To:
Olje- og Energidepartementet
Postboks 8148 Dep
0033 Oslo
Norway

Email: postmottak@oed.dep.no

Your reference: 14/293

Regeringskanliet
Näringsdepartementet
103 33 Stockholm
Sweden

Email: n.registrator@regeringskansliet.se,
eva.centeno-lopez@regeringskanliet.se

Your reference: N2014/734/E

12 May 2014

On behalf of, and copy to:
Commerzbank
DNB Bank
HgCapital
VasaVind
Zephyr AS
Copy to:
Erik Brandsma, Director General, Swedish Energy Agency
Per Sanderud, Director General, Norwegian Water Resources and Energy Directorate
Mari Hegg Gundersen, Norwegian Water Resources & Energy
Gustav Ebenå, Swedish Energy Agency

Consultation on 2015 Elcertifikat "Control Station"

Commerzbank, DNB Bank, HgCapital, VasaVind and Zephyr (collectively referred to as the Group), are developers of, investors in, and lenders to wind farms in Norway and Sweden. The Group has worked closely with other market participants, including electricity and Elcertifikat traders, in reviewing the current state of the Swedish and Norwegian renewable energy markets with a view toward providing information and recommendations to the

Norwegian Water Resources and Energy Directorate and the Swedish Energy Agency for the 2015 Elcertifikat "control station".

On 22 October 2013 members of this Group[1] and others submitted to both the Norwegian Water Resources and Energy Directorate and the Swedish Energy Agency (collectively the "Agencies") recommendations with respect to the Control Station, focussing in particular on the need to revise the quota curves and increase transparency about investment decisions in the market. A copy of our 22 October 2013 submission is attached (the "October Submission").

We now write in response to the Control Station proposals issued by the Agencies on 12 February 2014 (the "February Proposals"). We were very pleased to see that issues raised in the October Submission have been prominently addressed by the Agencies. The purpose of this letter is to provide you with brief additional input on the February Proposals, which primarily reinforce and reiterate the points raised in the October Submission.

Our principal points are as follows:

1. **Increased transparency and disclosure of investment decisions.**

   As raised in the October Submission, real transparency and accurate reporting of investment decisions and the status of the renewable projects database is critical (i) for proper Elcertifikat price formation and (ii) to allowing debt and equity investors and lenders to take investment decisions to build the new projects needed to meet the 2020 targets. The February Proposals clearly reflect that both Agencies recognize that the lack of transparency hampers investment decisions and does not encourage the most robust projects (e.g., least cost and most efficient) to be built. In the February Proposals the Agencies queried whether increased transparency and disclosure can be done on a voluntary basis or through the existing Vindbrukskollen database.

   We believe that disclosure must be mandatory. Voluntary disclosure is not likely to work. Moreover, as outlined in our proposed disclosure rules in our October submission, there needs to be a level of independent data verification. In a voluntary disclosure system, without data quality controls and a level of independent verification, project developers / sponsors could try and "game" the

[1] VasaVind is a Swedish wind business owned by HgCapital. VasaVind participated in the Group but was not named in the 22 October 2013 Submission

system by overstating or understating production, the timing of potential projects and investment decisions. For example, a sponsor / developer might report that an "investment decision" has been taken and construction started based on simply clearing land for turbine erection or doing some ground works but without ordering equipment or having significant capital committed. A small developer / sponsor, who may not be able to secure financing, could make such assertions in the hopes of putting off more viable projects. This would not improve the already poor and unverified data on which people take investment decisions and trade Elcertifikats. Thus, mandatory disclosure to a reasonable standard is needed. The disclosure proposal contained in the October Submission contains what we believe to be adequate information.

We further encourage you to take action to implement reporting rules before January 2016. The next two years are likely to be critical in whether Sweden and Norway will meet their 2020 renewable energy targets. That is, if projects continue to be delayed for the next few years, there may not be sufficient construction capacity to catch up for lost time before 2020. We recognise that the Swedish Energy Agency does not have the legal authority to compel such disclosure, but we think a strong signal at the conclusion of the consultation on the February proposals that (i) mandatory disclosure will occur when the new legislation is passed and (ii) that both agencies will look favourably if market participants started to comply with the mandatory disclosure obligations before legal enactment could help restore investor confidence. It would also provide a test period to "troubleshoot" any data collection issues in the run-up to mandatory disclosure becoming law.

Finally, we do not believe that the existing Vindbrukskollen database provides adequate information for investors on project status. If you would like, we can prepare a simple spreadsheet that we would suggest could be the basis for mandatory disclosure. This needs only to be updated by project developers through some public data entry portal plus the ability to upload any relevant documentation. This needs to be nothing more than a relatively simple list of projects and their current status and output.

2. **Changes to the quota curve**

We are very pleased that Sweden has acknowledged the issues with the Swedish quota curve and the proposed adjustment effective January 2016 to eliminate a

substantial part of the surplus through "front end loading" to quota obligation. In this respect, some Group members have analysed the market and are concerned the level of correction in 2016 may be insufficient to materially affect the market and eliminate the surplus. Because the overestimated electricity demand forecast will remain and new renewable energy projects have come online faster than originally anticipated, the surplus will continue to grow until 2016. We are concerned that the rate of growth of surplus over the next two years may be greater than the Agencies expect. Therefore, we encourage the Agencies to review the likely levels of surplus growth over the next two years and determine whether the adjustments outlined in the February Proposals will be sufficient to achieve the agencies' goals.

Related to the quota curve adjustments, when Norway and Sweden agreed to the common market, commencing in 2012, Sweden brought into the market an "ingoing" reserve of 8.78 million Elcertifikats. On pages 55 and 56 of the Swedish Energy Agency proposal, this 8.78 million Elcertifikat reserve would be reduced through further quota curve adjustments from 2020 onwards.

This reserve contributes to the oversupply of Elcertifikats and since the ingoing reserve does not have any corresponding demand in the medium term, we do not believe it is correct to wait until 2020 to adjust quotas for the 8.78 million Elcertifikats. Therefore, in addition to confirming the proposed adjustment for the quota curve for the surplus that will continue to accumulate to 2016, we suggest an additional adjustment of 8.78 TWh at the outset in 2016.

3. **Timing of changes**

As noted above, critical investment decisions need to be taken in the coming two years to make sure that Sweden and Norway achieve their 2020 renewable energy targets. We understand that the Swedish parliamentary election cycles make it difficult to take the necessary legislative action until after the autumn elections. We also understand, however, that proposed action by the new Swedish parliament could be taken in the Spring of 2015. Because of the critical need to correct these imbalances in the Elcertifikat market, we would urge both Sweden and Norway to make the quota curves effective from 1 April 2015, which coincides with the start of the Elcertifikat year. Preferably, this would be done by the new Swedish parliament taking legislative action by 31 March 2015 but it would also be possible for it to take action after that date but effective as of 1 April 2015.

We understand that the Agencies may have concerns that an early intervention could be viewed negatively by investors. We do not share this view as these interventions are designed to rectify incorrect assumptions and restore confidence in the market needed to reach Sweden and Norway's goals. Where investors worry is where regulation or changes are rushed in an effort to reduce or change tariffs to the detriment of investments. Clearly, the purpose of these changes is to enhance investments. Recognising that the market needs correction, acting ahead of schedule sends a positive message to investors and should not be viewed by the Agencies as a negative or that it would be perceived by investors as increasing regulatory risk.

4. Elcertifikat fundamentals

Comments 1, 2 and 3 outlined above are broadly in line with the October Submission, in which we focussed on improving how the system works. We did not raise fundamental questions about the viability of the system. In the six months since October, we have become increasingly concerned that there is a substantial risk of a collapse in Elcertifikat prices after 2020. This is because Norwegian projects must be online by 2020 to qualify for Elcertifikats, whilst Swedish projects do not. Swedish projects that enter service after 2020 would only receive Elcertifikats until 2035 which means they could receive less support. Still, there is a substantial risk that the following 2020 projects will continue to enter the Elcertifikat system driving up the surplus of certificates and driving down the prices of existing certificates.

It may be that post 2020 new projects may require lower Elcertifikat prices due to falling costs. However, projects built before that date will still be saddled with original higher costs. Because of this risk of falling prices post 2020, there is an increased risk that investors will not invest because they will not have confidence in the stability of the Elcertifikat prices and they will be forced to compete with cheaper technologies which render the existing investments "stranded assets".

We strongly urge you to address this situation by (i) either requiring that the Elcertifikat system be effectively closed to new projects after 2020, that is putting Norway and Sweden on the same footing, with perhaps a one year extension if the system is in shortage, or (ii) by providing for an increased quota of Elcertifikats post 2020 to reflect the ongoing build in Sweden that will still benefit from the system.

In short, the unpredictability and high volatility of Green certificate prices, particularly when coupled with extremely low power prices, makes investing in the system very difficult and creates a substantial risk that capital will not be deployed. In this respect, please note Attachment 1 to this report which contains excerpts of Elcertifikat price forecasts from several leading consultants, all of which include a collapse of Elcertifikat prices post 2020 as a realistic scenario.

We thank you for the opportunity to present our views on the control station and we are pleased that you have taken on board our comments from our October submission.

We would be happy to meet with you at any time to discuss our comments and any other proposals we can assist with in making the Elcertifikat system a success.

Respectfully submitted,

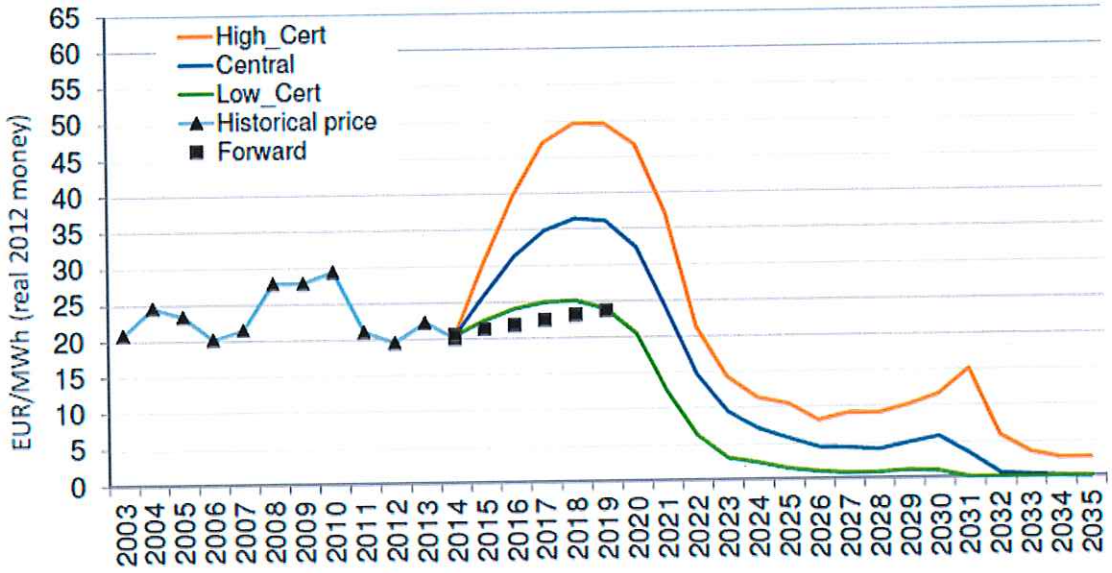
Thomas Murley
Director, Head of Renewable Energy, HgCapital
Tel: +44 (0) 20 7089 7962
On behalf of the Group

ATTACHMENT 1 – ELCERTIFIKAT PRICE FORECASTS

The following charts are taken from the most recent Elcertfikat price forecasts from the leading market consultants, including Poyry, Markedskraft and SKM. For each we have shown their base, high and low case forecasts. It is worth noting that in the past neither the base nor high case forecasts have been met and more often than not actual Elcertifikat prices have been lower than than low case forecasts.

Forecast 1: Poyry – Quarter 1 2014 – including the effect of proposed quota changes

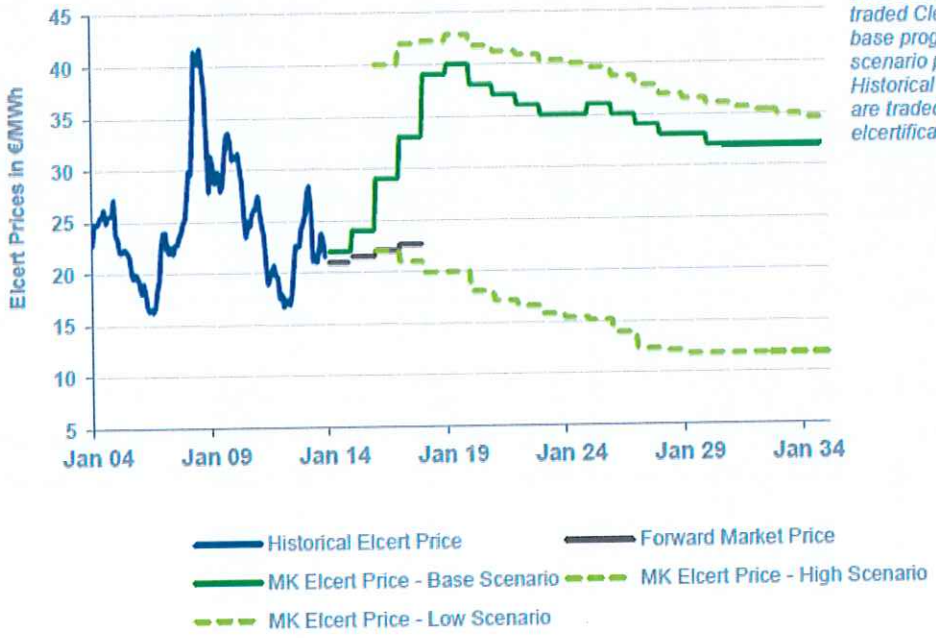
Summary Figure 6 Price projections for scenarios High_Cert, Central and Low_Cert, €/MWh (real 2012)



Source: SKM, Pöyry Management Consulting analysis

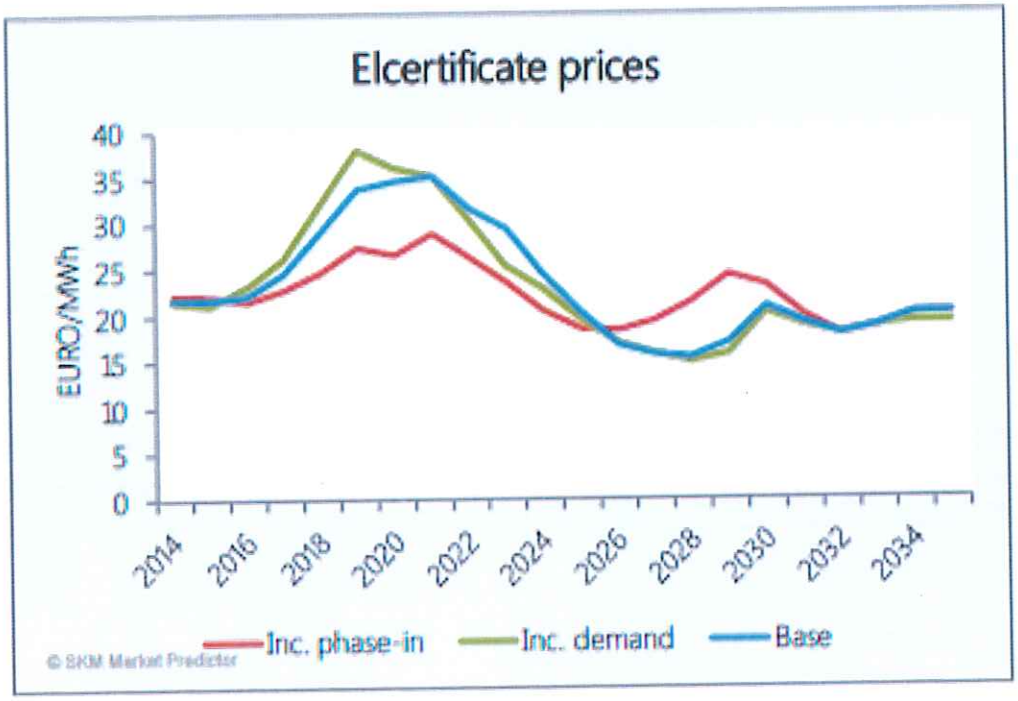
Forecast 2: Markedskraft – Quarter 1 2014 – including the effect of proposed quota changes

Figure 6: Market Prices vs MK Prognosed Prices



The chart depicts historical traded SKM prices , forward traded CleanWorld prices, our base prognosis price and scenario prognosis prices. Historical elcert prices depicted are traded March ahead elcertificate prices.

Forecast 3: SKM– Quarter 1 2014 - – including the effect of proposed quota changes



NORWAY AND SWEDEN ELCERTIFIKAT MARKET CONTROL STATION

MARKET OBSERVATIONS AND RECOMMENDATIONS

FOR

22 OCTOBER 2013

SUBMITTED BY:

Commerzbank, DNB Bank, HgCapital, Vattenfall Vindkraft AB and Zephyr AS (collectively referred to as the Group), are developers of, investors in, and lenders to wind farms in Norway and Sweden. The Group has worked closely with THEMA Consulting Group of Oslo and other market participants, including electricity and Elcertifikat traders, in reviewing the current state of the Swedish and Norwegian renewable energy markets with a view toward providing information and recommendations to the Norwegian Water Resources and Energy Directorate and the Swedish Energy Agency (collectively referred to as the Agencies) for the 2015 Elcertifikat "control station" review.

This paper sets forth the results of our review, including our views on the current state of the Elcertifikat market, and suggests recommendations to improve the market.

Appendix 2 to this paper contains more information about the members of the Group, including our respective interests in Norwegian and Swedish renewable energy.

1. EXECUTIVE SUMMARY

1.1 Key observations

Our key observations on the Elcertifikat system are:

A. **The system has delivered early success** in supplying new renewable energy, especially in Sweden, at competitive cost to consumers, and in encouraging a substantial pipeline of biomass, wind and hydro projects which, if realized, will allow Norway and Sweden to meet their 2020 renewable targets. **However, continued success is not guaranteed, as...**

B. **...falling and unstable electricity and Elcertifikat prices** are placing financial stress on many existing projects, especially wind projects, and slowing down or stopping decisions to invest in new projects because of concerns whether projects will deliver the required return on investment. This creates a risk that the targets will not be met.

C. We believe **the main causes of Elcertifikat price instability** and unpredictability are:
   - **Unexpectedly large reserve of Elcertifikats**, driven predominantly by eligible demand being far less than planned and expected, due to non-market driven issues
   - **Lack of transparency on supply and demand and irregular liquidity** in the Elcertifikat market which inhibits proper price formation
   - **Highly seasonal trading** in the Elcertifikat market

D. **With more than five times the number of wind project under development than is required to meet the 2020 targets, the market build-out may not be efficient** as the market is not sufficiently able to differentiate between the most efficient, low-cost projects, and less efficient higher cost projects. This creates a perceived risk of overbuild. For investors and financers the lack of transparent market data on investment decisions and the risk of overbuild add to the uncertain price picture.

These factors prevent the Elcertifikat market from developing into a first rate market like Nord Pool, and from having accurate and fair price discovery and formation.

1.2 Key recommendations

The Group believes that the market can function better with greater information, transparency and liquidity. Thus, most of our recommendations are focused on correcting technical problems and improving information quality and flows, as well as increasing market liquidity.

Our four key recommendations for the control station are:

1. **Make technical corrections to the eligible demand curve** to reduce the Elcertifikat reserve and restore the supply/demand balance originally envisioned, specifically
   - **Adjust the Elcertifikat "demand curve" in the near-term** to eliminate the Elcertifikat reserve generated by lower than forecasted eligible electricity demand and the reduced biomass cancellations in Sweden. It is important that such adjustment happens swiftly to restore a more effective price formation.
   - **Express the target as a number of TWh per year**, and not as a percentage of eligible demand. This will reduce price volatility arising from incorrect forecasts and weather related changes in annual domestic consumption, which leads to more volatile prices and difficulty in forecasting demand.

We understand that both of these options are under consideration by the Agencies. We believe that the first recommendation – adjusting the demand curve – is in effect a technical correction that resets the market to what it was expected to be and would help stabilize Elcertifikat pricing. Such adjustment would not be seen as an aggressive market intervention by investors as it would merely correct forecast assumptions that were proven wrong largely due to the economic downturn.

2. **Improve the transparency of the Elcertifikat market** and the quality of information by requiring market participants to provide regular data about eligible demand, decisions to investment in new projects and Elcertifikat production. The lack of both current and long-term information about what projects will be built, what is economic, and what is required demand, leads to poor price formation and a strong tendency to trade only in the short term. This increases price uncertainty and deters investments. Uncertainty is a greater issue than price levels. To that end, we suggest that the market should have much more information, regularly provided, specifically:
   - Awarding permits for new projects
   - Firm investment decisions to construct new projects, including start of construction, estimated production and operations dates
   - "Banked" Elcertifikats
   - Large bilateral sales of Elcertifikats outside of the current markets
   - Elcertifikat production and eligible demand requiring Elcertifikats

Appendix 1 contains a detailed proposal on the nature and timing of the information we think should be reported and published to make the Elcertifikat market a first rate market.

We have been asked whether this reporting could be voluntary. We do not believe so, due in large part to the fragmentation of the market, and the tendency of many participants in the renewable energy industry to overestimate project production and delivery. We think that only strong mandatory reporting will provide the necessary information to allow Elcertifikat market participants with the data

necessary for accurate price formation in the market. As an alternative (and one that is far less desirable) such information requirements could be through NASDAQ/Nord Pool trading rules. However, as the Elcertifikat market is a regulatory construct to achieve crucial energy and environmental policy objectives, it would be best if done through regulation. We do not think that this would be seen by investors as market interference, but rather supplying market participants with the best information.

3. **Require a significant portion of Elcertifikats to be cancelled quarterly** in order to even out the currently seasonal trading and provide more stable pricing by improving Elcertifikat market liquidity. For example, at the start of each "Elcertifikat year" each utility could be required to make an estimate of obligated demand for the year. The utility could then be required to settle at certain percentage, for example 20 %, of the estimated demand in each of the first 3 quarters, and the balance in Q4. This would increase liquidity and result in more robust and stable pricing throughout the year.
4. **Consider project cost/efficiency in granting or extending** permits for projects to ensure that the least-cost projects are constructed and minimize the impact on local landscapes and populations. This would also have the benefit of reducing the "overhang" of permitted projects, and could lead to lower trading uncertainty. We note that this is already in effect in Norway where production, efficiency and financial and technical ability to build are considered in awarding licenses.

2. Facts and observations on the development and state of the Swedish and Norwegian Elcertifikat Markets

2.1. Early success threatened by falling and unstable Elcertifikat prices

Between 2007 and 2011 Sweden made strong progress toward reaching its renewable energy goals, especially in the rapid deployment of wind power. As a financially strong country with predictable regulatory and legal frameworks, Sweden is a desirable investment destination. The Elcertifikat system is, in principle, a system that should deliver least cost renewable energy; generally acknowledged to be onshore wind (especially for Sweden) and small scale hydro (especially for Norway).

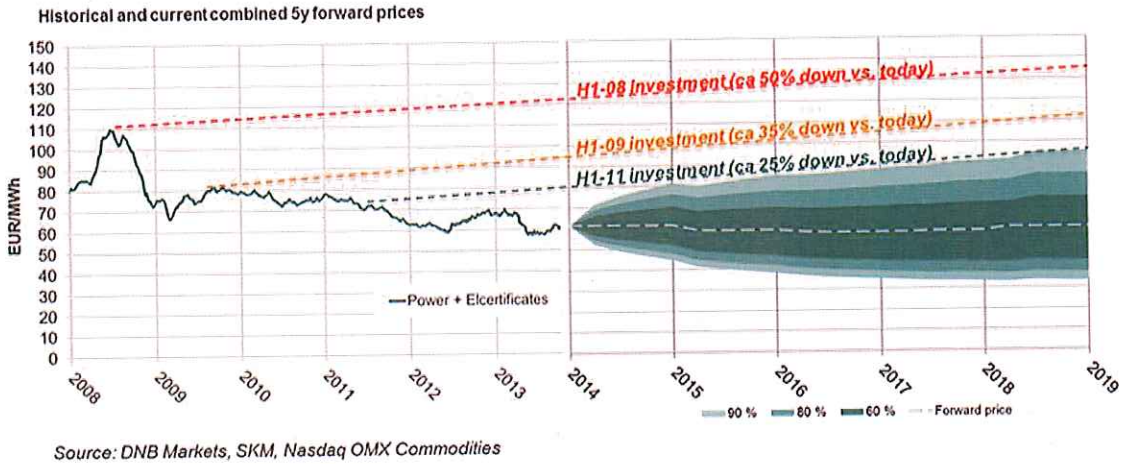
Norway too is a desirable investment destination due to strong finances and stable regulation, but has made less progress to date than Sweden. This is due to several well-known factors, including

- Norway joining the Elcertifikat system 9 years after it was started in Sweden
- Delays in securing building permits and concessions, and
- Grid constraints.

From 2007 to 2011 the twin expectations that (i) Nord Pool prices (which are tied to German electricity prices and the cost of coal and CO_2) would stay relatively high, and (ii) the Elcertifikat market would provide stable pricing and evolve into a liquid market like Nord Pool, encouraged project developers, investors and lenders to invest in onshore wind at a pace faster than anticipated. In those years Sweden became one of the leading European markets for new wind power investment.

The electricity and Elcertifikat markets, however, have not evolved as expected, as shown in **Figure 1**.

Figure 1: Expected historical forward prices and forward curve probabilities (EUR/MWh)



Source: DNB Markets, SKM, Nasdaq OMX Commodities

Source: Cesar, NASDAQ OMX, SKM, DNB

Nord Pool prices stabilised after the financial crisis in 2008-9, then began to fall in early 2011 due to (i) reduced Nordic power demand, (ii) reduced German electricity demand and (iii) falling CO_2 and coal prices, which in turn reduced power prices.

With current price expectations, investors in existing and new projects are not likely to achieve required investment returns. **Figure 1** shows that:

- Investments made in H1 2008 based on the then forward power and Elcertifikat curves have "lost" 50% of their expected income compared to today's forward curves;
- Investments made in H1 2009 have seen a fall of 35% from the 2009 forward curves; and
- Investments made H1 2011 investments have seen a fall of 25% from the 2011 forward curves.

The theory underlying the Elcertifikat market is that with falling power prices, Elcertifikat prices should rise to provide sufficient revenues to allow wind to be built, i.e. covering the marginal Levelized Cost of Energy (LCOE) range of wind power as illustrated in **Figure 2**. That however, has not happened. Instead, Elcertifikat prices have been lower and more volatile than expected and have fallen to a level where they together with (forward) power prices are below the current and forecast LCOE of all but the very best projects.

Current Elcertifikat and power prices are not providing sufficient returns on current or new investments, leading to a material slow-down of investment decisions, threatening the 2020 targets.

The natural consequence for projects that were debt financed based on the past forward curves is that they are beginning to experience difficulties in servicing their loans, and many projects that have been permitted are on hold as investors consider whether these investments will meet their return requirements. Although projects continue to come on line, these are the product of investment decisions taken 2-3 years ago. The Group notes that if the slowdown in investment continues, it will translate into fewer projects coming on line in 2014 and 2015, potentially threatening the fulfilment of the overall target of adding 26.4 TWh of new renewable generation by 2020.

The following charts show that the current and forecast electricity and Elcertifikat prices are below the levelized cost of energy (LCOE) of many existing projects, and of many new projects waiting for construction. **Figure 2** shows the potential range for the long-term marginal LCOE for wind, which largely depends on three main factors

1. Full load hours (FLH) or annual generation, which is a function of wind speed and turbine energy capture
2. The economic lifetime of a wind farm
3. Learning rate, which are expected reductions in capital expenditure over time[1]

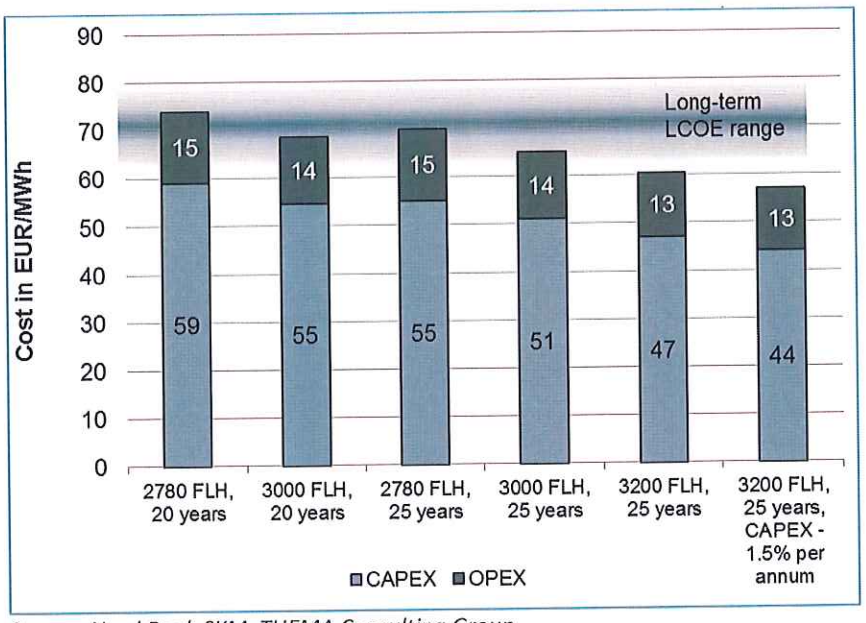
---

[1] The range of estimated levelized cost of energy (LCOE) for onshore wind projects is based on several key assumptions. The assumptions underlying the forecasts above include

- Range of full load hours (FLH) or capacity factor, with highest cost range based on 2870 FLH and the lowest cost based on 3200 FLH.
- Operating life, with the highest cost based on a 20-year operating life and the lowest cost based on 25 years' operating life time.
- Capital costs, assumed at 1.61 M€/MW. In the last sensitivity an annual cost reduction of 1.5% per annum is assumed.
- Required rate of return assumed to be 8.1%

The LCOE is expressed in constant 2013 Euros. Although investment costs should be expected to come down over time, it should be noted that many projects in the current pipeline have full-load hours lower than 2800 hours and that financial costs may increase due to market uncertainty

Figure 2: LCOE estimates marginal onshore wind project (EUR/MWh)



Source: Nord Pool, SKM, THEMA Consulting Group

Figure 3 compares the estimated LCOE range with the expected annualized revenues of projects, clearly showing that current revenues are, and are projected to below the LCOE for many projects. The expected annualized revenues are based on the year of commissioning and using both historical and current electricity and Elcertifikat prices and long-range forecasts beyond the current markets to 2020 in constant 2013 Euros.[2]

According to Vindstat, which collects and publishes data on Swedish wind production, in 2012 the average Swedish wind farm produced at 2100 full load hours[3]. We believe that this is moving up with larger turbines and better site selection, but it clearly shows that a large number of projects are not likely to meet their LCOE and provide their investors with expected returns.

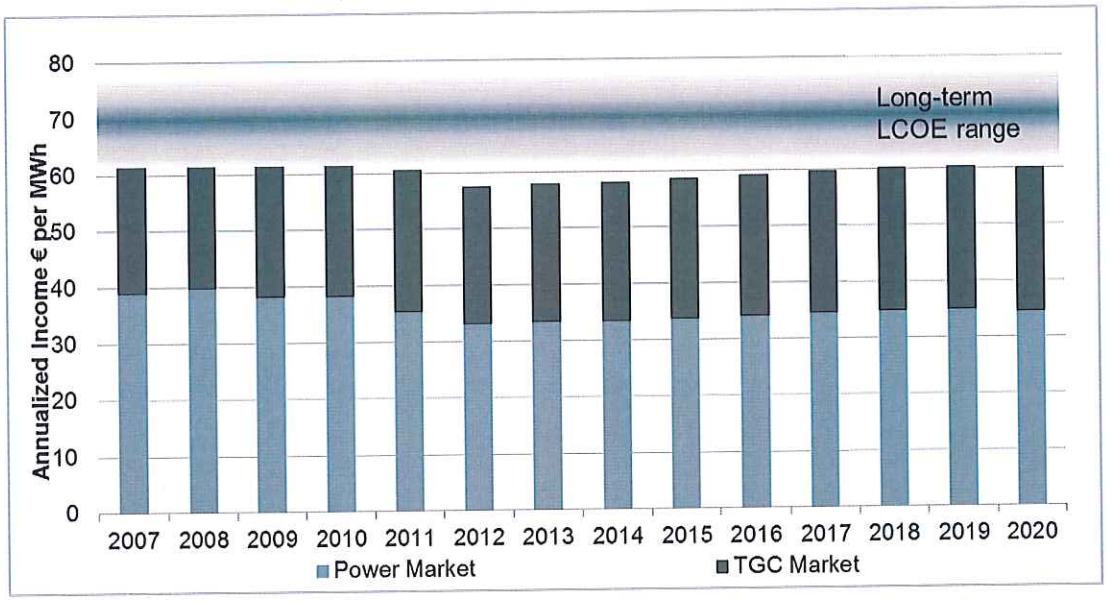
The best hydro and wind sites can be viable at low prices, but many will not be. Even with projects viable at low prices, however, the extreme volatility in Elcertifikat prices is putting off investors.

---

[2] The calculation is based on real prices and assuming that a project commissioned in a given year will generate power and Elcertifikats throughout the year. E.g., the annualized revenue for a project commissioned in 2015 is calculated on the basis of forward prices for Elcertifikats (market prices to 2018 carried forward to 2020) and power (annual contracts 2015-2020).

[3] Vindstat collects production data on Swedish wind farms. The 2012 Vindstat database covered approximately 70% of all wind turbines operating in Sweden. The 2100 FLH is only for reporting wind farms that operated for the full 2102 calendar year.

Figure 3: Historic and future annualized income for an average wind farm (EUR/MWh)



Source: Cesar, NASDAQ OMX, SKM, THEMA Consulting Group

2.2. Main causes of Elcertifikat price instability and unpredictability

The best hydro and wind sites can be viable even at low prices, but many will not be. Even with projects viable at low prices, however, the volatility and unpredictability of Elcertifikat prices are putting off investors.

In our opinion, several factors have caused Elcertifikat prices to fall and become more volatile:

- Unexpectedly large reserve of Elcertifikats
- Lack of transparency on supply and demand
- Highly seasonal trading in the Elcertifikat market

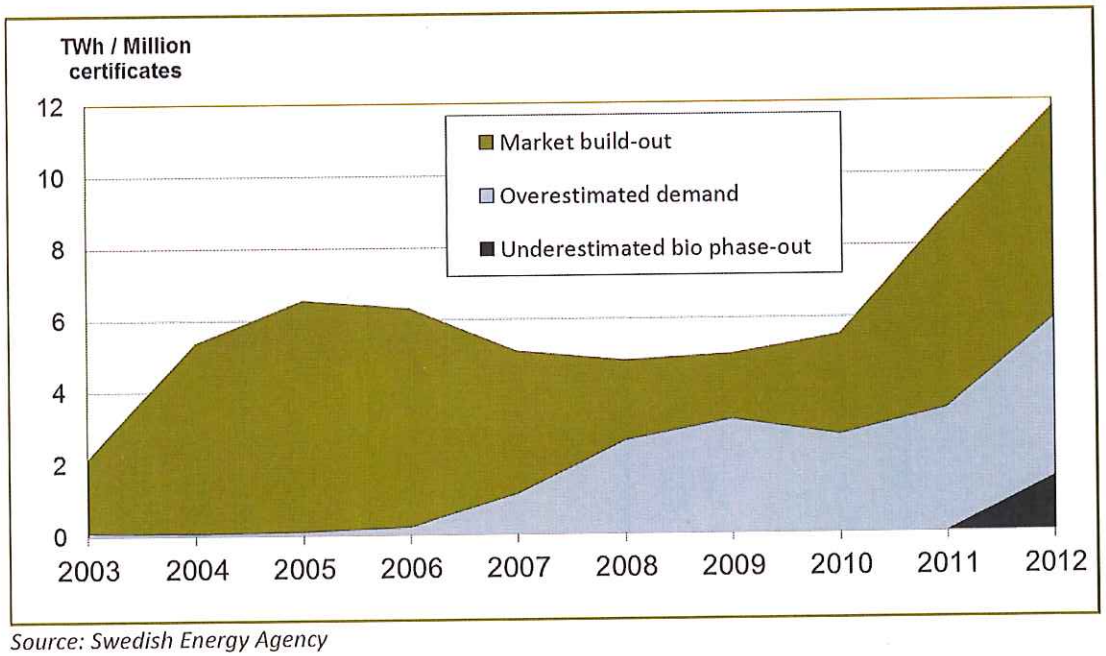
2.2.1. Unexpectedly large increase in the reserve of Elcertifikats

The unexpected increase in the Elcertifikat reserve is driven by two factors.

- First, the quota curve was set on anticipated levels of eligible Swedish electricity demand that has been consistently overestimated in light of greater energy efficiency and the on-going economic downturn. Norway has done the opposite, setting the demand assumption slightly too low. However, because of the late addition of Norway to the Elcertifikat system and the large overestimation by Sweden this remains a substantial source of Elcertifikat price uncertainty.
- Second, build rates for new renewable capacity, both in onshore wind and biomass CHP, were higher than forecasted. This resulted in a reserve (surplus) of 11.7 TWh of Elcertifikats after the 2012 cancellations. This reserve is depressing prices.

Figure 4 shows the sources of the current reserve and the evolution of the reserve from 2003 through the 2012 cancellations. It clearly shows that 40% of the reserve is attributable to Sweden's overestimation of demand and lower than expected biomass cancellations (supply from investments made prior to 2012). This large surplus is depressing prices, as one would suspect in a market where supply materially exceeds demand.

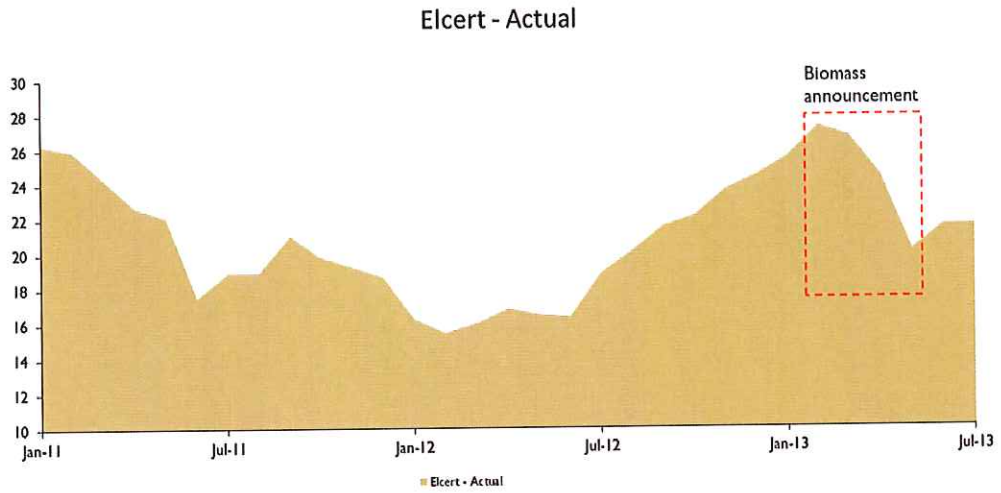
Figure 4: Evolution of accumulated reserve of Elcertifikats 2003-2012 (Mill. Cert.)



Source: Swedish Energy Agency

Basic economic theory suggests that markets that are in substantial oversupply have more volatile pricing, as they are moved by expectations and hence very sensitive to movements in expected supply and demand. An example is the price movement in April and May 2013 when it was announced that 1.5 fewer TWh of eligible biomass generation than expected were retired from the Elcertifikat system, causing a major and sudden price decline, as illustrated in **Figure 5**.

Figure 5: Elcertifikat prices 2011-2013 (EUR/MWh)



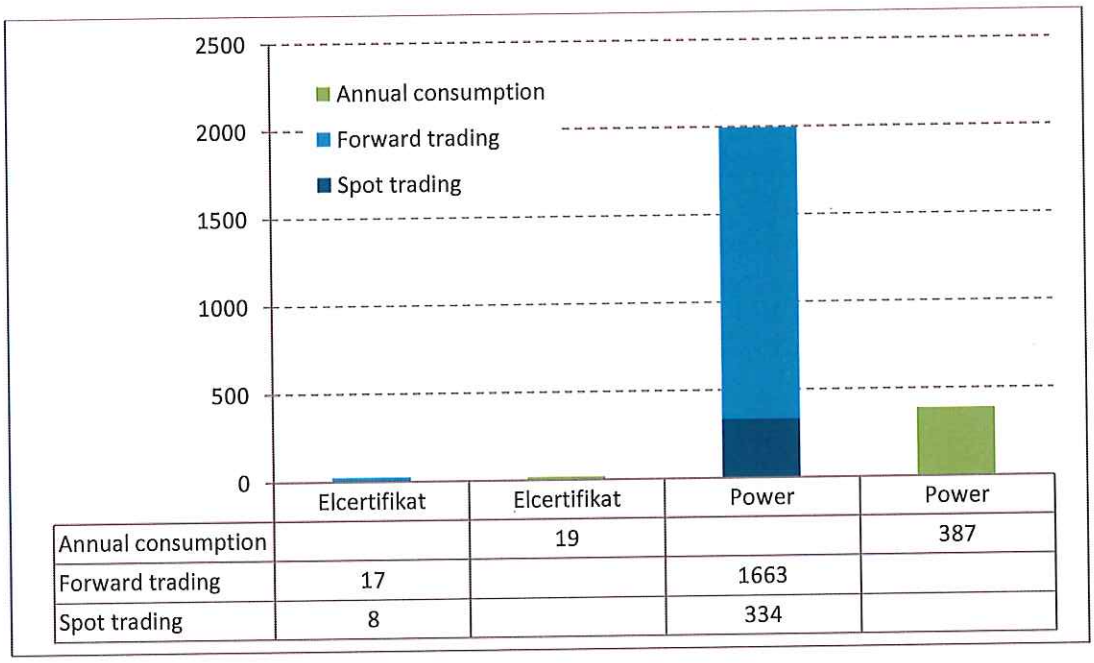
Source: SKM

The large reserve depresses short-term prices. The build-up of the reserve creates uncertainty in the market and suppresses short-term prices. The current reserve – in combination with the perceived overhang of permitted projects (see below) – largely explains current low Elcertifikat prices. Low liquidity exacerbates the issue.

Low market liquidity. The Elcertifikat market is small and quite illiquid. **Figure 6** compares the liquidity in Nord Pool with that of the Elcertifikat market. It is clear that in both volumes and number of traders the market is smaller. Whereas the total volume traded at Nord Pool Spot and NASDAQ OMX in 2012 was 5.2 times the total Nordic electricity consumption, the spot and financial trading in the Elcertifikat market was only 1.3 times the underlying consumption (18.7 TWh cancelled certificates). Moreover, Elcertifikats are only traded until 2016, while power is traded until 2023 at NASDAQ OMX.

The low liquidity in general is amplified by seasonal trading patters (see discussion below). Obligated consumers and LSEs (Load Serving Entities) trade when they need Elcertifikats, and the liquidity in forward trades is low.

Figure 6: Nord Pool v. Elcertifikat market liquidity (TWh)



	Elcertifikat	Elcertifikat	Power	Power
Annual consumption		19		387
Forward trading	17		1663	
Spot trading	8		334	

Source: Nord Pool Spot, NASDAQ OMX, Swedish Energy Agency, NVE

2.2.2. Lack of transparent information in the Elcertifikat market

On the transparent Nord Pool power market forecasted demand, reservoir levels, planned capacity additions and retirements and generation costs are well known. The market is therefore very liquid and has close to perfect information. In contrast, the Elcertifikat market has relatively fewer traders, each of which has to make his or her own forecast of demand/supply using patchy public information that may or may not be disclosed. There is no timely data about Elcertifikat demand, supply and who holds or banks Elcertifikats. For example:

- One of the major traders recently missed an announcement of a major wind farm investment decision which will affect long-term Elcertifikat supply and thus price formation.
- In early 2013 the Elcertifikat market expected that 8.1 TWh of biomass generation would come out of the system at the end of March 2013. Published government data confirmed this. Instead, in April it was announced that only 6.6 TWh would be retired, an 18 % change in the expected retirement and 8 % of the overall Elcertifikat market in 2012. This caused large price dislocations. As was said by one of the Europe's leading electric utilities and a material trader in the Elcertifikat market:

  > *"markets taken by surprise on such a material piece of news would be totally unthinkable in the Nord Pool"*
  >
  > *"this is testament of the Elcertifikat market needing better info flow"*

- Similarly, until the end of the Elcertifikat year traders have no real guidance on annual eligible demand. In short, it is a market that trades on limited information and traders are unable to

form a long-term view. It is also influenced by imperfect information about investment decisions.

2.2.3. Highly seasonal trading affects liquidity and increases volatility

SKM Elcertifikat trading volumes reveal that about 60 % of all Elcertifikats trades are made in February and March. Elcertifikat prices are higher in these months than the rest of the year. Many projects, especially those that are debt financed, cannot bank certificates and need to regularly sell Elcertifikats to pay operating costs and debt service – they cannot time their sales with the market. The corresponding low liquidity for the other parts of the year opens up bid ask spreads, increasing price uncertainty. The seasonality also causes unnecessary interference with investment decisions (sponsors who want to enter into Elcertifikat price contracts need to take liquidity into account when launching construction, in addition to other constraints such as weather windows etc.). We suspect that in a small market like the Elcertifikat market these volume variations create unnecessary price volatility. Requiring minimum volumes to be purchased during the year (rather than simply requiring a "true up" at the end of the year) would even out volumes and reduce volatility.

2.3. Concerns over possible oversupply

The Group engaged THEMA Consulting Group in a detailed market study of current and potential projects, and their economic viability at various pricing levels. There are already more projects operating, under construction or permitted than are needed to reach the 2020 target. **Figure 7** shows THEMA's findings, the highlights of which are:

- There are approximately 9 TWh wind, hydro and bio projects already operating or in construction, leaving 17.4 TWh of new construction to be built.
- Approximately 3 TWh of Norwegian hydropower generation has secured permits, and a further 4-6 TWh of Norwegian hydro is likely to secure permits and be built by 2020.
- This leaves 11.5-13.5 TWh to come from biomass and wind. With onshore wind being the lower cost option, we expect most if not all of this will come from onshore wind.
- There are approximately 25 TWh of permitted wind projects in Sweden and Norway that are awaiting finance and grid connections. About 5 TWh of these are offshore wind power projects with much higher LCOE than onshore wind. Some projects have received licenses before 2010 and may be considered inactive projects.
- There are a further 45-50 TWh of onshore wind projects in Sweden and Norway that are seeking permits and concessions.
- That a large number of the projects, whether permitted or under development, are unlikely to be economic given the current market.4

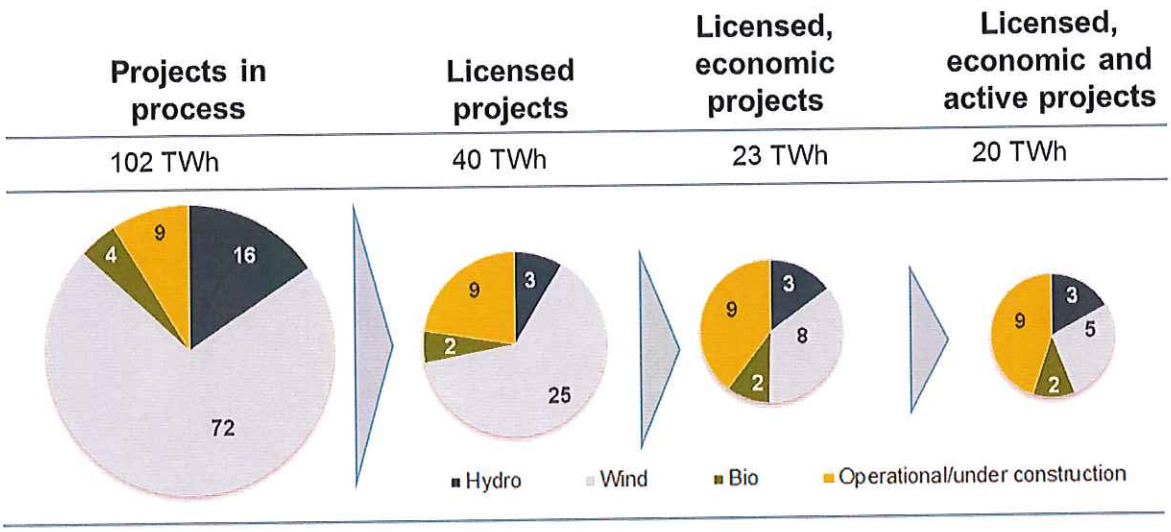
---

[4] THEMA Consulting used the following assumptions in creating the figure

- Projects in Process contain projects under construction, projects with license but not under construction, and projects which have applied for licenses. The data is taken from THEMA Consulting Group's database, which has been largely confirmed by the members of the Group
- Licensed projects have secured the necessary building and environmental permits to start construction.

Applying these assumptions, we arrive at a potential of 20 TWh in active, licensed and economic projects. This is also a "gross" potential as wind projects often do not build to the full licensed capacity, and financing and grid issues may still be barriers to investments. However, it should be taken into account that some new projects will be licensed and some "uneconomic" projects are likely to be built as well. Although the total project potential is about 4 times the necessary volume, the realistic potential seems to correspond much better to the market demand.

Figure 7: Project pipeline 2012-2020 deconstructed (TWh)



Source: NVE, Svebio, THEMA Consulting Group

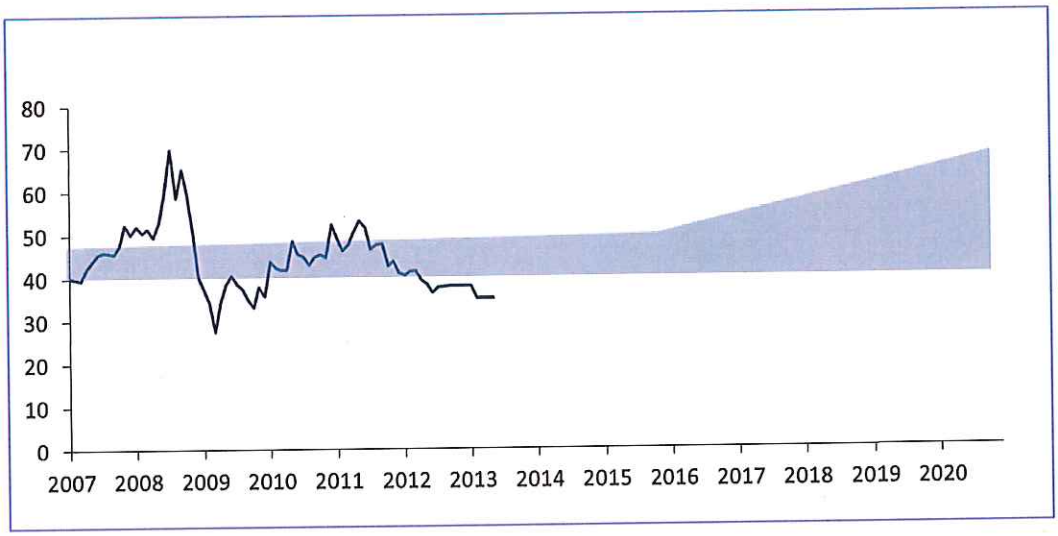
Hence, far from all of the projects in the pipeline will be built. The fact that they are under development, however, clouds the market, which does not have sufficient information to determine the likely future supply of Elcertifikats, when projects will be built and what will be the marginal project that should, in theory, set Elcertifikat prices for the long term.

This lack of knowledge of what will be built in the Elcertifikat market, in stark contrast to the information available in Nord Pool, further clouds information in an illiquid and oversupplied market, inhibiting proper price formation and increasing price uncertainty and unpredictability.

- Licensed economic projects are licensed hydro projects larger than 1 MW (smaller ones are not likely to be profitable) and wind projects with more than 2850 FLH, which when plotted on a cost curve of all potential projects, would fall at or below the marginal cost of meeting the 2020 targets based on industry standard operating and capital costs.
- Licensed, economic and active projects excludes projects that have received licenses before 2010 but are not yet under construction or in operation, as these are less likely to be built.
- About 70 % of the hydro projects applying for permits are expected to secure them, which is consistent with the historic Norwegian average.
- Projects that cannot be built before 2020, which have been delayed or have uncertain grid connection are excluded from economic projects.

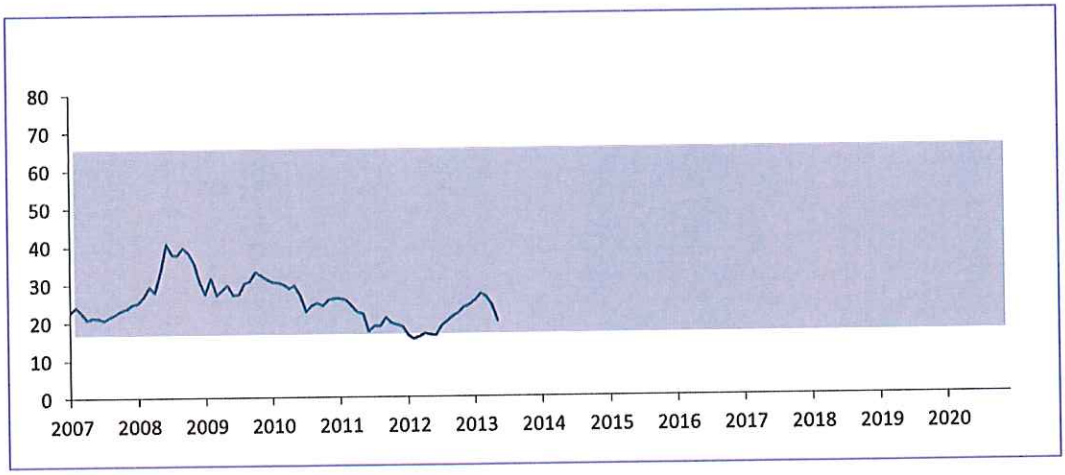
Poor past investment decisions. Since 2008 expert price forecasts for electricity and Elcertifikats have generally overestimated actual pricing. The error range for electricity is lower (and the 2008 economic dislocation was not modelled) than for Elcertifikats, as evidenced by the following charts. **Figure 8** shows the range of a variety of Nordic power price forecasts from 2007 onwards compared to actual prices, whereas **Figure 9** shows a corresponding range of Elcertifikat price forecasts. We observe that the range of power price forecasts is not only narrower than that for Elcertifikats, it also much more in line with the actual price developments in the market.[5]

Figure 8: Actual Power Price v. Expert Nord Pool Power Price Forecasts 2007-2012 (EUR/MWh)



Source: Markedskraft, Redpoint, Poyry Group

Figure 9: Actual Elcertifikat Price v. Expert Elcertifikat Price Forecasts 2007-2012 (EUR/MWh)



Source: Markedskraft, Redpoint, Poyry Group, SKM

[5] We note here that the power price forecasts applies to years with normal precipitation and temperatures, whereas the actual price development also reflects wet and dry year conditions.

This has led many small and inefficient wind projects in Sweden to be built, many of which are overburdened by debt and will not provide any investment return under current consensus Elcertifikat and power price forecasts. We are not suggesting that these projects be bailed out or supported, but the fact is that overoptimistic forecasts, based on poor market information and transparency has led to poor investment decisions, meaning that Sweden in particular is not getting the best wind projects. This is depressing certificate prices for better projects, and meaning Sweden is building unnecessary wind farms. Greater information to investors about where Elcertifikats will really settle, along with expected minimum performance data would help avoid these poor decisions.

APPENDIX 1: SUGGESTED DISCLOSURE RULES ON WIND INVESTMENT DECISIONS

1. Rationale. Sweden and Norway have created the Elcertifikat regime to support investment in renewable electricity projects in order to further national and EU environmental, sustainability and energy security goals. Our review of the Elcertifikat market shows that the market may not achieve that goal due to several factors, including higher than expected price volatility and the lack of information and transparency in the markets. We believe that market would be more effective and encourage more investment in least-cost projects if more information and transparency were introduced. Therefore, commencing as of **[date]** we require that participants in the Elcertifikat market, including generators, suppliers, traders, brokers and project developers or sponsors[6]

2. Information Reporting Requirements. As outlined below, to be eligible to receive Elcertifikats, the following persons and entities shall provide the following information to both NVE and the Swedish Energy Agency (the "Agencies") in the manner and the times provided below. Such information shall be published by Agencies on their websites, which shall be updated [monthly/quarterly]. This data will be available to all market participants in the Elcertifikat markets. The Agencies shall produce a standard form, which may be electronic, to collect the data.

   2.1. Concessions and Planning Consents. Each person or entity who secures a governmental concession, permit or license to construct a renewable energy installation eligible for Elcertifikats ("Eligible Facility"), shall report to the Agencies within 30 days of such permit becoming final a notice of that such permit or concession has been granted, and containing the following information:

   2.1.1. The production capacity of such Eligible Facility in MW.

   2.1.2. The estimated P50 and P90 annual production of such facility in MWh, and the name of the independent consultant used to generate such estimate, or if there is none a statement that it is an estimate of the reporting person.

   2.1.3. Preliminary estimates of the date on which such Eligible Facility will start construction and enter operation.

   2.1.4. If the date on which the Eligible Facility can enter operation is dependent on electrical grid extension or reinforcement, the date on which such grid extension or reinforcement is expected, based on information from the grid operators in Norway and Sweden.

   2.1.5. If there is any material change in the information supplied under clauses 2.1.1., 2.1.2, 2.1.3 and 2.1.4 above, the reporting person or entity shall notify the agency of such changes within 30 days. Examples of a material change would include, but not be limited to, an (i) 5% or more increase or decrease in the capacity or output of such facility, (ii) a change in the operations date by more than 3 months, (iii) any decision to terminate, abandon or not construct such Eligible Facility and (iv) [others].

---

[6] Any final regulations would define each of these terms, such as "developer or sponsor" shall mean any natural person, corporation, partnership, trust or other entity who seeks to obtain permits to build and operate new renewable energy facilities, regardless of whether said person or entity may be the final owner or holder of such facility, e.g. persons or entities who seek permits for the purpose of selling them to others who will construct, own and operate such facilities.

2.2. Investment Decisions. Each person or entity that secures who secures a governmental permit to construct and operate and Eligible Facility shall report to the Agencies within 30 days of making an Investment Decision in respect of such Eligible Facility the information set forth in this Section 2.2. "Investment Decision" means a decision by a person or entity to commence the construction of such Eligible Facility based on such person or entity having secured the necessary funds to construct such project and has taken a clear and material overt step to start such construction, such as entering into a contract to purchase wind turbines and making a substantial payment in respect thereof. Immaterial actions such as tree felling or minimal civil works made to comply with commencement of construction requirements by a certain date under concessions or permits for such projects shall not be considered Investment Decisions.

2.2.1. The date on which the investment decision was taken.

2.2.2. Evidence that the reporting person or entity has secured the finance necessary to fund the full construction of such Eligible Facility. Evidence of financing would include:

2.2.2.1. For a person or entity (or its parent) whose debt is rated by an international rating agency at BBB/Baa3 or higher, a statement by the Chief Executive or Chief Financial officer of such person or entity that funds have been allocated or available.

2.2.2.2. For persons or entities not covered by Section 2.2.2.1 above, one or more of (i) a statement from the independent accountants or auditors of such person or entity that they have the necessary funds and/or have entered into binding loan agreements or investment agreements to provide such funds, (ii) a statement from a bank, pension fund, insurance company, investment company or similar entity stating that such person or entity has sufficient funds to complete the construction of such Eligible Project.

2.2.2.3. The production capacity of such Eligible Facility in MW

2.2.2.4. The estimated P50 and P90 annual production of such facility in MWh, and the name of the independent consultant used to generate such estimate, or if there is none a statement that it is an estimate of the reporting person

2.2.2.5. The expected date on which such Eligible Facility will start construction and enter operation, including a statement that such date is consistent with the dates set forth in the construction and equipment contracts for the construction of such Eligible facility.

2.2.2.6. If the date on which the Eligible Facility can enter operation is dependent on electrical grid extension or reinforcement, the date on which such grid extension or reinforcement is expected, based on information from the grid operators in Norway and Sweden.

2.2.2.7. If there is any material change in the information supplied under clauses 2.2.2.1. through 2.2.2.6 above, inclusive, the reporting person shall notify the Agencies of such changes within 30 days. Examples of a material change would include, but not be limited to, an (i) 5% or more permanent increase or decrease in the capacity or output of such facility, (ii) a change in the operations date by more than 3 months, (iii) any decision to terminate, abandon or not construct such Eligible Facility and (iv)[others]

2.2.3. Outages and Failures. Each Eligible Facility shall report to the Agencies within 10 days of the occurrence any material outages or failures of such Eligible facility. A material

outage or failure is one which has or can be reasonably expected to result in the inability of such Eligible facility to operate (i) for 10 or more consecutive days, or (ii) for less than 50% of capacity for 20 or more consecutive days or (iii) more than 20 days in any consecutive three month period.

2.2.4. Electricity and Elcertifikat Production. Within 30 days following the end of each calendar month each Eligible facility shall report to the agencies (i) the total MWHs of electricity produced by such Eligible Facility and the number of Elcertifikats that it will claim in respect of such production. Such report shall be based on the official meters used to track/monitor/report such production.

2.2.5. Bilateral Elcertifikat Contracts. Any Eligible Facility whose expected annual P50 production as reported in under Section 2.2.2.4 above exceeds [25] GWH that shall enter into any bilateral contract for the sale of Elcertifikats for a duration of 12 months or more shall provide the Agencies within 30 days following the date of such agreement (i) the duration of such contract and (ii) the expected annual volume of such Elcertifikats subject to such contract. For the avoidance of doubt, no disclosure shall be required of the pricing of such contract or the identity of the purchasers. As used herein a contract for a duration of 12 months or more shall include contracts for less than one year if they are part of what is commonly referred to as a "framework" agreement whereby long terms sales are aggregated under a single master contract.

2.2.6. Banked Certificates. Each Eligible Facility and each Obligated Supplier shall, within 30 days after the end of each calendar month report to the Agencies on the total number of Elcertifikats held by such persons which are not subject to a contract for sale and are being "banked" by such person.]

2.2.7. Eligible Demand. Each [use relevant term for a supplier who has obligation to purchase green certificates] shall within 30 days after the end of each calendar quarter report to the Agencies on their best estimate of the amount of electricity consumed by their customers and which is subject to the obligation to purchase Elcertifikats. [language on giving firm final eligible demand after year end]

APPENDIX 2: PROPOSERS AND THEMA STUDY PARTICIPANTS

In aggregate, the authors of this letter

- are developing over 2,600 MW of Swedish and Norwegian wind farms and small scale hydropower
- own and operate about 650 MW of Swedish and Norwegian wind farms and small scale hydropower
- have invested as debt or equity more than €1100 million in Swedish and Norwegian wind farms and small scale hydropower

Commerzbank

Commerzbank is a globally active universal bank based in Frankfurt, Germany. Founded in 1870 in Hamburg, Commerzbank has a long tradition of financing private customers, small and medium-sized enterprises and multi-national corporations, both in Germany and abroad. Commerzbank operates through 1,200 branches and locations in Germany and is active in more than 50 countries globally.

Commerzbank has been active in renewable energy finance for 25 years and has established a leading position in renewable energy project finance throughout Germany, Europe and North America. Commerzbank has a total renewable energies project financing portfolio of more than EUR 3.5 billion, with a focus on onshore wind.

In Sweden, Commerzbank has provided long-term debt financing to several large onshore wind projects.

DNB Bank

DNB is Norway's largest financial services group and one of the largest in the Nordic region in terms of market capitalisation. The Group offers a full range of financial services, including loans, savings, advisory services, insurance and pension products for retail and corporate customers.

We are a relationship bank with a long-term client focus. We have about 65 energy professionals with extensive industry and banking experience in Norway and internationally in our Aberdeen, Houston, London, New York, Santiago, Singapore, Stockholm and Malmö offices.

The Energy Division offers a full range of financial services to customers within the oil & gas, oilfield services and power & renewables industries.

The power & renewables industries are fast growing sectors with focus on low carbon emissions energy production. The bank has a selective global focus on renewable energy, with main emphasis on hydro, wind and solar technologies.

DNB is the only Nordic bank with a dedicated Energy sector team and we have more than 40 years of specific focus on the energy sector. We have approx. EUR 22 bn in total energy commitments worldwide.

DNB is the leading lender in the Scandinavian renewable financing market. The bank has financed 16 wind projects in Sweden with 205 WTG's and 512 MW installed effect, and approximately SEK 3bn committed to the sector.

In addition we act as financial advisor on more than SEK 4bn in debt facilities for Scandinavian wind farms.

HgCapital

HgCapital is one of Europe's leading institutional renewable energy investors. Through its Renewable Power Partners funds HgCapital has raised over €900 million from over 30 global pension funds, insurance companies and other institutional investors for investment in EU renewable power projects. To date HgCapital has backed over 50 renewable power projects with a total capital value on excess of €2 billion.

In addition to renewable energy, HgCapital is also a leading private equity firm, with over €4 billion in assets under management. HgCapital was founded in 1985 and is wholly-owned by its current and past employees.

HgCapital was the first major international investor to invest in the Swedish wind market, when in 2008 it financed that 95MW Havsnas wind farm in Stromsund Municipality. Havsnas became operational in 2010, and was until recently the largest operational wind farm in Sweden. It is also, according to Vindstat data, the most productive large scale wind farm in Sweden. In 2010 HgCapital financed two further wind farms in Vasserbotten totalling 95MW which became operational in 2012 and 2013. In March 2013 HgCapital acquired the Swedish wind development business of Scottish and Southern Energy, based in Stockholm, which is now called Vasa Vind. With the acquisitions HgCapital is one of the 5 largest owners of operating Swedish wind farms, and is the largest financial investor in the Swedish wind energy sector.

Our experience in the Swedish market gained over 5 years informs our response to this consultation.

Vattenfall Vindkraft AB

Vattenfall is one of Europe's largest utilities with a turnover of 170 BSEK and 180 TWh of electricity production. Vattenfall is 100 % owned by the Swedish state and operates in Northern Europe with a target of growing faster in renewables than the average market growth. Currently, Vattenfall has wind business in five markets; Sweden, Denmark, Germany, the Netherlands and the UK. Vattenfall Vindkraft AB manages Vattenfall's wind power development and commissioning in Sweden.

In total, Vattenfall has an installed onshore and offshore wind capacity of 1.7 GW and an onshore pipeline above 2.5 GW. Vattenfall Vindkraft has installed 224 MW onshore wind and 130 MW offshore wind in Sweden. The onshore pipeline in Sweden exceeds 700 MW. Vattenfall Vindkraft is thus a leading player within wind power in the certificate system and has significant experience from operating on the certificate market.

Zephyr AS

Zephyr AS was established in 2006 with the purpose of developing, build, own and operates wind farms in the south and central Norway. Today's owners are Østfold Energi AS (1/3), Dong Energy Wind Power AS (1/3), Vardar Boreas (1/6) and EB Kraftproduksjon AS (1/6). Currently Zephyr has a legally

binding concession on one 130 MW wind farm and two concessions from NVE that are appealed of 350 MW and has applied for a concessions for about 400 MW that are still waiting for the governmental decision.

The owners have a strong ambition to grow their renewable energy production and Zephyr AS is their joint wind power company in Norway for this purpose. All owners have extensive experience in the construction and operation of production facilities for renewable energy.

Vardar and Østfold Energi have been working together on wind power projects since 2001. They own 50 percent each in Kvalheim Kraft, which owns and operates thirteen wind turbines at Mehuken wind farm in Vågsøy Municipality. For development and building of Mehuken II, Zephyr was involved and responsible for planning and building the wind farm. Zephyr is responsible for the daily operations of the Mehuken wind farms for Kvalheim Kraft.

Vardar and Østfold Energy acquired in 2011 Dong Energy's stake in Midtfjellet Vindkraft AS in Fitjar municipality. The owners in Midtfjellet Vindkraft AS are Fitjar Kraftlag SA, Østfold Energi AS, EB Kraftproduksjon AS and Vardar Boreas AS. Zephyr is responsible for project management and technical management of the development of Midtfjellet Vindkraft AS. The project has been under development since the mid-1990s, and construction began in late summer 2011. Since then, 44 wind turbines, 27 km of new roads and a 300/33 kV transformer station have been built.