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Summary and Conclusions

How the Energy Efficiency Directive is implemented nationally may affect the development of a common Nordic end-user market if measures are not harmonized and if the business models of suppliers are affected. Against this background, we have carried out an analysis of how the implementation of the EED may affect the development of a common Nordic end-user market:

- What are the consequences of different energy efficiency policy instruments for the electricity suppliers?
- How may different measures counteract the development of a common Nordic end-user market?
- What can and should be done to prevent or mitigate any adverse competitive effects?

Implementation of the EED can adversely affect the development and competitive of a common Nordic end-user market in the following ways:

- Directly if national implementation introduces new cross-border entry costs.
- Indirectly if provision of services related to energy efficiency measures constitute an advantage for incumbent suppliers.
- Indirectly by reducing the size of the market and the attractiveness of acquiring new customers.

The analysis focus on the first two types of barriers.

A common Nordic end-user market

Electricity sales to end-users in the Nordic area have been liberalised and suppliers compete for end-users within all the Nordic countries. However, the markets are largely national, with few suppliers offering services across country borders. As the supplier business is largely a volume business, operating in a larger market area should release increased economies of scale. Hence, efficiency gains can be realized by reducing or removing barriers to cross-border competition. A harmonized common

Nordic end-user market should bring benefits to stakeholders, through increased competition among the suppliers, improved market efficiency, reduced supply margins and reduced costs for the customers.

Different requirements and regulations pertaining to the supplier business in the different countries currently constitute barriers to a common Nordic end-user market. The Nordic council of Ministers has a goal to harmonise legislation, rules and processes that constitute important barriers for suppliers to establish their business in other Nordic countries by 2015 in order to create a common Nordic end-user market.

Implementation of the Energy Efficiency Directive

At the same time, the EU members Denmark, Finland and Sweden, and perhaps subsequently the EES country Norway, are obligated to implement energy efficiency measures in accordance with the EU Energy Efficiency Directive (EED).¹ The Directive sets (non-binding) targets for energy efficiency for end-users, but obliges the member states to increase energy efficiency efforts through implementation of national policy measures. The national implementation of the Directive may affect the development of a common Nordic end-user market if the countries implement policies in a non-harmonized way and in a way that affects the supplier's business models differently in different countries.

There are currently a number of energy efficiency measures in place in the Nordic countries. In order to comply with the Energy Efficiency Directive the countries can either expand the scope of the existing measures or develop new measures in accordance with the guidelines in the directive.

The period up to 2020 is too short to develop and implement harmonized instruments. We therefore find it most likely that we will see a continuation of a system of non-harmonized national measures to promote energy efficiency.

¹ European Parliament and Council Directive 2012/27/EU on Energy efficiency, entered into force on December 4th 2012.

Consequences for electricity suppliers

In general, energy efficiency policies affect electricity suppliers by reducing the market volume and may in addition increase the costs for suppliers. Costs increase if the suppliers are given a role in the financing or carrying out of the energy efficiency measures. Tax collection, obligations to inform about energy efficiency measures, and obligations to buy white certificates constitute such costs.

Most of the energy efficiency measures applied in the Nordic countries today do not imply significant costs for suppliers.

The Energy Efficiency Directive recommends implementation of energy efficiency obligation schemes or white certificate schemes. A white certificate scheme where the obligation is put on the suppliers would however increase the cost of suppliers as such schemes require particular trading strategies and IT systems, and introduces new risks. Implementation of a white certificate scheme in one country would increase the cost of both incumbent suppliers and new entrants. As such the incumbents would not have an advantage in the implementation phase. None-the-less, a cross-border entrant would not be able to realize economies of scale by expanding its business to the adjacent market to the same degree.

Measures counteracting a common Nordic end-user market

In general, non-harmonized energy efficiency measures affecting the supply business may counteract a common Nordic end-user market.

The more particular the roles and requirements for suppliers in one country, the higher is the obstacle to expand supplier business from one market to another as less economies of scale may be gained.

An energy efficiency obligation scheme where the obligation is put on suppliers has the most potential of hampering the development of a common market, as energy efficiency measures reduce the initial value of acquiring new customers, and the cost of expanding the customer base to other markets increase.

Development of an energy service market may also imply increased customer loyalty and reduced propensity for supplier switching. Therefore, energy service businesses should be set up as independent business entities and not as integrated parts of energy supply. Moreover, consumption data should be easily accessible for end-users (on an individual basis) and for all energy service providers in a non-discriminatory way.

Mitigation of adverse competitive effects

Generally, non-harmonized policy instruments do not need to counteract competition in a common end-user market as long as the suppliers are not given a specific role in managing the scheme. Hence, adverse effects on cross-border competition may be prevented by avoiding obligations on suppliers or harmonizing such obligations among the Nordic countries.

A common system is the optimal solution if a white certificate market is chosen as the main energy efficiency measure. The reason is that differences in other measures will not distort competition to the same degree as white certificates.

1. Introduction

1.1 Background

The creation of a Nordic end-user market for electricity is a top priority for energy policy cooperation between the Nordic countries. The ambition is to establish a common Nordic end-user market covering Denmark, Finland, Norway and Sweden, in order to realize lower costs for network operators and electricity suppliers, and ultimately electricity consumers. Currently, the roles and regulations of electricity suppliers differ among the Nordic countries. These differences are perceived to constitute barriers to entry for cross-border suppliers, and hence to hamper the creation of a common end-user market. Some conditions for the development of a common Nordic end-user market for electricity have been analysed by NordREG, requested by the Nordic Council of Ministers' electricity markets group. Their recommendations call for harmonization on a number of areas affecting the supplier business.

At the same time, the EU members Denmark, Finland and Sweden, and perhaps subsequently the EES country Norway, are obligated to implement energy efficiency measures in accordance with the EU Energy Efficiency Directive (EED).² The Directive sets (non-binding) targets for energy efficiency for end-users, but obliges the member states to implement national policy measures to achieve the target. The directive is very broad and includes provisions affecting most of the energy systems of the EU member countries – from energy conversion through transmission and distribution to end use.

² European Parliament and Council Directive 2012/27/EU on Energy efficiency, entered into force on December 4th 2012.

1.2 Approach

The national implementation of the Directive may affect the development of a common Nordic end-user market if measures are not harmonized and if the business model of suppliers are affected. Against this background, the Working Group for Energy Efficiency under the Nordic Council of Ministers (AGEE) has commissioned THEMA Consulting Group to carry out an analysis of how the implementation of the EED may affect the development of a common Nordic end-user market:

- What are the consequences of different energy efficiency policy instruments for the electricity suppliers?
- How may different measures counteract the development of a common Nordic end-user market?
- What can and should be done to prevent or mitigate any adverse competitive effects?

Implementation of the EED can adversely affect the development and competitive of a common Nordic end-user market in the following ways:

- Directly if national implementation introduces new cross-border entry costs.
- Indirectly if provision of services related to energy efficiency measures constitute an advantage for incumbent suppliers.
- Indirectly by reducing the size of the market and the attractiveness of acquiring new customers.

The first type of effect is barriers to cross-border competition. The second type constitutes entry barriers for all entrants, including within the national market. Thus, we distinguish between cross-border entry barriers and general entry barriers.

The third impact applies to all energy efficiency measures. There are both costs and benefits of getting more customers. If the cost is independent of the size of the client, while income is positively correlated with consumption, the gain by getting more customers will be reduced if each customer has lower consumption. This indirect effect will not be discussed further in the report. However, it could be argued that this effect implies that it is even more important to reduce the other two types of barriers in order to develop a common market.

1.3 Overview of the work process

The analysis is based on the framework for energy efficiency measures in the EED (Article 7), the current energy efficiency measures in the Nordic countries, and the roadmap for a common end-user market developed by NordREG.

NordREG has identified a number of issues that need to be harmonized in order to get a well-functioning end-user market. Their recommendations provide a useful starting point for the analysis of energy efficiency measures. In order to analyse the possible impacts of the EED, we describe the properties of the relevant energy efficiency measures with particular emphasis on the design elements that can affect the electricity supplier.

We focus the analysis on existing measures in the Nordic countries, as the short timeframe to 2020 limits the possibility to design new harmonised measures, and on the policy measure recommended in the EU, namely an energy efficiency or white certificate obligation scheme.

During the project, we have had presentations in two workshops with the Working Group for Energy Efficiency under the Nordic council of Ministers. We have also performed a number of interviews with suppliers in the Nordic countries.

2. A common nordic end-user market

To be able to discuss to what extent implementation of the EU Energy efficiency Directive will affect harmonization of and competition in a common Nordic end-user market for electricity, we need to establish an understanding of what both of these reforms actually imply for the suppliers and the end-user market.

Electricity supply to end-users involves different participants, namely the generators, the suppliers, and the distribution system operators (DSOs). The generators produce the electricity and sell it in the wholesale market. The suppliers buy electricity in the wholesale market and sell it to end-user. The DSOs operate the distribution networks and are regulated monopolies in their distribution area. As owners of the grid and responsible for metering, the role of the DSOs is to be neutral market facilitators, treating all suppliers in a non-discriminatory. In the following, we refer to the competition between suppliers when we talk about the end-user market.

2.1 National end-user markets

Electricity sales to end-users in the Nordic area has been liberalised and a number of suppliers compete for end-users within all the Nordic countries. Consumers can change supplier at a low cost, and a large number of different types of contracts has gradually emerged in the end-user markets. Electricity sales to end-users is best characterised as a “margin business”. Economies of scale imply that it is important to secure a high volume of customers and to be cost effective in administration and billing in order to compete successfully. However, the markets are largely national, with few suppliers offering services across country borders, although supplier margins differ between markets.

A common Nordic end-user market should bring benefits to stakeholders. A larger market is likely to increase competition among the suppliers, improve the efficiency in the market, reduce supply margins and reduce costs for the customers. Increased competition should also

foster innovation and give customers a wider choice of offerings and products to meet their needs. Further, an integrated Nordic end-user market should be more attractive for new entrants.

The main barriers to a common Nordic end-user market are perceived to be the different requirements and regulations pertaining to the supplier business in the different countries. This implies that the supply business is not easily expanded from one country to another. Basically, expanding one's business into another country requires setting up a new entity with a different business model. NordREG recommends increased harmonization of a number of requirements and regulations in order to remove barriers to cross-border competition. Some recommendations have already been issued, while others are still pending.

We present an overview of the entry barriers and the NordREG recommendations in the following sections.

2.2 Entry barriers for electricity suppliers in the Nordic area

In this chapter we address the legal and institutional entry barriers for electricity suppliers in the Nordic markets. In this context, an entry barrier is any type of legal or institutional obstacle preventing a supplier "easy" entry into the market.

In the Nordic countries, some parts of the legal and institutional framework for electricity supply are similar, while other parts differ. The Nordic countries have common historical ancestry and have been working together in order to create a common wholesale energy market. Harmonization of the Nordic energy market is *inter alia* stimulated by NordREG, the organisation for the Nordic energy regulators. The organisation's mission is to actively promote legal and institutional framework conditions necessary for developing the Nordic and European electricity markets. NordREG has developed a target model for the Nordic end-user market and published a number of publications (studies) and recommendations towards realisation of this target model.

In this chapter, we discuss a (non-exhaustive) number of legal and institutional entry barriers for electricity suppliers in the Nordic countries' electricity markets. Similarities in the different markets, like acqui-

sition of electricity in the common wholesale market, that do not constitute an entry barrier for suppliers, are not discussed.³

There are different types of (legal and institutional) entry barriers. We may distinguish between four types of potential entry barriers:

- Requirements for (becoming) a supplier.
- Legal obligations for suppliers.
- Types of contracts.
- General tax regime.

2.2.1 Requirements for (becoming) a supplier

The Nordic countries all have a liberalized electricity market that allows virtually anyone to become a supplier of electricity. However, suppliers need to fulfil some prerequisites in order to be legally permitted to buy and sell electricity to end-users. One of these prerequisites is a license. In Norway any trader, including suppliers, are required to have a license from the regulator.⁴ The license serves as an obligation to comply with the national regulations. In Denmark, Sweden and Finland such a license is not required. However, Danish law requires a license for the supplier of last resort.⁵ According to NordREG, however, the differences in licensing requirements do not constitute a barrier for a common Nordic energy market.⁶

Information exchange is mandatory in all Nordic countries. Information exchange is crucial in different business processes. The supplier needs to communicate with the DSOs in connection with business processes such as supplier switching, moving, billing, etc. Data needed to be exchanged can be meter data (information about the meter such as metering point ID, meter number, whether the meter is manually read, remotely read or just estimated, and other relevant technical information about the meter), customer data (customer name, meter address, billing

³ Suppliers in the Nordic countries may all purchase electricity via the common power exchange Nord Pool Spot.

⁴ Chapter 4, Forskrift om produksjon, omforming, overføring, omsetning, fordeling og bruk av energi m.m. (energilovforskriften), <http://lovdata.no/dokument/SF/forskrift/1990-12-07-959>.

⁵ Chapter 6 and 8, Energy supply act Denmark.

⁶ P. 75, "Market Design Common Nordic end-user market", NordREG publication 2009, https://www.nordicenergyregulators.org/upload/Reports/Market_Design_Common_Nordic_end-user_market_20090507.pdf

address, birth date, customer number or ID, phone number or other contact info etc.) and consumption data (estimated data, consumption profile, manual meter readings and automatic meter readings). In Denmark the information exchange is organized via a so-called central data-hub that covers all market players' information. The Danish TSO is responsible for the management of the data hub. Any supplier in Denmark must, to be able to supply, report its data to this data-hub. Acceptance as an actor to the data-hub requires approval by the TSO and is based on criteria approved by the Danish Regulator.⁷ Other Nordic countries have not yet set up a mandatory central data-hub system for information exchange. Instead, information exchange is based on a point-to-point information exchange. Norway is however planning to set up such a central data-hub.

Establishment of a legal entity in the country seems necessary in order to conduct business in most countries and is perhaps preferable for most suppliers. For example information exchange and customer service require suppliers (or any other market player) to have (minimally) an office in the country of supply. In Norway, however, licenses for trade are also given to foreign companies that do not have a legal entity in the country, although they have to register in the Central Coordinating Register for Legal Entities (Brønnøysundregistrene) to get a license. Legislation and requirements for establishment of a company in one of the Nordic countries is the same for all market actors in that country.

2.2.2 Legal obligations for suppliers

The public service obligation to supply electricity to the end-users that have no supplier of electricity at the moment (supplier of last resort, SoLR) is arranged differently in the Nordic countries. In Norway the distribution company is supplier of last resort. In Denmark, Finland and Sweden, the SoLR obligation lies with a supply company. In Denmark the SoLR requires a license approved by the Energy Agency.⁸ To get approval, the company must have a license showing that it has the necessary technical and financial resources.⁹ In Finland the SoLR obligation lies

⁷ Danish Electricity Supply Act, and p. 20, "High level suggestions for common Nordic processes for information exchange- obstacles and possibilities", NordREG report 2013, https://www.nordicenergyregulators.org/upload/Reports/Common%20Nordic%20processes%20for%20information%20exchange_approved.pdf

⁸ Chapter 6, Energy supply act Denmark.

⁹ Chapter 6 and 8, Energy supply act Denmark.

with the supplier that has a major market position or the highest percentage of customers in the distribution network area it operates.¹⁰ In Sweden the SoLR for each area is appointed by the DSO.¹¹

Transparency and information provision is a central obligation for all electricity suppliers. However, the type of information that is required is different. In Finland and Denmark, all customers have to be informed about the origin of the electricity and the environmental impact of the electricity produced. In other Nordic countries such information is not mandatory. In Norway for example, the need to inform the end-user on nationally produced renewable electricity is limited, due to a high percentage of hydro generation. In some countries, guarantees of origin are available that will automatically inform the end-user on their origin if used.

2.2.3 General tax regime

National tax regimes can be cumbersome to manage for international actors and can constitute a barrier to entry. However, general tax regimes applying to all business in a country are not likely to be harmonized across the region. Some differences between countries are likely to prevail, and we do not regard differences in the general tax regimes as a major entry barrier for electricity suppliers in the Nordic region.

2.3 Recommendations for a common Nordic end-user market

The Nordic council of Ministers has a goal to harmonise legislation, rules and processes that constitute important barriers for suppliers to establish their business in other Nordic countries by 2015. As an organisation for the Nordic energy regulators, NordREG has no decision power and can only provide recommendations.

¹⁰ Finland law.

¹¹ See NordREG report "Nordic harmonisation of universal service supply obligations".

2.3.1 *The supplier-centric model*

NordREG recommends implementation of a so-called supplier-centric model for the end-user market. The supplier-centric model implies that the supplier is responsible for (almost) all information, billing and communication with the end-users. From a customer point of view, this implies that the supplier handles most issues. Examples of such issues could be billing, moving in/out, supplier switching and questions about consumption, fuel mix etc. This differs from today's situation where the customer must deal with both the supplier and the DSO. Issues strictly related to the network will however remain the responsibility of DSOs. Such issues include interruption of supply, technical aspects of metering and metering devices, quality of supply, new connections and compensation for interruptions.

The purpose of the supplier-centric model is to make it easier for the customers to operate in the electricity market, by, in most processes, providing them with the opportunity to only be in direct contact with the supplier. This will give the suppliers the main role in the market, while the DSOs have the role of market facilitators. This means that the contact between the DSO and the end-user will be kept at a minimum.

NordREG is currently working towards defining responsibilities in the customer interface of the supplier-centric model and the way of billing the customers. According to NordREG the end-user markets should be harmonised to the extent that the most critical prerequisites for a well-functioning Nordic end-user market have been achieved by 2015.

2.3.2 *Harmonization of business processes*

In order to implement a common Nordic end-user market, a number of different processes need to be harmonised. In Table 1 we have listed the main recommendations in different areas included in the target model.

Combined billing

The recommendation on a combined billing regime implies that suppliers bill both electricity and network charges to the customer. The harmonisation of the billing regime would therefore require changes in the suppliers' systems and processes.

Responsibilities in the customer interface

The supplier-centric model implies that the supplier company is responsible for all interface with the customer that is not strictly network related.

Information Exchange

NordREG recommends that all Nordic countries choose the same model, or similar models, for information exchange, as this will make the harmonisation more complete. There has to be a tool in each country guiding suppliers when they need to get relevant customer information in order to carry out a supplier switching etc. Further, there should not be more than one interface in the supplier's procedure for retrieving and providing the relevant data. It is essential that the responsibility for customer data and processes is the same between the countries.

The countries should nationally investigate what information exchange solutions to implement in each country, but the chosen data exchange models must not distort competition, especially between national and foreign suppliers.

Table 1 Selected target model recommendation areas and their year of publication

Selected recommendation areas	Year of recommendation	Remark
Billing	2011	Recommendation: mandatory combined billing regime
Responsibilities in the customer interface	2011	Recommendation: supplier-centric model
Information exchange	2012	Recommendations: Same model in all countries Tool to aid suppliers switching consumers Only one interface for suppliers' data collection Nationally investigate information exchange solutions Data models/IT systems should not distort competition One system for the Nordic market actors Industry and TSOs to work together in setting up one interface
Moving	(Planned 2013)*	
Access to customer data /transparency	2013	Recommendation on principles that require full transparency of metering data from the customer perspective: type of information that is being collected, receive information on the explicit data ,and clients can decide on the way that this data is being used
Tax collection	2012	A suggested fee and tax regime with the supplier having central responsibility. (Tax regulation is however not within the mandate of energy regulators)
Metering	(Planned 2013)*	
Universal service	2013	Recommendations: Neutrality of DSO Customer activity (encourage active participation of consumers)
Data format	(Planned 2014)	
Supplier Switching	2013	A framework model is prepared, but there are still issues open. (in June 2013 further research outsourced to Edisys Consulting.)
Risk management	2012	Focus on combined billing
Number (payment, number of contracts and making and ending contracts)	2012	Consideration of optimal contract type subcontractor model, the customer only has a contractual relationship with the supplier
Balance settlement	2012	TSOs have committed to facilitate a harmonized Nordic balance settlement system (NBS). (Further ongoing work by the TSOs.)

* No recommendation is published before the completion of this report.

Access to customer data/transparency

NordREG has developed a set of recommendations on principles regarding access to information in a harmonised Nordic end-user market:

- Regardless of the meter value management process, metering data should be fully transparent from the customer perspective.
- It is always the customer that chooses in which way metering data shall be used and by whom, with the exception of metering data required to fulfil regulated duties.
- The customer should receive information on actual consumption and costs, on a monthly basis, free of charge, from the supplier.

On demand, the customer should be able to access information on his/her up to date consumption and costs. When communicating with the customer, the service provider (a supplier, a distribution system operator or an energy service company) should offer a choice of different channels to provide this information for free.

Tax collection

NordREG recognises that harmonisation of tax collection requirements is a critical step in order to successfully harmonise the Nordic end-user electricity markets. Taxation rules are however not in the scope of energy regulators and thus are not a part of NordREG's responsibilities.

Therefore NordREG have asked the Nordic Governments to take the necessary actions in order to harmonise the tax collection rules between the Nordic countries. A tax regime where suppliers collect all taxes and fees, and forward relevant taxes and fees to the DSO has been pointed out as the most suitable option in a consultancy report by Ernst and Young (Ernst and Young, 2012) delivered to NordREG. Input from stakeholders point in the same direction.

Universal service

NordREG has analysed the need and possibility to harmonise the rules covering universal service (default supplier and supplier of last resort). The regulations for universal services differ in the Nordic countries, but NordREG does not see harmonised regulation in this area as an urgent need. NordREG does however recommend that universal service obligations should be designed so that customers are encouraged to actively choose and make a contract with a supplier. NordREG also made recommendations on DSO neutrality when contacted by customers.

Supplier switching

NordREG has prepared a framework model on supplier switching, but there are still issues that have to be solved before a fully harmonised switching model is ready. The national regulators have made different assessments of the need for online access to a database containing contract information for the electricity end-users. It is also a central issue whether a data hub is a part of the foundation of a harmonised market or not.

Risk management

In the current billing regime the credit risks are divided between the stakeholders. The supplier and the DSO are each responsible for the monetary claim of supply and distribution charges. There is a well-defined stakeholder relationship and a common understanding of which stakeholder is responsible for what in the billing and debt collection process.

The supplier-centric model implies a combined billing regime where the end-user receives one invoice that includes both supplier and DSO charges, and the supplier should be the single point of contact regarding the invoice. When the billing information has been submitted to the supplier the DSO has a claim against the electricity supplier that corresponds to the grid tariff.

According to the NordREG recommendation, the supplier shall forward the payment for the grid tariff to the DSO on a monthly basis. Still, NordREG recognise that there may be need for further analysis at national level of how payment forwarding should be implemented.

If the supplier fails to pay the DSO for the grid cost there should be a possibility to exclude the supplier from the market. The criteria for excluding a supplier should be harmonised. The exact procedure of exclusion should be defined in each country.

Number (payment, number of contracts and making and ending contracts)

In 2012 NordREG commissioned Henrik Bjørnebye and Ivar Alvik of the University of Oslo to analyse and make recommendations on the optimal contract model in a supplier-centric market. The study presented two general options:

- A subcontractor model where the customer enters into a contract with the supplier governing both energy supply and grid use. The supplier then enters into a separate contract with the DSO for grid use, making the DSO a subcontractor for this service.
- A power of attorney model where the supplier acts as a customer representative, and the customer and the DSO will still formally be contract parties to the grid use agreement, but the supplier will act with a power of attorney from one of the parties in order to facilitate combined billing.

The consultants concluded that from a legal perspective a subcontractor model is better suited than a power of attorney model and recommended that the subcontractor model is further explored for possible implementation in the Nordic countries. NordREG will therefore not issue a Nordic recommendation on the contractual arrangement at this stage. Any decisions to change the current contractual arrangement has to be taken at national level, but national decisions should make regard to the Nordic harmonisation.

Balance settlement

Earlier, the Nordic TSOs have made a commitment to facilitate a harmonized Nordic balance settlement system (NBS) without any adverse effects for competition and efficiency in the common Nordic wholesale and Nordic end-user market. The on-going work on changing national legislation in order to ensure the implementation of NBS has started in all Nordic countries. The finalizing of the legal changes is however dependent on an agreed proposal from the TSOs on the open issues.

Implementation process

So far, NordREG has made recommendations on responsibilities in the customer interface, billing, information exchange, customer access to data and transparency, DSO neutrality and supplier switching. Furthermore, NordREG will make recommendations on moving, metering and format, content and interface for market messages.

Figure 1 is taken from NordREG Report 5-2013 “Road map towards a common harmonised Nordic end-user market” and shows recommendations already made by NordREG and recommendations that are pending. The year indicates the NordREG issuing year. The colours indicate the implementation of the recommendations in each of the four Nordic countries. Green indicates that the recommendation has been implemented or that a formal decision has been taken with a fixed date for

implementation. Yellow indicates that the implementation process has started. Red indicates that the implementation process has not started. The red indication does not necessarily mean that all of the more detailed recommendations for each category do not comply with NordREGs recommendations.

Figure 1 Recommendations made by NordREG and status of implementation

Recommendation	Issued by NordREG	DK	FI	NO	SE
Supplier centric customer interface	2010	Implemented	No work started yet	On-going work	On-going work
Combined billing	2011	Implemented	No work started yet	On-going work	On-going work
Information exchange	2012	Implemented	On-going work	On-going work	On-going work
Access to customer data and transparency	2013	On-going work	On-going work	On-going work	On-going work
DSO neutrality (Universal service)	2013	Implemented	Implemented	Implemented	On-going work
Supplier switching	2013	Implemented	No work started yet	On-going work	On-going work
Payment requirements with combined billing	2013	Implemented	No work started yet	On-going work	On-going work
Moving	Planned 2013				
Metering	Planned 2013				
Message format, content and interface	Planned 2014				

Legend

- Implemented
- On-going work
- No work started yet

Source: NordREG Report 5-2013.

3. Implementation of the EU energy efficiency directive

Currently a number of energy efficiency measures are in place in the Nordic countries. In order to comply with the Energy Efficiency Directive the countries can either expand the scope of the existing measures or develop new measures in accordance with the guidelines in the directive.

The Energy Efficiency Directive (EED) came into force on December 4, 2012.¹² The Directive's purpose is the setting of Union (20% by 2020) and national (differentiated) energy efficiency targets.¹³ The Directive distinguishes two sectors that should achieve improved energy efficiency:

- Energy use (industry, commercial, residential and transport).
- Energy supply (energy sector).

This project concerns energy efficiency in the end-user market. Therefore, the analysis will focus mainly on measures related to the efficiency of energy use.

In this chapter, we present the energy efficiency measures included in the EED and the current policy measures applied in the Nordic countries, and discuss their possible impact on suppliers. Finally, we discuss possible impacts on end-user competition due to the emergence of an energy service market.

¹² Directive 2012/27/EU of the European Parliament and the Council of 25 October 2012 on energy efficiency, amending Directive 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC.

¹³ The Directive is the successor of the Energy Services Directive (2006/32/EC) and the Cogeneration and Heating Directive (2004/8/EC) and complementary to the ECO-Design Directive (2009/125/EC) and the Energy Labelling Directive (2010/30/EC).

3.1 EED policy instruments

To support the Member States in achieving their national energy efficiency targets, the Directive introduces a number of policy instruments that focus in particular on the end-user market. In drafting the policy instruments, the Commission defined four main components that should promote energy efficiency in the end-user market:

1. Energy savings obligation scheme.
2. Increased (exemplary) role of the public sector.
3. Ensure information on savings is provided to consumers and industry.
4. Development of the energy services market.¹⁴

3.1.1 Energy savings obligation

For this project, only component number 1, and partly 4, is relevant. The other two are therefore not described in further detail. The list is not exhaustive, and the Directive also opens for other measures as long as adequate energy savings can be substantiated.

The energy savings obligation component obliges Member States:

“to achieve new energy efficiency savings each year from January 1, 2014 to December 31, 2020 of 1.5% of the annual energy sales to final customer (...) averaged over the most recent three-year period prior to January 1, 2013.”¹⁵

The suggested policy instrument according to the Directive is an energy efficiency obligation scheme.

An energy efficiency obligation scheme (EEOS) “is a regulatory mechanism that requires obligated parties to meet quantitative energy saving targets by delivering or procuring eligible energy savings produced by implementing approved end-use energy efficiency measures.”¹⁶ The

¹⁴ This enumeration follows the Impact Assessment Report as available at: http://ec.europa.eu/energy/efficiency/eed/doc/2011_directive/sec_2011_0779_impact_assessment.pdf, last visited 08/04/2013

¹⁵ Art. 7.1 EE Directive.

¹⁶ p. 1, International Energy Agency, RAP, “Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes”, Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes, available at: http://www.ieadsm.org/Files/AdminUpload/%281%29RAP_IEADSM%20Best%20Practices%20in%20Designing%20and%20Implementing%20Energy%20Efficiency%20Obligation%20Schemes%2012%20June%286%29.pdf, last visited 8/04/2013.

obliged parties in the EEOS are energy distributors and/or suppliers. The rest of the implementation of the EEOS is up to the Member States, as long as certain criteria are met, e.g. non-discriminatory, social aim, measurement, control and verification. A number of Member States already have an EEOS in place and their experiences have been used as a basis for the Commissions Impact Assessment that serves as a basis for this Directive.¹⁷ Annex V of the EED describes common methods for the calculation of the impact of EEOS and other policy measures.

However, Member States may opt to use other types of policy measures to achieve the 1.5% target, see section 3.1.3.

3.1.2 A market for energy services

The fourth component described in the Directive is promotion of an energy service market. Energy services, like energy audits, should be made available to all market participants. Member States should create and/or promote access to the market for participants who provide energy services in a transparent and non-discriminatory manner.

3.1.3 Other measures

Member States may also opt for other policy options that target reduction of the end-use energy consumption and achieve the 1.5% energy efficiency target.¹⁸ Alternative options mentioned in the Directive are:

- Energy or CO₂ taxes that target energy consumption.
- Financial schemes, instruments or incentives that lead to the application of energy efficient technology or techniques.
- Regulations or voluntary agreements.
- Standards or norms that improve energy efficiency of products or services (additional to the regulations already in place under Union law).
- Energy-labelling schemes (additional to the regulations already in place under Union law).
- Training, education and energy advisory programmes.

¹⁷ E.g., the United Kingdom, Italy, France, Denmark and the regional government of Flanders (Belgium).

¹⁸ Art. 7.9 EE Directive.

The policy options are not limited to the suggested instruments. Any type of policy measure, including the EEOS, requires an explanation on the manner in which the equivalent amount of energy efficiency savings is achieved.

3.2 Current energy efficiency measures in the Nordic countries

Figure 2 shows an overview of the main energy efficiency measures in place in the different Nordic countries today. The measures are described more in detail in the appendix.

Figure 2 National energy efficiency measures in the Nordic countries

Denmark	<ul style="list-style-type: none"> • White certificates/energy saving obligation on utilities • Building Regulations/standards • Energy labeling and energy performance certificates • Performance of heat generators for space heating and hot water
Finland	<ul style="list-style-type: none"> • Building regulations/standards • Subsidies for heat insulation, renewing and repairing ventilation and heating systems, RES • Energy efficiency agreements with municipalities, private services, farms, the property sector • Energy and environmental taxes • Energy audit infrastructure is developed
Iceland	<ul style="list-style-type: none"> • Few measures • Granted derogation from Directive on Energy performance of buildings due to special features of the Icelandic energy situation
Norway	<ul style="list-style-type: none"> • Enova - Grants for electricity savings in households • Enova - information campaigns and hotline • Energy and environmental taxes • Building Regulations/standards • Energy saving loans (Husbanken) • Local energy efficiency fund in Oslo (Enøkfondet i Oslo)
Sweden	<ul style="list-style-type: none"> • Tax incentives (ROT-deduction) • Energy and carbon dioxide tax in the household sector • Building Regulations • Information campaign on improved energy efficiency • Support for installation of Solar heat

Energy efficiency measures in Norway, Sweden, Denmark and Finland are similar in many areas. The four countries all have some form of:

- building regulations and standards
- energy and environmental taxes
- grants and subsidies
- energy declaration/auditing.

There are however, differences in how the countries implement these measures (see appendix for details).

Denmark is the only country with an obligation scheme in the form of white certificates in line with the recommendation in the Energy Efficiency Directive. The system was introduced in 2006 and applies to grid and distribution companies in the electricity, natural gas, district heating and oil sector.

Finland relies to a larger extent on voluntary agreements in order to promote energy efficiency. The practical measures boosted by the agreements, such as energy audits and analyses subsidized by the government, provide companies and communities with means of ascertaining their own energy usage and the scope of improving it, as well as integrating improvements in energy efficiency in their daily operation.

Norway applies an energy efficiency policy including different support schemes for energy efficiency, information and advice. The efforts are coordinated by the state agency Enova who is obligated to deliver a defined energy efficiency target (in TWh), and has a high degree of flexibility in how to deliver savings.

Sweden has a broad range of energy efficiency measures in use with policies focused on energy and environmental taxes and subsidies, including tax deductions for building repairs and renovation. The latter is not directly related to energy efficiency improvements.

3.3 Impacts of current EE measures

The most likely scenario for implementation of the EED in the Nordic countries is a continuation of the current non-harmonized national policy measures. The period up to 2020 is too short to develop and implement common Nordic policies and instruments. Different institutional frameworks and traditions further corroborates to this view.

Direct effects arise from obligations on the suppliers, i.e. in the form of saving obligations or if the supplier gets the responsibility for tax collection.

3.3.1 Economic policy measures

Energy saving obligations for distributors/White certificates

Energy savings obligations can be designed in a number of ways as discussed in detail in section 3.4. In the white certificate system in Denmark the savings obligation is put on the grid and distribution companies in the electricity, natural gas, district heating and oil sector. Hence, suppliers are not directly affected by the measure.

Application Based Subsidy

Application based subsidies for energy efficiency are widely used in the Nordic countries. The energy efficiency measures eligible for support is usually defined by a public agency. The applicant must specify what actions he intends to carry out. The size of the subsidy for each measure is known at the start of the project, but remuneration requires documentation that the measure is carried out according to the contract. Usually there will be a limited total amount of subsidies in a given time period and all projects compete for this total amount of support. Grants will be based on fixed criteria.

As far as we know, suppliers do not play a role in application based support schemes in any of the Nordic countries. In principle, the electricity supplier could provide services to end-users related to their application or advice on possible measures. We discuss the effects of such services in section 3.5.

Rights-Based Subsidy

An agency defines the measures for energy efficiency that provides the right to the subsidy. The system specifies a fixed subsidy to be paid for energy efficiency measures meeting a set of predetermined criteria. The criteria are predetermined to reduce the administrative costs both for the applicants and the agency handling the applications.

As for application based support systems, right-based subsidies systems put no direct obligations on the suppliers in the Nordic area and hence do not have a direct effect on the supplier. The supplier could play a role in advising end-users on the possibility to apply for such subsidies, but as the criteria are standardized, the information should be much more easily accessible for end-users anyway.

Tax deductions

Tax credits are sometimes used for various types of energy efficiency measures. The ROT deduction scheme for households in Sweden is a well-known example (see Appendix).

Tax credits for energy efficiency measures do not directly impact the supplier as they have no role in any part of the procedures or application process. If such tax credits are directly linked to energy use, the supplier may have a role in documenting the effects. However, as long as metering is carried out and metering data available, such a service should not constitute a substantial extra cost for suppliers, particularly if a common data-hub is established where end-users have the right to access all data on their own energy use.

Energy and environmental taxes

Energy use and generation is taxed many different forms; they may be added to the price of electricity directly or affect the price indirectly as with a CO₂ tax on generation.

Taxes might affect the cost of suppliers if they are obligated to collect the tax on behalf of the authorities. This might lead to increased administrative costs. Currently, collections of energy taxes are done by the DSO's in all countries except Sweden. Suppliers in all countries are responsible for the tax collection in the form of VAT. Swedish companies with systems to handle energy tax collection today, might therefore have a competitive advantage in competing for Swedish customers in a common Nordic end-user market today. In the supplier-centric model however, suppliers will be responsible for tax collection from end-users.

Tax collection is also associated with reputational effects. Some consumers do not recognize the different cost elements on their bills leading to a belief that the supplier charges more than they should. Consumers in general might be less positive to companies collecting taxes. This would however apply to all suppliers and does not constitute a barrier to competition.

Summary of conclusions

Taxes on end-use and different support schemes are economic policy measures. As Figure 2 shows, all the Nordic countries apply economic policy measures. The effect on suppliers is however, limited when it comes to subsidies as long as the suppliers do not have obligations in informing about the subsidies or controlling that measures are completed by end-users. Hence, it would not increase the cost of for new entrants.

In the same way increased taxes on energy or CO₂ will only have direct effects if the supplier is obligated to collect the tax on behalf of gov-

ernment. If suppliers are obligated to collect taxes it would induce administrative cost and favour companies with tax collection systems in place today. This would increase the cost for new entrants and hence affect competition in a common Nordic end-user market by introducing cross-border entry costs. In the supplier-centric model however, suppliers would be responsible for tax collection in all the countries and would have to set up systems for this activity, hence it would not constitute a barrier to competition.

Table 2 Effects of economic policy measures on suppliers

Policy instruments	Affects suppliers?	How?
Energy saving obligations for utilities/White certificates	Limited	Only if obligation is put on supplier
Subsidies (by application)	Limited	Only if given a role in information and/ or control
Subsidies (by rights)	Limited	Only if given a role in information and/ or control
Tax deductions	Limited	No direct effects
Increased tax on energy or CO ₂	Limited	Cost related to tax collection and reputation, cost to customer service

3.3.2 Regulatory policy measures

In addition to economic measures, all the Nordic countries apply regulatory measures and standards in order to promote energy efficiency.

Standards/norms

A number of standards are applied both for buildings and products in all the Nordic countries. The use of standards does not involve or directly affect the suppliers.

Energy labelling

Residential and commercial buildings sold or rented out are often required to have an energy certificate. The aim of using labelling are inter alia to raise awareness about energy use, various heating solutions and solutions that can make the home or building more energy efficient.

In general energy labelling does not affect the suppliers directly, as the labelling is performed by a third party. Implementation of a common data-hub should also provide better and more easily accessible data on energy use in buildings.

Summary of conclusions

In Table 3 we have summarized the relevance and effects of regulatory policies such as standard, norms and energy labelling schemes have on the supplier companies. The direct effects are limited, as the policies will reduce electricity consumption. We do not see these measures as barriers to cross-border competition.

Table 3 Effects of regulatory policy measures on suppliers

Policy instruments	Affects suppliers?	How?
Standards /norms	Limited	Reduced electricity consumption
Energy labelling schemes	Limited	Reduced electricity consumption

3.3.3 Information policy measures

Information policies are implemented in all Nordic countries and the effect depends on the design of the measure.

Information campaigns

Information campaigns are a well-used measure to promote energy efficiency. The aim is to inform end-users of available energy efficiency measures, to get end-users to understand that they can save money by saving energy, and to communicate environmental impacts of reduced energy consumption. Supply companies might be obligated to provide information on energy savings or energy use to end-users, which will affect the business model and increase administrative costs. Such an obligation may constitute a barrier to entry of suppliers who are originally based in a market without such obligations, and hence, with a different business model.

Education and training

Supply companies might be obligated to provide education and training on energy savings, which will increase administrative costs and may reduce margins if they are not compensated. In the same way as for information campaigns, all companies in the market will be affected and it will therefore not constitute a barrier to competition.

On the other hand, suppliers might want to use information campaigns or education and training as means to get a closer relationship to its customers. Hence, information campaigns can constitute a barrier both directly, in the form of increased cost and indirectly by favouring incumbents.

Voluntary agreements

If it is common for suppliers to be involved in voluntary energy efficiency agreements, it can constitute a barrier to entry into the market because such agreements can lock in consumers to their existing suppliers.

Summary of conclusions

Table 4 summarizes the conclusions on information measures. Information policy measures will not affect suppliers unless they are given an explicit obligation to inform.

Table 4 Effects of information measures on suppliers

Policy instruments	Affects suppliers?	How?
Information campaigns	Limited - Depends on design	Only if given a role in distributing information through bills etc.
Education and training	Depends on design	Only if given a role
Voluntary agreements	Depends on design	Only if they are given an active role – like in Finland where they need to offer energy services

3.4 Impacts of national EE obligation schemes

An energy obligation scheme in the form of a white certificate scheme is the EE measure recommended by the EED, and the measure with the largest potential of affecting suppliers. How the supplier is affected is however closely connected to the design of the system.

3.4.1 What is an energy efficiency obligation scheme?

A white certificate system is an energy efficiency obligation scheme. In most applications, the white certificates are tradable. Within the system, an obligated party (usually end-user energy suppliers or distributors) must procure or carry out a certain amount of energy saving. The obligation is met through submission of a specified number of certificates for a given period, usually associated with energy consumption base. If the obligated parties do not meet the mandated target for energy savings they are required to pay a penalty. Those who implement energy efficiency measures are awarded certificates equivalent to a (usually) estimated or measured energy saving, and can sell the certificates to the certificate obligated party. Certificates can be awarded for projects that result in energy savings beyond business as usual.

Quite analogous to the closely related concept of green certificate trading, the tradability is supposed to lead to the overall energy saving

being achieved at least cost, while making sure that the overall energy saving target is achieved.

There are a number of ways to design a white certificate system, as depicted in Figure 3. Choices made on a large number of design elements might influence the success and operability of the scheme. The design of the system also determines the impact on suppliers.

Figure 3 Designing a white certificate system

Scope

In defining the scope of the system the first issue to be considered is the main objective of the system. What is the saving target to be achieved? How can appropriate target levels be defined? For what period should targets be specified? Further, the system might include other energy carriers than electricity.

Design

The overall goal of the design is to create a well-functioning and effective system that is easy to understand and not overly costly to implement and monitor. The main question will be who to place the obligation on. If the obligation is placed on the DSO, as in Denmark, the supplier will not be affected and it will not hamper competition in a common Nordic end-user market for power. Placing the obligation on the DSO might however not be compatible with the supplier-centric model. In a supplier-centric model, the supplier should be the main point of contact for the customer,

while only strictly network related questions should be handled by the TSO. If the quota obligation is placed on suppliers, and supply companies can do the measures themselves, it might contribute to increased customer loyalty and thereby restrict supplier switching and serve as a barrier for new entrants. A component in the Energy Efficiency directive is to development of the energy services market; this can be done by allowing all actors to complete energy efficiency measures.

To allow for trading of certificates would increase cost effectiveness in the certificate system as the least cost measures would be realized.

If money is given in exchange for cancelled certificates it would lead to a fixed price for certificates taking away price risk for the supplier companies.

A penalty fee for not cancelling enough certificates might be designed as a fixed fee or as in the elcertificate market be a percentage of the volume weighted certificate price the past year. The danger with a fixed fee is that it might serve as the focus point for the market and certificate prices might approach the fixed penalty fee.

Monitoring

A registry needs to be set up to keep track of the certificates. The registry should be organized by an independent body. The obligated parties must regularly report savings to receive certificates based on calculations of energy savings for standard measures. This would mean extra reporting and administrative costs for the supplier.

3.4.2 Impact on the obligated party

A white certificate system will obviously impact supplier companies directly and imply substantial costs if the obligation for the energy saving is put on the supplier. An obligation put on the suppliers will increase their cost and their business model, as the purchase of white certificates must be managed. Such an obligation will increase the risk for the supplier. Each new customer a supplier gains would increase the supplier's quota obligations, while the loss of a customer presents a risk of overinvestments in energy efficiency measures.

Electricity suppliers are very different, some companies can have few employees and large sales, while in other suppliers are large corporations. The larger corporations are probably better positioned to manage the requirements of a quota obligation system than smaller companies are. This may to some extent be counteracted by allowing trading of certificates compared to a system where suppliers are obligated to carry out and monitor energy savings among their customer base. Although

suppliers act on the electricity market and as such are set up for trade, trading in white certificates implies involvement in a new market with its own dynamics and risks, and hence represents an additional cost for suppliers. If a white certificate scheme is implemented in any of the Nordic countries, it will most likely be in the form of a tradable scheme.

Risks

A supplier with a savings obligation in a white certificate system faces increased risk exposure in a number of ways. Firstly, there is a risk associated with not meeting the imposed obligation. Failure to meet the savings obligation would induce a penalty. If end-users are not willing to implement energy efficiency measures initiated by the supplier the supplier will be punished as they and not the end-user have a savings obligation.

Second, if an energy efficiency measure is completed there may be a risk associated with the approval of the savings. This can to some degree be counteracted by applying highly standardised procedures for approving, notifying and calculating energy savings resulting from each measure. This would also minimise administrative costs for both the obligated party and the regulator.

Third, there is market risk associated with the trading of certificates. This comes both as a result of price fluctuation and possibility of use of market power in a limited white certificate market.

Fourth, in a competitive market it would be a risk of not being able to roll over the cost to the end-user.

Costs

The main cost component in a white certificate system is associated with compliance and/or buying certificates. In addition, there are costs associated with monitoring and verification. Administrative costs will also occur.

Monitoring costs might involve meter reading and auditing, depending on the possibility of applying non-standardised measures. Depending on the set-up, suppliers might be able to incorporate the necessary monitoring in their normal activities, and hence reduce the cost.

Transaction costs might be a significant cost component especially during the initial planning and implementation period of eligible measures, before both the certificate trading and learning curve effects materialise. This might serve as a barrier for new entrants in the market. The entry barriers can to some extent be mitigated by standardized full cost accounting systems, ex ante monitoring and verification of energy savings, streamlined procedures, and standardized trading contracts.

Administration costs (fees required for authorities' services in the scheme, e.g., for issuance, redemption) might be carried over to suppli-

ers. It is important to keep such fees paid by suppliers low and transparent. High fees increase the cost of entry and increases the economies of scale of the supplier business, thus increasing entry barriers.

IT systems are a key component in any suppliers business. Any requirement in a white certificate system leading to a need to do larger changes and more complex IT systems will induce significant costs for the supplier. Implementation of a white certificate scheme in one country would increase the cost of both incumbent suppliers and new entrants. As such the incumbents would not have an advantage in the implementation phase. None-the-less, as such a scheme would require a different kind of business model, a cross-border entrant would not be able to realize economies of scale by expanding its business to the adjacent market. Hence, the attractiveness and efficiency gains of cross-border expansion would be reduced.

Summary of conclusions

Figure 4 summarizes the impacts related to different designs of a white certificate scheme.

Figure 4 Impact of a white certificate obligation on suppliers

A key reason for implementing a common Nordic end-user market for power is to increase competition, reduce the thresholds for new entrants and increase the efficiency in the market by realizing synergies across the countries. As electricity supply is a data intensive business, a white certificate system should preferably be designed so that the suppliers could manage their business without having to set up different IT and trading systems (and business models) for each Nordic country. A non-harmonized system could significantly lower the efficiency gains induced by a common end-user market.

The optimal solution if a white certificate market is used as the main energy efficiency measure in the Nordic countries is a common system.

The gains of having a common white certificate system will be larger than harmonizing other measures. The reason is that differences in other measures will not distort the completion to the same degree as white certificates. Other measures (as implemented today) can be managed with today's systems. Different requirements on IT and trading systems in the different countries have a great impact.

3.5 Impacts of an energy service market

Development of an energy service market related to energy efficiency obligations schemes, or other support schemes for energy efficiency measures for end-users, may constitute a barrier to cross-border competition in the Nordic end-user market. Competition between suppliers should be based on margins and supply contracts, and not on a position gained as a provider of required energy services. If suppliers can tie in end-user customers by offering energy services, customer loyalty will increase and end-users will be less willing to switch supplier. Hence, competition in the end-user market will be muted and margins increase.

A report from the Swedish Energy Agency argues that an energy service obligation should be put on distributors as they are neutral towards end-users (Swedish Energy Agency, 2011). Since they are regulated monopolies they do not compete for market shares and hence, cannot exploit their position as obligated parties towards end-users. The Swedish Energy Market Inspectorate, on the other hand, holds that in a supplier-centric model, the obligation should be put on suppliers, whereas distributors should only be responsible for grid-related issues. In their view, the adverse effects on a common Nordic end-user market would be limited. The main reason is that other differences between the countries in terms of e.g., taxes and green certificates, are likely to remain.

Generally, regardless of where the obligation is put, the energy service business should be organized as a separate business from the supply business or the distribution business in order to create a competitive market. Many other market actors are positioned to offer supply energy services to end-users. In the Danish white certificate market, for example, the obligation is on distributors, but distributors who wish to offer energy services in order to produce white certificates must do so via a separately organized energy service company.

Suppliers will have strong links to their customers, particularly in a supplier-centric model, and will be the parties responsible for billing for white certificates, regardless of where the obligation is put. Since suppli-

ers are uniquely placed to provide information about consumption through billing and metering processes, an energy service market related to an energy efficiency obligation scheme may provide suppliers with a competitive advantage in the market. As such, an obligation scheme may constitute a competition barrier for smaller suppliers – who do not have the means to offer energy services – and entry of new suppliers, including cross-border suppliers.

In order to cater for an efficient energy service market, the market data for individual end-users should be accessible for all parties, and not exclusively for the supplier (and the distributor). Hence, it is important that end-users may easily make such data available for any service provider.

Development of an energy service market is however a key point in the energy efficiency directive. When the Swedish Energy Agency compared the energy services markets in Sweden, Finland and Denmark, where only the latter has an obligation scheme, they could not find conclusive evidence of the energy services market in Denmark being more developed than in the other two countries. The analyses points to national conditions, such as existence of a large energy-intensive industry in Sweden and Finland to be as important for the development of energy service market as an obligation scheme. Studies in Europe indicate that competition between operators offering EPC (Energy Performance Contracting) is broadly similar in Finland, Sweden and Denmark. There are roughly 10 players in each country, of which only half are active. Companies competing in these markets are large, as these energy services requires considerable funding in the early phase.¹⁹

If a common, harmonized framework for an energy service market, including energy efficiency obligations, is implemented, cross-border competition should not be harmed. However, with our focus on the impact of different national energy efficiency policies, we recommend that non-harmonized obligations are put on distribution companies as in the current Danish system in order to limit adverse effects on the development of a common Nordic end-user market.

¹⁹ "Analys av marknaden för energitjänster i Sverige", Energimyndigheten 2011.

4. Conclusions

We find it most likely that we will see a continuation of a system of non-harmonized national measures to promote energy efficiency in the Nordic countries. The period up to 2020 is too short to develop and implement harmonized instruments. Different institutional frameworks and traditions further adds to this view.

The conclusions of the analysis are summarized below in accordance with the main issues of the project:

- What are the consequences of different energy efficiency policy instruments for the electricity suppliers?
- How may different measures counteract the development of a common Nordic end-user market?
- What can and should be done to prevent or mitigate any adverse competitive effects?

4.1.1 Consequences for electricity suppliers

Energy efficiency policies affect electricity suppliers by reducing the market size and may increase the costs of electricity supply. Costs increase if the suppliers are given a role in the financing or carrying out the energy efficiency measures. Tax collection, obligations to inform about energy efficiency measures, and obligations to buy white certificates constitute such costs.

Most of the energy efficiency measures applied in the Nordic countries today do not imply significant obligations or costs for suppliers. Sweden is the only market in which the suppliers are responsible for tax collection, but when the supplier-centric model is implemented, this practice would be harmonized across the Nordics.

White certificate obligations on suppliers do particularly increase the cost to suppliers as they require particular trading strategies and IT systems, and introduces new risks for suppliers.

4.1.2 *Measures counteracting a common Nordic end-user market*

In general, non-harmonized energy efficiency measures affecting the supply business may counteract a common Nordic end-user market.

The more particular roles and requirements for suppliers in one country, the higher is the obstacle to expand supplier business from one market to another as less economies of scale may be gained.

An energy efficiency obligation on suppliers has the most potential of hampering the development of a common market, particularly as energy efficiency measures reduce the initial value of acquiring new customers, while the cost of expanding the customer base to other markets increase.

Development of an energy service market may also imply increased customer loyalty and reduced propensity for supplier switching. Energy service businesses should be set up as independent business entities and not as integrated parts of energy supply. Moreover, consumption data should be easily accessible for end-users (on an individual basis) and for all energy service providers in a non-discriminatory way.

4.1.3 *Mitigation of adverse competitive effects*

Generally, non-harmonized policy instruments do not need to counteract competition in a common end-user market as long as the suppliers are not given a specific role in managing the scheme. Hence, adverse effects on cross-border competition may be mitigated by avoiding obligations on suppliers or harmonizing such obligations among the Nordic countries.

The optimal solution if a white certificate market is used as the main energy efficiency measure, is a common system. The gains of having a common white certificate system will be larger than harmonising other measures. The reason is that differences in other measures will not distort the competition to the same degree as white certificates.

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6. Sammendrag

Gjennom å harmonisere lover, regler og prosesser for salg av kraft til sluttbrukere mellom de nordiske landene har Nordisk Ministerråd et mål om å etablere et felles nordisk sluttbrukermarked for kraft i 2015.

Samtidig er EU-medlemmene Danmark, Finland og Sverige, og potensielt også EØS-landet Norge, forpliktet til å gjennomføre energieffektiviseringstiltak i samsvar med EUs energieffektiviseringsdirektiv. Direktivet setter (ikke-bindende) mål for energieffektivitet for sluttbrukere i 2020, og pålegger medlemslandene å øke energieffektiviseringen gjennom å implementere nasjonale virkemidler.

Hvordan energieffektiviseringsdirektivet implementeres nasjonalt kan påvirke utviklingen av et felles nordisk sluttbrukermarked. Fordi perioden frem til 2020 er for kort til å utvikle og implementere harmoniserte virkemidler, forventer vi å se en videreføring av et system med ikke-harmoniserte nasjonale tiltak for å fremme energieffektivitet i de nordiske landene.

Ikke-harmoniserte virkemidler vil generelt sett ikke motvirke konkurransen i et felles sluttbrukermarked så lenge leverandørene ikke er gitt en rolle i å forvalte ordningen. Dette betyr at negative virkninger på konkurransen over landegrensene kan reduseres ved å unngå å legge forpliktelser på leverandørene eller alternativt ved å harmonisere forpliktelsene mellom de nordiske landene.

7. Appendix 1: overview of EE measures in the Nordic Countries

7.1 Denmark

Denmark's main energy efficiency measure is a white certificate system introduced in 2006 and applies to grid and distribution companies in the electricity, natural gas, district heating and oil sector. The target of the system is to save 10.7 PJ/year in 2013–2014 and 12.2 PJ/year in 2015–2020. As in the other Nordic countries, building regulations, taxes, subsidies and information campaigns are also used.

White certificates/Energy saving obligations for utilities

The obligation scheme applies to grid and distribution companies in the electricity, natural gas, district heating and oil sector. The individual companies report their savings to the trade organizations and are accountable to them. The companies have a large degree of freedom in how they meet the energy savings targets. A comprehensive menu of energy saving measures complete with standard values for energy saved has been developed. The companies can also apply for certificates for measures not on the standard list, and they can use certificates from savings outside their own distribution area and in all types of energy in order to fulfill the obligation. The targeted consumption is end use in all sectors including reduction of grid losses. Savings are measured in “first year savings.”

The current obligations scheme was introduced in 2006, renewed in 2009 and again in 2012 where the target has been increased from 6.1 PJ/year to 10.7 PJ/year in 2013–2014 and 12.2 PJ/year in 2015–2020.

Building regulations/standards

The energy requirements for new buildings have been strengthened quite considerably over the last 25 years and further strengthening is expected in accordance with new technical and economic possibilities. According to the EU's Buildings Directive, the energy provisions must be

reviewed at regular intervals which shall not be longer than five years. Future tightening of requirements for energy consumption will be based on both technological developments and the cost optimality of the requirements.

Energy declarations/labelling

The energy labeling of buildings in Denmark dates back to 1979. In accordance with EU Directive (2002/91/EC) on the energy performance of buildings, energy labeling or certification of buildings is required. In Denmark the former labeling scheme was further developed and a new scheme introduced in 2006. Under this scheme, buildings need an energy label, when they are newly constructed, when they are sold, and if they are rented out. For existing buildings the certificates cannot be more than 5 years old. Buildings are labeled according to 14 energy classes, with A1 as the highest level (best performance) to G2 at the lowest (worst performance). New buildings must meet requirements corresponding to a B1 classification.

Energy and environmental taxes

Energy and environmental taxes are important for promoting energy savings in Denmark. Throughout the 1990s energy and CO₂ taxes have increased steadily, in order to provide stronger energy efficiency incentives via price signals to end-users.

Without the application of energy taxes it is estimated that energy consumption in Denmark would be at least 10% higher (Danish Ministry of Economic and Business Affairs, 2008). The actual taxes paid differ between sectors and end-uses. The highest taxes apply to electricity use in households and the public sector. Energy used for heating is also highly taxed across all sectors.

Grants and subsidies

Grants are available for energy efficiency measures (30–40% of the total costs) carried out by private and public enterprises.

Future Danish policy

Denmark has signaled a continuation of the current policies in order to fulfil the EED. The main focus will most likely be on a continuation of the white certificate system in line with the recommended policy instrument in the directive. The other policies will also most likely be continued.

7.2 Finland

Finland largely relies on voluntary agreements in order to promote energy efficiency. The energy efficiency agreement for industries (2007–2016) contains five sector-specific programmes for small and medium sized industrial energy users. These programmes are managed by trade associations in each sector.

Building regulations, taxes and subsidies also plays an important role in Finland's energy efficiency policy.

Building regulations

The energy efficiency of buildings has been guided by national building codes since 1976. The latest tightening of the regulation was done in the beginning of 2012. Under the new regulations, an upper limit is set for the building's total energy consumption (heating, cooling and electrical energy), depending on the type of building, and it is expressed using an "E ratio". The method employed to produce the energy used by the building is considered when calculating the E ratio. The calculation method advances the use of renewable energy and district heat and discourages the use of electricity for heating. Energy efficiency in existing buildings is advanced through energy audits, subsidies, two voluntary agreement schemes and energy advice. In addition, new legislation for regulating the energy efficiency levels to be achieved when existing buildings are renovated is under way.

The Höylä III energy efficiency agreement (2008–2016) is a continuation of two preceding programs, which promoted energy efficiency in oil-heated single-family dwellings between 1997 and 2007. The main areas for action in Höylä III are the improvement of energy efficiency of oil-heated houses and oil-heating systems, the promotion of biofuel oils and solar-powered heating, and the provision of advice and information to energy end-users as required under the Energy Services Directive.

Energy and environmental taxes

Finland introduced a CO₂ tax in 1990. The tax level has changed many times over the years. Energy taxation is considered a central means to influence energy consumption.

Subsidies

Since 2000, a household tax deduction has been available for labour costs incurred when replacing, upgrading or repairing heating systems.

Subsidies for energy audits and analysis of companies and communities are available for those who have signed up to the voluntary agree-

ment schemes described below. The same applies for subsidies directed towards energy efficiency investments.

Voluntary energy efficiency agreements

In the 1990s, Finland implemented a voluntary agreement scheme to promote energy efficiency. The practical measures boosted by the agreements, such as energy audits and analyses subsidized by the government, provide companies and communities with means of ascertaining their own energy usage and the scope of improving it, as well as integrating improvements in energy efficiency in their daily operation. The Energy efficiency Agreement on the Improvement of Energy Efficiency in Industries consists of a framework agreement and action plans for various sectors. A company joining the agreement scheme makes a commitment to implement the action plans.

An energy audit is an inspection, survey and analysis of energy flows in a building, of a process or system with the objective of understanding the energy dynamics of the system under study. Beyond simply identifying the sources of energy use, an energy audit seeks to prioritize the energy uses according to the greatest to least cost effective opportunities for energy savings. In addition, energy audits look into the possibilities of renewable energy use. Also the effects of the proposed savings methods on CO₂-emissions are taken into consideration.

The energy efficiency agreement for the property sector includes two programs of measures. Associations which own, e.g., rental properties, are entitled to participate in the program for residential lettings associations.

Future Finnish policy

Finland is expected to continue its voluntary agreements in order to fulfil the goals of the EED. The other policies are also likely to be continued.

7.3 Iceland

Iceland has been granted derogation from The Energy Efficiency Directive (EED). Its electricity and heating comes from hydroelectric power and geothermal resources, providing energy that is accessible, renewable, relatively inexpensive, and from which pollution is low.

More than 90% of all houses in Iceland are heated by energy from geothermal sources, and electricity generation comes either from hydropower or geothermal energy. Fossil fuels are used only where it is not technologically feasible to use renewable resources, that is, in transport and in the fisheries sector.

Space heating is very cheap in Iceland so cost effective energy efficiency measures in buildings are very hard to achieve. National building codes ensure that high levels of energy efficiency are attained: all European standards are entered into force as Icelandic standards.

7.4 Norway

The EE Energy Efficiency Directive is not implemented in Norwegian legislation. The Norwegian Government will, in consultation with other EEA members and EFTA, consider whether the Directive is relevant to the EEA Agreement.

Norway's main vehicle to promote energy efficiency is the state agency Enova. Enova was established in 2002 to support energy efficiency and renewable energy. The agency was given a defined target (in TWh), a stable financing and a high degree of flexibility in how to deliver. Placing the responsibility for supporting renewable energy and energy efficiency in one agency instead of several utilities, has given a harmonization of the measures provided across the country.

The Enova model was renewed in 2012, setting new targets for 2015 and expanding the scope to include reduction of greenhouse gas emissions. As the electricity certificate system with Sweden was implemented as the main support scheme for renewable electricity production in 2012, Enova's work has since been focused on renewable heat production and energy efficiency measures. In addition, efforts on energy- and climate technology were increased in 2012.

Energy and environmental taxes

Norway has an electricity levy of NOK 0.1161 per kWh (approx. EUR 0.015). The grid companies are responsible for collecting the tax. Parts of the industrial consumption and households in some of the municipalities in the northernmost part of Norway are exempted.

The CO₂ tax is regarded as an important policy instrument to reduce GHG emissions for sectors and activities outside the emissions allowance trading scheme. The most significant tax for the building sector is the tax on mineral oil for heating purposes, which was introduced in 2000 to avert a switch from electricity to heating oil when the electricity levy was increased. Increased tax revenues has been used to support energy efficiency and renewable energy programmes. In 2008, the Norwegian Government indicated a substantial increase of the tax on mineral oil, in order to improve the competitiveness of renewable energy.

Subsidies

Enova pays out grants for energy savings projects both in the industry sector and to households.

Information campaigns

“Enova Recommends” is a program designed to promote products which have favourable energy and climate qualities. The purpose is to influence the purchase decisions made in households towards choosing the best product in terms of energy. Enova has a label used for advertising at relevant sales outlets and the program is supported by PR and marketing campaigns. Windows was the first product targeted under “Enova Recommends”.

Enova further and provides large amounts of information, printed and online, concerning energy efficiency

Building regulations

The scope of the regulation is all types of constructions and products for constructions. Construction works shall be carried out in such manner as to promote a low demand for energy.

The building has to be as energy efficient as the requirements described in the law or fulfil the requirements of a total net energy demand (frame demand) as specified in the regulations.

Buildings with an area less than 500 m² have to cover at least 40% of the heating demand with other energy sources than direct electricity heating or fossil fuel, unless the heating demand is less than 15 000 kWh per year. Buildings with an area of more than 500 m² have to cover at least 60% of the heating demand with other energy sources than direct electric heating or fossil fuels.

In 2010, a new Norwegian standard for passive and low energy buildings was implemented. It includes definitions and requirements regarding heat loss, heating demand and energy supply and requirements for building components and leakage figures. The standard gives further requirements to test procedures, measurement methods and reporting of energy performance on completion for residential buildings that can be defined as passive house and low-energy houses in the Norwegian climate.

Future Norwegian policy

Norway is expected to continue to promote energy efficiency through Enova in order to comply with the EED, if the EED is deemed relevant to the EEA Agreement. Energy and environmental taxes will continue to play an important role in reaching the target as will building regulations.

7.5 Sweden

Sweden has a broad range of energy efficiency measures in use. The focus has been on energy and environmental taxes and subsidies.

Energy and environmental taxes

Since the 1950s, Sweden has applied taxes on fuels, electricity, CO₂, sulphur, and NO_x. Price increases achieved by taxes provide incentives for energy efficiency. In December 2009, energy and CO₂ taxation was reformed with a view to streamline tax levels towards the reduction of green-house gas emissions and to achieve the 2020 targets for renewable energy and energy efficiency. Parliament decided to gradually limit CO₂ tax exemptions for energy intensive industries and other sectors not included in the EU-ETS between 2011 and 2015. It abolished the special CO₂ tax break to some industrial installations outside the EU-ETS and reformed energy taxes on heating fuels to strictly reflect the energy content.

Subsidies

Under the so-called ROT-deduction scheme households can apply for a tax credit amounting to 50% of the labour cost, at a maximum SEK 50,000/year, for repairs and maintenance when rebuilding and extending the dwelling. ROT is an acronym for Repair, Renovation, and Extension. The scheme is often referred to as an energy saving measure, but is in reality a measure to avoid the use of illicit work in the construction sector.

The Programme for Energy Efficiency is intended to increase energy efficiency in the industrial sector by creating opportunities for tax exemptions. Companies have the possibility to escape the tax on industrial processes related to electricity of EUR 0.0006 /kWh if they participate in a five year program to improve energy efficiency.

In the first two years, the company must obtain certification for a standardized energy management and introduce energy efficiency screening procedures for the purchasing of high-consumption electrical equipment. It must also carry out an energy review, which identifies a list of EE opportunities.

In the following three years, the company must implement the EE measures identified thanks to the mandatory energy review. At the end of the five years, another report must be submitted to the Swedish Energy Agency. This report should describe and summarize the actual result of the implemented measures.

Building regulations

The first national building regulations in Sweden were introduced in 1956, and in 1975 the first requirements on energy efficiency were included. Over time, the requirements related to energy efficiency have been revised on several occasions. According to Swedish building regulations, constructions which are erected or renovated shall comply with technical requirements concerning (among others) energy efficiency and thermal insulation. When dealing with alterations, the requirements are the same as erections. In 2011/2012 new building regulations were introduced in Sweden, with a transitional period until 1 January 2013. There are different requirements for different climatic zones, for different types of residential buildings and commercial buildings, and for different heating systems.

Energy declarations

Multi-dwelling buildings (apartment blocks) had to be energy declared by the end of 2008. Energy declaration of other buildings started the 1st January 2009. The Government or the National Board of Housing, Building and Planning are responsible for regulation issues on exemptions from the energy declaration requirement.

Energy declarations have to contain the following information:

- The energy performance of the building.
- The result of the building's ventilation system.
- The radon measurement of the building.
- A reference value for comparison of the energy performance of the building.
- Proposals for energy efficiency measures to be taken.

Hence, the energy declaration is intended to provide recommendations about cost effective measures to improve the energy performance of the houses.

Future Swedish policy

The broad range of energy efficiency measures already in use in Sweden is expected to be part of the continued energy efficiency policy.

A common Nordic end-user market

Implementation of the Energy Efficiency Directive in the Nordic countries may affect the development of a common Nordic end-user market in electricity. As the period up to 2020 is too short to develop harmonized energy efficiency policy measures, we expect to see a continuation of a system of current national measures to promote energy efficiency in the Nordic countries. Generally, non-harmonized policy instruments do not need to counteract competition in a common end-user market as long as the suppliers are not given a specific role in managing energy efficiency schemes. Hence, adverse effects on cross-border competition may be mitigated by avoiding obligations on suppliers or by harmonizing such obligations among the Nordic countries.

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