



SKGS



The Swedish Industry's demand for electricity up to 2035

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About SKGS

SKGS works with the Swedish energy-intensive industry's energy issues. SKGS is a collaboration between the trade associations Swedish Forest Industries Federation, IKEM – Innovation and Chemical Industries in Sweden, Svemin – Swedish Association of Mines, Mineral and Metal Producers and Jernkontoret – Swedish iron and steel producers' association. SKGS has prepared the report. The survey was carried out by Ebba Löfblad, Mikael Odenberger, Julia Renström and Josefine Kjellander, Profu, on behalf of SKGS.

Updates

This is a renewed and expanded survey of the previous report the Swedish Industry's demand for electricity up to 2030 (version 2, last updated in May 2023). This year's report (version 3) assesses the electricity demand of the industry in Sweden up to 2035.

Foreword

Fossil-free electricity is the key to the climate transition. Sweden has a uniquely good starting position with a virtually fossil-free power system with a significant net export of electricity. Demand for electricity is expected to grow rapidly as a result of the industrial climate transition. Swedish industry is planning historically large investments that not only redraw the map for future climate-smart industrial production, but also for the power system.

Electricity generation will need to be expanded to keep pace with rising demand. There are several different analyses of the future electricity demand. Most of them look to the year 2045, when Sweden aims to be to be climate neutral, or 2050, which is the year of the EU climate target. But what is the energy-intensive industry's electricity demand in the shorter term?

The energy-intensive industry's co-operation SKGS has previously commissioned the consulting and research firm Profu to map the industry's future electricity demand year by year up to 2030. This report extends the period analysed to 2035, while updating the previous survey.

The mapping covers the measures and plans that the industries themselves assesses will be implemented in the coming years. The aim has been to provide a more detailed mapping to contribute to a constructive dialogue on where and

when new electricity generation needs to be realised, in order to maintain the pace of the climate transition and industrial competitiveness.

There are of course uncertainties about how large the actual electricity demand will be. As in the previous survey, the electricity demand of the planned investments are accounted for, even though there are some uncertainties surrounding the implementation. If the prerequisites are in place, mainly electricity grid capacity and electricity generation, it can be assumed that electricity demand will be in a higher range when more investments can be realised.

The survey shows that industrial electricity demand is in the same range or higher than recent analyses of the so-called high-electrification scenarios.

The demand for new electricity generation is high. The decided new electricity generation until 2026 will not be enough to meet demand in 2030. However, if wind power expansion continues at the current rate the industry's demand for electricity up to 2030 can be met. To meet the demand until 2035, 3-5 TWh of new electricity generation is needed annually. Mainly in the south of Sweden where the imbalance between generation and demand is greatest.

The pace of the climate transition is dependent on reliable and fossil-free electricity at competitive costs.

Martin Lindqvist

CEO SSAB, Chairman SKGS

Johan Bruce

Energy Director, Swedish Forest Industries Federation, Head of Operations SKGS

A short introduction to the Swedish power system

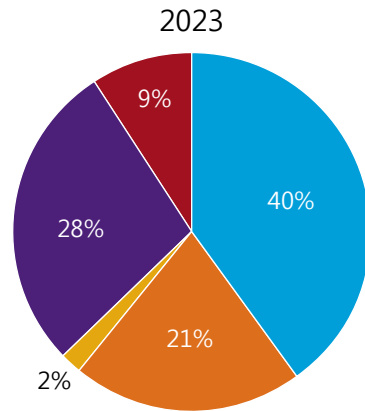
A virtually fossil free power system

Sweden has a virtually fossil free power system. 98 percent of the power generation is fossil free which gives Swedish industrial production a significantly lower carbon footprint than comparable countries.

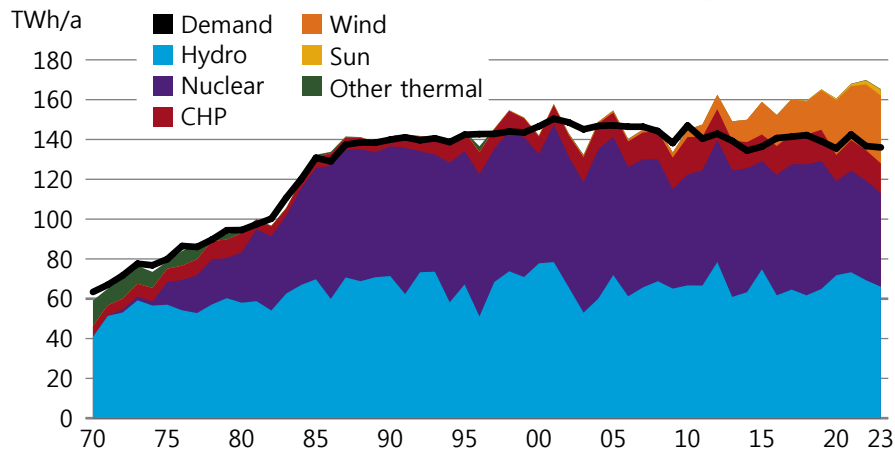
On an annual basis, Sweden is a net exporter of electricity. In 2023 163 TWh electricity was produced in Sweden, of which 135 was consumed within the country and 28 TWh was exported.

Hydro power and nuclear power is the backbone of the power generation in Sweden. Wind and solar power are continuously being expanded and are expected to meet the increasing demand for electricity in the near term. New nuclear can come place by 2035.

Even if the energy balance in Sweden is strong on an annual basis, the power adequacy has deteriorated as several nuclear reactors have been shut down in later years. This has increased the need for imports during the winter when the electricity demand is at its highest level.



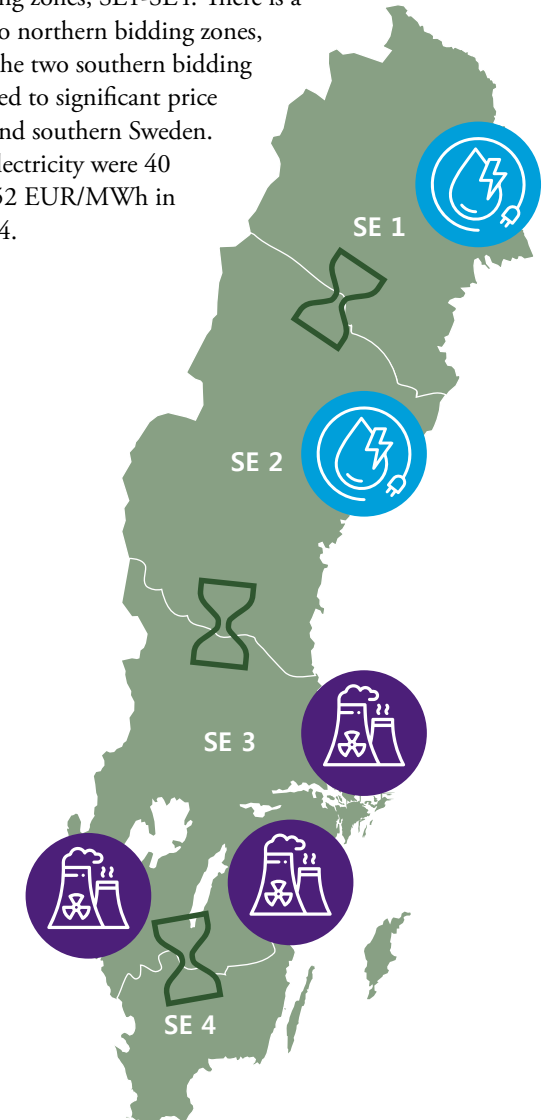
Electricity generation in Sweden TWh



Bottlenecks in the power grid combined with decreasing regional electricity capacity mean that southern Sweden has one of the EU's most strained electricity supply situations. At the same time, there is a large surplus in northern Sweden.

Due to internal bottlenecks in the power grid, the Swedish power market is divided in four bidding zones, SE1-SE4. There is a surplus of generation in the two northern bidding zones, SE1 and SE2, and a deficit in the two southern bidding zones, SE3 and SE4. This has led to significant price differences between northern and southern Sweden.

In 2023 the average prices of electricity were 40 EUR/MWh in SE1 and SE2, 52 EUR/MWh in SE3 and 65 EUR/MWh in SE4.



Summary

The Swedish industry's electricity demand will increase by 88 TWh by 2035. This corresponds to a further almost two thirds of Sweden's current total electricity demand of 140 TWh. Compared with the previous survey, electricity demand increase is postponed. The previous forecasted additional electricity demand in 2030 of 70 TWh is now expected to be reached in 2032.

- Steel and metal works increase electricity demand from 7 to 42 TWh/year, mainly by replacing fossil coal with hydrogen as iron ore reduction and steel production becomes fossil-free.
- Chemical industry, refineries and electro fuels increase their combined electricity demand from 5 to 38 TWh/year, with the refining and electro fuel industries accounting for a significantly increased electricity demand, from 1 to 28 TWh/year. However, there is considerable uncertainty around the planned investments. The electricity demand of the chemical industry increases from 4 to 10 TWh.
- Mining, earth and stone industries, are set to increase their combined demand for electricity. The combined electricity demand of the mining, earth and stone industries increases from 5 to 11 TWh/year, due to the phasing out of diesel in machinery and increased production.
- The forestry industry, which is currently by far the largest electricity user, will not increase its electricity demand as much, from 18 to 24 TWh/year. The forestry sector is suitable for Bio-CCS, which could eventually increase the industry's electricity needs.
- The technology industry will increase its electricity demand from 5 to 12 TWh. Battery manufacturing accounts for most of the increased electricity demand.
- Other industry, which includes the food and wood products industry and minor industries, is not expected to increase its electricity demand more than marginally. Total electricity demand is expected to remain at around 6 TWh in these sectors. However, they are not mapped in detail.

The large electricity-intensive investments planned in northern Sweden mean that the current electricity surplus in the SE1 and SE2 bidding areas will turn into a deficit by 2035. If all decided investments in new electricity generation are implemented, generation and demand will be in balance in northern Sweden by 2030. In 2035, the energy balance in northern Sweden turns to a deficit of 15 TWh, if the planned industrial investments are realised.

In southern Sweden, bidding areas SE3 and SE4, the deficit is expected to almost triple from 11 TWh in 2030 to 30 TWh in 2035. The largest increase in electricity demand is in Västra Götaland County.

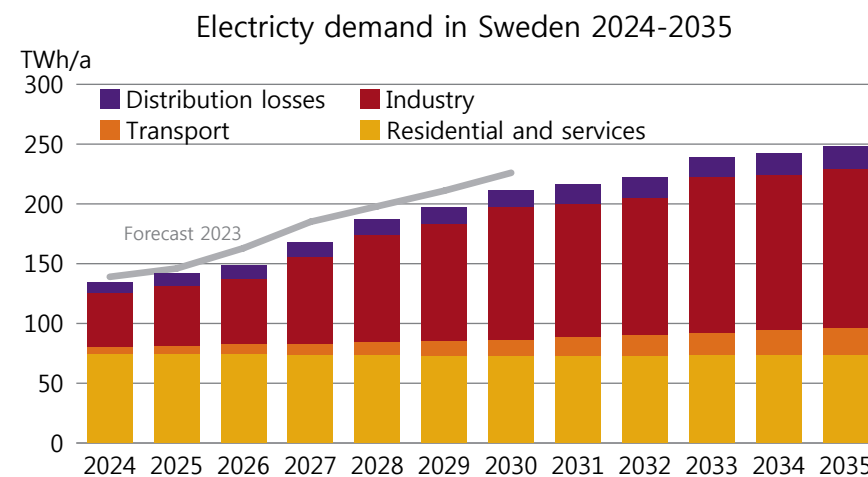
The companies in the survey see lack of capacity in the electricity grid and electricity generation as the biggest obstacles to their electrification by 2035.

To meet the increased electricity demand of industry, an annual expansion rate of at least 3-5 TWh of new electricity generation by 2035 is needed.

Industry needs an additional 88 TWh of electricity in 2035

Sweden's total electricity demand has remained relatively stable at around 140 TWh per year since 1990 until today. Now there is a dramatic expected increase in demand for electricity. Almost 250 TWh in total is needed by 2035, with industry's climate transition accounting for the main increase. If industrial investments in new production and electrification of existing processes are realised as planned, Swedish industry's electricity demand is expected to increase from 45 to 133 TWh in the years 2024-2035. This figure also includes an expected electricity demand of 18 TWh from investments whose realisation is considered less certain.

In this survey, no assessment has been made of electricity demand by non-industrial sectors. Instead, assumptions from the Swedish Energy Agency's latest long-term scenarios* are presented. Electrification of transport multiplies during the period from 8 to 23 TWh by 2035. Electricity demand from housing and services is basically unchanged and varies between 72 and 74 TWh/year. Transmission losses increase from 10 to 19 TWh over the period. A seemingly large increase but transmission losses reflect the increasing electricity demand.



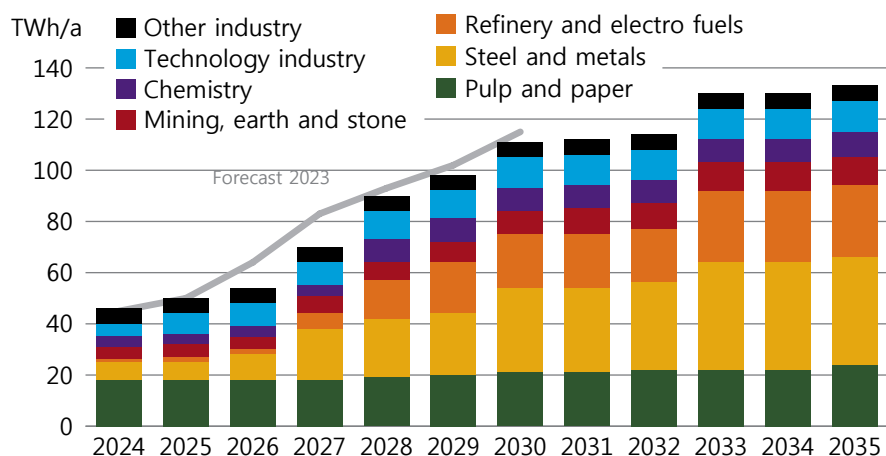
*Swedish Energy Agency, Scenarier över Sveriges energisystem 2023, "High electrification scenario"

Shifting schedules postpone electricity use

Compared to SKGS's previous mapping of Swedish industry's electricity demand for the period 2023-2030 (estimate 2023 in the graph), electricity demand will increase at a lower rate in the coming years. This is due to the fact that industry's investments have been postponed by a few years. The previously forecasted additional electricity demand in 2030 of 70 TWh is now expected to be reached in 2032.

However, electricity demand is still high and growing. The latest survey shows that industrial electricity demand in 2030 is estimated to be 4 TWh lower, 111 TWh compared to the 115 TWh previously assumed. Updated assumptions from external sources on non-industrial consumption lower the estimate for these by 10 TWh in 2030. This gives an expected total consumption of 212 TWh in 2030 compared to 226 TWh in the previous survey. A lower rate of increase, but it still involves very large amounts of electricity needed within a relatively short time.

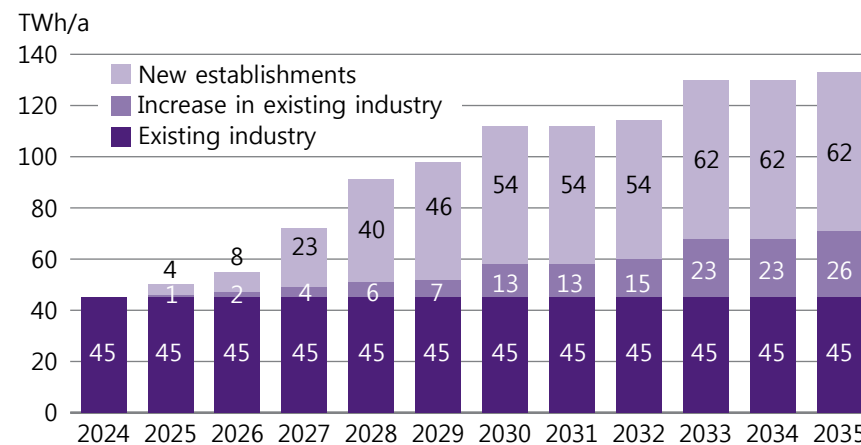
By 2035, industrial electricity demand in Sweden is expected to increase to 133 TWh. A lower rate of increase, but it still involves very large amounts of electricity needed within a relatively short time. This means a total consumption of 248 TWh in 2035.



Climate transition and new industrialisation

Industry is making and planning record investments, with the aim of phasing out fossil raw materials and fuels. Fossil-free electricity is the basis for achieving Swedish and international climate goals. The climate transition has led to new industrialisation, where innovative Swedish companies are leaders.

New battery factories are supplying batteries to an increasingly electrified transport sector. The production of fossil-free fertilisers and electrofuels are new activities that have positive climate and security policy effects.



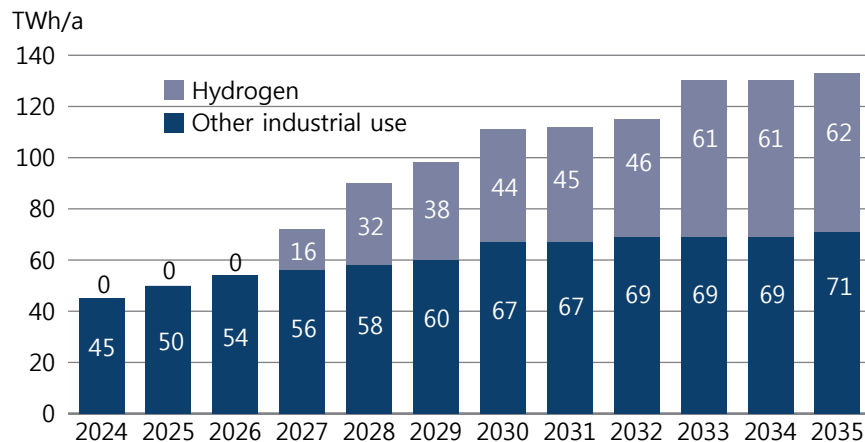
Increased self-sufficiency in fuels and fertilisers is necessary to replace imports from Russia. New industries are expected to account for almost half of industrial electricity demand in 2035, equivalent to 62 TWh.

Large-scale hydrogen production accounts for almost half of the increase in electricity demand by 2035

Hydrogen production is electricity-intensive and crucial to the green transition and meeting climate goals. Fossil-free steel, but also e-methanol production, for fuel or raw material in the chemical industry, will need large amounts of electricity already within a few years.

By 2035, 62 TWh/year of industry's electricity demand is expected to come from large-scale hydrogen production. The electricity demand for large-scale hydrogen production is based on a qualified assessment. The figures in this report are not fully comparable with the previous report. Previously, electricity demand for hydrogen-related investments was reported, now the specific electricity demand to produce hydrogen is reported.

Hydrogen producers can to some extent contribute to balancing the electricity system by regulating production depending on how much electricity the weather-dependent power sources are generating at the time. This is based on the availability of hydrogen storage.

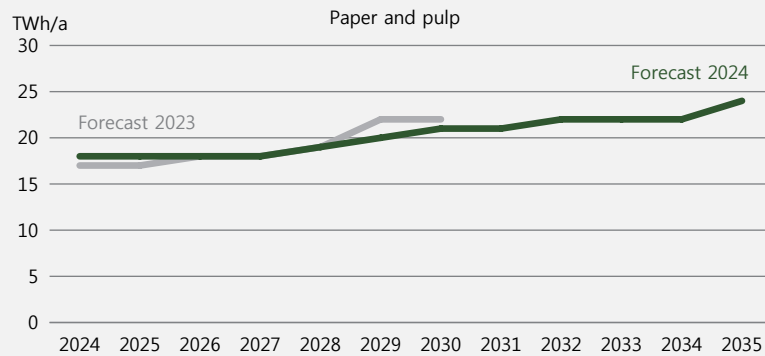




2030
+2.7 (+4.6*) TWh

2035
+6.4 TWh

*Forecast 2023



Forest

The paper and pulp industry has largely phased out fossil energy in its production and is expected to increase electricity demand by almost a third, from 17.9 to 24.3 TWh/year.

The pulp industry has great potential for capturing and storing biogenic carbon dioxide, so-called bio-CCS. Large single points of emission of carbon dioxide from biofuels in combination with electricity generation and deep-water harbours suitable for shipping out liquid carbon dioxide makes bio-CCS interesting for the pulp industry.

Increased production of biofuels with bio-CCU, with the captured carbon dioxide as a feedstock, could become a new product of the forest industry. The technology is electricity-intensive and could significantly increase the electricity use, if deemed profitable.

Chemistry

The electricity demand of the chemical industry is expected to increase by 5.9 TWh, from 3.9 to 9.8 TWh/year by 2035. Investments for the production of electrofuels are responsible for the very strong increase in electricity demand. The electricity demand of the refining and electrofuel industries multiplies, from 1.1 to 28.2 TWh/year by 2035. In total, electricity demand for chemicals, refining and electrofuels will increase by 25.3 TWh, from the current 5.0 to 38.1 TWh.

Increased use of fossil-free electricity and hydrogen in manufacturing processes, but also replacement of fossil raw materials to bio-based ones, is central to the chemical industry's climate transition. Carbon capture for storage, CCS, and for feedstock use, CCU, are promising technologies, albeit electricity-intensive technologies, which can further increase electricity demand.

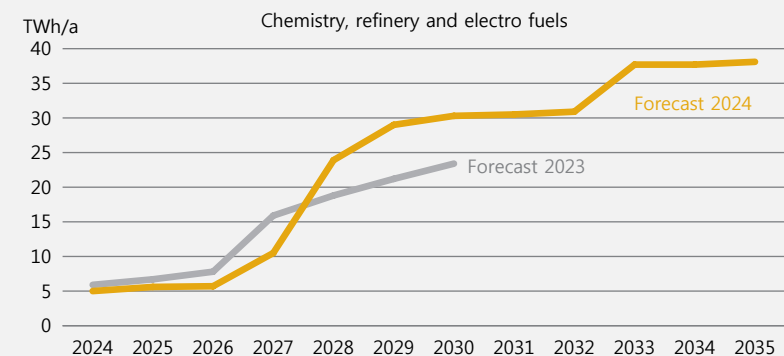
A large part of the difference compared to last year's survey can be explained by the announcement of several new investments in electrofuel manufacturing.



2030
+ 25.3 (+17.5*) TWh

2035
+33.1 TWh

*Forecast 2023

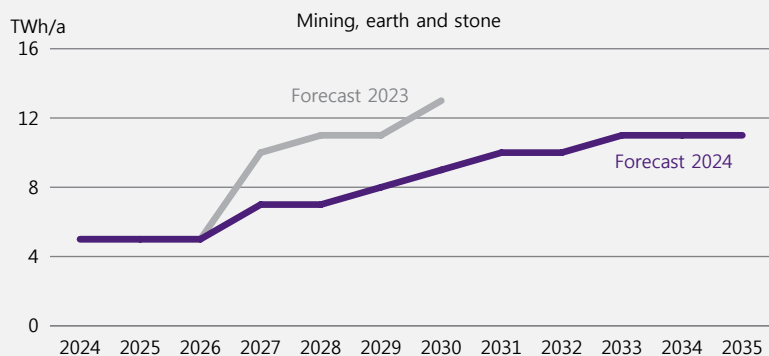




2030
+4.2 (+7.6*) TWh

2035
+5.8 TWh

*Forecast 2023



Steel

Steel and metal works is expected to increase its electricity demand by more than six times by 2035, from 6.8 to 42.0 TWh/year. The main increase in electricity demand comes from new plants to produce sponge iron and fossil-free steel, where hydrogen technology can replace fossil coal in the reduction of iron ore.

Compared to the previous survey, the steel industry's increased electricity demand will be at about the same level, but not until three years later. One of the reasons for this is that some industrial companies have not had access to the electricity/ electrical power needed to increase production according to the desired plan.

Mines

The electricity demand of the mining industry, including the earth and stone industry, is expected to double from 5.1 to 10.9 TWh/year by 2035. Electrification of mining provides significant climate benefits and can be implemented relatively quickly, by phasing out fossil fuels from loaders and other vehicles. Electricity can also be saved by reducing the need to ventilate if diesel exhaust underground is eliminated.

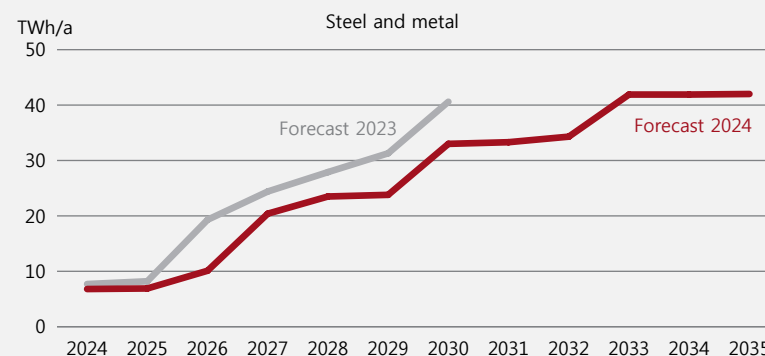
CCS to capture carbon dioxide from cement production further increases electricity demand, here reported under the earth and stone sector. Climate positive concrete would reduce Sweden's carbon dioxide emissions by three per cent. One of the main reasons for the clearly lower electricity demand in this year's survey compared to last year's has to do with the fact that this year's survey received more granular data in the responses for those industries that have both mines and production facilities in their operation (which means better knowledge of the distribution between these industries). Additional reasons are due to the fact that some industries have reduced the previously announced electricity demand due to changes in methodology and technology development.



2030
+26.3 (+32.9*) TWh

2035
+35.2 TWh

*Forecast 2023

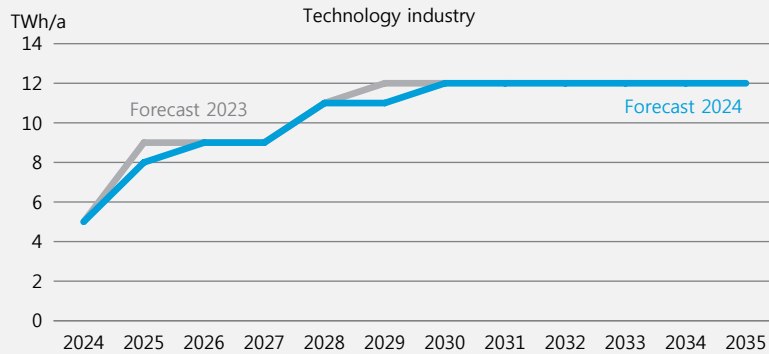


TECHNOLOGY INDUSTRY

2030
+7.1 (+7.4*) TWh

2035
+7.1 TWh

*Forecast 2023



Technology industry

The electricity needs of the technology industry also increase, from 4.9 to 12.0 TWh by 2035. Where battery manufacturing accounts for a large part of the increased electricity demand.

The other industries in the survey do not increase their electricity use more than marginally, from 5.8 to 5.9 TWh. However, it should be noted that these industry categories are not mapped, but they have, and are expected to continue to have, a very small electricity demand compared with the electricity-intensive industry.

Electricity use by sector in TWh per year

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Pulp and paper	18	18	18	18	19	20	21	21	22	22	22	24
Steel and metals	7	7	10	20	23	24	33	33	34	42	42	42
Refinery and electro fuels	1	2	2	6	15	20	21	21	21	28	28	28
Mining, earth and stone	5	5	5	7	7	8	9	10	10	11	11	11
Chemistry	4	4	4	4	9	9	9	9	9	9	9	10
Technology industry	5	8	9	9	11	11	12	12	12	12	12	12
Other industry*	6	6	6	6	6	6	6	6	6	6	6	6
Total	45	50	54	72	90	98	111	112	115	130	130	133

Whereof

New establishments	0	4	8	23	40	46	54	54	54	62	62	62
Hydrogen	0	0	0	16	32	38	44	45	46	61	61	62

*Food industry, wood products industry, small industry and other industries.

Sharp increase in electricity demand in northern and western Sweden

The mining and steel industry in the county of Norrbotten in northern Sweden accounts for the largest share of the increase in electricity demand in Sweden. Industrial electricity demand in the SE1 bidding area will increase by 44.9 TWh up to 2035. The large increase is mainly linked to production of hydrogen for LKAB's and H2 Green Steel's production of fossil-free sponge iron, and SSAB's transition to the production of fossil-free steel is also included.

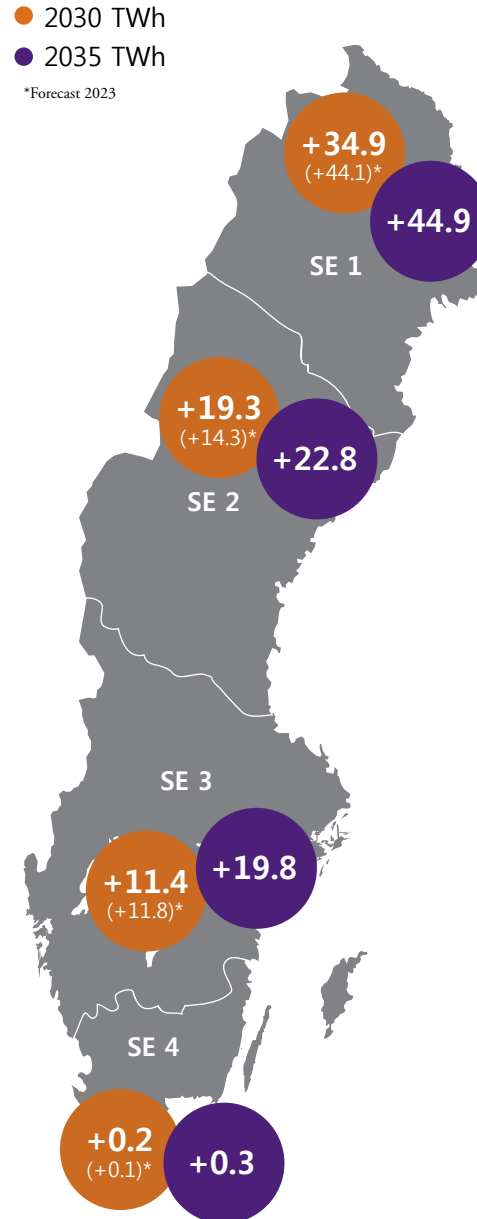
In SE2, industry's demand for electricity will also increase during the period, by 22.8 TWh.

In SE3, industrial electricity use is expected to increase by 19.8 TWh up to 2035. A large part of the increased electricity demand is accounted for in Västra Götaland county. There, industry's electricity needs will more than quadruple, from 3.8 to 16.9 TWh during the period.

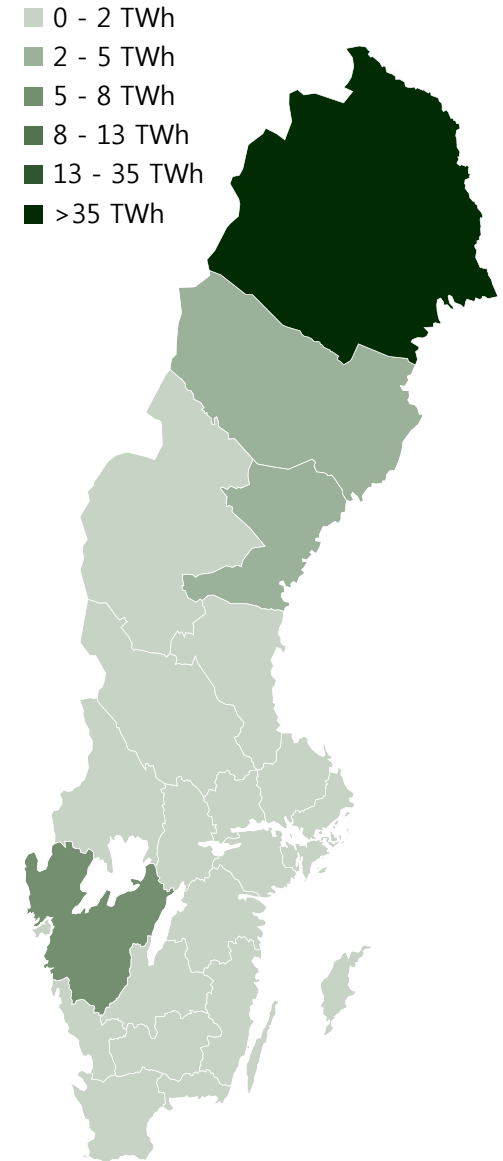
By 2035, industrial electricity demand in SE4 increases marginally by 0.3 TWh.

Industrial use per bidding zone, TWh						
	Not mapped (SE1-SE4)	SE1	SE2	SE3	SE4	Summa
2024	14.9	5.5	6.5	15.7	2.8	45.4
2025	14.9	7.8	7.2	16.8	2.8	49.5
2026	14.9	10.7	8.1	17.8	2.9	54.4
2027	14.9	22.7	10.6	20.5	2.9	71.5
2028	14.9	30.5	18.7	22.9	2.9	90.0
2029	14.9	31.0	24.0	24.6	2.9	97.5
2030	14.9	40.4	25.8	27.1	3.0	111.1
2031	14.9	40.8	26.2	27.6	3.0	112.5
2032	14.9	41.7	26.9	28.2	3.0	114.7
2033	14.9	49.9	26.9	35.1	3.0	129.8
2034	14.9	50.0	26.9	35.1	3.0	129.9
2035	14.9	50.4	29.3	35.5	3.1	133.2

Increase per bidding zone 2024-2035



Increase per county 2024-2035



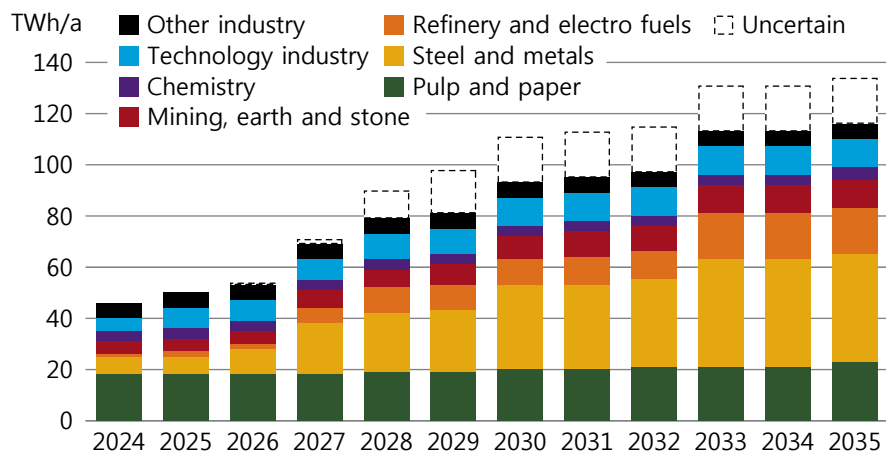
Uncertainties about the future electricity needs of industry

There are, of course, uncertainties in the mapping of industry's future electricity needs.

It is mainly investments in chemicals, refineries, electrofuels and green fertilisers where there are significant uncertainties.

The less certain investments are mainly in the northern bidding areas SE1 and SE2. Uncertainty is greatest in SE2, where 11 TWh of the expected electricity demand of 23 TWh is deemed to be uncertain.

The corresponding figure for SE1 is slightly lower. There, 6 out of 45 TWh are assessed as uncertain by 2035. In SE3 the assessment is much more certain, possibly 1 TWh may not be realized. In SE4, industry is hardly planning any investments that increase electricity demand, but those planned are expected to follow the timetables.



Several factors create uncertainties about electricity demand

The survey is based on a significant amount of data, collected through survey responses, where the companies themselves were asked to indicate the assessed degree of probability of estimated electricity demand. This means that there are a number of uncertainties to bear in mind.

- The degree of coverage for each sector – the proportion of companies with missing data the electricity demand has been assumed to remain at current levels until 2035.
- Uncertainty about the realisation of investment plans - there are significant uncertainties about whether electricity demand will arise before or after 2035.
- Implementation depends on factors that are difficult to assess – uncertainty about electricity and power, and not least price levels of electricity and raw materials, authorisation processes, competence supply, etc.
- Economic and security policy developments – geopolitical unrest and economic downturn affect investment appetite, overseas support packages for green production adds further uncertainties about how European industry will be affected.

Despite the uncertainties, it is important to emphasise that many companies have ambitious climate plans with targets to be implemented around 2035, or soon after. In several cases companies state that they see no alternative to shifting production, despite the difficulties and challenges they see ahead.

Many companies' expected electricity demand is linked to plans and choices that require new technologies, which are not yet mature or commercially available. The deployment of infrastructure for electricity generation and grids, as well as carbon storage systems takes time. This means that the time horizon for some of the planned investments could in practice be postponed beyond 2035.

In March 2024, a workshop was organised with some of the respondents to the survey where some of the uncertainties were discussed.

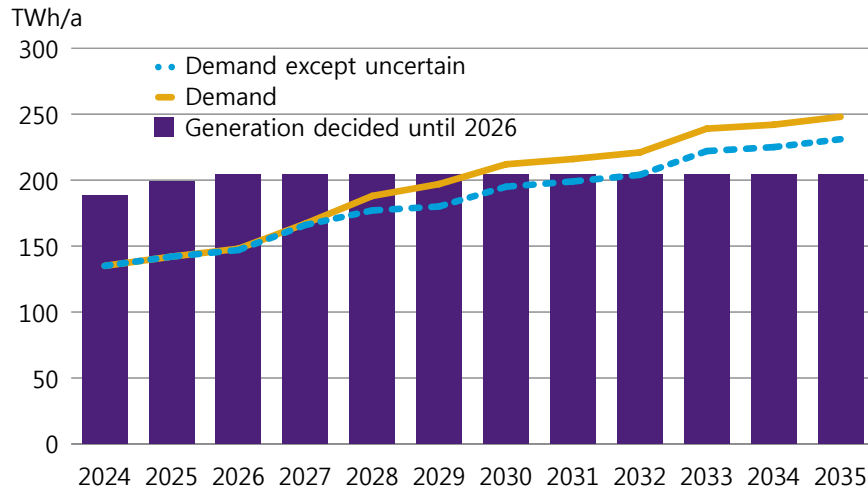
Considerable need for new energy generation by 2035

The energy balance in Sweden can be maintained until 2030 if the decided electricity generation follows the timetable and the uncertain electricity demand of industry does not materialise. If all industry's investments are implemented as planned, there will be a deficit of 9 TWh already in 2030.

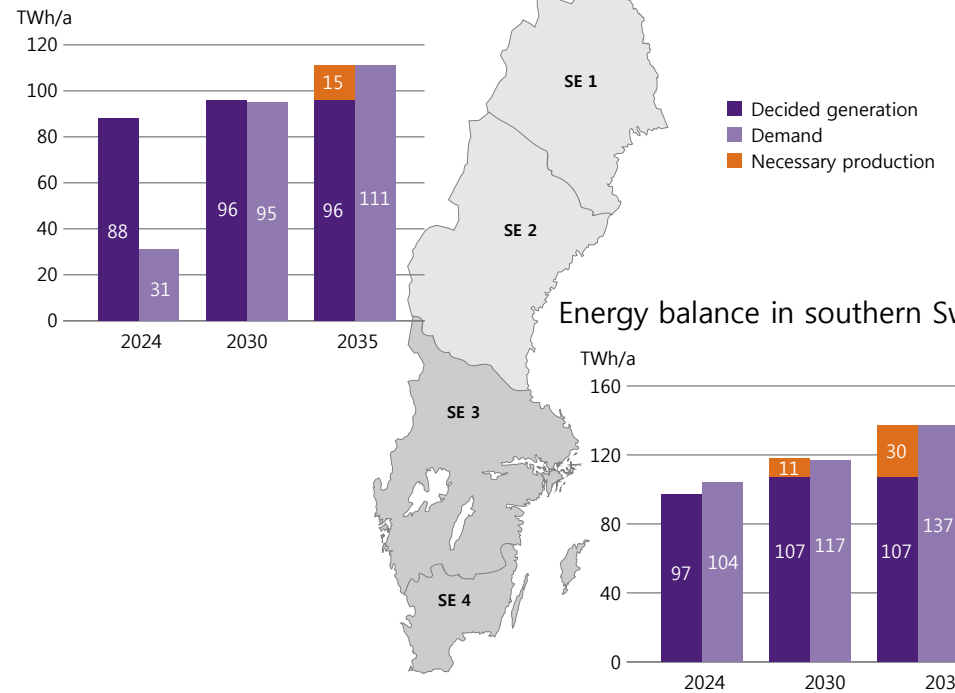
By 2035, electricity generation will need to increase by 45 TWh if the uncertain investments are also realised. This corresponds to an expansion rate of 5 TWh per year. Even if the uncertain investments are not realised, 27 TWh, or an additional 3 TWh of new electricity generation per year, is needed to meet the energy balance in Sweden.

To meet the increasing electricity demand, an annual development rate of new electricity generation of 3-5 TWh is needed. In the short term, new wind power is the solution. In the longer term, new nuclear power generation is needed.

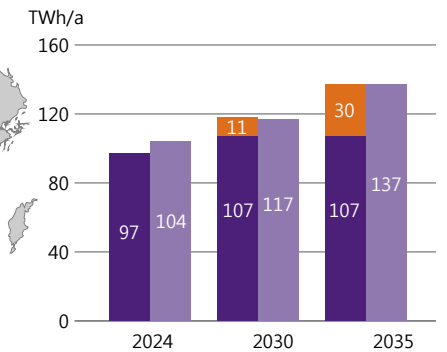
The climate transition and the major investments planned by industry are entirely dependent on the availability of reliable and fossil-free electricity at competitive costs. The increased demand for electricity must be met with increased electricity generation throughout the country.



Energy balance in northern Sweden



Energy balance in southern Sweden



Electricity surplus turns to deficit in Northern Sweden

The major electricity-intensive investments planned in northern Sweden mean that the significant surplus of electrical energy will decrease in SE1 and SE2.

If no new electricity generation is added, beyond what is planned until 2026, and the uncertain industrial investments do not materialise, demand and generation in northern Sweden will be in balance by 2035. If the uncertain investments are realised electricity surplus in northern Sweden will turn into a deficit of 15 TWh in 2035.

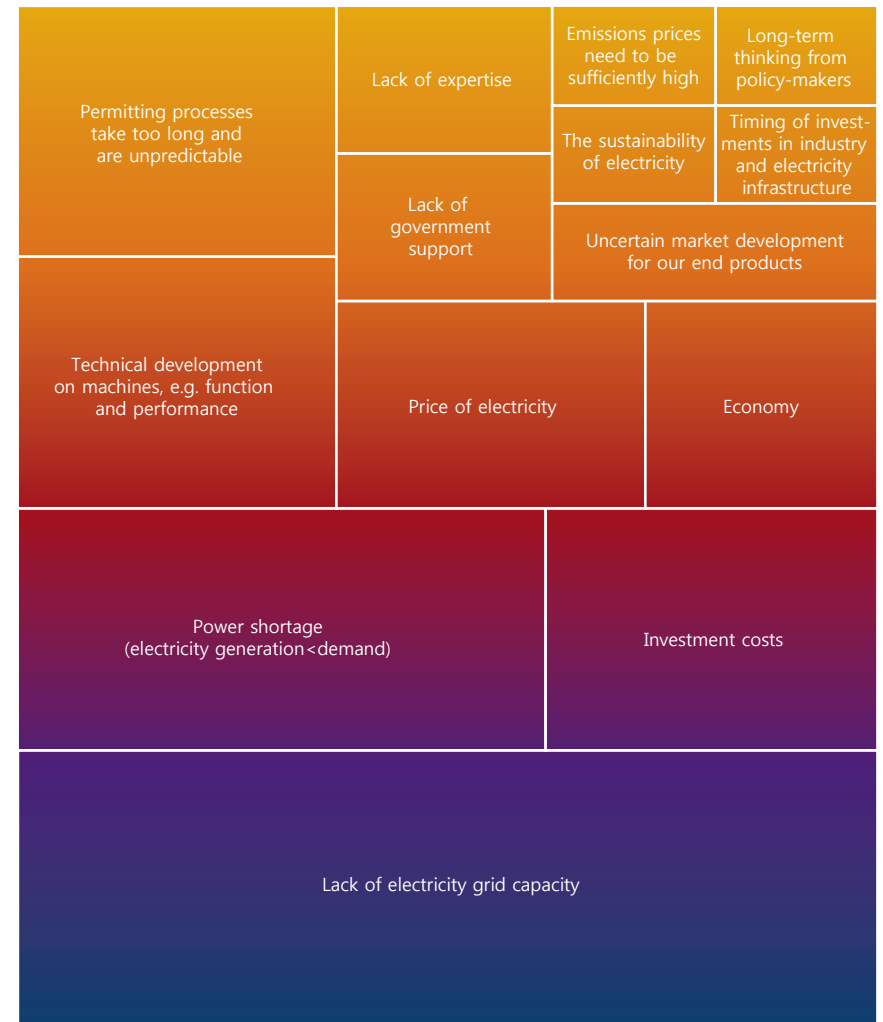
Southern Sweden is currently a deficit area that is dependent on electricity imports from other bidding areas, not least from northern Sweden. There are fewer projects classified as uncertain in southern Sweden. The difference between the outcomes in SE3 and SE4 is 1.0 TWh in both 2030 and 2035.

If no new electricity generation is added in the SE3 and SE4, the increased electricity demand will lead to a sharp increase in the deficit, from -11 TWh in 2030 to -30 TWh in 2035.



Obstacles to electrification up to 2035 according to industry

Lack of grid capacity is the biggest hindrance to industrial electrification according to the survey included in the survey. Almost three out of ten responded “grid capacity” to the question: What obstacles do you see to your electrification by 2035? Lack of electricity capacity due to insufficient electricity generation was the second biggest hindrance.



The survey

Background

The future of electricity demand has been described in a number of different scenario studies in recent years. In all scenarios, the tendency is for electricity use to increase, as a result of increasing electrification of transport and industry in particular.

This study examines the demand of Swedish industry in the coming years, up to 2035. The electricity demand only refers to plans and measures what the industries themselves consider likely within the time period. The survey is conducted during the winter of 2024 and is based on 35 survey responses from industrial companies and industry representatives. The data was supplemented with data from open sources in literature and media.

The industries in the survey are deemed to cover a large part of the industries with impact on electricity use, as they require new energy carriers to replace fossil fuels and raw materials. Electricity demand from unmapped industries is not expected to grow in the same way.

No assumptions on technology development

The mapping does not include assumptions on likely technology developments, pathways or general production changes in the different sectors. Beyond the major projects and electrification measures highlighted in the media in recent years the survey responses have provided new and complementary knowledge about planned changes in the electricity demand of additional industrial companies' facilities.

Although there has been a shift in the timing of many of the plans compared to the previous survey, which has reduced the near-term demand, this year's survey has helped to recognise the electricity demands from companies that were not included last year. The latter has thus contributed to the reduction not being as large as it could have been without this additional knowledge from this year's survey. In comparison with other scenarios published in recent years, this year's survey, like last year's, is relatively close to both the Swedish Energy Agency's and (Transmission Systems Operator) Svenska Kraftnät's latest high electrification scenarios.

*Profu has contributed to two of the recent surveys on behalf of the Swedish Energy Agency, Svenska Kraftnät and the Swedish Energy Agency have produced a number of different scenarios in recent years. At the time of writing, the Swedish Energy Agency and Svenska Kraftnät are working on their latest long-term scenarios.

The different sectors of the industrial sector

The survey focuses on the electricity-intensive industry but covers the industrial sector as a whole. The industries have been grouped by the SNI code (Swedish Standard Industrial Classification) of the activity, according to how they are named in the Swedish Energy Agency's publication series on energy use and supply. The food, textile, rubber/plastics, pharmaceutical, printing and other industries other industries' future electricity demands have not been investigated.

Description	SNI-code	Mapped?
Extraction of minerals (mining)	05-09	Yes
Food, beverage and tobacco processing	10-12	No
Manufacture of textiles, clothing and leather	13-15	No
Timber industry (production of e.g. boards, veneer)	16	Yes
Manufacture of pulp, paper and paper products	17	Yes
Graphic production and reproduction (e.g. printing of newspapers and books)	18	No
Manufacture of chemicals and chemical products	20	Yes
Manufacture of pharmaceutical products	21	No
Rubber and plastic products industry	22	No
Earth and stone products industry (e.g. production of cement, glass, bricks)	23	Yes
Iron and steel works	24.1-24.3	Yes
Other metal works and foundries (e.g. production of aluminium, copper, casting, etc.)	24.4-24.5	Yes
Fabricated metal products, machinery, electrical and optical equipment and transport equipment (engineering industry)	25-30	Yes
Other manufacturing (e.g. manufacture of furniture, repair of machinery, etc.)	31-33	No

Methodology

The main basis of the study is data on individual companies' electricity demand up to 2035, in light of ongoing measures and initiatives. The survey has been supplemented with open sources.

The Swedish Energy Agency's statistics on current electricity use by industrial sectors is used as a basis for estimating what proportion of total electricity use the companies in the survey account for. This gives an idea of the survey's coverage.

The likelihood of planned electricity-intensive investments being realised is difficult to assess. For those companies that declined to participate in the survey, or where there was no response, the electricity demand has been assumed to remain constant over the period to 2035.

The responses from companies differ significantly in the level of detail provided. Some responses are very detailed, with planned production increases, energy efficiency measures and electricity demand at the plant level. Other responses are very generalised, for business reasons.

To show some of the uncertainties, some of the projects have been categorised as more uncertain than the others (the 'uncertain projects' group). These are projects run by new or established actors/companies that are planning entirely new activities or facilities but are not yet ready for land allocation or have not yet started the authorisation process and/or activities that are not dependent on a specific location (i.e. it is not a given that the investment will take place in Sweden).

