The Swedish-Norwegian Electricity Certificate Market

ANNUAL REPORT 2018

Norges vassdrags- og energidirektorat
NVE

Swedish Energy Agency

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Preface

This publication is the joint annual report of the Swedish Energy Agency and the Norwegian Water Resources and Energy Directorate (NVE) on the Norwegian-Swedish electricity certificate market. In the report, the two agencies aim to provide a picture of the most important events and key figures relating to the electricity certificate market in 2018.

Sweden and Norway have had a common market in electricity certificates since 1 January 2012. It is based on the Swedish electricity certificate market which has been in existence since 2003. The joint target set by the two countries is to develop 28.4 TWh of new renewable electricity production through the electricity certificate system by the end of 2020. Sweden has committed to financing 15.2 TWh and Norway 13.2 TWh. Sweden also aims to increase renewable electricity production by an additional 18 TWh by 2030. The market will determine where and when the new production will take place.

Starting this year, the annual report will be published in a simplified format, with a shorter summary of the year's events and a section with tables and figures. More information about the electricity certificate system is available on the web sites of the agencies involved (see appendix 3).

The project managers for the annual report were Liza Liwiz Yacoub at the Swedish Energy Agency and Aulie Frida Hugaas at NVE.

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Key figures for 2018

The tables below summarise the relevant figures for the electricity certificate market in 2018. Analysis and further details on the content of the tables are presented throughout this report.

Key figures – Goal fulfilment and issued electricity certificates 2018	Norway	Sweden
Expected renewable annual production for plants included in the joint electricity certificate target [TWh]	7.7	19.1
Issued electricity certificates [millions of electricity certificates][1]	8.4	23.0
Electricity certificates issued to plants included in the joint electricity certificate target [millions of electricity certificates]	5.6	13.9
Electricity certificates issued to plants not included in the joint electricity certificate target [millions of electricity certificates]	2.7	9.1

Key figures – Cancellations in 2018	Norway	Sweden
Cancelled electricity certificates [millions of electricity certificates]	12.6	27.9
Quota-relevant electricity consumption [TWh]	82.6	93.2
Quota obligation [%]	15.3	29.9
Quota obligation fee	NOK 200 each	SEK 215 each
Volume-weighted average price 1 April 2018 – 31 March 2019[2]	NOK 133 each	SEK 143 each

Key figures – Surplus 2018	Norway and Sweden
Surplus 2018 [millions of electricity certificates]	1.8
Change since 2017 [millions of electricity certificates]	–9.1

Key figures – Price and trading 2018	Norway and Sweden
Volume-weighted average price of transactions in the electricity certificate registers NECS and Cesar in 2018 (change since 2017) [SEK/MWh][3]	119 (–1.6)
Average spot price (change since 2017) [SEK/MWh][4]	154 (+88)

Key figures – Electricity customers' estimated cost for electricity certificates in 2018	Norway	Sweden
Electricity customers' average cost [öre/kWh][5]	1.8	3.6

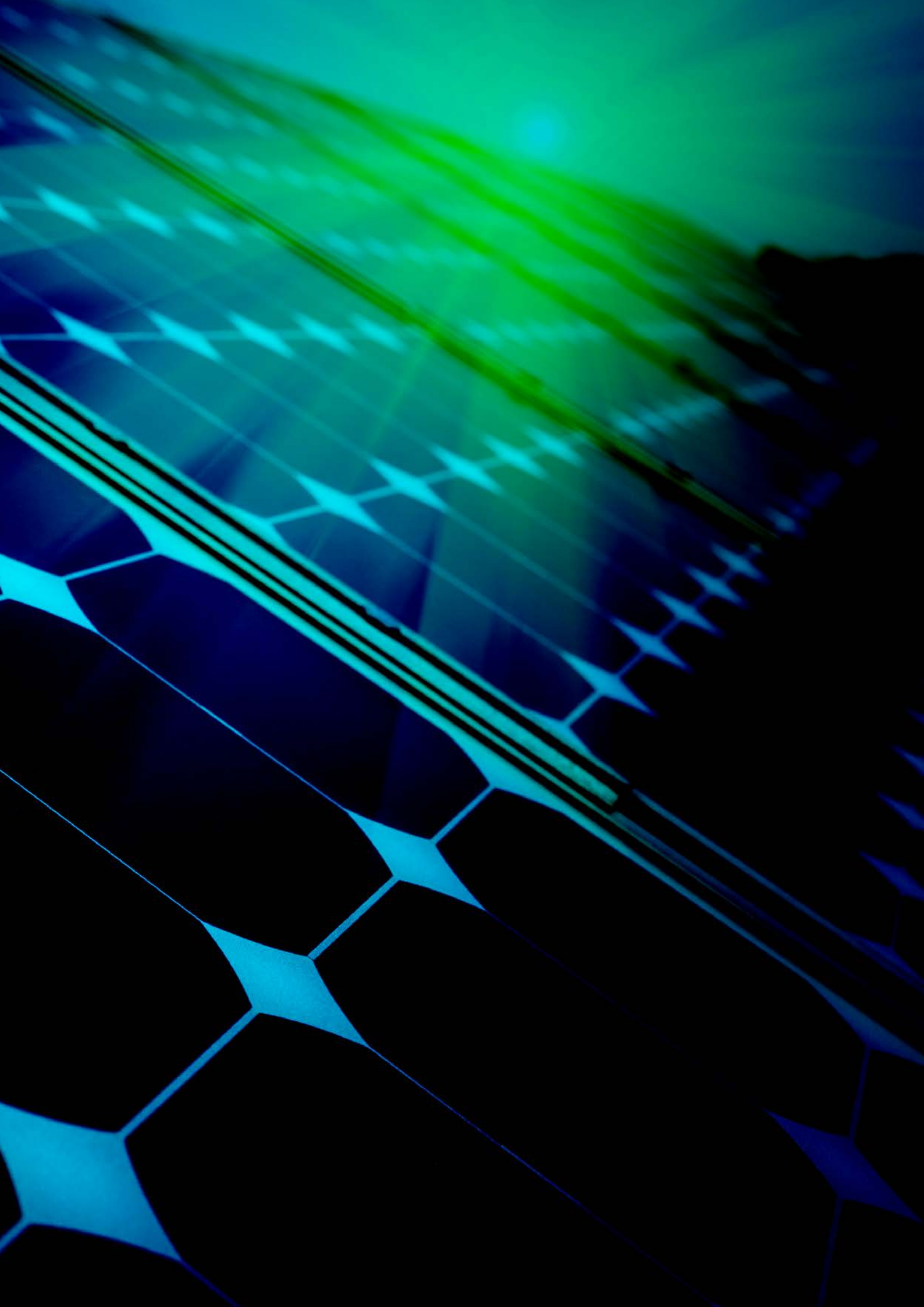
[1] 1 million electricity certificates = 1 TWh of electricity production eligible for electricity certificates.

[2] Exchange rate at 31 March 2019: EUR 1 = SEK 10.41 = NOK 9.65.

[3] Exchange rate at 31 December 2018: EUR 1 = SEK 10.25 = NOK 9.95.

[4] Average of the daily closing prices of spot price contracts at CleanWorld, ICAP, Svensk kraftmäkling in 2018.

[5] Calculated from the 2018 volume-weighted average price for transactions in Cesar and NECS, excluding VAT and transaction costs.



Electricity certificate market 2018

The common electricity certificate market is dominated by wind power in Sweden and hydropower in Norway

From 2012 to 2018, the Swedish-Norwegian electricity certificate system contributed to an expected 26.8 TWh of new renewable annual production, of which 19.1 TWh was in Sweden and 7.7 TWh was in Norway. Wind power continues to dominate in Sweden and hydropower in Norway. These have so far been the two main energy sources in the electricity certificate system, but wind power grew more quickly in both Norway and Sweden in 2018.

The growth in renewable electricity was higher than needed to achieve the joint target of 28.4 TWh by 2020. The target is likely to be reached during the first half of 2019.

In terms of the number of plants in the system, photovoltaic plants are still growing fastest in Sweden. In Norway, the increase in number is mainly due to hydropower plants.

The first Swedish plants in the electricity certificate system were phased out in 2018

The electricity production facilities commissioned in 2003 were phased out of the electricity certification system in Sweden in 2018 because they they were allocated electricity certificates for a 15-year period. A total of around 30 plants producing 128 GWh were phased out.

40.5 million electricity certificates were cancelled for 2018

For the year 2018, Swedish market participants with quota obligations were required to buy electricity certificates corresponding to 29.9 per cent of their sale or consumption of electricity. In Norway, the quota was 15.3 per cent. In total, 40.5 million electricity certificates were cancelled in Norway and Sweden. Of these electricity certificates, 27.9 million were cancelled in Sweden and 12.6 million in Norway.

In 2018, the actual quota-relevant electricity consumption in Norway was 82.6 TWh (lower than assumed in the quota curve). In Sweden, the actual quota-relevant electricity consumption was 93.2 TWh (higher than assumed). This discrepancy explains why more electricity certificates than expected were cancelled in Sweden, and less than expected in Norway.

The total number of electricity certificates that were not cancelled on 1 April 2019 was 10,364. The market participants with quota obligations which did not cancel enough certificates (18 market participants in Sweden and 7 in Norway) will have to pay the quota obligation fee of SEK 215/MWh[6] this year.

[6] The fee is 150 per cent of the volume-weighted average price in the year of calculation for transactions in the electricity certificate registers (Cesar and NECS).

31.4 million electricity certificates were issued and the accumulated surplus decreased in 2018

In Norway and Sweden, a total of 31.4 million electricity certificates were issued to producers with renewable energy during 2018. After the electricity certificated were cancelled on 1 April 2019, there were 8.7 million electricity certificates in the various accounts in NECS and Cesar. This also includes electricity certificates relating to production in January and February 2019.

After this year's cancellations, the accumulated surplus in Sweden and Norway decreased by 9.1 million electricity certificates.

Varying electricity certificate prices during 2018

The average spot price in the electricity certificate market increased steadily at the beginning of 2018 and then peaked in September. Towards the end of the year, the spot price fell but the average price was still higher for 2018 compared to 2017[7]. The electricity certificate price for forward contracts (March contracts) for 2019 followed the same curve as the average spot price for 2018.

Data from the three largest brokers in the electricity certificate market shows that 47 TWh were traded through brokers between 1 April 2018 and 31 March 2019. This compares to 32 TWh for the previous period.

The volume-weighted average price of transactions in NECS and Cesar for 2018 was SEK 119/MWh. This is a decrease of SEK 1.6 per electricity certificate compared to the previous year.

Electricity customers' estimated cost for electricity certificates in 2018

For Norwegian electricity customers, the average cost for electricity certificates was 1.8 öre/kWh and for Swedish electricity customers it was 3.6 öre/kWh. These costs are the electricity supplier's estimated costs for electricity certificates that are invoiced to the end customer. The cost does not include VAT or transaction fees.

Technical adjustment of the Swedish and Norwegian quotas

Pursuant to the Electricity Certificate Act (2011:1200), the Swedish Energy Agency prepared background information for technical adjustments to quotas, to be used in the calculation of 2019 quota obligations. As proposed, the 2019 quota has been reduced from 0.312 to 0.305.

NVE prepared background information for the technical adjustment of the quota for 2019 calculations. As suggested by the Norwegian Ministry of Petroleum and Energy, the quotas were adjusted from 0.167 to 0.171.

The technical adjustment is based on actual electricity consumption data from 2017 and on certificates issued in the transition scheme.

[7] Clean Word, ICAP and Svensk kraftmäkling.

In the 2019 progress review, the agencies proposed a date-based stop in Sweden in 2030

In the 2019 progress review[8], the Swedish Energy Agency was asked to analyse and suggest possible stop mechanisms for the electricity certificate system. The report, released in December 2018, analysed different kinds of stop mechanisms, based either on the date or on approved volumes in the electricity certificate system. NVE was asked by the Norwegian Ministry of Petroleum and Energy to analyse the consequences of different kinds of stop mechanisms in Sweden. The Swedish Energy Agency's proposal was for a date-based stop at the end of December 2030.

The proposed stop mechanism means that it will only be possible to issue electricity certificates to plants commissioned before that date. The Swedish Energy Agency's reasoning is that a date-based stop is the stop mechanism that best preserves the basic functions of the system. For example, the electricity certificate system must stimulate a market-driven and technology-neutral expansion of renewable electricity production, in order to reach the production target at the lowest possible cost. A date-based stop in 2030 also meets the need for planning certainty and is compatible with the Norwegian stop mechanism even if there is a rapid expansion of renewable electricity.

In its report for the 2019 progress review[9], NVE drew the same conclusion and advocated a date-based stop in Sweden in 2030. NVE's reasoning, like the Swedish Energy Agency's, is that a date-based stop in 2030 reaches the target in a cost-effective way and preserves the principles of the electricity certificate system.

The progress review was also asked to investigate whether after restructuring, a certain period of time should be left before a new issuing period starts in the electricity certificate system. The Swedish Energy Agency also had the task of monitoring whether any electricity certificates have been issued when the variable electricity price (spot price) in Sweden is zero or lower.

In addition, the progress review looked into ways to increase transparency within the electricity certificate system, and a report was released in June 2018.[10] The report focused on greater transparency around planned renewable electricity projects. The Swedish Energy Agency proposed adding more information (for example about investment decisions) to the existing market surveillance data, and making the existing information more accessible and user-friendly. To help with implementation of the proposals, the list of planned projects on the Swedish Energy Agency's web site has been published quarterly starting from Q3 2018. The market statistics page has also been updated with links to internal and external information about planned projects.

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[8] Swedish Energy Agency 2018. *Progress review for the electricity certificate system 2019.* ER 2018:25.

[9] NVE (2018). *2019 progress review, stop mechanism in Sweden.* No 96/2018.

[10] Swedish Energy Agency (2018). *Greater transparency in the electricity certificate system. Government contract to investigate opportunities for greater transparency in the electricity certificate system.* ER 2018:18.

Quotas

Figure 1 shows the quotas for Norway and Sweden from 2003 to 2045. The quotas are fixed for the years 2003 to 2045 and they govern the demand for electricity certificates. The quota obligation means that every year, some operators must obtain and cancel electricity certificates corresponding to a certain proportion of their sale or use of electricity. The quotas represent the percentage, for each year, of quota-relevant electricity sales or consumption for which corresponding electricity certificates must be held by the market participants with quota obligations.

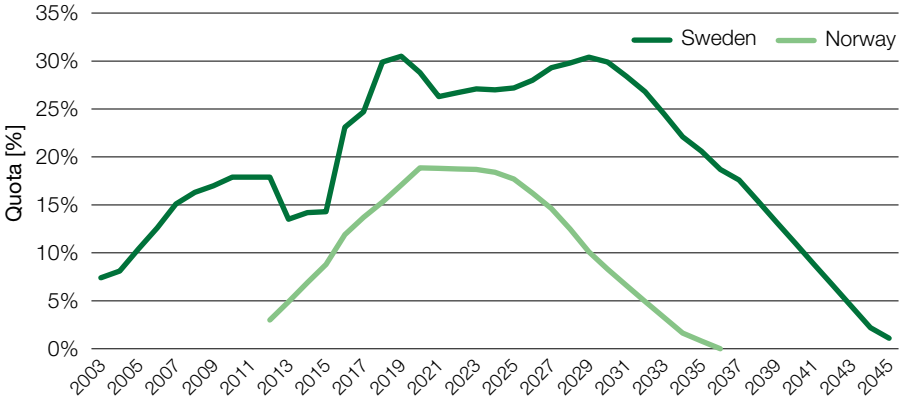


Figure 1. Quota curves for Sweden and Norway (table 4)

Source: Swedish Energy Agency and NVE

Goal fulfilment

Sweden and Norway have had a common electricity certificate market since 1 January 2012. The joint target is to increase renewable electricity production by a total of 28.4 TWh in the two countries from 2012 to 2020. Of this, Norway will finance 13.2 TWh and Sweden will finance 15.2 TWh. Sweden also aims to increase renewable electricity production by an additional 18 TWh by 2030.

Figure 2 shows the expected normal annual production included in the joint target. The expected normal annual production is an estimate of a plant's annual production of renewable electricity under normal operating conditions.

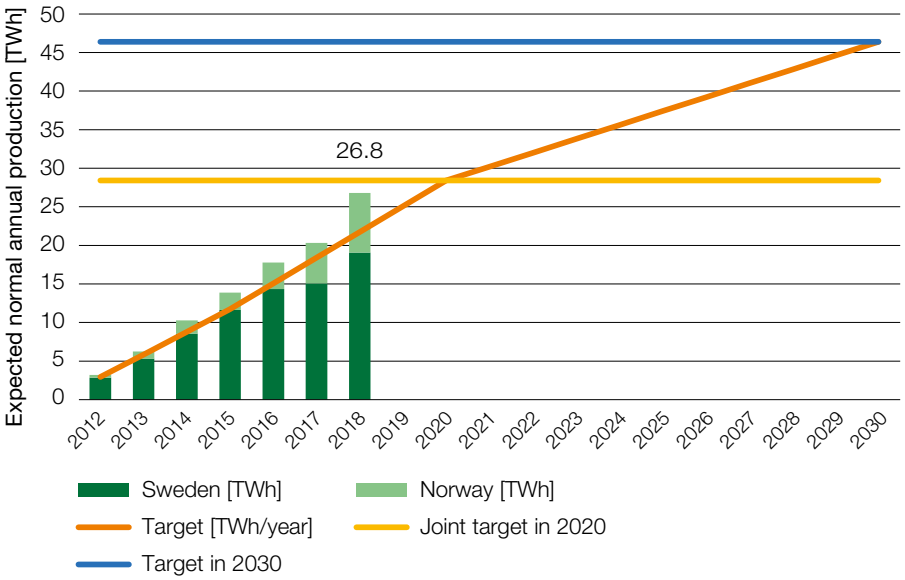
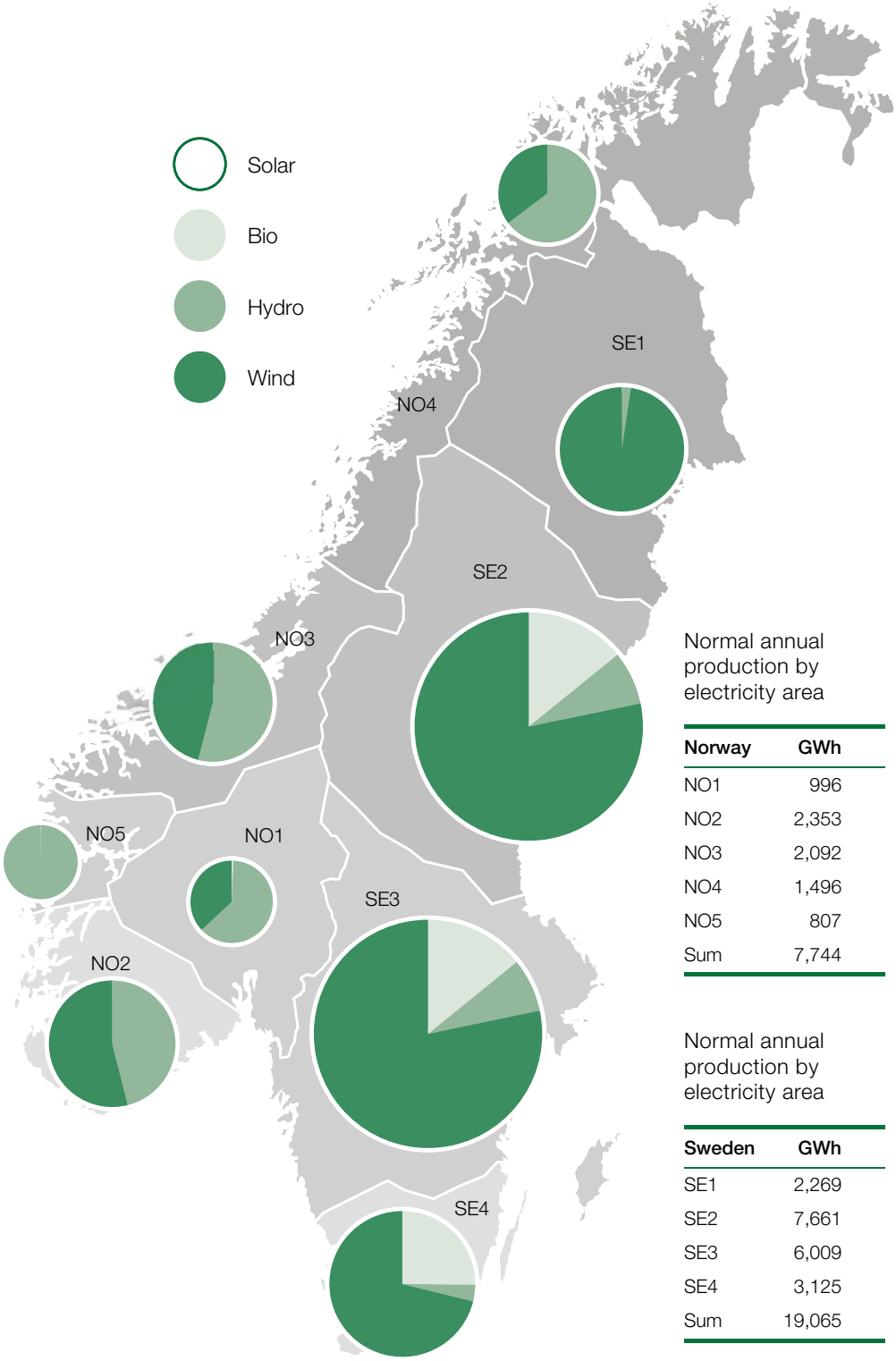


Figure 2. Expected normal annual production in the joint electricity certificate system (table 5)
Source: Swedish Energy Agency and NVE



Normal annual production by electricity area

Norway	GWh
NO1	996
NO2	2,353
NO3	2,092
NO4	1,496
NO5	807
Sum	7,744

Normal annual production by electricity area

Sweden	GWh
SE1	2,269
SE2	7,661
SE3	6,009
SE4	3,125
Sum	19,065

Figure 3 New expected normal annual production for plants included in the joint target, by electricity area (table 6, table 7)

Source: Swedish Energy Agency and NVE

Issued electricity certificates

Electricity certificates are issued on the 15th of each month. They are issued on the basis of the previous month's actual electricity production reported to Cesar and NECS. It is the actual production, and not the normal annual production, that determines how many electricity certificates are issued to the plant. The production that is eligible for electricity certificates varies depending on factors including the weather and operating conditions. Normal annual production, on the other hand, is the estimated production of a plant in normal operating and weather conditions.

Figures 4 and 5 compare the expected normal annual production and the actual production based on electricity certificates issued in Sweden and Norway. Figure 6 shows the electricity certificates issued in Sweden and Norway.

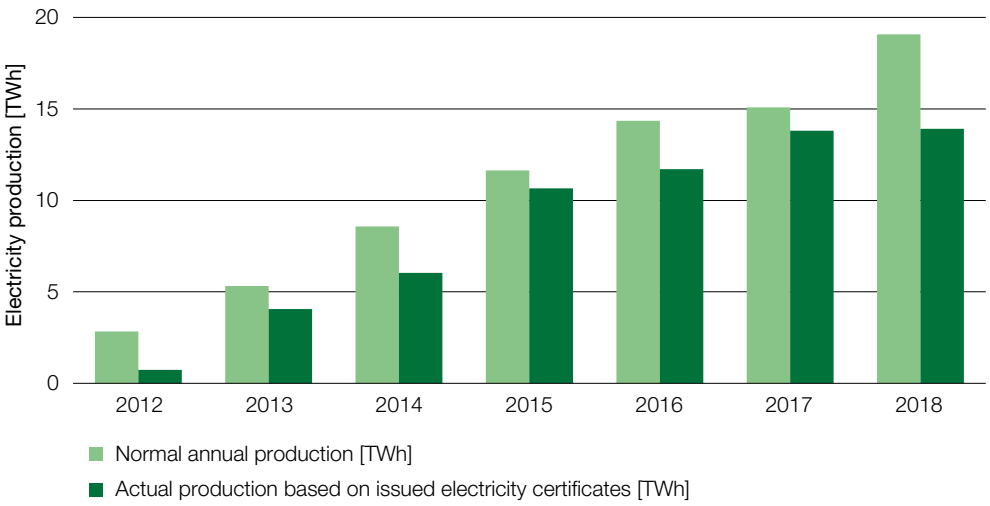


Figure 4. Normal annual production and electricity certificates issued in Sweden (table 12)
Source: Statnett, Swedish Energy Agency and NVE

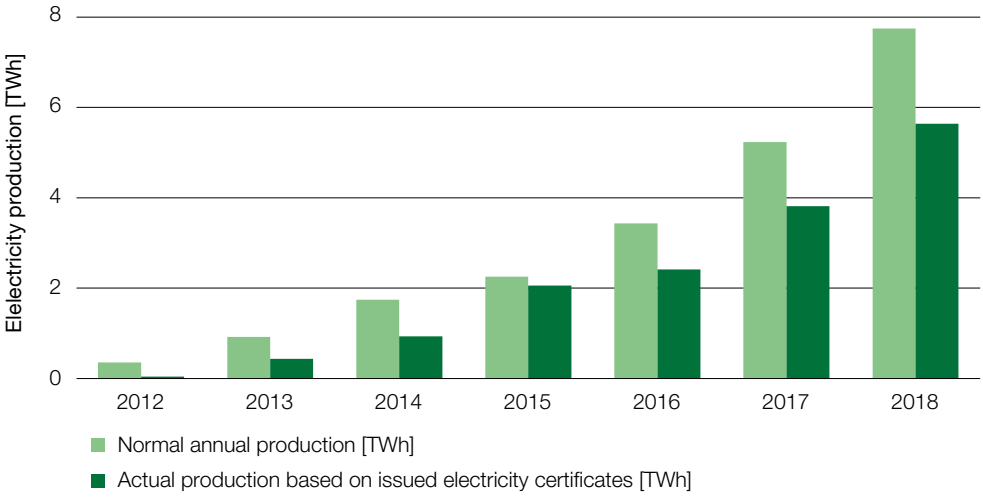


Figure 5. Normal annual production and electricity certificates issued in Norway (table 13)
Source: Statnett, Swedish Energy Agency and NVE

Figure 6 Electricity certificates issued in Sweden and Norway in 2018 (table 13)

Source: Cesar and NECS

Phase-out of approved power plants

The eligibility period of approved plants is 15 years. This means that power plants will steadily be phased out of the electricity certificate system. For Swedish power plants, the eligibility periods began to expire from 2018, and in Norway this will happen in 2020. Tables 1 and 2 show the expected normal annual production that will be phased out each year.

Table 1 Norway — Phase-out of plants (expected normal annual production) between 2020 and 2033 in GWh

Year	Biofuel	Solar	Hydro	Wind	Total
2020			8		8
2021			29		29
2022			51		51
2023			31		31
2024			176		176
2025			527		527
2026			542		542
2027			986	16	1,002
2028			827	169	996
2029			1,364	189	1,553
2030			495	17	511
2031		1	1,170	43	1,215
2032		4	681	1,106	1,791
2033		5	924	1,715	2,645
Total		**10**	**7,810**	**3,255**	**11,076**

Source: NVE

Table 2 Sweden — Phase-out of power plants (expected normal annual production) between 2018 and 2033 in GWh

Year	Biofuel/peat/fossil	Solar	Hydro	Wind	Total
2018	57	0	13	59	128
2019	43	0	102	136	280
2020	125	0	64	134	324
2021	1,436	0	151	111	1,698
2022	827	0	268	546	1,640
2023	545	0	49	754	1,348
2024	1,138	0	144	928	2,209
2025	673	12	51	1,552	2,288
2026	248	0	99	1,955	2,303
2027	184	1	93	2,104	2,383
2028	54	7	378	1,866	2,305
2029	462	13	58	2,703	3,236
2030	676	23	147	2,252	3,099
2031	976	33	178	1,770	2,958
2032	424	46	73	605	1,148
2033	16	58	31	2,451	2,555
Total	**7,881**	**194**	**1,900**	**19,925**	**29,901**

Source: Swedish Energy Agency

Cancelled electricity certificates

In order to fulfil the quota obligation, the market participants with quota obligations must obtain electricity certificates corresponding to the statutory quota of their sale/consumption of electricity. The electricity certificates are cancelled on 1 April in respect of the previous year, when they are deleted and cannot be re-used. Cancellation means that the market participants must buy new electricity certificates in order to fulfil next year's quota obligation. This creates a constant demand for electricity certificates.

Table 3 and figure 7 present a comparison between predicted and actual cancellations and electricity consumption. The predicted cancellations and predicted electricity consumption are extrapolated from the quota curve for 2018. The actual equivalents are the electricity certificates that were actually cancelled for 2018 and the electricity that was actually consumed during 2018.

Table 3 Cancellations in 2018

	Norway		Sweden	
	Predicted	Actual	Predicted	Actual
Cancelled electricity certifi-cates [millions of electricity certificates]	13.1	12.6	27.1	27.9
Electricity consumption [TWh]	85.5	82.6	90.8	93.2
Quota obligation [%]	15.3		29.9	
Quota obligation fulfilment [%]	99.98		99.97	
Quota obligation fee	NOK 200 each		SEK 215 each	

Source: Cesar, NECS, Swedish Energy Agency and NVE

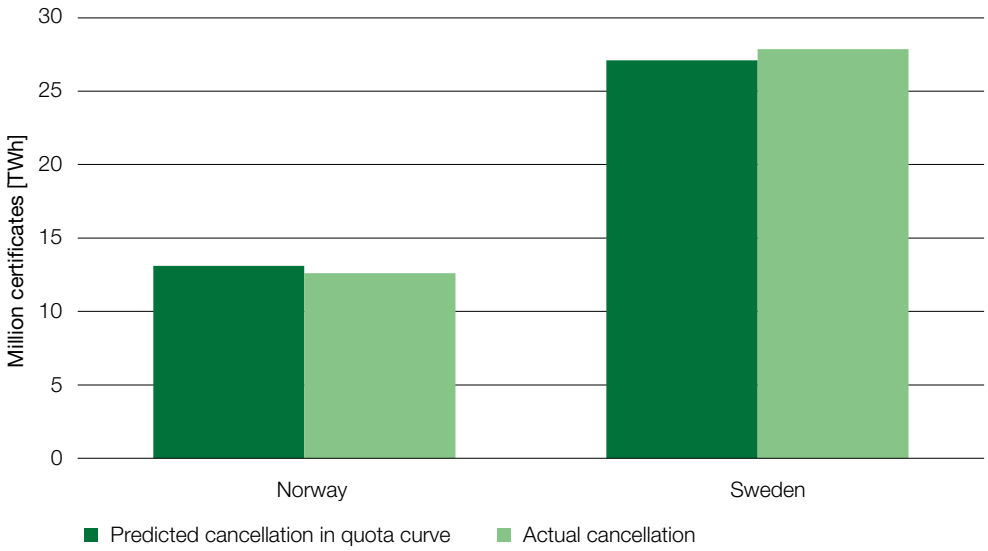


Figure 7 Number of cancelled electricity certificates in relation to the number predicted from the quota curve for Norway and Sweden respectively

Source: Cesar, NECS, Swedish Energy Agency and NVE

Surplus

The electricity certificate surplus consists of the electricity certificates that have been issued but not cancelled, see figure 8. The surplus increases in years when the number of electricity certificates issued exceeds the demand for electricity certificates. The supply and demand of electricity certificates may differ from year to year due to the rate of rollout and the actual production in relation to the identified demand.

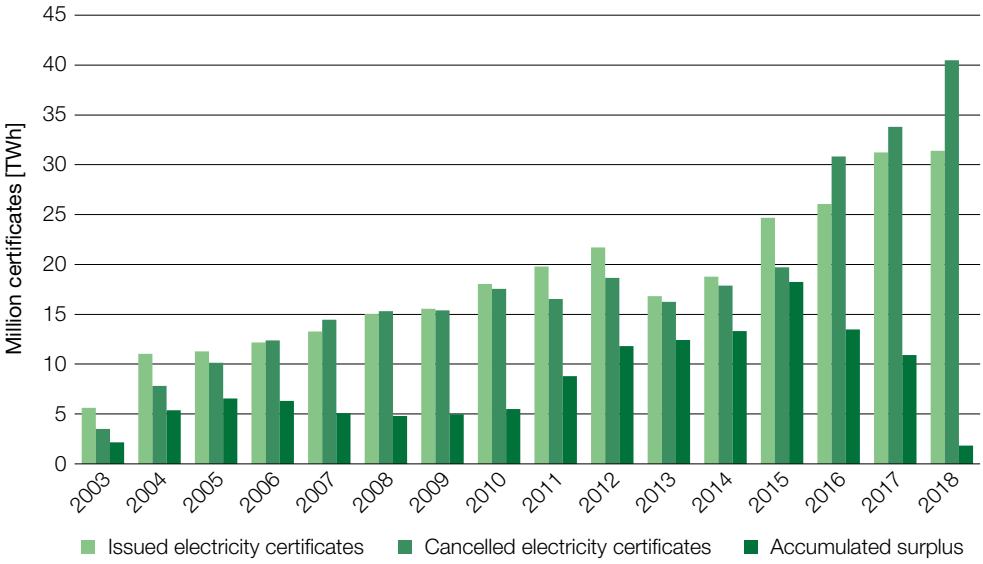


Figure 8 Surplus of electricity certificates with changes over time (table 15)

Source: Cesar and NECS

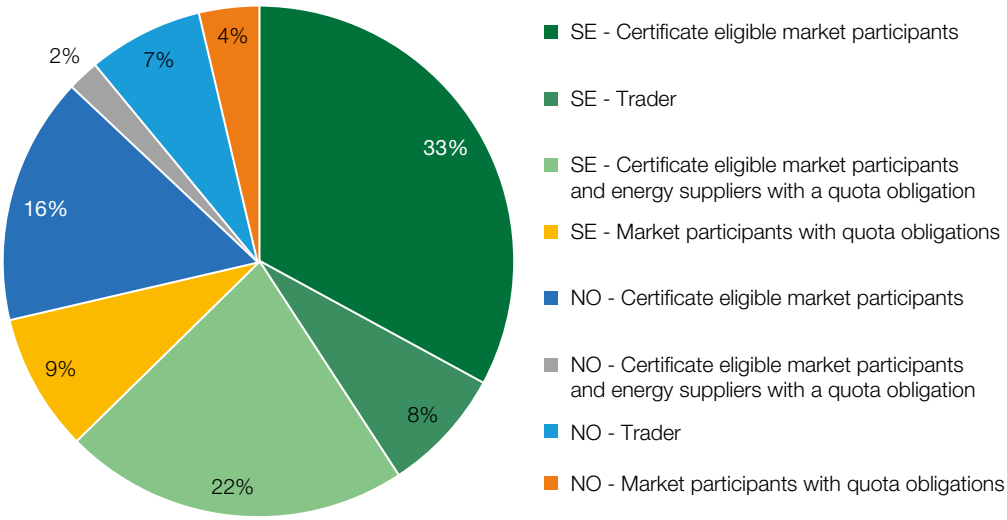


Figure 9 shows how electricity certificates held in different accounts, in NECS and Cesar after cancellation on 1 April 2019, are distributed among different market participants. The volume also includes electricity certificates issued for production in January and February 2019.

Source: Cesar and NECS

Price and trading

Electricity certificates are traded primarily between market participants with quota obligations and market participants eligible for electricity certificates. In addition, there are traders with accounts in the electricity certificate registers NECS and Cesar, which aim to buy electricity certificates and sell them later at a profit. Figures 10 and 11 present average monthly spot prices from different brokers (Cleanworld, ICAP and SKM).

Electricity certificates are traded both bilaterally and through brokers. Two types of broker contract are available in the electricity certificate market: spot price contracts and March contracts. March contracts are available for the next five years, allowing a price to be fixed for the electricity certificates over a longer period. Figure 12 shows trading in electricity certificates by type of contract.

Figure 10 Average monthly spot prices for electricity certificates 2003-March 2019
Source: Clean World, ICAP and SKM

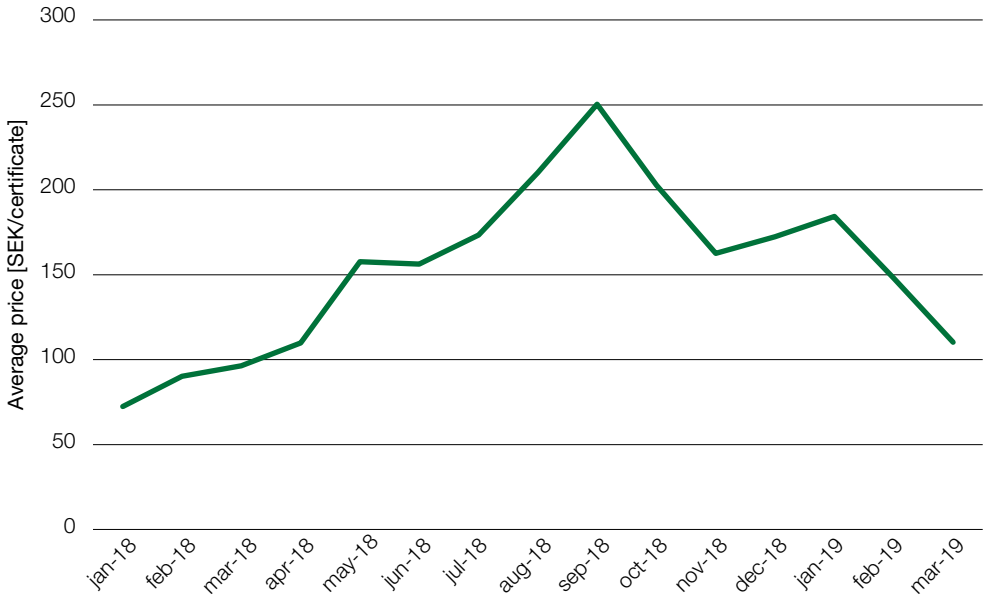


Figure 11 Average monthly spot prices for electricity certificates January 2018 to March 2019

Source: Clean World, ICAP and SKM

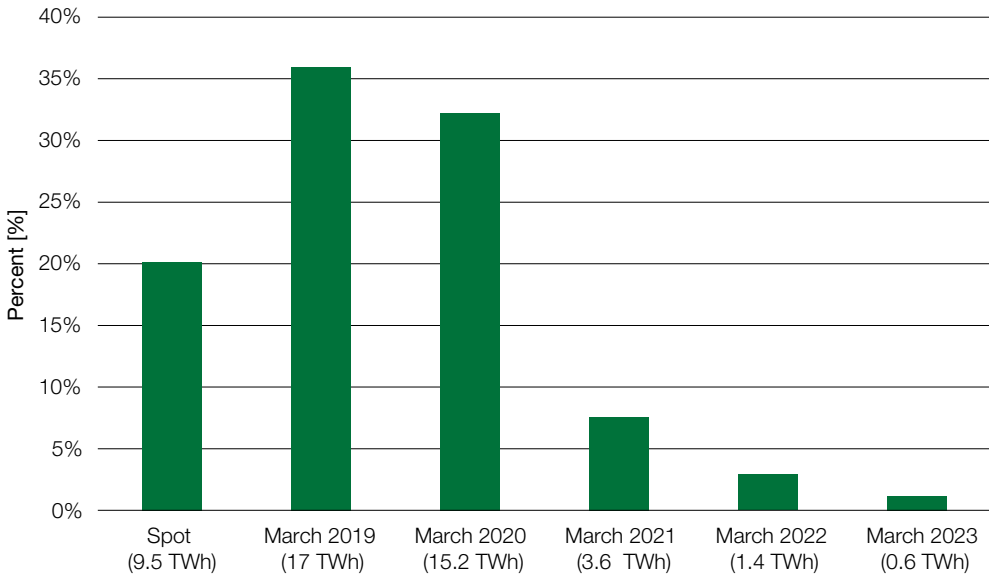


Figure 12 Trading in electricity certificates through brokers by type of contract during the period 1 April 2018 to 31 March 2019

Source: Clean World, ICAP and SKM

Register prices in Cesar and NECS

The register prices are average prices in the electricity certificate registers Cesar and NECS, figure 13. The average prices presented in the electricity certificate registers Cesar and NECS are volume-weighted average prices of transactions in each register over the relevant time period. The price therefore reflects all transfers between two legal entities during the period. The register price represents a value of electricity certificates over a historical period, weighted according to traded volume in the same period, and it cannot be regarded as a market price for electricity certificates.

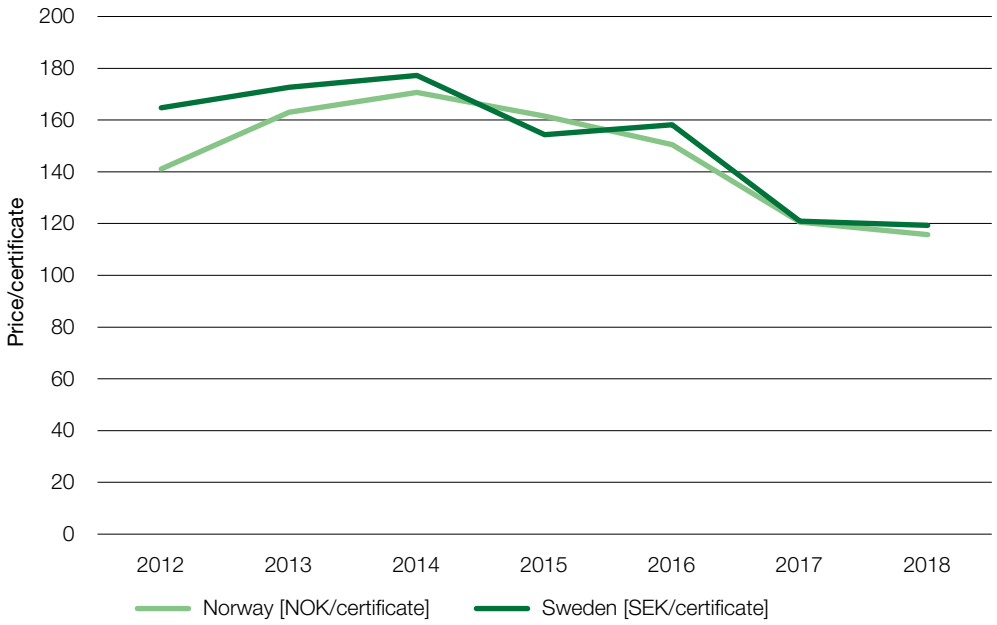


Figure 13 Volume-weighted average price 2012–2018

Source: Cesar and NECS

Appendix 1. Tables

Quotas

Table 4 Quotas

Year	Quota for Sweden	Quota for Norway	Year	Quota for Sweden	Quota for Norway
2003	0.074		**2025**	0.272	0.177
2004	0.081		**2026**	0.280	0.162
2005	0.104		**2027**	0.293	0.146
2006	0.126		**2028**	0.298	0.125
2007	0.151		**2029**	0.304	0.101
2008	0.163		**2030**	0.299	0.083
2009	0.170		**2031**	0.284	0.066
2010	0.179		**2032**	0.268	0.049
2011	0.179		**2033**	0.245	0.033
2012	0.179	0.030	**2034**	0.221	0.016
2013	0.135	0.049	**2035**	0.206	0.008
2014	0.142	0.069	**2036**	0.187	0
2015	0.143	0.088	**2037**	0.176	0
2016	0.231	0.119	**2038**	0.154	0
2017	0.247	0.137	**2039**	0.132	0
2018	0.299	0.153	**2040**	0.110	0
2019	0.305	0.171	**2041**	0.088	0
2020	0.288	0.189	**2042**	0.066	0
2021	0.263	0.188	**2043**	0.044	0
2022	0.267	0.188	**2044**	0.022	0
2023	0.271	0.187	**2045**	0.011	0
2024	0.270	0.184			

Goal fulfilment

Table 5 Expected normal annual production of plants included in the 28.4 TWh target at 1 January 2019

Energy source	Norway [TWh]	Sweden [TWh]
Biofuel, peat	0.00	4.08
Solar	0.01	0.18
Hydro	4.60	0.94
Wind	3.13	13.86
Total	**7.74**	**19.07**

Table 6 Expected normal annual production of plants in Sweden included in the 28.4 TWh target by electricity area [TWh]

Electricity area	Biofuel	Solar	Hydro	Wind	Total
SE1	0.00	0.00	0.05	2.22	2.27
SE2	1.08	0.01	0.58	6.00	7.66
SE3	2.27	0.12	0.19	3.43	6.01
SE4	0.74	0.05	0.11	2.22	3.13
Total	**4.08**	**0.18**	**0.94**	**13.86**	**19.07**

Table 7 Expected normal annual production of plants in Norway included in the 28.4 TWh target by electricity area [TWh]

Electricity area	Biofuel	Solar	Hydro	Wind	Total
NO1	0.00	0.01	0.62	0.37	1.00
NO2	0.00	0.00	1.08	1.27	2.35
NO3	0.00	0.00	1.13	0.96	2.09
NO4	0.00	0.00	0.97	0.53	1.50
NO5	0.00	0.00	0.81	0.00	0.81
Total	**0.00**	**0.01**	**4.60**	**3.13**	**7.74**

Table 8 Number of plants in Sweden included in the joint target [number]

	2012	2013	2014	2015	2016	2017	2018
Biofuel, peat	13	23	28	38	44	52	57
Solar	62	379	967	2,324	4,214	6,294	9,207
Hydro	9	61	102	137	159	172	186
Wind	218	921	770	982	1,227	1,263	1,397
Total	**302**	**1,384**	**1,867**	**3,481**	**5,644**	**7,781**	**10,847**

Table 9 Number of plants in Norway included in the joint target [number]

	2012	2013	2014	2015	2016	2017	2018
Biofuel, peat	0	0	0	0		0	1
Solar	0	0	0	0	3	5	12
Hydro	29	74	127	171	240	278	324
Wind	2	3	4	5	7	11	18
Total	**31**	**77**	**131**	**176**	**250**	**294**	**355**

Table 10 Number of plants included in the transition scheme [number]

	Sweden	Norway
Biofuel, peat	106	
Solar	134	
Hydro	196	390
Wind	1,192	
Total	**1,628**	**390**

Issued electricity certificates

Table 11 Total number of electricity certificates issued in Sweden and Norway in 2018 (included in the target and the transition scheme) [millions of electricity certificates]

Energy source	Sweden	Norway
Hydro	1.47	6.43
Wind	16.17	1.96
Biofuel	5.16	
Peat	0.07	
Solar	0.12	0.004
Total	**23.00**	**8.39**

Table 12 Actual renewable electricity production based on issued electricity certificates and expected normal annual production (in brackets) in Sweden included in the joint target [GWh]

Year	Biofuel and peat	Solar	Hydro	Wind	Total
2012	174 (773)	0.4 (1)	2 (11)	566 (2,061)	742 (2,846)
2013	742 (986)	2 (7)	76 (424)	3,248 (3,899)	4,068 (5,316)
2014	881 (1435)	9 (18)	454 (534)	4,699 (6,584)	6,043 (8,571)
2015	1367 (2088)	23 (42)	694 (658)	8,577 (8,852)	10,661 (11,640)
2016	1,967 (2,855)	43 (76)	618 (786)	9,080 (10,626)	11,708 (14,343)
2017	2,230 (2,903)	72 (120)	760 (824)	10,747 (11,229)	13,809 (15,076)
2018	**2,358 (4,084)**	**118 (180)**	**759 (939)**	**10,668 (13,862)**	**13,809 (19,065)**

Table 13 Actual renewable electricity production based on issued electricity certificates and expected normal annual production (in brackets) in Norway included in the joint target [GWh]

Year	Biofuel, peat	Solar	Hydro	Wind	Total
2012	0 (0)	0 (0)	40 (342)	3 (16)	42 (358)
2013	0 (0)	0 (0)	397 (729)	39 (185)	436 (920)
2014	0 (0)	0 (0)	717 (1,361)	218 (374)	934 (1,741)
2015	0 (0)	0 (0)	1,712 (1,854)	344 (391)	2,055 (2,252)
2016	0 (0)	0.3 (1)	2,052 (3,002)	358 (434)	2,411 (3,435)
2017		2 (5)	3,116 (3,686)	695 (1,540)	3,812 (5,232)
2018		4 (9)	3,692 (4,604)	1,940 (3,130)	5,636 (7,744)

Table 14 Actual renewable electricity production based on issued electricity certificates and expected normal annual production (in brackets) included in the transition scheme [GWh]

Energy source	Sweden	Norway
Biofuel, peat	2,876 (3,530)	
Solar	3 (3)	
Hydro	714 (971)	2,736 (3,212)
Wind	5,502 (6,195)	
Total	**9,096 (10,699)**	**2,736 (3,212)**

Surplus

Table 15 Surplus [millions of electricity certificates]

Year	Issued electricity certificates	Cancelled electricity certificates	Surplus (change)/year	Accumulated surplus
2003	5.6	3.5	2.1	2.1
2004	11.0	7.8	3.2	5.4
2005	11.3	10.1	1.2	6.5
2006	12.2	12.4	–0.2	6.3
2007	13.3	14.5	–1.2	5.1
2008	15.0	15.3	–0.3	4.8
2009	15.6	15.4	0.2	5.0
2010	18.1	17.5	0.5	5.5
2011	19.8	16.5	3.3	8.8
2012	21.7	18.7	3.0	11.8
2013	16.8	16.2	0.6	12.4
2014	18.8	17.9	0.9	13.3
2015	24.7	19.7	4.9	18.2
2016	26.1	30.8	–4.8	13.5
2017	31.2	33.8	–2.6	10.8
2018	31.4	40.5	–9.1	1.8

Electricity customers' estimated cost for electricity certificates in 2018

Table 16 Electricity customers' estimated cost for electricity certificates[11]

	Volume-weighted average price		Quota		Electricity customers' estimated cost [öre/kWh]	
Year	Norway [NOK each]	Sweden [SEK each]	Norway	Sweden	Norway	Sweden
2012	141.05	164.73	0.03	0.179	0.4	2.9
2013	162.98	172.65	0.049	0.135	0.8	2.3
2014	170.62	177.24	0.069	0.142	1.2	2.5
2015	161.49	154.34	0.088	0.143	1.4	2.2
2016	150.44	158.15	0.119	0.231	1.8	3.7
2017	120.58	120.93	0.137	0.247	1.7	3.0
2018	115.75	119.31	0.153	0.299	1.8	3.6

[11] From 2018, the electricity customers' estimated cost for Norway will be calculated in the same way as in Sweden. The electricity customer's cost is calculated by multiplying the volume-weighted average price by the quota.

Appendix 2. Glossary

Term	Explanation
Cancellation	The use of electricity certificates in order to fulfil the annual quota obligation.
Cesar	The Swedish account management system for electricity certificates. The account management system is an electronic register with details of electricity certificates issued, cancelled and sold. Cesar is operated by the Swedish Energy Agency.
Declaration of quota obligation	Market participants with quota obligations in Norway and Sweden must declare their quota obligation on 1 March each year. In Norway this is based on values reported by grid companies. In Sweden, the market participants with quota obligations make a declaration to the Swedish Energy Agency.
Electricity certificate	Certificate issued by the state confirming that one MWh of renewable electricity has been produced in accordance with the Electricity Certificates Act.
Electricity certificate quota	Percentage indicating the proportion of quota-relevant electricity consumption for which corresponding electricity certificates must be held by the market participants with quota obligations.
Electricity certificate surplus	The electricity certificate surplus consists of the electricity certificates that have been issued but not cancelled.
Electricity certificate system	Market-based support system for electricity produced from renewable sources in accordance with the Electricity Certificate Act.
Forward contract in the electricity certificate market	A forward contract is an agreement between two parties to buy or sell a number of electricity certificates on a specified date in the future. The agreement date and the delivery date are therefore different. The price is set when the agreement is entered into.
NECS	The Norwegian account management system for electricity certificates. The account management system is an electronic register with details of electricity certificates issued, cancelled and sold. NECS is operated by Statnett.
Producer eligible for electricity certificates	Electricity producers that are eligible for electricity certificates in accordance with the Electricity Certificates Act.
Progress review	In the progress review, the parties jointly analyse and discuss whether there is any need to change or adjust the rules on electricity certificates.
Quota curve	A curve that shows annual electricity certificate quotas between 2012 and 2035.
Quota obligation	Market participants with quota obligations are primarily electricity suppliers but also some electricity users. Every year, they must purchase and cancel electricity certificates corresponding to a certain proportion of their sale or consumption of electricity, and this is called the quota obligation.
Quota obligation fee	A fee that market participants with quota obligations must pay if they fail to cancel the number of electricity certificates corresponding to their quota obligation.
Quota-relevant electricity consumption	Electricity consumption which is subject to quota obligations.
Renewable electricity production	Electricity produced from renewable energy sources, such as hydro, wind, solar, geothermal and bioenergy.
Renewable Energy Directive	Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.
Spot contract in the electricity certificate market	A spot contract is an agreement between two parties to buy or sell a number of electricity certificates at a price set on the agreement date. The agreed number of electricity certificates is transferred between the buyer and the seller within one week of the agreement date.
Technical adjustment	Necessary adjustments to quotas so as to fulfil the obligations in the Electricity Certificates Agreement between Norway and Sweden. This does not involve any target increase.
Transition scheme	The transition scheme applies to plants that are eligible for electricity certificates but were commissioned before 2012.

Appendix 3. Links to information about the electricity certificate market

www.energimyndigheten.se/fornybart/elcertifikatsystemet/

https://cesar.energimyndigheten.se

https://www.nve.no/energiforsyning-og-konsesjon/elsertifikater/

https://necs.statnett.no

Photo: www.shutterstock.com

A common market for electricity certificates – more renewable energy production

Sweden and Norway have had a common market for electricity certificates since 1 January 2012. The annual report on the electricity certificate market is published by the Swedish Energy Agency and the Norwegian Water Resources and Energy Directorate (NVE). With this report, the Swedish Energy Agency and NVE wish to present statistics for the electrical certificate system and to increase the understanding of how the system works.

This report is also published in Swedish and Norwegian.
Download or order your report from
www.energimyndigheten.se or www.nve.no

Norges vassdrags- og energidirektorat
NVE

Swedish Energy Agency