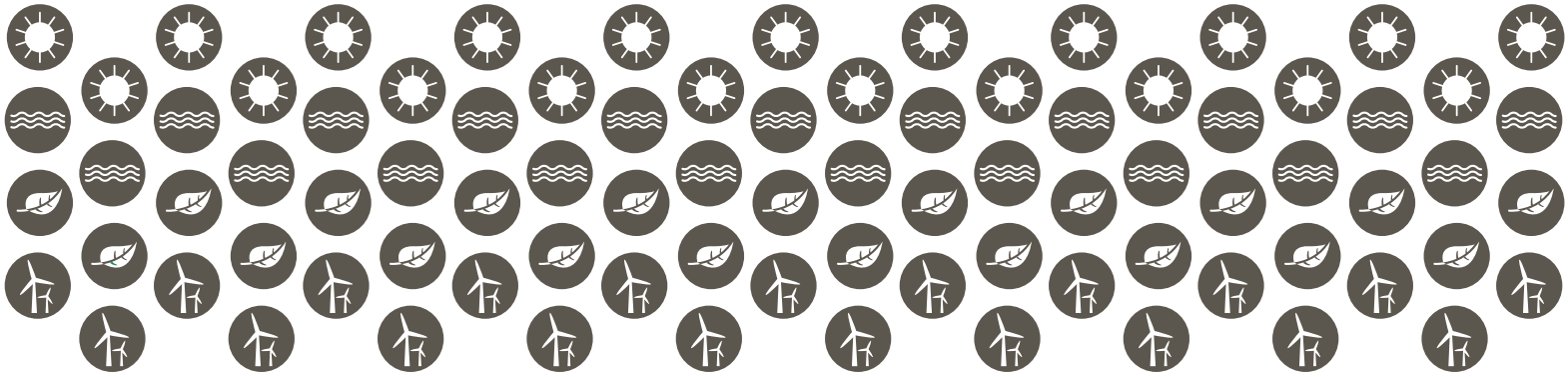
The Swedish–Norwegian Electricity Certificate Market

ANNUAL REPORT 2020



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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 2020. For the next coming years, the annual report is planned to be presented through a digital web solution replacing the current PDF format.

Sweden and Norway have had a common market in electricity certificates since 1 January 2012. The market 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 46.4 TWh of new renewable electricity production through the electricity certificate system by the end of 2030. 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.

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 Frida Ljungek at the Swedish Energy Agency and Noor Nooraddin at NVE.

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Innehåll

Key figures for 2020

The tables below summaries the relevant figures for the electricity certificate market in 2020. Analysis and further details on the content of the tables are presented throughout this report.

Key figures – Goal fulfilment and issued electricity certificates 2020	Norway	Sweden
Expected renewable annual production for plants included in the joint electricity certificate target [TWh]	16.6	28.5
Issued electricity certificates [millions of electricity certificates][1]	15.6	34.4
Electricity certificates issued to plants included in the joint electricity certificate target [millions of electricity certificates]	12.3	25.0
Electricity certificates issued to plants not included in the joint electricity certificate target [millions of electricity certificates]	3.3	9.4

Key figures – Cancellations in 2020	Norway	Sweden
Cancelled electricity certificates [millions of electricity certificates]	14.7	23.6
Quota-relevant electricity consumption [TWh]	79.9	89.2
Quota obligation [%]	18.6	26.5
Quota obligation fee	NOK 32 each	SEK 33 each
Volume-weighted average price 1 April 2019 – 31 March 2021[2]	NOK 22 each	SEK 22 each

Key figures – Surplus 2020	Norway and Sweden
Surplus 2020 [millions of electricity certificates]	9.8
Change since 2019 [millions of electricity certificates]	+ 11.6

Key figures – Price and trading 2020	Norway and Sweden
Volume-weighted average price of transactions in the electricity certificate registers NECS and Cesar in 2020 (change since 2019) [SEK/MWh] [3]	69 (–46)
Average spot price (change since 2018) [SEK/MWh][4]	12 (–66)

Key figures – Electricity customers' estimated cost for electricity certificates in 2020[5]	Norway	Sweden
Electricity customers' average cost [öre/kWh]	1.3	1.8

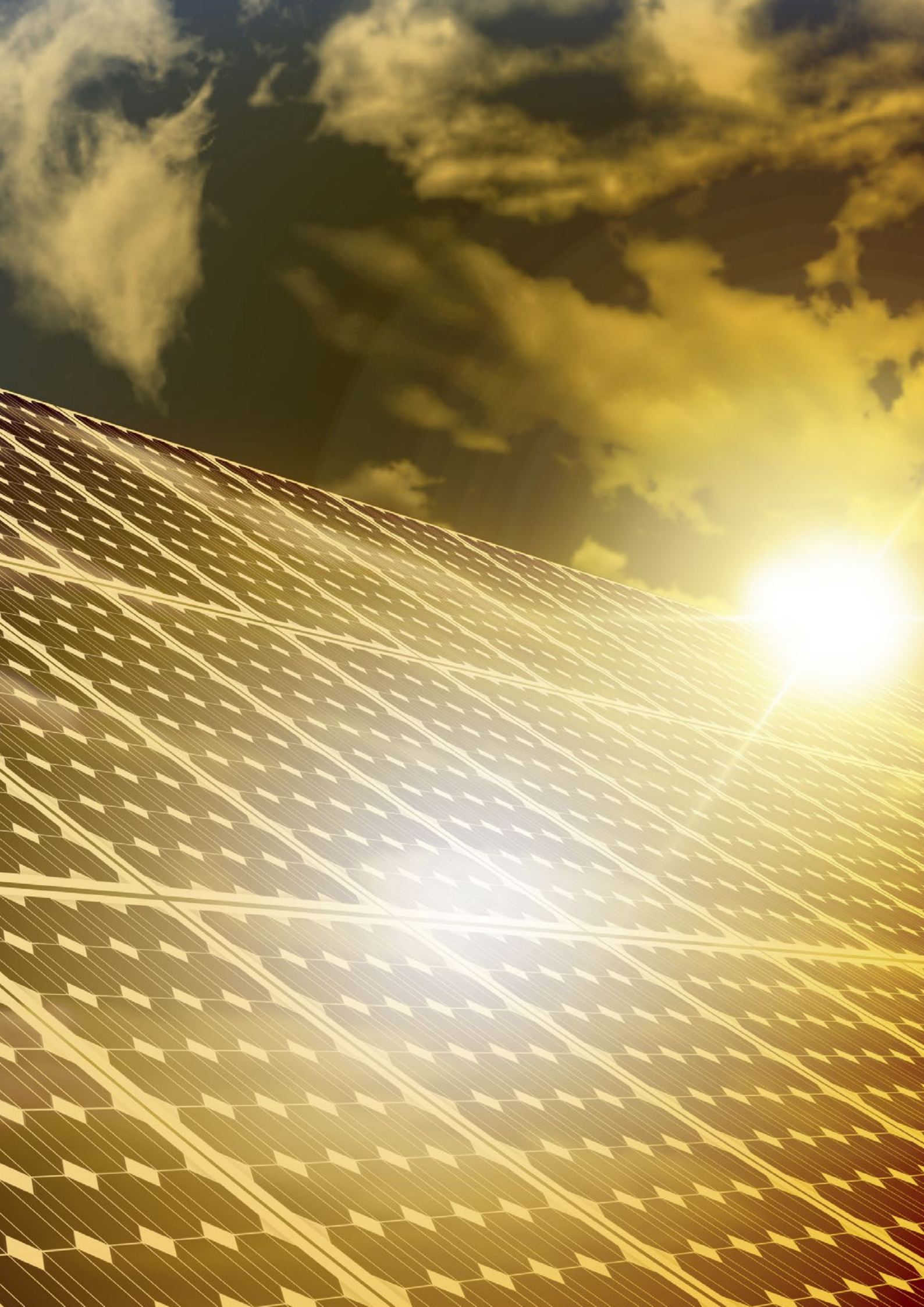
[1] 1 million electricity certificates = 1 TWh of electricity production eligible for electricity certificates.

[2] Exchange rate at 31 March 2021: 1 EUR = 10.28 SEK = 10.04 NOK.

[3] Exchange rate at 31 December 2020: 1 EUR = 10.07 SEK = 10.55 NOK.

[4] Average of the daily closing prices of spot price contracts at Cleanworld, ICAP, Svensk kraftmäkling in 2020.

[5] Calculated from the 2020 volume-weighted average price for transactions in Cesar and NECS, excluding VAT and transaction costs.



Electricity certificate market 2020

Goal fulfilment

The joint target of developing 28.4 TWh new renewable electricity production by the end of 2020 was already achieved in May 2019. Sweden's goal of an additional 18 TWh making up a total target of 46.4 TWh for both countries by 2030 was reached in mars 2021.

Renewable electricity production and issuing

The Swedish–Norwegian electricity certificate market has, in total, contributed to financing renewable electricity production corresponding to 45 TWh between the years of 2012 and 2020. During 2020, new plants in the electricity certification system with an expected renewable annual production of 10.7 TWh were approved. This is the greatest increase in production capacity during a single year since the start of the electricity certification system. New wind power plants represented the largest part of the increase in capacity in both countries.

During 2020, a total of 50 million certificates in Norway and Sweden was issued within both the joint target and each country's transition scheme. The certificates were issued for the renewable energy actually produced during 2020 by plants within the certificate system. Hydro power represented the largest share of the production volume, and therefore the number of issued certificates, in Norway. In Sweden, the largest share of certificates was issued to wind power production.

Cancellation and Surplus

A total of 38.4 million certificates were cancelled in Sweden and Norway for the year of 2020. Market participants with quota obligations were required to cancel these certificates to cover the quota obligated part of their electricity sale or consumption for 2020. In Sweden and Norway the actual quota-relevant electricity consumption was lower than assumed in the quota curve. Therefore, fewer electricity certificates than expected were cancelled in Norway and Sweden.

The accumulated surplus of electricity certificates was, after 2020, reduced to an excess after this year's cancellation. The total number of issued certificates was higher than the number of cancelled certificates, entailing a positive outcome for 2020.

Approximately 130 000 electricity certificates were not cancelled in Sweden and Norway together. The market participants with quota obligations who did not cancel enough certificates are obliged to pay the quota obligation fee of 33 SEK/MWh this year.

Technical adjustment of the Swedish and Norwegian quotas

During 2020, both Sweden and Norway prepared background information for technical adjustments to the quotas. In Norway, a rise was established for 2021 and in Sweden a reduction was established for the 2021 quota.

The authorities carry out technical adjustments to make sure cancelled certificates correspond to financing obligations for the joint target and the plants included in each country's transition scheme.

Electricity certificate prices

After falling electricity certificate prices in 2019, prices were further reduced in 2020. The declining prices can be explained by the fact that the supply of electricity certificates is higher than the demand created by the established quotas. Increased supply of electricity certificates is mainly explained by a strong expansion of wind power where factors other than support from electricity certificates drive the expansion.

The average price for forward contracts (March contracts) for 2021 followed the same curve as the average spot price for 2020. Furthermore, this type of contract was the most traded contract among brokers during the period 3 of April 2020 until 31 of March 2021.

The volume-weighted average price of transactions in NECS and Cesar for 2020 was reduced in comparison to last year.

Electricity customers' estimated cost for electricity certificates in 2020

During 2020, the average cost for electricity certificates for Norwegian electricity customers was reduced compared to the year before. The average cost for Swedish customers was however reduced. The cost can be interpreted as the electricity supplier's estimated costs for electricity certificates that are invoiced to the end customer. It does not include VAT or transaction fees.

Proposition about a Swedish stop date at the end of 2021

The framework for the Electricity Certificates Ordinance was regulated in a bilateral agreement between Norway and Sweden on a common market for electricity certificates on 29 June 2011, cf. Prop. 5 S (2011–2012), amendment agreements occurred on April 8, 2015 and May 5, 2017. On September 18, 2020, a new agreement was signed. The agreement states that the electricity certificate system will be terminated in 2035, which means that a stop date will be introduced for when production sites in Sweden must be put into operation to be eligible for electricity certificates. In Norway, the stop date has previously been 31 December 2021, this will not change.

The stop date in Sweden is set to 31 December 2021 if 46.4 TWh normal year production is approved within the electricity certificate system before the end of March 2021. It is crucial that enough new production has entered the system before the stop date is realized. If there is a margin for deviations from the normal annual production, so that the supply of electricity certificates is not too small in relation to demand over time up to and including 2035, the Swedish stop date must be postponed two years. The agreement allows for a later stop date if the target is not achieved, or if the supply of electricity certificates becomes too small in relation to demand until 2035. An earlier termination of the electricity certificate system means that the Swedish electricity certificate quotas for years after 2035 are included in the quotas for 2024–2035.

Quotas

Figure 1 shows the quotas for Norway and Sweden from 2003 to 2035. The quotas are fixed for the years 2003 to 2035 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.

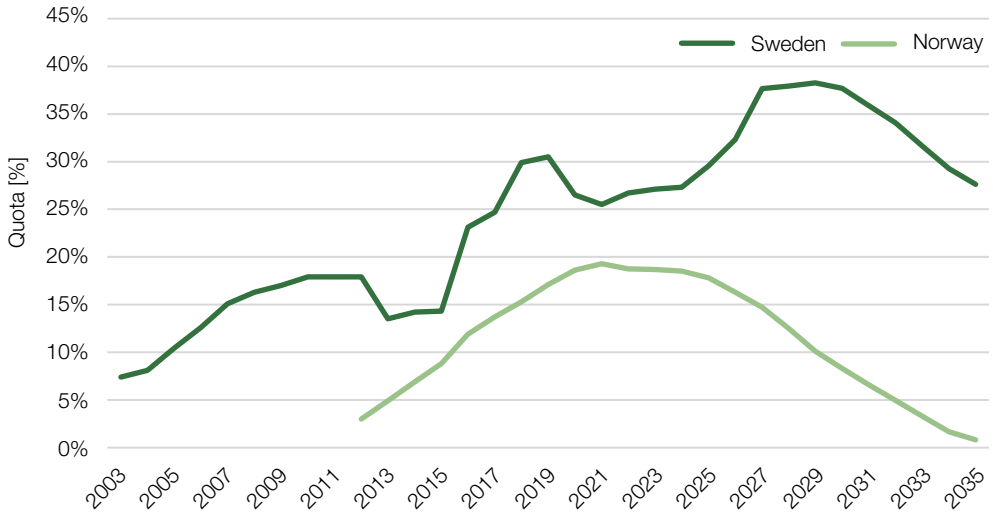


Figure 1. Quota curves for Sweden and Norway (Table 4).
Source: Swedish Energy Agency and NVE.

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 46.4 TWh in the two countries by 2030. 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. The joint target of 46.4 TWh for both countries by 2030 was reached already in mars 2021.

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 3 shows the expected normal annual production for plants included in the joint target, by bidding area and energy source.

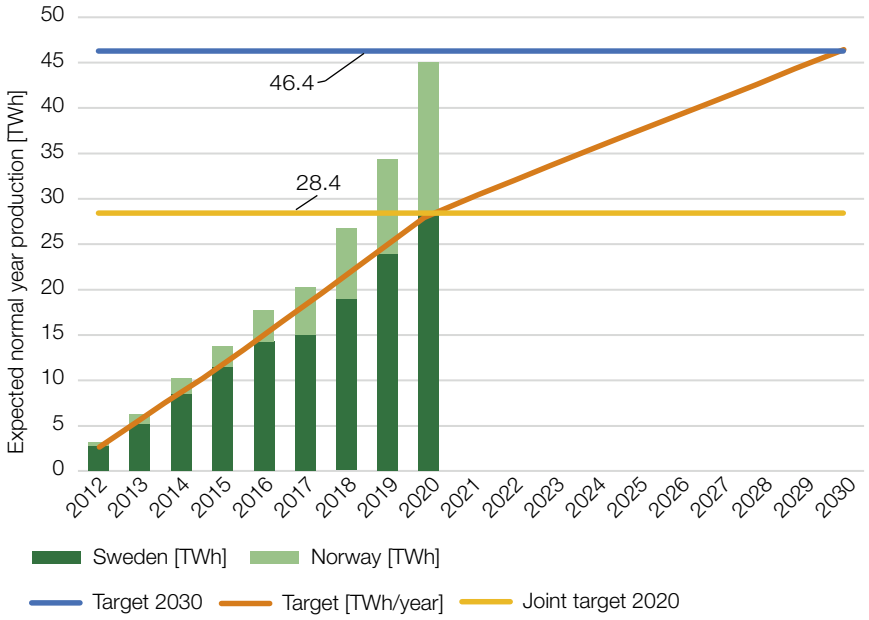
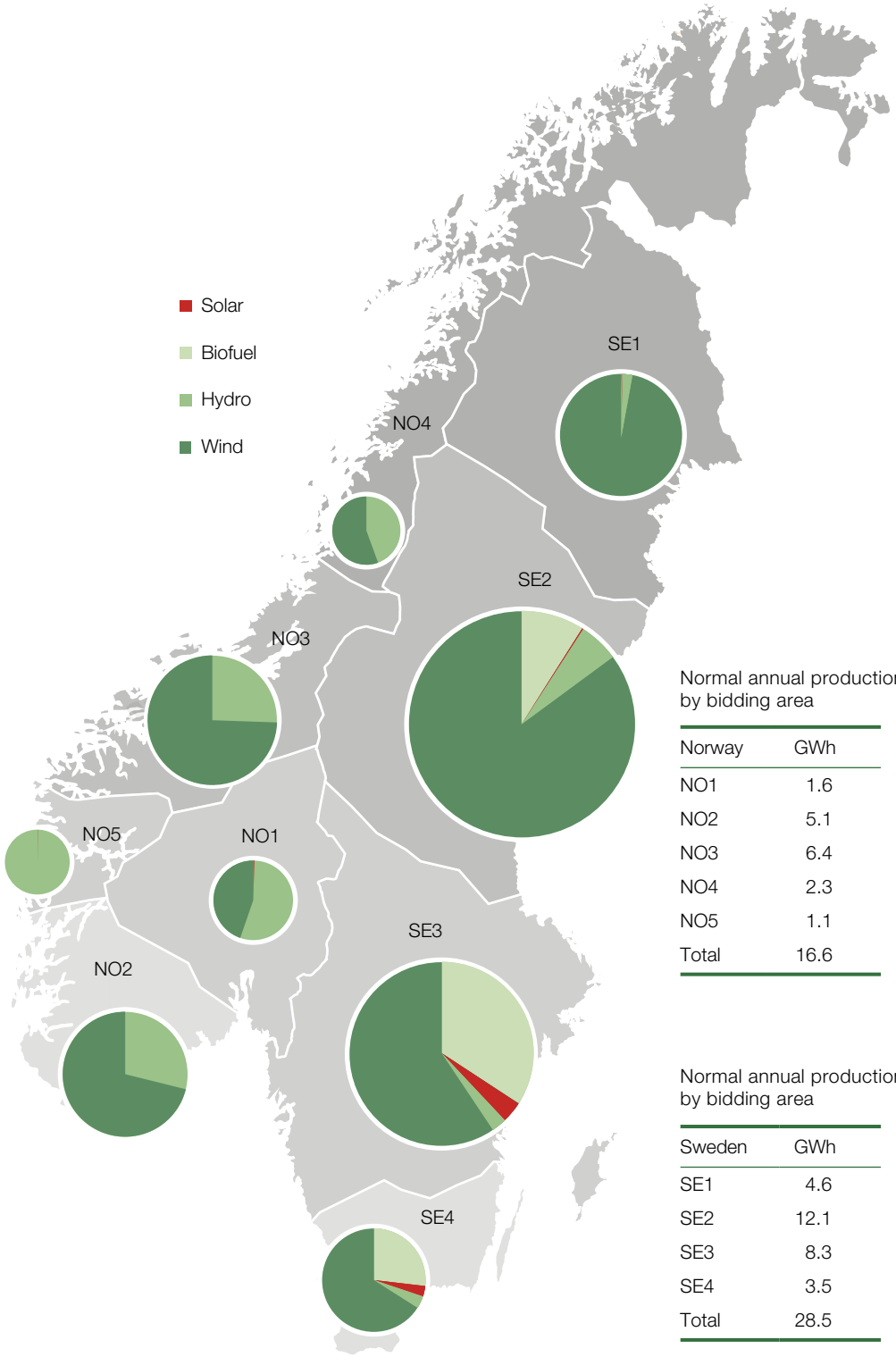


Figure 2. Expected normal annual production in the joint electricity certificate system (Table 5).

Source: Swedish Energy Agency and NVE.



Normal annual production by bidding area

Norway	GWh
NO1	1.6
NO2	5.1
NO3	6.4
NO4	2.3
NO5	1.1
Total	16.6

Normal annual production by bidding area

Sweden	GWh
SE1	4.6
SE2	12.1
SE3	8.3
SE4	3.5
Total	28.5

Figure 3. New expected normal annual production for plants included in the joint target, by bidding 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 based on 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. Plants are approved regularly during a year. As a result, each plant will not have contributed with a whole production year during its first year of operation. As an example, a plant approved in December will only contribute with production corresponding to approximately a month during its first year. Thus, a disparity between the expected normal annual production and the actual production arise when summarizing each year. Figure 6 shows the electricity certificates issued in Sweden and Norway.

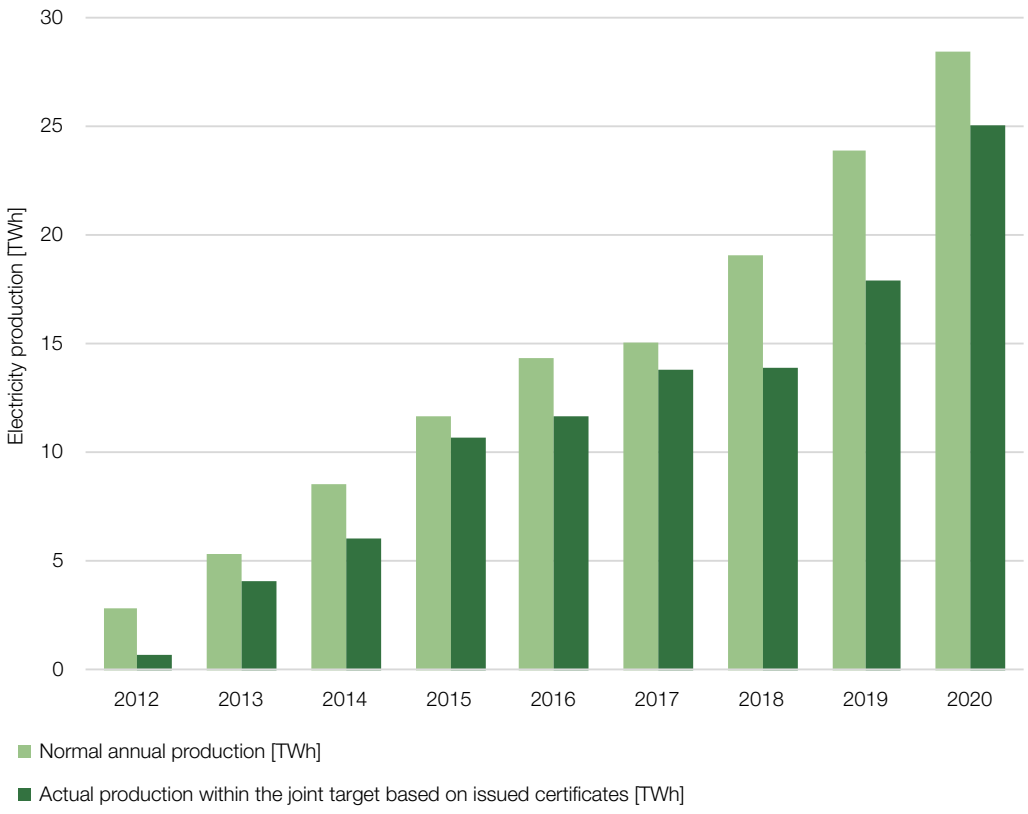


Figure 4. Normal annual production and electricity certificates issued in Sweden (Table 12).
Source: Statnett, Swedish Energy Agency and NVE.

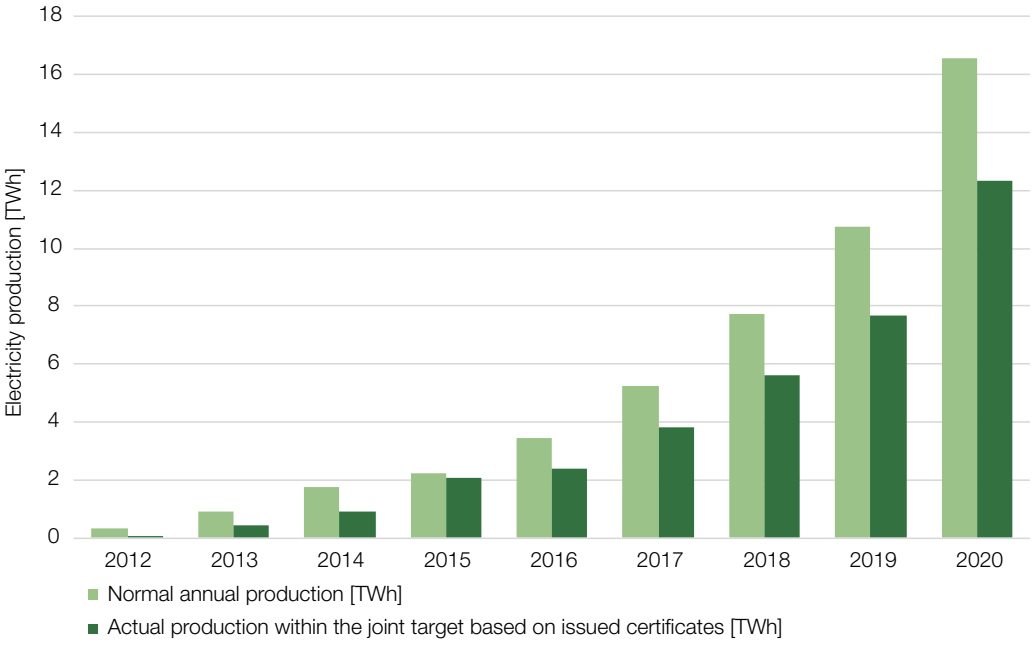


Figure 5. Normal annual production and electricity certificates issued in Norway (Table 13).
Source: Statnett, Swedish Energy Agency and NVE.

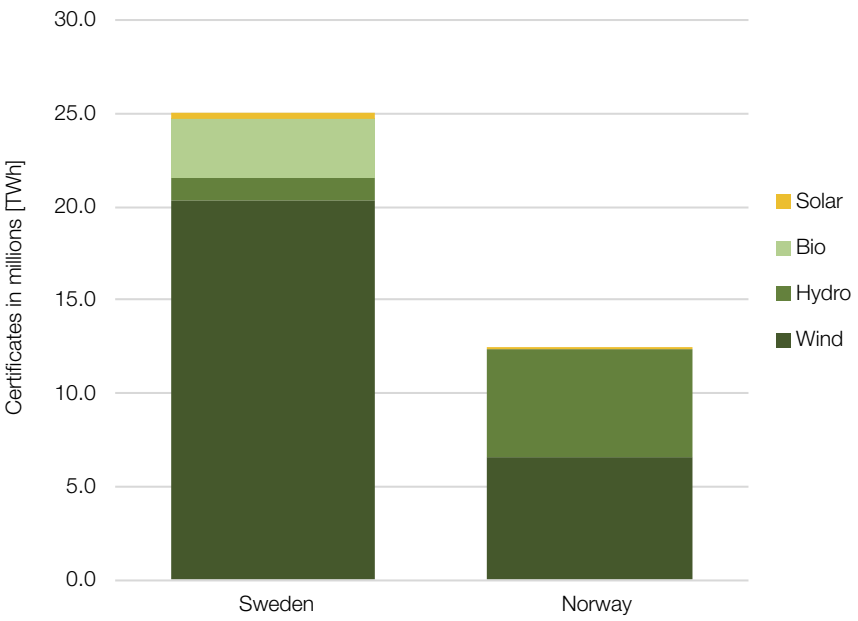


Figure 6. Electricity certificates issued in Sweden and Norway in 2020 (Table 13).
Source: Cesar and NECS.

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 in GWh).

Year	Bio	Solar	Hydro	Wind	Total
2020			8		8
2021	0	0	29	0	29
2022	0	0	51	0	51
2023	0	0	31	0	31
2024	0	0	174	0	174
2025	0	0	527	0	527
2026	0	0	542	0	542
2027	0	0	971	16	987
2028	0	0	844	157	1 001
2029	0	0	1 365	189	1 554
2030	0	0	495	17	511
2031	0	1	1 175	43	1 219
2032	0	4	679	1 106	1 789
2033	0	4	938	1 715	2 658
2034	0	1	814	2 022	2 838
2035	0	0	650	5 181	5 830
Sum	**0**	**11**	**8 644**	**5 264**	**19 749**

Source: NVE.

Table 2. Sweden – Phase-out of power plants (expected normal annual production in GWh).

Year	Bio	Solar	Hydro	Wind	Total
2020	125	0	16	435	576
2021	1 402	42	93	162	1 700
2022	630	0	280	658	1 568
2023	484	0	45	635	1 165
2024	1 152	0	130	922	2 203
2025	673	2	68	1 552	2 294
2026	265	0	118	1 954	2 337
2027	274	1	124	2 099	2 498
2028	80	7	380	1 866	2 333
2029	462	12	52	2 703	3 230
2030	676	21	148	2 221	3 066
2031	957	30	179	1 770	2 935
2032	624	43	111	605	1 383
2033	96	53	91	2 351	2 592
2034	178	107	47	4 541	4 873
2035	271	154	68	4 596	5 089
Sum	**8 348**	**319**	**1 883**	**29 070**	**39 842**

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 2020. The actual equivalents are the electricity certificates that were cancelled for 2020 and the electricity that was actually consumed during 2020.

Table 3. Cancellations for 2020.

	Norway		Sweden	
	Predicted	**Actual**	**Predicted**	**Actual**
Cancelled electricity certificates [millions of electricity certificates]	16.1	14.7	24.0	23.6
Electricity consumption [TWh]	86.8	79.9	90.7	89.2
Quota obligation [%]	18.6		26.5	
Quota obligation fulfilment [%]	92.1		99.9	
Quota obligation fee	NOK – each		SEK – each	

Source: Cesar, NECS, Swedish Energy Agency and NVE.

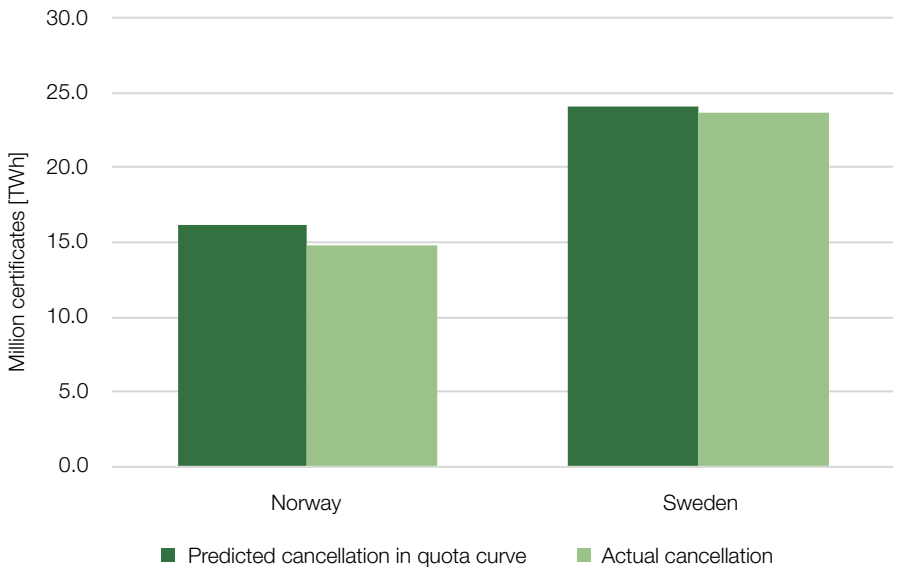


Figure 7. Number of cancelled electricity certificates in relation to the number predicted from the quota curve for Norway and Sweden respectively.

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.

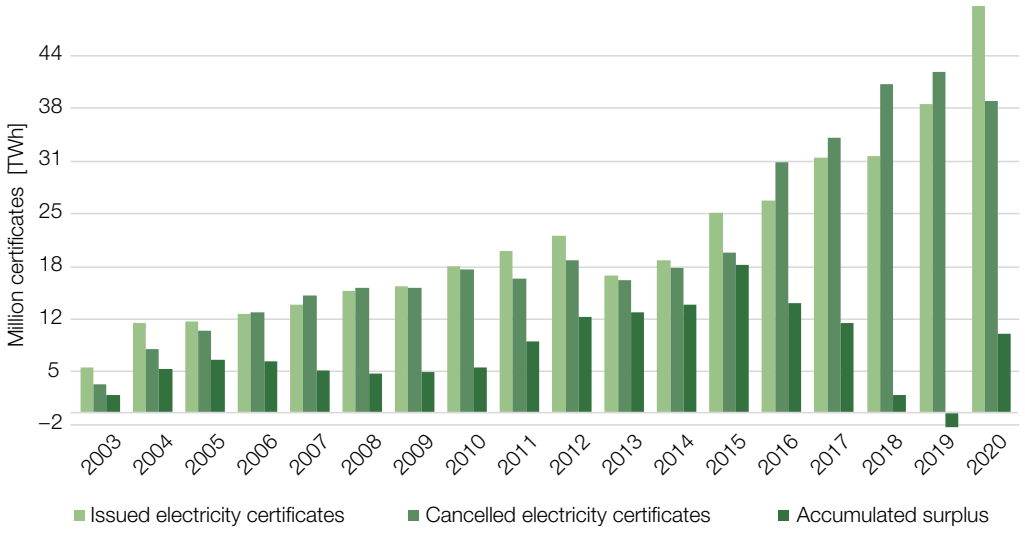


Figure 8. Surplus of electricity certificates with changes over time (Table 15).
Source: Cesar and NECS.

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 9 and 10 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 11 shows trading in electricity certificates by type of contract.

Figure 9. Average monthly spot prices for electricity certificates 2003–2020.
Source: Clean World, ICAP and SKM.

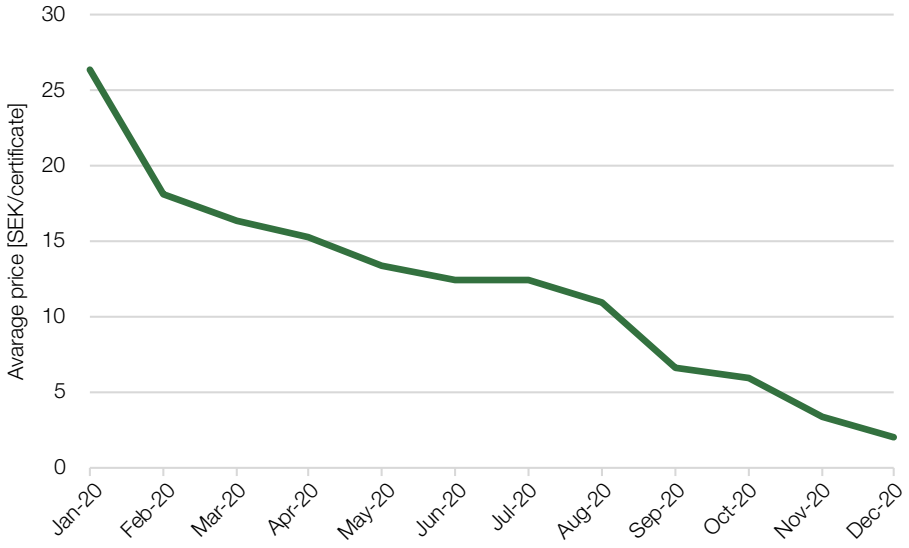


Figure 10. Average monthly spot prices for electricity certificates January 2019 to March 2020.

Source: SKM.

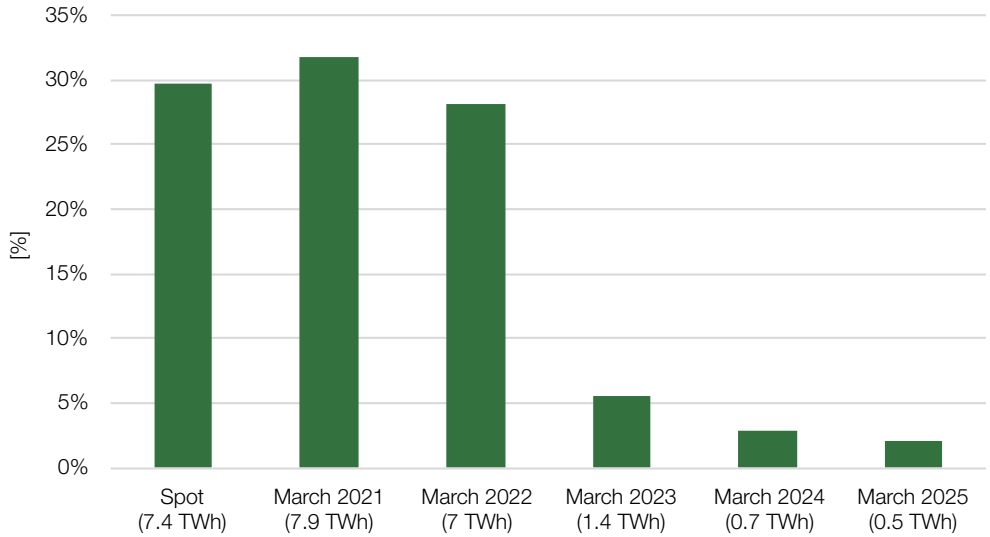


Figure 11. Trading in electricity certificates through brokers by type of contract during the period 1 April 2020 to 31 March 2021.

Source: SKM.

Register prices in Cesar and NECS

The register prices are average prices in the electricity certificate registers Cesar and NECS, Figure 12. 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.

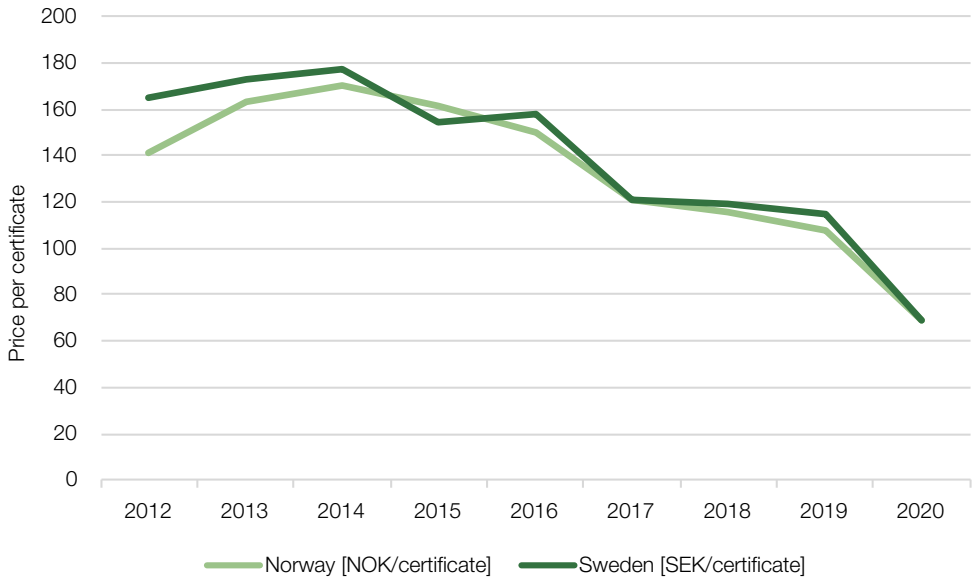


Figure 12. Volume-weighted average price 2012–2020.
Source: Cesar and NECS.

Appendix 1. Tables

Quotas

Table 4. Quotas.

Year	Quota Sweden	Quota Norway	Year	Quota Sweden	Quota Norway
2003	0.074		**2025**	0.296	0.178
2004	0.081		**2026**	0.323	0.163
2005	0.104		**2027**	0.376	0.147
2006	0.126		**2028**	0.379	0.125
2007	0.151		**2029**	0.383	0.101
2008	0.163		**2030**	0.377	0.083
2009	0.170		**2031**	0.359	0.066
2010	0.179		**2032**	0.341	0.049
2011	0.179		**2033**	0.316	0.033
2012	0.179	0.030	**2034**	0.292	0.016
2013	0.135	0.049	**2035**	0.276	0.008
2014	0.142	0.069	**2036**		
2015	0.143	0.088	**2037**		
2016	0.231	0.119	**2038**		
2017	0.247	0.137	**2039**		
2018	0.299	0.153	**2040**		
2019	0.305	0.171	**2041**		
2020	0.265	0.186	**2042**		
2021	0.255	0.193	**2043**		
2022	0.267	0.188	**2044**		
2023	0.271	0.187	**2045**		
2024	0.273	0.185			

Goal fulfilment

Table 5. Expected normal annual production of plants included in the 46.4 TWh target by the 1st January 2021.

Energy source	Norway	Sweden
Biofuel, peat	0.00	4.87
Solar	0.01	0.44
Hydro	6.10	1.18
Wind	10.45	21.97
Total	**16.56**	**28.46**

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

Bidding area	Biofuel	Solar	Hydro	Wind	Sum
SE1	0.00	0.00	0.12	4.45	4.58
SE2	1.09	0.02	0.70	10.30	12.10
SE3	2.85	0.31	0.22	4.94	8.33
SE4	0.93	0.11	0.13	2.28	3.45
Sum	**4.87**	**0.44**	**1.18**	**21.97**	**28.46**

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

Bidding area	Bio	Solar	Hydro	Wind	Sum
NO1	0.00	0.01	0.87	0.71	1.59
NO2	0.00	0.00	1.48	3.66	5.15
NO3	0.00	0.00	1.64	4.78	6.41
NO4	0.00	0.00	1.04	1.30	2.33
NO5	0.00	0.00	1.07	0.00	1.07
Sum	**0.00**	**0.01**	**6.10**	**10.45**	**16.56**

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

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Biofuel, Peat	13	23	28	38	44	52	57	66	69
Solar	62	379	967	2 324	4 214	6 294	9 207	14 605	19 795
Hydro	9	61	102	137	159	172	186	215	233
Wind	218	921	770	982	1 227	1 263	1 397	1 572	1 706
Total	**302**	**1 384**	**1 867**	**3 481**	**5 644**	**7 781**	**10 847**	**16 458**	**21 803**

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

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Biofuel, Peat							1	1	1
Solar					3	5	12	15	15
Hydro	29	74	127	171	240	278	324	350	378
Wind	2	3	4	5	7	11	18	23	37
Total	**31**	**77**	**131**	**176**	**250**	**294**	**355**	**389**	**431**

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

	Norway	Sweden
Biofuel, Peat		88
Solar		143
Hydro	391	159
Wind		1 016
Total	**391**	**1 406**

Issued electricity certificates

Table 11. Total number of electricity certificates issued in Sweden and Norway in 2020 (included in the target and the transition scheme) [millions of electricity certificates].

Energy source	Norway	Sweden
Hydro	9.06	1.99
Wind	6.53	26.73
Biofuel	0.00	5.36
Peat	0.00	0.02
Solar	0.00	0.29
Total	**15.59**	**34.39**

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 (1 435)	9 (18)	454 (534)	4 699 (6 584)	6 043 (8 571)
2015	1 367 (2 088)	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)	13 903 (19 065)
2019	3 336 (4 588)	179 (300)	1 007 (1 116)	13 424 (17 898)	17 947 (23 903)
2020	3 190 (4 870)	287 (445)	1 191 (1 176)	20 354 (21 971)	25 022 (28 461)

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 and 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	1 (0)	2 (5)	3 116 (3 686)	695 (1 540)	3 812 (5 232)
2018	2 (0)	4 (9)	3 692 (4 604))	1 940 (3 130)	5 636 (7 744)
2019	3 (0)	9 (11)	4 201 (5 434)	3 486 (5 023)	7 696 (10 468)
2020	0 (0)	1 (11)	5 796 (6 103)	6 525 (10 445)	12 323 (16 559)

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	Norway	Sweden
Biofuel, Peat	0	2 193 (3 283)
Solar	0	2 (4)
Hydro	3 264 (3 212)	803 (814)
Wind	0	6 373 (5 998)
Total	**3 264 (3 212)**	**9 371 (10 100)**

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	0.0	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	–4.7	13.5
2017	31.3	33.8	–2.5	11.0
2018	31.6	40.5	–8.9	2.1
2019	38.0	41.9	–3.9	–1.8
2020	50.0	38.3	11.6	9.8

Electricity customers' estimated cost for electricity certificates in 2020

Table 16. Electricity customers' estimated cost for electricity certificates.[6]

	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	0.030	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
2019	108.08	114.47	0.171	0.305	1.8	3.5
2020	68.54	68.65	0.186	0.265	1.3	1.8

[6] 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.
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 analyze 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/default.aspx

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

https://necs.statnett.no

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.
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