiving housing benefits Citizens who are receiving housing benefits, and who live in one of the three southernmost electricity price zones, receive an extra 1000 NOK per month, plus 150 NOK per additional household member.</p>	<p>Enacted: Dec 2021 Extended until: Jan 2023</p>	<p>2 900</p>
<p>Support for students Students may receive a one-time payment of 4500 NOK to cover electricity costs, of which 1800 NOK is added to their student loan total.</p>	<p>Enacted: Dec 2021</p>	<p>250</p>
<p>Energy saving measures for public housing Funding investments in energy saving measures for public housing, retirement homes, public student homes, etc. The Government has proposed to increase the funding until Dec 2023.</p>	<p>Enacted: Dec 2021 Extended until: Dec 2022</p>	<p>480</p>
<p>Social security Increased funding for municipalities in the three southernmost electricity bidding zones to cover an increase in social security costs.</p>	<p>Enacted: Dec 2021</p>	<p>400</p>
<p>Electricity subsidies for the agricultural industry The Norwegian Government covers X per cent of electricity costs exceeding 0,70 NOK per kWh.</p> <p>Jan 2022 to Mar 2023: X = 80</p>	<p>Enacted: Jan 2022</p>	<p>500</p>

⁹ The term electricity costs in this Table excludes network tariffs, taxes and VAT.

<p>Support for sports and voluntary organisations</p> <p>Dec 2021 to Mar 2022: Municipalities with an average spot price above 0,70 NOK per kWh in December of 2021 received additional funds for distribution to local sports associations and voluntary organisations.</p> <p>April 2022 to December 2022: The Norwegian Government covers 80 per cent (90 per cent from Oct 2022) of electricity costs exceeding 0,70 NOK per kWh, for eligible sports associations and voluntary organisations in the three southernmost electricity bidding zones.</p>	<p>Enacted: Feb 2022 Extended until: Jun 2023</p>	<p>770</p>
<p>Energy efficiency grants for the private sector</p> <p>The Norwegian Government covers X per cent of electricity costs exceeding 0,70 NOK per kWh, <i>provided that the company applying:</i></p> <ul style="list-style-type: none"> • had electricity costs exceeding 3 per cent of total company costs during the first half of 2022. • commits to thoroughly examining its electricity consumption to identify possibilities for energy saving (X up to 25). • invests in energy saving measures or in-house energy production (X up to 45). The government may cover up to 50 per cent of the initial investment. <p>Companies receiving support through this policy may not distribute dividends to shareholders in 2023.</p>	<p>Proposed</p> <p>Pending ESA approval</p>	<p>2 800</p>
<p>Loan guarantees</p> <p>For companies facing acute liquidity problems due to high electricity prices, the Norwegian Government guarantees 90 per cent of the loan amount on new bank loans, up to a maximum of 50 million NOK per company. Guarantees are only available to companies whose electricity costs exceeded 3 per cent of total company costs during the first half of 2022.</p>	<p>Enacted: Sep 2022</p> <p>Pending ESA approval</p>	<p>200</p>
<p>Changes to resource rent tax on fixed price electricity contracts</p> <p>At present, the resource rent tax on electricity is calculated using the electricity spot price, regardless of whether the units produced are sold through spot contracts or fixed price contracts. The Norwegian Government is currently assessing whether taxes on electricity sold through fixed price contracts should be calculated independently from the spot price.</p>	<p>Proposed</p>	<p>n/a</p>

Source: <https://www.regjeringen.no/no/tema/energi/regjeringens-stromtiltak/id2900232/?expand=factbox2900261>

3.2. The NCA's role in measures taken to handle rising electricity prices

The NCA has an important role in pointing out whether proposed measures will impose restrictions on competition. The NCA is tasked with ensuring that competition is maintained in the energy market., The tools to achieve this are presented below.

3.2.1. Price Action Act

The NCA may under Section 1 in the Price Action Act determine a price cap if considered necessary to ensure socially justifiable price developments. The Price Action Act can be useful if, for example, individual companies use a crisis or a special market situation to raise the price to increase their own profits.

Different political parties and interest organizations have advocated setting a price cap in the retail electricity market.

However, the NCA has emphasized that setting a price cap lowers incentives for energy efficiency. By removing the price signals, consumers are not faced with scarcity issues when making decisions about electricity consumption, which increases the risk of electricity rationing.

A further risk of setting a price cap aimed at end consumers is that this fixed price could at some points be lower than the purchase price of the electricity suppliers. In this case, it will no longer be profitable to sell electricity, leading to a risk of bankruptcies in the industry. This may threaten security of supply and could affect competition in the market in the long term.

3.2.2. Statements in public hearings

The Ministry of Finance recently proposed changes in the calculation of resource rent tax related to fixed-price agreements for electricity. These changes include a proposal that resource rent tax should be calculated on the basis of the actual contract price agreed upon in the standardized fixed-price agreements, rather than the market price.

Some of the respondents and the industry are positive to the proposed changes, which may increase the availability of fixed-price products on the market. The NCA has submitted a consultation response to the proposal from the Ministry of Finance. In this response, the NCA is critical to the proposal of setting an upper limit to what electricity suppliers can charge for the electricity they purchase from power producers. The NCA believes that this could have several unfortunate consequences and could lead to less innovation and fewer fixed-price agreements for electricity. If the maximum mark-up is set too low, it may become unprofitable to offer such agreements in the retail market, as the mark-up may not cover the costs. If the premium is set too high, this may result in higher prices for the agreements than if competition in the market were to have an effect. The NCA stresses that it should be investigated whether there are other tools than maximum mark-up that may prevent tax adjustments when there are common interests between power producer and electricity supplier.

3.3. Studies on different measures in response to the rising prices

The Norwegian Ministry of Petroleum and Energy has commissioned public authorities and private consultant companies to study consequences of and measures aimed at rising electricity prices.¹⁰ Measures aimed at both reducing prices and increasing security of

¹⁰ <https://www.regjeringen.no/no/aktuelt/eksterne-utredninger-av-stromsituasjonen/id2928977/>

supply have been discussed. However, there is often a contradiction between these goals. To achieve an increased security of domestic supply one could set a higher minimum level for water reservoirs, but this would most likely result in higher prices. The commissioned studies have different mandates and approaches, but the overall purpose is to increase knowledge on how to deal with the energy crisis.

- The **Norwegian Energy Regulatory Authority (RME)** has considered whether current legislations permit imposing export restrictions. The conclusion is that maximum trading capacity must be made available on interconnectors, considering operational reliability. In other words, the sectoral legislation allows for trade capacity on interconnectors to be reduced, if the reduction is justified by operational factors. RME therefore concludes that high price levels do not provide a legal basis for the TSO to reduce trading capacity at interconnectors.
- **Statistics Norway** have studied the impact of higher electricity prices for consumers and evaluates the electricity subsidy scheme.¹¹ The electricity subsidy scheme is designed so that the amount of support is related to consumption. To a certain limit, higher consumption gives higher subsidies. Because households with higher incomes often have a higher electricity consumption, this group also receives more subsidies. However, the report states that there is an increased significance of higher electricity prices and the resulting subsidies on household finances, for lower income households. This is also reflected in the distribution of energy savings during the period of high prices. The report finds that there have been significant power savings overall, but unevenly distributed. The households with lower income have saved more per household.
- **Thema Consulting** has conducted an analysis of the financial markets in the Nordic region regarding price hedging opportunities for electricity suppliers in Norway. The scope of fixed-price agreements in Norway in the past decade has been low compared with other Nordic countries. According to the report, the reason for this appears to be a low demand for these products. The power suppliers interviewed highlight several reasons for the low demand: The Consumer Council's recommendations of spot price contracts, the current electricity support scheme, and that the spot price in Norway has historically been low, meaning end users have been able to manage the price risk themselves. Furthermore, because of minimum volume requirements in the financial contracts, it has been difficult for the electricity suppliers to gather a sufficiently large customer group to be able to offer an effective fixed-price product. According to the report, there does not appear to be a significant demand for fixed price-agreements among Norwegian end-users that is not met today. The recent development with high price volatility and low liquidity in the financial market has further increased the risk associated with offering such agreements. To address these problems, the report highlights the following as potential measures: 1) fixed-price agreements with volume-fixed insurance products, 2) to facilitate trade in EPAD-contracts between participants in different bidding areas by connecting the markets, and 3) total purchasing agreements, which can lead to a significant reduction in the period when electricity suppliers are exposed to unsecured price risk.

¹¹ https://www.ssb.no/energi-og-industri/energi/artikler/okonomiske-konsekvenser-av-hoye-kraftpriser-og-stromstonad/_attachment/inline/9a39ac2d-f93a-41b4-80e2-5b38ddd7ad2b:71b9050840159e1478462581eac6c03ebb8d40f/RAPP2022-36.pdf

- **Afry and Menon** has assessed several potential measures in the power market. They find that: 1) Minimum requirements for reservoir filling could contribute to increased security of supply, but the effect on power prices is uncertain. 2) Limiting power exports could reduce prices, but the effect on security of supply is low. Close dialogue with neighboring countries would be necessary, particularly to ensure Norway's ability to import in critical situations. 3) A maximum price of power in the wholesale market can result in large challenges to security of supply. 4) Price caps in the retail market reduce electricity customers' price exposure but the cost-effectiveness is dependent on how the scheme is designed. A maximum price level reduces incentives for energy savings and investments in energy efficiency, the costs of which will also increase over time. 5) Establishment of a state-owned company that sells power is not necessarily more effective than a stricter regulation. 6) Utilization and expansion of the power grid will reduce price differences. There are limited opportunities in the short term but planned measures will improve the situation.
- **Vista and DNV** have conducted an analysis on the effects of high electricity prices on the Norwegian economy. The report find that consumers can and will adapt to higher electricity prices, but adaptation options vary. Comparisons to previous studies indicate that power consumption in Norway is more flexible than in many other countries due to the extensive use of electricity for heating. This also indicates that there is higher flexibility in winter than in summer in Norway because many households have alternative heating sources and can replace electricity with for example firewood.
- **Sintef Energi** have assessed the power situation in 2021 and 2022 and the risk of similar situations in the future. They are also assessing various measures taken or potential, with an emphasis on water reservoir disposal. Several factors affect Norwegian producers' disposal of water reservoirs. The basis for the assessment is the water value of each producer. Water value indicates the power price necessary for a producer to produce today rather than save water for future production. This is determined based on expectations of future prices and inflow. If prices are expected to be higher in the future, it will be profitable for the producer to hold back production today. The report finds that during the fall of 2021 and winter of 2022, the reservoirs were drained more than the expected price development in Europe would indicate. The review of the power situation shows that during this period, the market has consistently underestimated the future price development. The final parts of SINTEF's report will not be completed until later this fall.

4. Norway's role in the European energy system

Norway is an important supplier of gas to the global market, and almost all gas produced on the Norwegian shelf is exported. A significant amount of the supply of energy is exported in pipelines to other countries in Europe. Because of this, Norway plays a central role in the current energy crisis. During the first two quarters of 2022, the supply of Norwegian natural gas accounts for about a quarter of extra-EU imports of natural gas.¹²

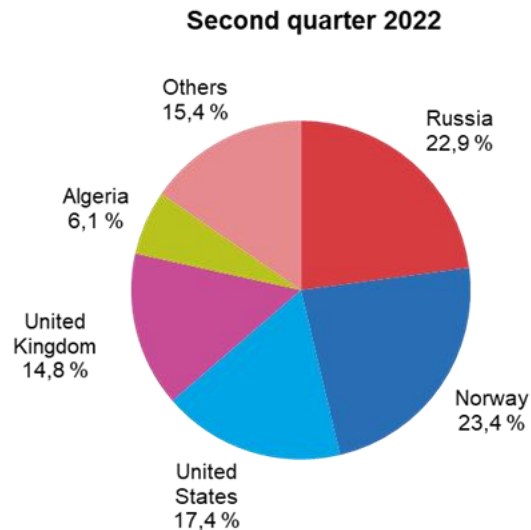
12

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_recent_developments#Main_suppliers_of_natural_gas_and_petroleum_oils_to_the_EU

In the second quarter of 2022, Norway is in fact the most important trading partner for the EU measured as share of trade in value, as shown in the Figure below.

Figure 2. Extra-EU imports of natural gas by partner

Share of trade in value



Source: Eurostat database (Comext) and Eurostat estimates

Furthermore, Norwegian gas exports to Europe are expected to increase by eight percent in 2022 compared to 2021.¹³ This increase is equivalent to about 100 TWh of energy. Still, about 60 per cent of the expected natural gas resources in Norway are yet to be produced.¹⁴ In the short- and medium-term, the most important contribution from Norway to support the challenging energy situation in Europe is to maintain a high daily production of natural gas and to invest in new production on the shelf.

Compared to the amount of gas exported, Norway's contribution as a net exporter of electricity is small, but not insignificant. A large amount of flexible hydropower production equals low costs associated with adjusting production in the short term.

This combination of factors positions Norwegian power supply as a key element in balancing supply and demand in the Nordic and European power system.

In the long term, Norway may play an important role as a net exporter of renewable energy in the European power supply system. Safeguarding competition in energy markets ensures continued investments in renewable energy. Combined with more specific measures such as ensuring competition in tendering rounds of offshore wind-licenses, this will further strengthen the role of Norwegian renewable energy in Europe.

¹³ <https://www.regjeringen.no/no/aktuelt/hoy-gassproduksjon-og-store-ringvirkninger-fra-norsk-sokkel/id2930619/>

¹⁴ <https://www.norskpetroleum.no/en/production-and-exports/exports-of-oil-and-gas/>