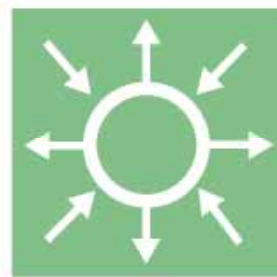
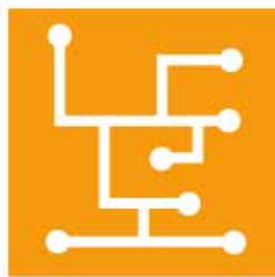


Customer benefits of an integrated Nordic end-user market for electricity

A discussion memo

Elforsk rapport 07:48



Niclas Damsgaard

September, 2007

ELFORSK

Customer benefits of an integrated Nordic end-user market for Electricity

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Foreword

Despite having had a deregulated electricity market in Sweden for over ten years we still need to increase our understanding as to how deregulated electricity markets actually work and how possible problems are to be solved.

During the last couple of years there has been an increasing interest in the creation of an integrated Nordic end-user market for electricity. Currently there is an integrated Nordic wholesale market with a common electricity exchange (Nord Pool). ECON was commissioned to conduct a study on the customer benefits of an integrated Nordic end-user market for electricity. The study focused on the effects on competition and the retail margins (Elforsk report 07:49.) During the work process, in discussions with the reference group assigned to the project and workshops the scope was broadened. This report thus summarizes the discussions and qualitatively assesses the likely benefits for the customers of the creation of an integrated Nordic end-user market for electricity.

Elforsk (Electricity research) is owned by the Swedish electricity industry. Its corporate business idea is to carry out research and development in line with the interests of the owner companies and carry out these research projects in cooperation with other parties on the market. The Market Design program was initiated in 2000 for the purpose of increasing the knowledge of how deregulated electricity markets work. The program is financed by Svensk Energi, EBL-Kompetanse in Norway and the Swedish Power Authority.

More information on the program, our reports and current activities is available on program's website, www.marketdesign.se.

Stockholm, November 2007



Peter Fritz
Program Secretary, Market Design
Elforsk AB

Sammanfattning

När man ska bedöma nyttan för kunder av en förändring är det till att börja med viktigt att ha i åtanke att kunderna inte är en homogen grupp. Beroende på lokalisering, typ av konsumtion, storlek och andra faktorer kan kunder påverkas olika. I varje analys av reformer finns därmed frågan dels om reformen bidrar till att skapa en mer välfungerande marknad, vilket ger större samlade fördelar, men också hur fördelar och kostnader fördelas. Det vill säga, det finns såväl effektivitetsaspekter som fördelningsaspekter. Vi har inte haft möjlighet att gå in på djupet vad gäller de fördelningsmässiga aspekterna. Vi har ställt upp fyra kriterier som vi har använt för att bedöma om det är sannolikt att en integrerad nordisk slutkundmarknad på lång sikt kommer att ge fördelar för kunderna. Dessa kriterier är:

- Tillräcklig eller förbättrad konkurrens
- Systemeffektivitet
- Förbättrad funktionssätt hos marknaden
- Mer diversifierad marknad

Baserat på diskussionen i rapporten gör vi en bedömning av de troliga, eller möjliga, effekterna för kunderna utifrån dessa kriterier.

Det blir ingen stor effect på priserna till följd av minskad marknadskoncentration

Konkurrensen på de nationella detaljistmarknaderna för el är troligen redan relativt god, men man ska inte förvänta sig att en integrerad nordisk detaljistmarknad väsentligen kommer att reducera elhandelsmarginalerna (se Elforsk rapport 07:49 för en mer detaljerad analys). Det första skälet till detta är att elhandelsmarginalerna idag är relativt små för de "konkurrensutsatta" kontrakten och utrymmet för minskade marginaler förefaller vara små. Ett undantag kan vara spotpriskontrakt i Sverige där den genomsnittliga marginalen förefaller vara oförklarligt hög.

Det andra skälet är att de nationella detaljistmarknaderna inte karaktäriseras av en särskilt hög koncentrationsgrad. Vi förväntar oss att en utvidgning av marknaden främst skulle påverka konkurrensen genom en reducerad koncentration, och det är tveksamt om detta har någon betydande effekt i detta fall. Konkurrensen på denna marknad påverkas dock troligen inte i första hand av koncentrationsgraden, utan av sök- och byteskostnader i förhållande till kundernas förväntade vinster av att byta leverantör. För att få en förbättrad konkurrens skulle därmed åtgärder för att underlätta informationsinhämtning och leverantörsbyten, m.m., vara viktiga. De flesta sådana åtgärder skulle kunna genomföras på nationell nivå, men en marknadsintegrationsprocess skulle kunna vara ett tillfälle att genomföra önskvärda förbättringar.

En bättre fungerande detaljistmarknad kan också förbättra grossistmarknadens funktionalitet

Efterfrågefleksibilitet, dvs att konsumtionen påverkas av den aktuella marknadsbalansen (t.ex. genom prismekanismen) möjliggör för kunderna att sänka sin totala kostnad för elinköpen. Om kunderna för nödvändig teknik (ex. bättre mätare) och sedan har möjlighet att välja lämpliga

kontraktsformer, är det troligt att åtminstone några kunder kan sänka sin elkostnad genom att anpassa sin konsumtion i förhållande till marknadspriserna.

I tillägg till de direkta vinsterna för de enskilda konsumenter som reagerar på priserna kan det också förbättra grossistmarknadens funktionalitet och sänka den totala kostnaden för systemet. Under senare år har ett förnyat intresse för efterfrågefleksibilitet uppstått, särskilt med syfte att bättre kunna hantera bristsituationer (såväl energi- som effektknapphet). För att efterfrågefleksibilitet ska ha någon reell effekt krävs att (pris)signaler når slutkunderna. Med hänsyn till att det finns en gemensam nordisk grossistmarknad och därmed i vart fall i någon utsträckning ett gemensamt nordiskt intresse att säkra tillräcklig energi- och effektkapacitet, finns det en naturlig koppling till en gemensam slutkundmarknad.

Efterfrågefleksibilitet kräver att priserna skickas vidare till slutkunderna (för att kunderna ska ha något att reagera på), praktiska lösningar för att kommunicera dessa priser till kunderna, mätning av konsumtionen med tillräcklig tidsupplösning och möjligen även andra tekniska lösningar. Vinsterna av detta är ofta spridda mellan många parter (kunder, nätbolag, elhandelsbolag, systemoperatör), vilket innebär att det kan krävas en koordination för att realisera potentialen. En gemensam slutkundmarknad med gemensamma regler kan bidra till att underlätta för olika aktörer som önskar utveckla tjänster för att exempelvis öka efterfrågefleksibiliteten. Generellt skulle en gemensam slutkundmarknad ge samma möjligheter på samtliga nationella marknader.

Kunder kan tjäna på förbättrat regelverk

Det finns en mängd nationella regleringar som inte förefaller vara särskilt väl utformade. I Finland har detaljistpriserna så här långt inte följt grossistpriserna i någon större utsträckning, vilket innebär att kunderna inte har fått korrekta prissignaler. I perioder med höga priser på grossistmarknaden kan detta naturligtvis vara till fördel för många kunder (och motsatsen i perioder när grossistpriset faller). På lång sikt innebär dock det faktum att kunderna inte får möjlighet att reagera på aktuella marknadspriser att kostnaderna såväl för den enskilda kunden som för systemet som helhet blir högre. I Sverige förefaller det klart att kunder med tillsvidarekontrakt förlorar på alltför höga priser. Båda dessa exempel skulle kunna lösas på nationell nivå, men harmonisering skulle kunna vara en möjlighet att välja en ny (och bättre) modell. Om ingripande från regleringsmyndigheter/lagstiftare är lämpliga i dessa situationer, eller om det ska vara upp till marknadens aktörer att utveckla bättre lösningar ligger utanför denna rapports omfattning. I vilket fall som helst, så är eventuella förbättringar i slutändan naturligtvis beroende på vilka val som faktiskt görs.

Ett bredare spektrum av serviceerbjudanden och en mer innovativ bransch är möjligt, men inte alls säkert

Vi har tidigare hävdad att effekterna på konkurrenstrycket av en gemensam marknad troligt är begränsade. Även om elhandelsmarginalerna inte faller substantiellt kan det finnas andra effekter som är svårare att kvantifiera. En integrerad marknad skulle underlätta för elhandelsbolag som är aktiva på en nationell marknad, eller helt nya aktörer, att ge sig in på andra nationella

marknader. Även om det primärt inte förefaller finnas ett stort problem med marknadskoncentration, är det viktigt att ha i åtanke att företag är olika och har olika strategier. Genom att underlätta marknadsintegration är det därmed möjligt att ett bredare spektrum av erbjudanden (service, kontrakt, priser) än vad kunderna för närvarande möter kan uppstå. Det kan leda till att de förväntade vinsterna av att byta leverantör kan öka, genom att en enskild kund kan hitta en leverantör som bättre svarar mot den kundens behov. Över tid är det dock möjligt att företagens strategier konvergerar och att ett initialt bredare produktspektrum återigen minskar. Det kan till och med vara fallet att det finns vissa fördelar av att ha nationella marknader som ger möjligheter att testa olika lösningar (institutionell konkurrens).

För stora kunder med verksamhet i flera länder finns det några ganska uppenbara fördelar. Det finns ett antal exempel på mellanstora till stora kunder som endast får ett mycket begränsat antal offerter vid upphandlingar.¹ Det kan finnas flera skäl till detta. Många elhandelsföretag har problem att leverera till mycket stora kunder. För andra med geografiskt utspridd verksamhet, behöver elhandelsbolaget ha balansavtal i samtliga områden för att kunna erbjuda en komplett leverans. Elhandelsmarginalen för dessa kunder är redan idag låg, men om ytterligare leverantörer kan leverera till dessa kunder kan det inte uteslutas att marginalerna kan pressas ytterligare. Ökad konkurrens om dessa kunder kan dock också leda till en mer innovativ bransch och förbättrade totala erbjudanden.

Kostnader kan reduceras, men vikten av detta är osäker

I första hand de stora företagen som har verksamhet i flera länder argumenterar för att en integrerad nordisk slutkundmarknad ger bättre möjligheter att utnyttja skalekonomier och minska kostnaderna. Det är svårt att verifiera detta av flera skäl. Men, om det är riktigt gäller det inte enbart för företag som idag har verksamhet i flera länder utan också för företag som i framtiden skaffar sig verksamhet på ytterligare marknader.

För det första är data avseende kostnaderna för elhandelsverksamheten bristfälliga och vi kan därför inte dra några bestämda slutsatser om vad som utgör den minsta effektiva storleken på elhandelsverksamhet. För nätverksamhet görs effektivitetsstudier regelbundet, ofta som en del av nätregleringen. Den befintliga litteraturen indikerar att det finns skalekonomier, åtminstone för mindre enheter. Den skattade minsta effektiva storleken varierar dock kraftigt mellan olika studier, och det är därför inte möjligt att dra några bestämda slutsatser kring effekten av en utökad marknadsstorlek.

Studierna är dock gjorda på historiska data och distributionsverksamheten automatiseras i ökande grad (t.ex. automatisk mätaravläsning). Detta kan förändra vikten av skalekonomier och öka den minsta effektiva storleken. Det finns dock, av naturliga skäl, i dagsläget inget empiriskt stöd för detta utan det får kvarstå som en hypotes.

¹ I Sverige har elintensiv industri typiskt sett endast fått offerter från de tre största producenterna, även om detta kanske är på väg att förändras. Enligt NordREG (2007) fick Choice Hotels Scandinavia endast seriösa offerter från tre leverantörer.

Det finns initiala kostnader

Vi har inte fokuserat på kostnaderna av harmonisering. Det förefaller dock som att merparten av kostnaderna är engångskostnader som i många fall kan leda till ett mer effektivt system i senare skede. Kostnaderna är i första hand relaterade till harmonisering av tekniska standarder, men harmonisering av regelverk kan i vissa fall också tvinga fram teknisk harmonisering.

Rekommendationer

- Om inte kostnaderna är oöverstigliga och givet att processen kan organiseras på ett effektivt sätt bör en gemensam slutkundmarknad vara ett mål.
- Harmoniseringsåtgärder som inte resulterar i stora kostnader ska definitivt genomföras.
- Det förefaller särskilt viktigt att försöka etablera gemensamma funktionalitetskrav för AMR/AMM system (mätaravläsning/mätarhantering) eftersom detta är ett pågående arbete.
- Huvudsakligt fokus bör vara på *hur* en gemensam nordisk slukundmarknad utformas, snarare än *om* en sådan marknad bör skapas.
- Vid utformandet av marknaden är det viktigt att säkerställa tillräcklig konkurrens, skapa en bas för utvecklandet av effektiva system samt att förbättra möjligheterna för kunderna att reagera på priset. Detta kommer i förlängningen att gynna såväl de enskilda kunderna som marknaden som helhet.
- Det skulle vara en fördel att ha samma ansvarsfördelning mellan nätföretag och elhandelsföretag i de nordiska länderna. Det gäller t.ex. skyldigheter avseende allmänna tjänster (public service obligations), skatteuppbörd, administration av elcertifikat², ansvar för hänvisade kunder, etc.

² Om ansvaret för elcertifikat flyttas till nätföretaget innebär det dock att certifikaten flyttas från den konkurrensutsatta marknaden till att bli en del av en reglerad verksamhet.

Summary

When assessing the benefits for the customers it is important to keep in mind that this is not a homogeneous group. Depending on location, type of consumption etc. customers can naturally be affected differently. In every analyses of any reform there will be a question of whether the reform creates a more efficient market (resulting in overall benefits) and how the benefits and costs are distributed, i.e., an efficiency and a distributional aspect. It has not been possible for us to go into any depth on this. Initially we set up four criteria to assess whether it is likely that an integrated Nordic end-user market in the long-run will provide benefits for the end-users. These criteria are:

- Sufficient or improved competition
- System efficiency
- Improved functionality of the market
- More diversified market

Based on the discussions in this report we assess the possible effects on the customers against these criteria.

There will not be a major effect on prices through reduced market concentration

There is probably already sufficient competition in the retail market, but one should not expect that an integrated Nordic retail electricity market by itself reduces the retail margins in any significant way (see Elforsk report 07:49 for a more detailed analysis). The first reason is that the retail margins are relatively small today for the “competitive contracts” and that there does not seem to be much space for reduction. One exception could be spot price contracts in Sweden where the average margins seem to be inexplicably high.

The second reason is that the national retail markets are not characterised by a particularly high level of concentration. One would expect that market enlargement would primarily affect competition through a reduced concentration level, and it is questionable if that will have any significant effect in this particular case. The level of competition is however probably not mainly determined by the concentration level but by the search- and switching costs relative to the customers expected gains from switching supplier. Improving competition should thus include measures such as improving access to information, facilitating switching etc. Most of such measures could as well be taken on a national level, although a market integration process could provide one opportunity to make beneficial changes.

A better functioning retail market will also improve the functionality of the wholesale market

Demand side flexibility, i.e., the fact that the consumption responds to the current market balance (possibly through the price mechanism), provides an opportunity for customers to lower the total cost of their electricity purchases. If the customers are provided with the technology (e.g. metering equipment) and then are able to choose suitable contracts, at least some customers would be able to reduce their total cost of electricity by adapting their consumption behaviour according to the market prices.

In addition to the direct benefits for the individual consumer that responds to prices it will also improve the functionality of the wholesale market and reduce the total system costs. During the last couple of years there has been a renewed interest in demand side flexibility, particularly in order to meet shortages (energy & effect). In order for demand side flexibility to have any real effect it must naturally reach the end-users. Considering that there is a common Nordic wholesale market and thus to some degree a common interest in securing sufficient energy and effect capacity, there is a natural link to a common retail market.

Demand side flexibility requires that prices are passed through to the end-users (to create incentives), practical measures to communicate these prices and possibly technological solutions. The benefits of this is often distributed between many parties (the customer, distribution company, retailer, system operator), which may require coordination in order to realise the potential. A common retail market with common rules would facilitate for different operators who wish to develop services e.g. to improve demand side flexibility and in general a common retail market would provide the same type of possibilities in all the national markets.

Customers can gain through improved rules and regulations

There are many national regulations that are not particularly well-designed. In Finland the retail prices have so far not been responsive to the wholesale prices, implying that the customers do not face the correct price signals. In periods with high prices this is of course beneficial for many customers (and the opposite when prices fall). In the long run the impossibility for the customers to react to the actual market prices leads to higher costs for the individual customer and for the system as a whole as discussed in the previous paragraph. In Sweden the customers on conditional contracts (the default contract for those not actively choosing a supplier) clearly lose from too high prices. Both these examples could be changed on the national level, but harmonisation provides one opportunity for selecting a new model. Whether regulatory interventions are suitable in these situations, or it should be left for the market participants to develop better practices is outside the scope of this report. Anyhow, improvements are in the end of course contingent on the actual choices made.

A broader spectrum of service offerings and a more innovative industry is possible, but not certain

Previously we stated that the effects on the competitive pressure probably are limited. However, even if the retail margin does not fall substantially there might be other effects that often are hard to quantify. An integrated market would make it easier for retailers currently active in one market, or completely new entrants, to enter the other national markets. Although, the primary problem is not related to market concentration one should have in mind that companies are different and have different strategies. Facilitation of market integration could thus lead to a more diverse spectrum of offers (services, contracts, prices) than the customers currently face, which would increase the expected gain of switching. Over time it is however possible that the strategies will converge and that the initial broadening of the product spectrum is once again reduced. It could even be the case that there are

some benefits of having national markets that allow for trying out different solutions (institutional competition).

For larger customers with operations in several countries there are some rather apparent benefits. There are numerous examples of mid-sized to large customers who only receive a very limited number of offers to supply.³ There could be many reasons for this. Many retailers have problems with supplying the very large customers. For other with geographically dispersed operations, the retailer needs to have balancing agreements in all the areas to be able to give an offer to supply all the localities. The retail margins for supplying these types of customers are low already today. With more suppliers being able to supply these customers it can not be ruled out that the prices are being put under further pressure. More importantly, increased competition for these customers could also lead to a more innovative industry and thus improved service offerings.

Costs could be reduced, but the importance is uncertain

Primarily the large companies that already have operations in more than one country strongly argue that an integrated Nordic end-user market would provide better possibilities to exploit economies of scale and reduce costs. It is hard to validate this statement for many reasons. If it is true it would however not only be valid for the companies that currently have operations in more than one country but in the future also for the companies that consider moving into additional markets.

First of all there is almost no data on the costs in the retail operations, which means that we can not draw any conclusions on the minimum efficient scale of in the retail operations. For the distribution (local network) efficiency studies are made on a regular basis, often as part of the network regulation. The literature in the field suggests that there are economies of scale, at least for smaller entities. The estimated minimum efficient scale does however vary considerable between studies and make it impossible to draw any firm conclusions regarding the effects of a market enlargement in the Nordics.

However, the studies made are made on historical data and the distribution operations are increasingly being automated (e.g. AMM). This may change both the importance of the economies of scale and the minimum efficient scale, but there are no empirical evidence and it thus remains as a hypothesis at this time.

But there are some initial costs

This report has not focused on the costs of harmonisation. However, most of the costs seem to be one-off costs that in most cases result in a more efficient system later on. The costs are primarily related to the harmonisation of technical standards, although harmonisation of regulations may in some cases make technical harmonisation necessary.

³ In Sweden power intensive industries have typically only had offers from the three large producers, although this might be about to change. NordREG (2007) reports that the Choice Hotels Scandinavia only received serious offers from three suppliers/portfolio managers.

Main recommendations

- Unless the costs are insurmountable and given that the process can be organised in an efficient manner a common end-user market should therefore be a goal.
- Harmonisation measures that do not result in large costs should be taken.
- In particular it seems important to try to establish common basic functionality standards for AMR/AMM systems since this is on ongoing work.
- The main focus should be on *how* an integrated Nordic end-user market is designed, rather than on *if* it should be created.
- When designing the market it is important to ensure sufficient competition, create a basis for system efficiency and to improve the possibilities for the customers to respond to electricity prices. This will in the end benefit customers as well as the market as a whole.

It would be beneficial to have a similar division of responsibilities between DSOs and retail companies in the Nordic countries, e.g. public service obligations, electricity tax collection, administration of green certificates⁴, responsibilities for assigned customers, etc.

⁴ If the responsibilities for the green certificates are put on the DSOs this would however mean that this is moved from the competitive market to the regulated part of the business.

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1 Introduction

During the last couple of years there has been an increasing interest in the creation of an integrated Nordic end-user market for electricity. Currently there is an integrated Nordic wholesale market with a common electricity exchange (Nord Pool). By international standards the Nordic wholesale market can be regarded as a success, although for example competition authorities and energy agencies/regulators are raising concerns about the risks of increasing market concentration.

However, one fundamental weakness is that the market to a large extent is driven by the supply side. The majority of the customers do not face the Nord Pool spot prices directly. This is due to both limitations in the measuring of the consumption, the settlement and in the contract designs. The degree to which consumers face and respond to the spot prices varies. For instance, to a relatively high degree Norwegian household customers have electricity contracts with prices following the Nord Pool prices quite closely, although usually not hour-by-hour. This means that these customers tend to respond relatively rapidly to increased prices in a dry-year ("energy shortage"), than household customers in the other Nordic countries. This has also been observed during periods of high prices. We do not expect that most customers will have contracts that fully reflect the short term spot prices in the future either, but the important issue is that the price signals are better carried through from the wholesale market to the retail market.

The discussions around a joint Nordic end-user market must also be seen in relation to ongoing discussion about deepened integration of the Nordic electricity market(s) in general. The discussion has revolved around issues such as harmonisation of the system responsibility, investment in central grid and interconnectors and the creation of a common Nordic end-user market⁵. The Nordic Council of Ministers (NCM) took, after the Council meeting in Akureyi in 2004, an initiative to a process aiming at further integration. The electricity market group under the NCM then invited the Nordic regulatory agencies (NordREG) and the Nordic TSOs (Nordel) to conduct several studies on obstacles for a deepened integration. NordREG delivered four reports, among those "The Integrated Nordic End-User Electricity Market – Feasibility and Identified Obstacles" (NordREG, 2006). Nordel has also presented a report on the harmonisation of balancing services (Nordel, 2006).

NordREG has since the established three working groups focusing on issues related to the creation of a common Nordic end-user market. The first working group focus on a common market platform for balancing services, and they have delivered a report to the NCM electricity market group in April 2007 supporting the proposals made by Nordel. The future work is related to a Nordic balancing agreement.

⁵ The terms end-user market and retail market are used interchangeably throughout the report. If not otherwise stated it should be interpreted as sale to all types of final customers of electricity.

The other two working groups work on the market design of the Nordic retail market. The first of these two working groups has during the spring 2007 done a short cost-benefit analysis of an integrated Nordic retail market. This will be further discussed below, but the overall conclusion is that the benefits probably outweigh the costs. The group will continue its work on finding a possible structure for a common Nordic market. The last of the working groups are focusing on a common model for switching supplier and analyse how the distribution (network) companies are regulated in each country.

ECON was commissioned by the Elforsk Market Design program⁶ to conduct a study on the customer benefits of an integrated Nordic end-user market for electricity. The study focused on the effects on competition and the retail margins (Elforsk report 07:49). During the work process, in discussions with the reference group assigned to the project and workshops the scope was broadened. This report thus summarizes the discussions and qualitatively assesses the likely benefits for the customers of the creation of an integrated Nordic end-user market for electricity.

1.1 What are the benefits for the customers

The end-user market consists of two, or three, different markets. The retail market (supply) is the sales of electricity to final customers. However, large end-users may also purchase directly on the wholesale market. These markets constitute the competitive part of the business. In addition to the supply of electricity there is also the transportation of electricity, i.e. distribution or local network operations.⁷ An integrated Nordic end-user market will have effect on both the supply business and the network business. This is particularly the case since many of the adjustments in rules, regulations and systems are related to communication between DSOs and supply companies. Changes – both positive and negative – can thus be expected for both.

There is no clear definition of what constitutes a common Nordic end-user market for electricity. A spontaneous definition would be to say that we have a common market either if all retailers in all countries are able to sell to all customers in the Nordic area, or if all customers are able to shop from any retailer without taking into account the location of the retailer. In reality it will however not be as clear cut as this. There might still be a need for local registration (for tax purposes etc.) as for most other services that are sold across borders and many customers may then still be forced to shop from a retailer with a local registration. Given a harmonised regulatory framework such registration should however be fairly simple and cheap. When we refer to a common Nordic market we refer to a market where all the main electricity market specific regulations have been harmonised, but there might for example still be a need for local registration of the business and non electricity market regulations may still differ between the countries.

⁶ The Market Design program is financed by Svensk Energi (Swedenergy), EBL-Kompetanse (Norway) and the Swedish Energy Agency.

⁷ Large end-users may not be connected to the distribution grids but rather directly to the regional or central grid.

Possible customer benefit from an integrated Nordic market could be found in at least three main areas:

- Lower prices/costs
- Higher quality of services
- An improved spectrum of service offerings.

In reality, most of the changes is likely to first affect the supply companies and DSOs and then possibly passed on to the customers. A common Nordic end-user market is also likely to increase in interest from retailers outside the Nordic area. A higher number of potential customers will be easier to reach than today. We have therefore identified four criteria when assessing whether an integrated market is likely to provide benefits for the customers:

Sufficient or improved competition

A first important requirement for a good result for the customers is that it at least is sufficiently many sellers in the market to achieve an effective competition. In a situation when there is lack of competition to start with, an increased market size could contribute to diluting market power which would bring benefits to the customers in the form of lower prices or improved services. Even if the market enlargement does not improve competition, it is important that there is sufficient competition in order for the benefits to be passed on to the customers.

System efficiency

Secondly, improved efficiency of the system will reduce the costs. Given that there is sufficient competition and effective regulation of the monopoly business this will in the end benefit the customer through reduced prices/tariffs. We are assuming that in the long run efficiency improvements will to a substantial degree be passed on to the customers.

Improved functionality of the market

As highlighted in the introduction, the demand side is to a large extent currently lacking in the wholesale market since most customers do not respond to prices for technical or commercial reasons. This is negative for the market as a whole, leading total costs for the electricity system which in the end will be paid by the customers. Improvements will thus benefit customers on the aggregate level. In the more narrow perspective of the individual customer, changes in e.g. technology and contract design will enable the customer to adapt its behaviour/electricity use and thus achieve a lower total cost for its electricity purchases.

More diversified market

Customers are different and thus have different needs, e.g. in contract design, billing and information. A larger market creates a larger basis for more targeted offers, although this by no means guarantees a broader spectrum of service offerings. In addition, new technology (egg AMR/AMM) will contribute to providing the infrastructure for providing more diversified and advanced service offerings.

1.2 Barriers to a Nordic market

Currently there are no absolute legal, technical or regulatory hindrances preventing an electricity retail company in one Nordic country (or from elsewhere) to enter into another Nordic country. There are however a number of factors creating barriers to entry. This has for instance been discussed in NordREG (2006) and this section mainly draws on the conclusions from that report.

If a retail company in one Nordic country is to enter into any other country a number of barriers need to be overcome. Separate balancing agreements need to be made in each country and the IT-systems differ between the countries. The latter is may be affected by differences in procedures and practical rules as well as different processes and handling routines in the companies. In addition to this it might be necessary to establish offices in the countries where you wish to operate. This would however be a factor determined by the market conditions and driven by customer demands, and would thus not be affected by active measures taken by different public authorities in order to create a common market. Furthermore, additional risks may arise when you operate in several countries. NordREG (2006) identifies a number of measures that need to be taken to create a common Nordic retail market:

Technical barriers

The most important technical barrier is the differences in IT-systems for communication between the network companies (DSOs) and the retail companies. Harmonisation of IT-systems, protocols and measurements are required. There is also a need to harmonise the rules for switching supplier.

Regulatory barriers

The division of tasks between the monopoly and competitive parts of the business differ between the countries as does the responsibilities and the regulation of the DSOs and there are different rules for consumer protection. According to NordREG a number of steps need to be taken. Firstly, the principles to ensure competitive neutrality (between integrated and independent retailers) and the surveillance of these principles need to be harmonised. The procedures for switching supplier need to be smooth and easy, and the model for switching ought to be harmonised.

Business barriers

There are always a number of business barriers when trading across borders and some of those will remain even if the (electricity market) regulatory framework is fully harmonised. Access to information will however be important for how a market functions. Currently there are national price comparisons available, which contribute to transparency on the national level. This does not exist on the Nordic level. To achieve an integrated Nordic market the existing price comparisons should at least be open for all market participants.

On the wholesale market the Nordic countries are within different price areas. There are well developed possibilities to hedge against the price area risk, but at least differences in average prices between the areas should also be

reflected in the retail prices. This implies that you should not expect the retail companies to make the same offer to all Nordic customers.

Differences in language and currencies will naturally also constitute barriers, which cannot be removed by any action taken on the electricity market.

2 Potential benefits for the customers

There are several potential benefits for the customers from an integrated Nordic end-user market. Whether or not these benefits will be realised depends to a large degree on how the common market is set-up. Even though there are some pure gains of harmonisation, these are probably relatively small. The main effects will thus come through a possible improvement of the functionality of the market. The enlargement of the market can also provide some benefits. It is however always difficult to predict the developments in a dynamic market since it depends on the interaction of the behaviour of all parties (suppliers, DSOs, customers, regulators etc.).

During the work with this project and in discussions with the reference group and at workshops several potential benefits of an enlarged market have been raised, e.g.:

- Improved possibilities for developing the market
- More effective segmentation of the market
- Lower entry barriers
- Lower unit costs
- More market participants
- Improved competition among system suppliers
- Improved possibilities to compare and develop "Best practices"
- More effective Nordic wholesale market.

Many of these potential benefits, but not all of them, may arise from the market enlargement. At the same time most of them are to a high degree depending on the actual implementation and the new regulatory framework. The general belief during the discussions is that the customers will not primarily benefit through the possibility to "shop abroad", although that possibility could arise, but through more market participants on the customers own home market. The wholesale market is already Nordic and an integrated Nordic retail market would facilitate for new entrants into the market (also other than those already present in any of the national market). Over the next few years substantial investments will also be made in AMM-systems⁸, which is important to have in mind. This also shows that an integrated end-user market does not only affect the retail market, but may also affect the distribution. Particularly, an integrated Nordic market creates the need for communication between retail companies and distribution companies across the borders. Many retail companies have also been involved in a cooperation aiming at common functional standards for AMM-systems. In Sweden all customers shall at least have monthly reading by 2009, which in practice require AMR and the Norwegian Minister of Petroleum and Energy gave NVE

⁸ Automatic Meter Management

the go ahead to start the work to ensure that all customers have two-way communication (AMR/AMM) by 2012 and in Finland AMR/AMM will probably be in place by 2014.

In June 2007 a workshop was held as part of this project. Sector participants, representatives of public authorities, customer representatives and other interested parties were invited to attend. At the workshop some preliminary findings (related to the study of the retail margin) were presented. Invited speakers⁹ commented on the preliminary findings and gave their own view on the effects of a common Nordic end-user market. The general view that was shared both between the invited speakers and most of the workshop participants was that a common Nordic market would be beneficial. There were some differences in the view regarding the urgency. Some referred to the upcoming investments in AMM-systems and claimed that the common years represented a window of opportunity to make important harmonisations and move forward towards an integrated market, while other claimed that although it would be beneficial there is no great urgency. Both views thus implies that an integrated market would be beneficial, but it is a difference in the view on how fast it needs to move. Although many of these positive effects are plausible it is very difficult to verify them *ex ante*. In this report we discuss and assess these possible benefits.

2.1 Improved competition and services

In Elforsk report 07:49 we argue that the market structure on the electricity retail market in the Nordic countries is not very concentrated. There are thus no strong reasons to expect that market enlargement will dilute market power in the same way as has been the case for the wholesale market. A larger market, with more market participants, is however likely to be more robust towards market concentrations due to mergers and acquisitions. A larger market may decrease any real or perceived competitive problems due to vertical integration.

Furthermore the retail margins are in most cases not very large. This means that the scope for reduced prices through reduced margins is limited.

Market power in the retail market is also probably not primarily determined by the market concentration, but on the search- and switching costs relative to the expected gains from switching and the question would thus be if an integrated market would encourage search and switching.

An integrated market would clearly result in lower entry barriers for market participants already present in one of the countries. In addition to this completely new entrants would be able to enter both an integrated wholesale and retail market of a considerable size. Fixed costs for entering the Nordic market could thus be spread over potentially larger volumes, compared with the case when only a national market is entered (on the retail side). Even though this new entry might not lead to substantially reduced margins in the first place, given the current cost structure a larger spectrum of offers and

⁹ The invited speakers were Magnus Thorstensson (Svensk Energi), Ole Haugen (EBL), Gunilla Åbrandt (Swedish Energy Markets Inspectorate), Anders Wickström (Fortum) and Bo Lindörn (Oberoende Elhandlare)

ideas – possibly directed toward different (smaller) groups of customers – is likely to benefit the development of the market. These types of dynamic effects in competitive markets are in most cases almost impossible to assess *ex-ante*, but nonetheless often exist.

Many medium sized and larger customers have operations in several of the Nordic countries. For them it is likely that an integrated market would bring about benefits in terms of the choice of suppliers and the quality of the services they can receive.

The largest customers (e.g. power intensive industries) have the possibility to participate on the wholesale market, and can also handle their balances by themselves (although they do not necessarily do that). Naturally, these customers would benefit from having e.g. only one balancing agreement but they still might have to deal with several different balances.

Other mid-sized to large customers have many consumption points spread over several countries, e.g. real estate companies, hotel chains, supermarkets, owners of shopping malls.¹⁰ The combined electricity consumption in all their locations of the large chains can be considerable. E.g. shopping malls and many other types of property there are also considerable room for improved energy efficiency. Services related to this could then give some retail companies a competitive edge vis-à-vis this type of customers – particularly if they could serve the entire chain. A larger market should provide a broader basis for developing services and offers targeted towards particular customer groups and one would thus expect that more such services would be developed on a larger market.

2.2 Reduced costs

2.2.1 Economies of scale - lower unit cost

Primarily the large companies that already have operations in more than one country strongly argue that an integrated Nordic end-user market would provide better possibilities to exploit economies of scale and reduce costs. It is hard to validate this statement for many reasons. First of all there is almost no data on the costs in the retail operations, which means that we can not draw any conclusions on the minimum efficient scale of in the retail operations. For the distribution (local network) efficiency studies are made on a regular basis, often as part of the network regulation.

The existence of economies of scale in electricity supply and distribution is highly uncertain. Most studies reports a relatively low minimum efficient scale. For instance, Yatchew (2000) find substantial increasing returns to scale, but the minimum efficient scale is reached already at 20,000 customers and that larger sizes exhibit constant or decreasing returns to scale. In a study of Swiss electricity distribution a minimum efficient scale of on annual volume of 1 TWh or 100,000 customers is found (Fillipini et.al, 2001). Agrell and Bogetoft (2000) assumes variable returns to scale in the short run and

¹⁰ NordREG has an example with the hotel chain Choice Hotels Scandinavia in one of their reports.

constant returns to scale in the long run, which is said to have been supported by a reference group with industry representatives.

On the other end of the spectrum is Kwoka (2005) who studies the economies of scale in the US electricity distribution (both wires and supply). He finds that the minimum efficient scale for the integrated distribution operations are at a volume of 36.9 TWh, but that the cost elasticity is quite low. For a wide range of volumes the costs are not more than 5 per cent above the minimum cost. The minimum efficient scale for the wire operations is found to be slightly higher (39.9 TWh), and for the supply operations lower (30.7 TWh) compared with the total distribution operations. Furthermore the average cost curve is flatter for the supply operations than for the wires. Given that these estimates on the minimum efficient scale are correct, very few of the Nordic distribution or retail companies are that large even on a combined Nordic market.

The existence of economies of scale also in the Nordic market is supported by e.g. Veiderpass (2004a). She show that only a small fraction (10.7 per cent) of the efficiency measurements included in her study are at the optimal scale.¹¹ Veiderpass (2004b) also show that since the productivity development has been more beneficial for larger entities.

There is thus quite clear that at least in the short run there are economies of scale, but there is no undisputed level of minimum efficient scale. Quantitatively the economies of scale may also be limited for a wide range of volumes. Based on the existing studies it is therefore difficult to assess whether a common Nordic market will bring about further productivity improvements.

However, it is possible that the scale economies will become more important with new technology. The large investment programs in AMM can make it possible to increase the level of automation were the economies of scale may be much more significant and the minimum efficient scale reached at larger volumes. Clearly, for any company currently operating or planning to operate in several countries, the possibility to use the same systems in all their operations should bring about possibilities for reduced costs by eliminating the need for duplicating systems.

2.2.2 System development costs

Currently different systems (IT etc.) are developed for each national market due to the different requirements. Already cooperations between DSOs has led to similar functional requirements for metering equipment also across national borders, which illustrates that it to some extent is possible to overcome differences in the national requirements. In the end there differences in protocols, message formats, etc. will however lead to a need for national adaptations, which will increase costs. The volumes for each specification will also be lower for with national markets, which is likely to reduce competition given that there are fixed costs for system development.

¹¹ Veiderpass (2004a) use DEA to study the productivity development in the Swedish electricity distribution. The technology is specified allowing for variable returns to scale. For observations at the optimal scale the model will yield constant return to scale while for the ones operating at other levels there will either be decreasing or increasing returns to scale.

We have not within the framework of this project studied the likely effects on system development costs and on the competition between system suppliers, but it seems clear that a Nordic harmonisation will yield positive effects in this respect. Based on the comments received during the project (workshop, project reference group) there seems to be a consensus around this, although no one has been able to quantify the savings.

2.3 Improvements in regulations

2.3.1 Improved functionality of the wholesale market

It is questionable whether an integrated Nordic retail market as such will have substantial effects on the wholesale market. The wholesale market is already to a large extent an integrated Nordic market. This means that larger customers and retailers can choose to buy their electricity from any party within the Nordic market (bilaterally or over Nord Pool). Physical restrictions may of course lead to price differences, but this will not be affected by the creation of an integrated end-user market. However, as previously pointed out one weakness of the wholesale market (Nord Pool spot) is that the demand side is not very strongly represented in the market, i.e. does only to a limited degree respond to price changes in the market.

There are many national regulations concerning the end-user market that are not particularly well-designed, and that have negative effects on the wholesale market. For instance, the degree to which end-user prices respond to wholesale prices varies, and particularly in Finland the retail prices have so far not been very responsive to the wholesale prices. This implies that the customers do not face the correct price signals. In periods with high prices this is of course beneficial for many customers (and the opposite when prices fall). More importantly, it results in a wholesale market that works less well and in a more expensive power system since demand flexibility is lost. It is important to realise that a well-functioning Nordic wholesale market also requires a well-functioning demand side.

The creation of an integrated Nordic retail market will not automatically solve these types of problems and changes could be made on a national level. Harmonisation is an opportunity to improve on systems that work less well, and the incentives to create rules that improve the Nordic wholesale market is also likely to be stronger on a Nordic level. On the national level some of the benefits are spilled to the other Nordic countries (positive externality) and the individual country may thus not take in the full Nordic benefit of changing the rules. Furthermore, even to the extent that national regulations may lead to improvements, Nordic integration can function as a catalyst in this work. It is possible that there are differences in preferences (either on the individual or on the political level) leading to that different types of contracts are chosen and harmonisation is of course not a goal in itself but a tool to a better utilisation of the combined Nordic energy resources.

It is important to keep in mind that harmonisation as such will not lead to substantial improvements. There is an apparent risk that harmonisation will lead to an agreement around a solution that for instance is politically acceptable, but that will not improve the functionality of the market.

2.3.2 Other types of harmonization

There are differences in the retail prices between the Nordic countries. For the default contracts it seems like particularly the Swedish customers with conditional contract are losing from too high prices. Sweden could make changes in the conditional contract giving benefits for the Swedish customers, but has apparently not done so yet. If Nordic harmonisation also included harmonisation of the default contracts it seems likely that it would have a potential to lead to benefits at least for these customers. It is of course possible that a solution is found were the conditional contracts are continued to be defined differently, although that does not seem to be an attractive solution if one aims at creating an integrated market.

Once again, unless there are significant gains from coordination per se, benefits from harmonisation are in most cases contingent on the actual choices made. Although it probably is more likely that good solutions are selected, one can not guarantee that harmonisation leads to the selection of good rules. In cases where there are small differences in the functionality and benefits of different models, harmonisation could be seen as a goal in itself. In other cases the design of the rules is more important than harmonisation.

2.4 Costs of harmonisation

It is outside the scope of this report to go into details on the costs of creating an integrated Nordic end-user market, and we will only provide a brief discussion of the main cost items. The costs can be divided into costs related to regulatory harmonisation and costs related to technical harmonisation. NordREG (2007) gives a short assessment of the costs for different types of harmonisation.¹² NordREG points to the fact that technical harmonisation has been on the agenda for some years in different forums. Most of the costs will be initial costs related to development and testing, but the new standards will generally reduce costs in the long run. As an additional comment (not mentioned in the NordREG report), it seems like there is a relatively low quality in the processes in the end-user market. There are frequent complaints about errors in the reporting between network companies and retailers and about customer switching that is not done correctly etc. There is a possibility that harmonisation and investments in more sophisticated technologies and a higher degree of automation of data processing and control also will reduce these problems, which will bring about an additional benefit.

¹² ECON has not done an independent analysis of this.

Table 2.1 Summary of costs of harmonisation

Regulatory harmonisation

Neutrality of DSOs	The rules to secure neutrality differ between the Nordic countries. For an integrated Nordic retail market it is important that all DSOs at least act according to general principles for neutrality. Changes in these rules do not generally trigger significant costs, although some specific proposals could do that.
Switching model	The pure regulatory changes are not costly but, harmonisation of the switching models will cause some changes in technical systems (customer information systems, exchange of Ediel messages), which can be costly.
Harmonisation of metering and settlement	There are currently differences in the thresholds for more advanced metering. All Swedish installations shall have automatic metering by 2009 and work to have automatic metering for all customers in Norway by 2012 has started. Different systems in the different countries are not impossible, but will be costly. Harmonisation of the metering requirement will generate costs (particularly for the DSOs), but will bring benefits as well (besides the pure harmonisation gains).

Technical harmonisation

Data protocols	Harmonisation of data protocols is critical for retail market integration. Today cheap Simple Mail Transfer Protocols (SMTP) is used in all countries except Finland, and harmonisation should only lead to negligible costs.
Message formats	The countries use different message formats to send customer data between DSOs and suppliers. Harmonisation of this causes costs related to IT development and testing, and these costs could be significant.
Identification of metering points	Identification of the metering points is crucial for the market. The countries are currently developing different approaches for this, and the national services could be developed into a Nordic service. NordREG (2007) does not make an assessment of the costs.

Source: NordREG (2007)

3 Conclusions and recommendations

Today we have a relatively well functioning wholesale market, but a clear weakness of the market is the limited involvement of the demand side. This is due to differences in contracts and that price signals are not always passed through to the end-users. A Nordic end-user market should ideally be a target and can function as a catalyst to get a more effective demand side (correct price signals being passed through and a better market dynamic by facilitating cross-border operations and offering more advanced and tailor made products and services to different customers/customer groups. A better functioning market will also benefit the customers. Customers can choose to take advantage of more advanced metering and contract designs through adapting their behaviour/electricity consumption depending on the price. This has a potential to reduce the total electricity bill for the individual customer as well as the total costs of the electricity system.

One should not expect substantial price decreases through improved competition in the retail market, due to the creation of a common Nordic end-user market. Mid-sized to large customers with operations in several countries can probably benefit more. The margins are already low on these contracts, but improved service offerings can result in benefits.

There seems to be many benefits of this type: We are pretty certain they exist but we can not quantify them. This is in fact often the case when dynamic markets are studied – it is difficult to predict dynamic changes in e.g. service offerings. It is however difficult to assess how large these are and value them in economical terms.

It is however we have no evidence that there are large sums of money that can be saved simply from the creation of an integrated Nordic end-user market. Harmonisation as such is important in some areas. Generally, it is however more important how a Nordic market is created, rather than if it is created. We have pointed at the importance of ensuring sufficient competition, designing the market in a cost efficient manor and making sure that the demand side becomes better represented in the wholesale market. Unless this is achieved it becomes more difficult to see that there will be substantial benefits of a Nordic end-user market.

We have not studied the costs of harmonisation, and any final conclusion on what should be done need an improved understanding of the costs involved. Harmonisation efforts that do not result in large costs, e.g. some harmonisation of rules and regulations, should definitely be taken. Some technical harmonisation could be more costly, but, as a minimum, new systems that are implemented should be harmonised as far as possible. Important in this respect is of course the ongoing and coming investments in AMR/AMM systems. In Sweden the official requirement is only monthly metering, but most companies seem to have chosen more advanced meters that can handle hourly metering since the extra costs is small. It would be beneficial if the Nordic regulators and/or the industry associations could agree on common basic functionality standards for AMR/AMM systems.

Some technical harmonisation may be costly, but one also has to keep in mind that if an integrated Nordic end-user market leads to average gross benefits for the customers (through price changes or improved services) corresponding to a mere 0.1 öre/kWh (less than 0.01 eurocent/kWh)¹³ this will result in total yearly benefits of approximately SEK 400 million. Although we can not give any numerical predictions of potential benefits, given the large turnover in this market even very small benefits per kWh can motivate rather substantial investments in technical harmonisation.

As well as it is important to separate the effects of a Nordic market from general improvements in the rules and regulations in the market, it is also important to treat costs in the same manor. While large sums are currently being invested in new metering technology such costs should not be seen as a part of the costs for a Nordic market, since the decision has been made independently of any creation of an integrated Nordic market.

The main recommendations are:

- Unless the costs are insurmountable and given that the process can be organised in an efficient manor a common end-user market should therefore be a goal.
- Harmonisation measures that do not result in large costs should be taken.
- In particular it seems important to try to establish common basic functionality standards for AMR/AMM systems since this is on ongoing work.
- The main focus should be on *how* an integrated Nordic end-user market is designed, rather than on *if* it should be created.
- When designing the market it is important to ensure sufficient competition, create a basis for system efficiency and to improve the possibilities for the customers to respond to electricity prices. This will in the end benefit customers as well as the market as a whole.
- It would be beneficial to have a similar division of responsibilities between DSOs and retail companies in the Nordic countries, e.g. public service obligations, electricity tax collection, administration of green certificates¹⁴, responsibilities for assigned customers, etc.

3.1 Outstanding issues

As indicated in the report there is a number of outstanding issues. Each of the discussed topics above could be analysed in more detail, and for some of them it would also be possible to provide quantitative assessments.

We have not discussed the cost side related to this in any detail. More detailed studies of the harmonisation and integration costs, as well as possible cost changes following these investments would be valuable.

¹³ Note that this is not an estimate of the potential benefit. The number is provided only for illustration.

¹⁴ If the responsibilities for the green certificates are put on the DSOs this would however mean that this is moved from the competitive market to the regulated part of the business.

To more accurately assess the future competition in the market it would also be interesting to study the effect on different types of companies in detail. This could be different types (large/small, vertically integrated/non-integrated) retail companies, DSOs etc.

There is ongoing work on the differences in the systems between the countries which is very important to assess how large changes that need to be made. On the surface some systems may seem similar, but in the end they are still not compatible.