

ELECTRICITY PRICE SHOCK AND SWEDISH EXPORTS

*How Swedish manufacturers are
impacted by the energy crisis*

FOREWORD AND REFLECTIONS

The price of electricity in Sweden and Europe is soaring, with major repercussions for society. This shouldn't have come as a surprise. Much like the run-up to the global financial crisis more than a decade ago, all the pieces of the puzzle were again perfectly lined up. The Energiewende policy in Germany, with its shutdown of nuclear power facilities and major investments in gas supply from a resurgent Russia. The ageing nuclear power plants in France, Europe's largest exporter of electricity. The rapid expansion of and rising dependence on wind power where production output relies on weather patterns. And, not least, the interconnected European energy system where spiking gas prices ripple out and affect electricity pricing overall.

Swedish manufacturers have historically benefited from reliable access to renewable energy at prices that, for the most part, have been lower than in the rest of Europe. With hydropower and, at a later stage, nuclear power, Sweden's energy supply was safeguarded for many trouble-free decades. Another Swedish natural resource, forest biomass, made biofuels a welcome addition to electricity generation in heat and power stations.

The current transformation of Sweden's energy system has changed the playing field for Swedish manufacturers. Meanwhile, electricity use is expected to rise sharply as a result of industrial investments in northern Sweden and the electrification of the transport system.

The vulnerabilities of Europe's energy supply, which includes electricity production, are now in the spotlight because of the war in Ukraine. Europe's gas stores are full as we enter winter, but the structural problems remain. Although Sweden is in a better starting position than most other European countries, the impact will hit us – now and in the future.

To investigate the consequences of Europe's energy crisis for Sweden and Swedish exports, Business Sweden has interviewed more than 500 manufacturing companies and asked how their operations in Sweden have been affected so far, and how they view the future. Almost all respondents are convinced that the price of electricity will continue to rise moderately or steeply during the winter months.

Nonetheless, the results of the survey give us a certain measure of hope. The impact of the soaring electricity price on production, sales and sourcing has so far been limited, and the companies are coping well with the challenges. A more worrying development is that the electricity price is broadly impacting profitability levels, which will have long-term consequences. And many companies are now signalling cutbacks in their operations.

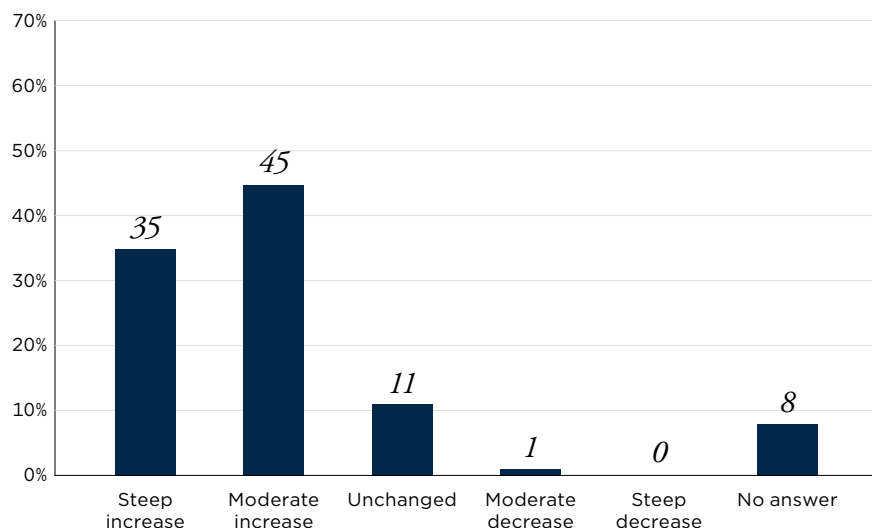
Let's keep our hopes up for a mild and windy winter.

Lena Sellgren
Chief Economist



LENA SELLGREN
Chief Economist
Business Sweden

MANUFACTURERS' FORECAST FOR ELECTRICITY PRICES UNTIL END OF FEBRUARY 2023



Companies are widely convinced that electricity prices will increase moderately to steeply in the next few months.

THE ROLE OF ELECTRICITY IN SWEDISH INDUSTRY

Sweden's export of goods amounted to a record SEK 1,626 billion in 2021, of which the manufacturing sector accounted for SEK 1,496 billion or 92 per cent. The remaining share of exports consists primarily of ore and minerals, agricultural and fishery products and electricity. Close to three quarters of the output of Sweden's manufacturing sector is destined for export to markets abroad.

PROCESSING INDUSTRY HIGHLY EXPOSED

Biofuel is the dominating energy type when it comes to powering Swedish industry, accounting for a 43 per cent share of the total energy supply. Electricity is the second largest energy type with a 35 per cent share. Coal and coke account for 9 per cent and petroleum products for 6 per cent. District heating, natural gas and town gas as well as other fuels account for the remaining 7 per cent.

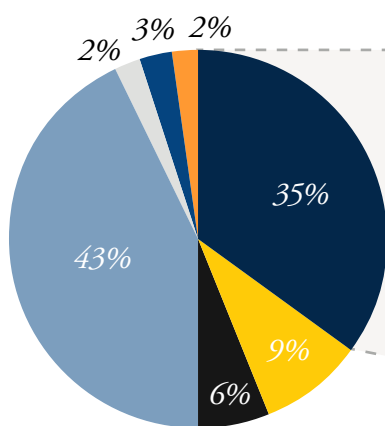
On average, energy consumption accounts for approximately 2 per cent of the manufacturing

sector's variable costs, with significant disparities between industries. In the chemicals industry, energy accounts for nearly 7 per cent of variable costs, and in the forest industry the share is 5 per cent. Meanwhile, in the engineering industry the share is just 0.5 per cent.

The energy-intensive industrial sector includes processing industries such as wood and paper, chemicals and pharmaceuticals and steel and metals. Parts of the food industry are also energy-intensive. The new battery industry as well as future hydrogen production will also be categorised as energy-intensive industries where electricity is the main energy source. Beyond manufacturing, mining and minerals processing also consume large amounts of energy.

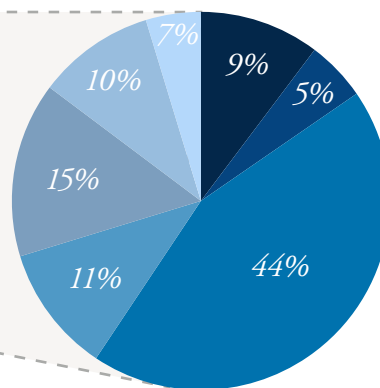
It is evident that electricity plays a significant role in powering all the operations of the manufacturing sector. For example, processes such as cooking and drying in the production of pulp and paper require large amounts of electricity. In scrap-based steelmaking electric arc furnaces are used to melt

ENERGY USE IN MANUFACTURING 2020, distribution by energy source



- Electricity
- Coal and coke
- Petroleum products
- Biofuels
- Other fuels
- Natural gas and town gas
- District heating

ELECTRICITY USE IN MANUFACTURING 2020, distribution by industry



- Mining and quarrying
- Food
- Wood and paper
- Chemicals and pharmaceuticals
- Steel and metals
- Engineering
- Other industries

Source: Swedish Energy Agency (2022)

the scrap steel. The chemicals industry uses electricity for electrolysis, among other processes. In engineering, electricity is used to power machines and other equipment. Factory buildings require electricity for heating and cooling, ventilation and lighting.

The processing industries of wood and paper, chemicals and pharmaceuticals as well as steel and metals account in total for 70 per cent of the Swedish industry's electricity consumption. These industries are particularly exposed to changes in the electricity price. Engineering accounts for 10 per cent of industry's electricity use.

GREEN TRANSITION AND WORLD EVENTS AMPLIFY PRICE SPIKE

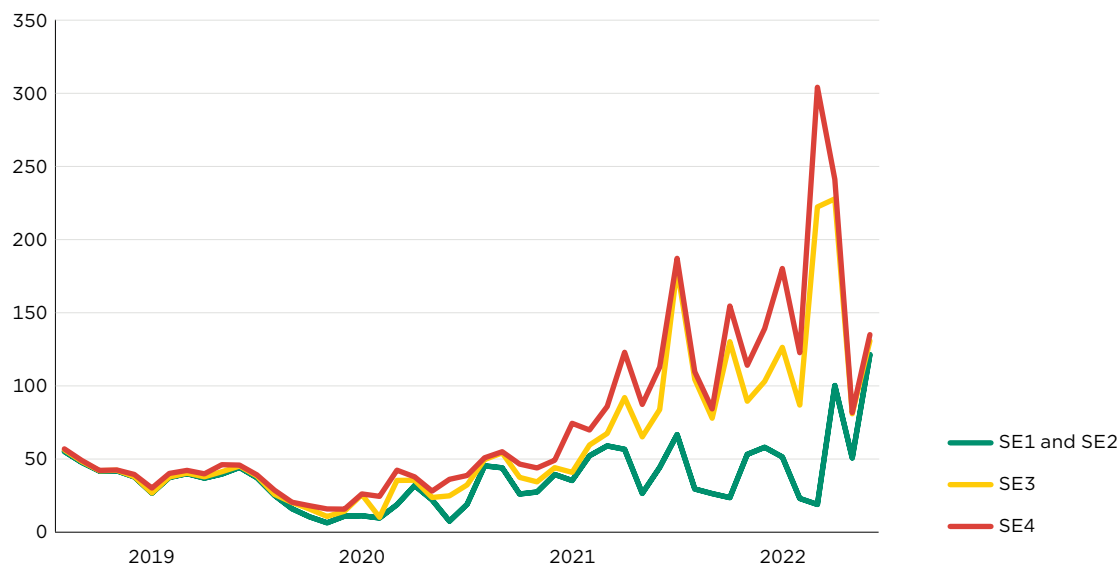
Due to the ongoing transformation of the Swedish and European energy system, as well as several world events, the electricity prices in Sweden

and the rest of Europe have soared over the past year. The war in Ukraine has drastically reduced deliveries of natural gas from Russia which has led to a severe increase in gas prices across Europe. Given that just over 20 per cent of Europe's energy production relies on gas as a primary source, the gas prices have a direct impact on electricity prices. Despite the fact that Sweden uses very little natural gas for its energy supply, and more or less no gas at all in electricity production, the link to the European energy market results in volatility and rising electricity prices in Sweden, too.

The development has been particularly dramatic in Sweden's grid regions 3 (Stockholm) and 4 (Malmö) which do not produce enough electricity to cover energy consumption. They instead rely on power transmission from grid regions 1 (Luleå) and 2 (Sundsvall) and from Sweden's neighbouring countries.

PRICE DEVELOPMENT FOR ELECTRICITY IN SWEDEN'S FOUR GRID REGIONS

January 2019 – November 2022, Swedish öre/kWh



Note: Average monthly price excluding taxes and fees. To simplify interpretation of the graph Business Sweden has applied the same time series for SE1 and SE2. The average monthly price was almost identical in both grid regions during the period.

Source: Nord Pool (2022)

CURRENT STATUS AND FUTURE OUTLOOK

TWO-THIRDS IMPACTED BY THE ELECTRICITY PRICE SHOCK

Business Sweden's survey shows that approximately two-thirds of manufacturers are affected in their operations in Sweden by the increased electricity price to a moderate or severe degree. The proportion is stable when comparing how the companies have been affected until now (November 2022) respectively when they assess how they are likely to be affected as of now until the end of February 2023.

The share of companies that are negatively affected by the rising electricity price naturally differs between Sweden's grid regions, as the electricity price is markedly higher in grid regions 3 and 4 than in regions 1 and 2. The survey shows that approximately 40 per cent of companies in grid region 1 have been negatively affected so far, while the corresponding figure for grid region 4 is almost 80 per cent.

Among large companies, 82 per cent confirm they have been negatively affected so far, a share that decreases to 76 per cent when assessing the next three months.

Broken down by industry, this share varies between 40 and 80 per cent for the period until now, while the span shrinks to between 50 and 74

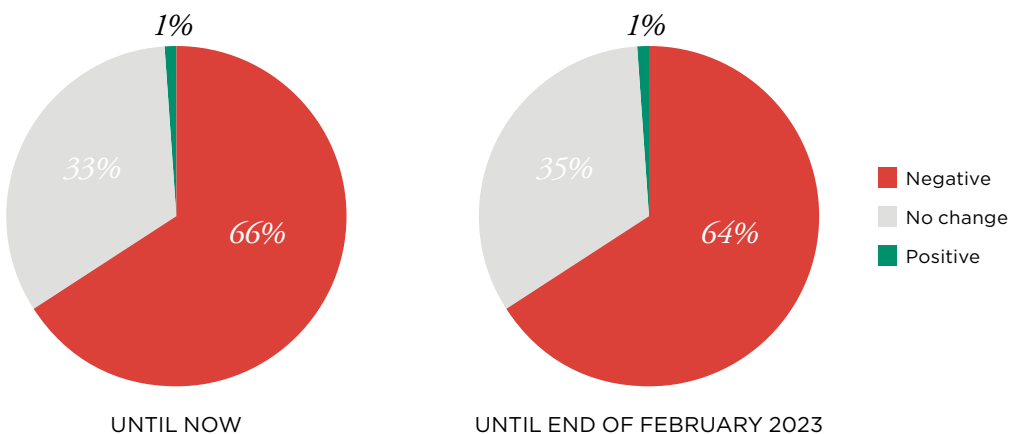
per cent for the forecast until end of February 2023. While the processing industry has clearly been most affected, the gap is closing compared to the engineering industry in the three-month forecast. The findings show that, in particular, the automotive and food industries will be the hardest hit in the coming period until the end of 2023, with 74 per cent of companies reporting that they will be negatively affected by the rising electricity price.

Only 1 per cent of the respondents stated that their operations in Sweden will be positively affected by the increased electricity price. This minority of companies is found both in the processing industry and in engineering. No small companies are represented in this category.

One-third of the surveyed manufacturing companies report that their operations in Sweden are not affected by the increased electricity price. This share also remains stable when comparing the two time periods. Larger companies stand out for having a considerably smaller share of respondents – 16 per cent – stating that they have been unaffected so far. In the companies' forecast until end of February 2023, this share remains more or less unchanged.

Broken down by industry, the share varies between 15 and 55 per cent for the historical period until now, while the range shrinks to between 24

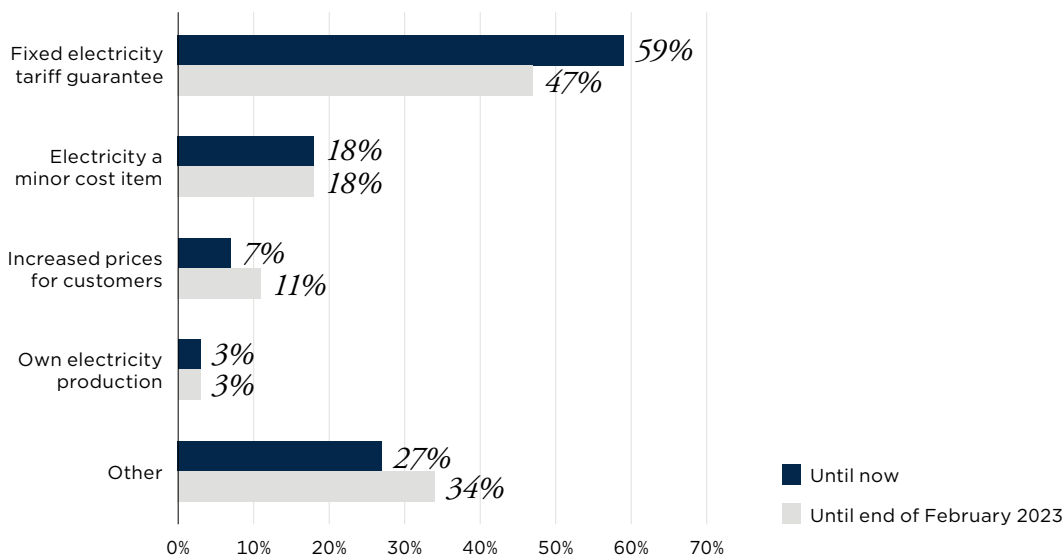
THE IMPACT OF RISING ELECTRICITY PRICES ON MANUFACTURING COMPANIES



Widespread negative impact, especially in processing industries such as *Food, Wood and paper, and Chemicals and pharmaceuticals*. The *Automotive* industry is expecting severe negative impact in the next few months.

Parts of the *Machinery* industry, as well as *Electrical equipment* and *Other manufacturing* are least affected.

FACTORS PROTECTING MANUFACTURING COMPANIES FROM IMPACT



Note: Companies have reported several factors which explains why the sum of factors exceeds 100 per cent

A fixed electricity tariff guarantee is the most important measure companies can take to hedge against rising prices.

and 50 per cent in forecast until February 2023. Electrical equipment stands out as a relatively unaffected industry during both time periods.

The near 60 per cent share of companies who report that they are unaffected by the increased electricity price explain this turnout by highlighting that they have fixed tariff guarantees for their electricity supply, which is common in the manufacturing industry. However, fixed tariffs involve extra costs and only apply for a limited time period. The share of companies opting for fixed tariffs drops to just below 50 per cent for the forecast period, from today until the end of February 2023.

The number of companies that have opted for fixed tariffs is most likely larger than the group of unaffected companies in the survey findings, but these companies could be impacted by the rising electricity price due to other, indirect factors.

Around 20 per cent of the reported one-third of companies that are unaffected state that electricity is not a major cost item on their bottom line. A smaller share of companies report that they have transferred higher electricity prices to their customer pricing. Only a small number of companies have their own electricity production.

MAJOR IMPACT ON PROFITABILITY

Business Sweden's survey shows how the rising price for electricity affects manufacturing companies' operations in Sweden, including their exports to and sourcing from markets abroad. The findings reveal, thus far, a moderate

negative impact on the companies' production, sales and sourcing operations. The positive effects of the higher electricity price seen among a small minority of companies are expected to fade in the next few months, while the negative effects on the vast majority of companies will be reinforced.

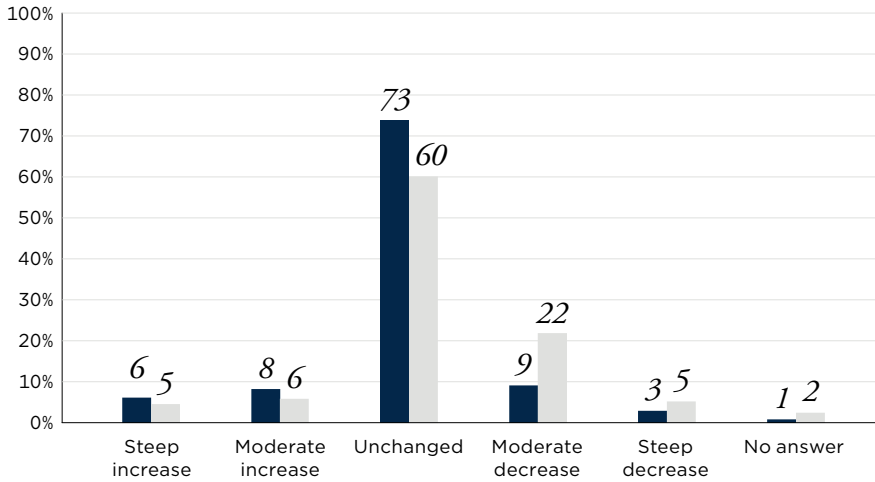
The increased electricity price has a particularly negative impact on the profitability of the surveyed companies, with approximately 75 per cent of companies reporting that profitability levels have so far been moderately to severely affected. Just 15 per cent of companies state that the increased electricity price has not impacted their profitability.

Broken down by industry, the automotive and electrical equipment industries are at opposite sides of the spectrum, with 0 per cent and 42 per cent respectively of companies reporting that profitability has so far not been affected by the increased electricity price.

For the period until the end of February 2023, the impacts of the electricity price on the profitability of companies will grow further, with 80 per cent of companies stating moderate to severely negative effects. Only 11 per cent of companies are expected to remain unaffected when it comes to their profitability level.

The detailed findings of Business Sweden's interview survey are presented below. The diagrams summarise the impacts of the increased electricity price on manufacturing companies' production, export sales, sales in Sweden, sourcing of intermediate goods in Sweden and from abroad, and overall profitability.

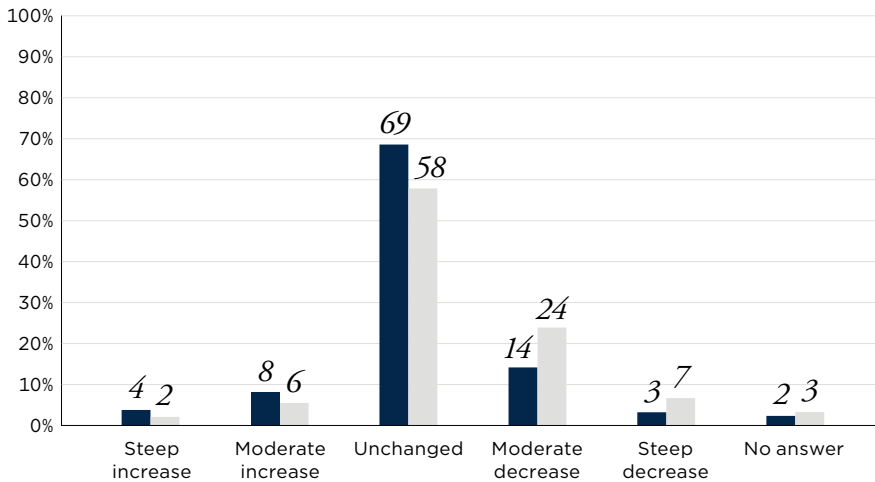
PRODUCTION



Expected decline in production in the next few months, primarily in *Wood and paper*, *Chemicals and pharmaceuticals*, and *Steel and metals*.

■ Until now
■ Until end of February 2023

EXPORT SALES

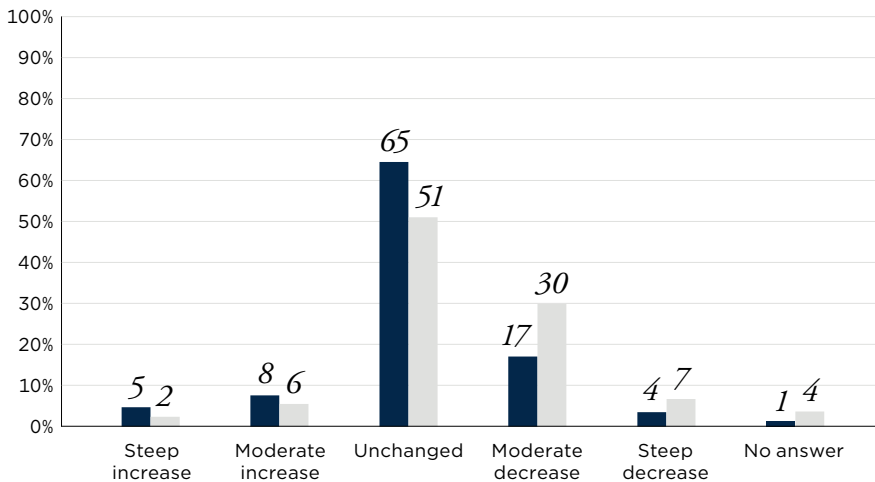


Sales drop so far in the processing industry except for *Food*.

Moderate sales decline expected in *Wood and paper* as well as *Chemicals and pharmaceuticals*.

■ Until now
■ Until end of February 2023

SALES IN SWEDEN

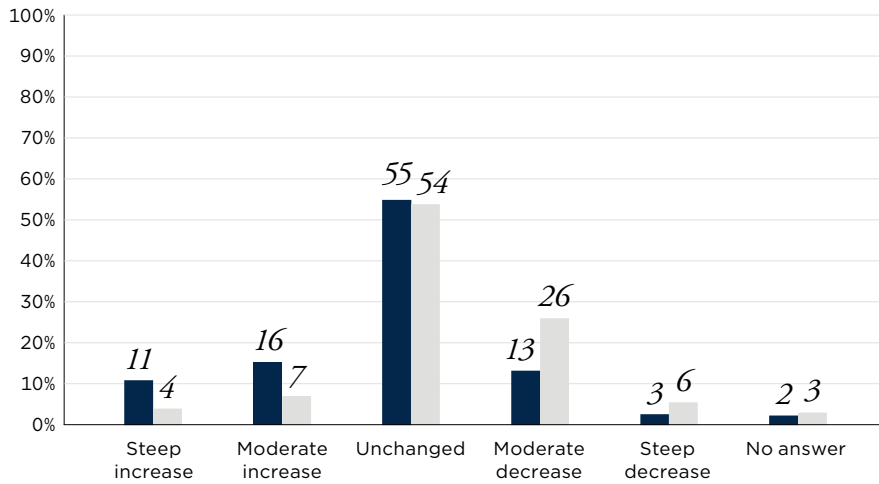


Moderate downturn so far in the engineering industry. More notable decline in the processing industry.

Sales drop in Sweden mainly expected for *Food* as well as *Chemicals and pharmaceuticals*.

■ Until now
■ Until end of February 2023

SOURCING OF INTERMEDIATE GOODS FROM SWEDEN

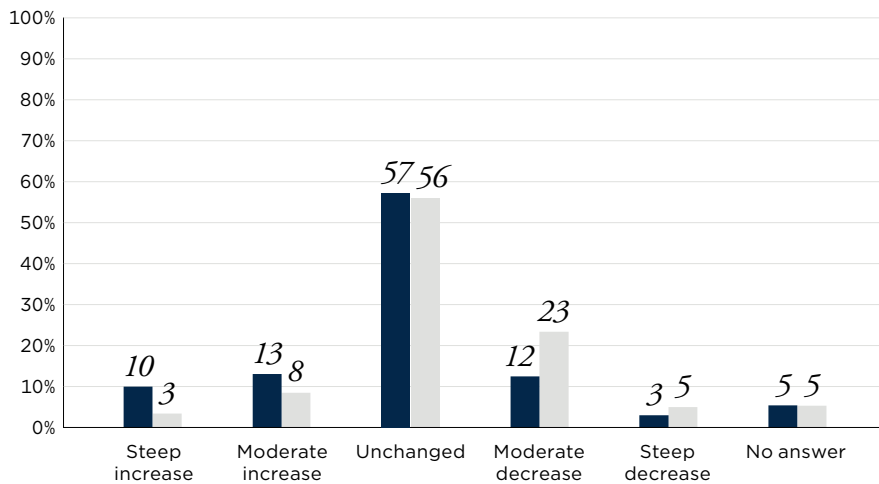


Increase in sourcing from Sweden mainly in *Food* and *Machinery*.

Expected shift from broad and predominantly positive effects so far to negative effects in the next few months.

■ Until now
■ Until end of February 2023

SOURCING OF INTERMEDIATE GOODS FROM ABROAD

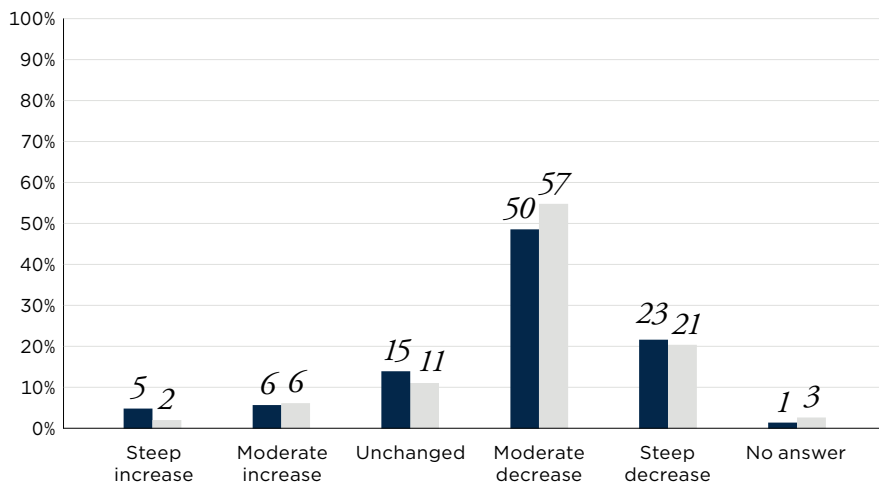


Moderate increase so far in parts of the engineering industry, primarily in *Machinery* and *Automotive*.

Expected decrease in the next few months, with the steepest decline in *Chemicals* and *pharmaceuticals*.

■ Until now
■ Until end of February 2023

PROFITABILITY



Widespread and considerable drop in profitability in all industries, with biggest impacts in *Food* and *Automotive*.

■ Until now
■ Until end of February 2023



ACTIONS AWAITING

The survey findings indicate that the measures taken by manufacturers to counteract the effects of the rising electricity price have so far been limited. One-quarter of the companies have chosen to revise their production plans and a small minority have downsized their workforce or supported suppliers. Even fewer companies have ceased parts of their operations. However, around one-third of the companies have put investments on hold, and almost all companies have taken steps to reduce their electricity consumption.

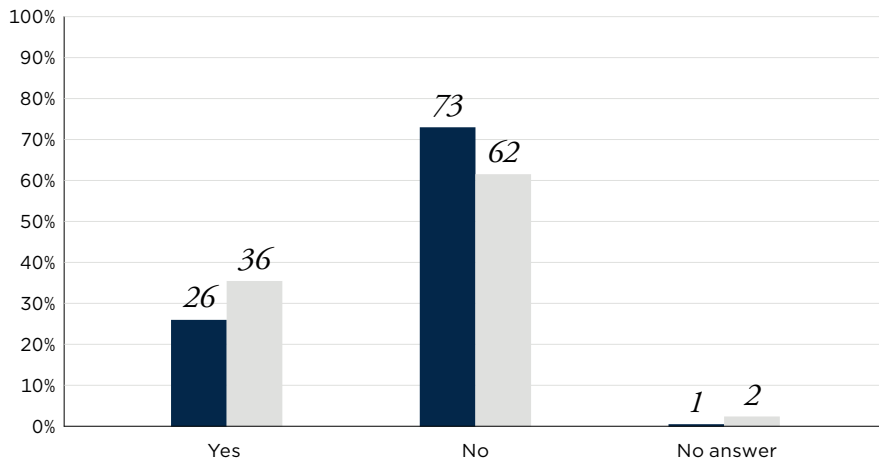
For the period until the end of February 2023, a significantly larger share of companies signal that they expect to take measures in their Swedish operations to counteract the impacts of the rising electricity price. Approximately one-third of the companies may revise their production plans.

Around 30 per cent of the companies may downsize their workforce. Almost half of the companies may put investments on hold. A small but growing share of the companies – 7 per cent – may cease parts of their operations in Sweden.

Food, wood and paper, chemicals and pharmaceuticals and automotive are the industries signalling the most severe negative consequences on their Swedish operations due to the increased electricity price.

The findings of Business Sweden's survey regarding how export companies in the manufacturing industry are responding to the increased electricity price are presented below. The results show impacts in terms of revised production planning, downsizing of personnel, support for suppliers, investment freezing, ceasing of parts of operations, as well as measures taken to reduce electricity consumption.

REVISED PRODUCTION PLANNING

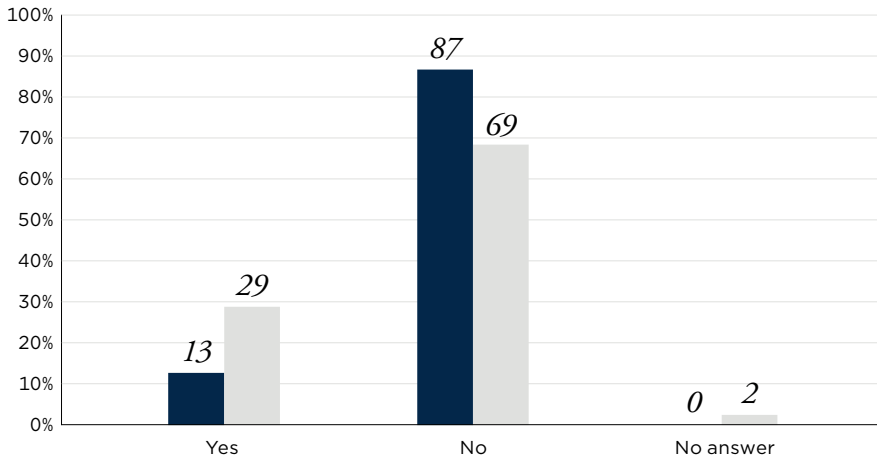


Relatively small difference between industries.

Electrical equipment is so far the exception, where very few companies have revised their production plans.

■ Until now
 ■ Until end of February 2023

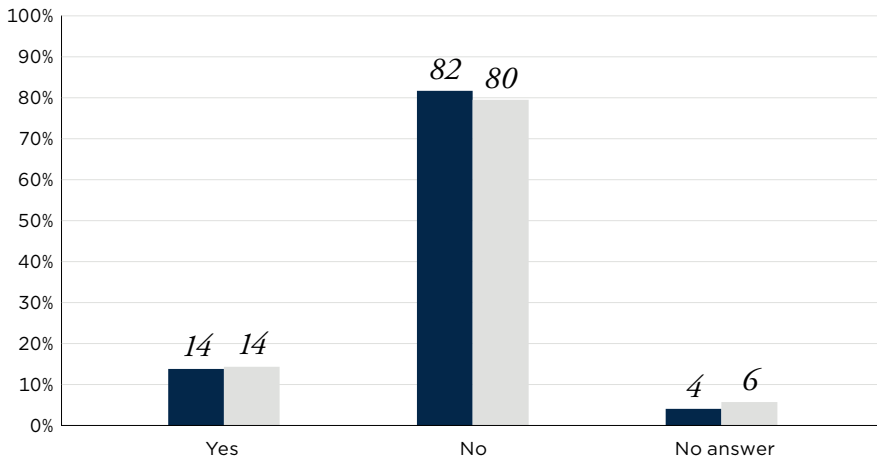
DOWNSIZING OF PERSONNEL



Limited downsizing so far but major cutbacks expected in the next few months, primarily in the processing industry.

■ Until now
■ Until end of February 2023

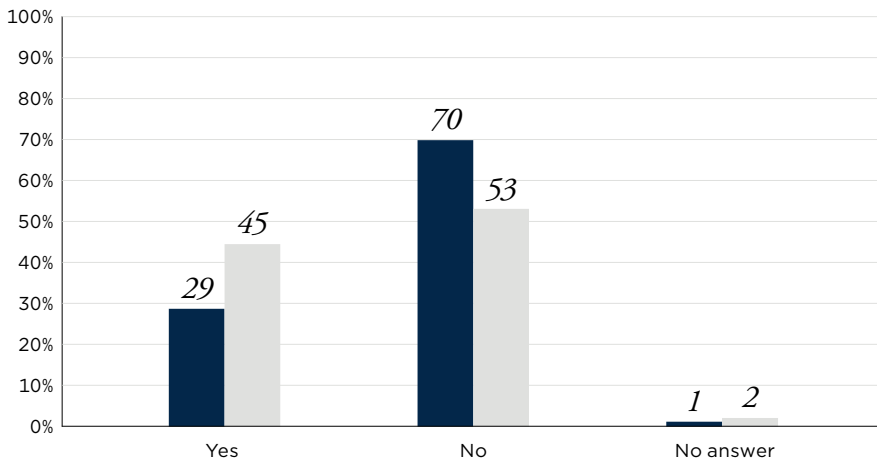
SUPPORT FOR SUPPLIERS



Low willingness among companies to support suppliers, with the exception of parts of the engineering industry, primarily in *Electrical equipment* and *Automotive*.

■ Until now
■ Until end of February 2023

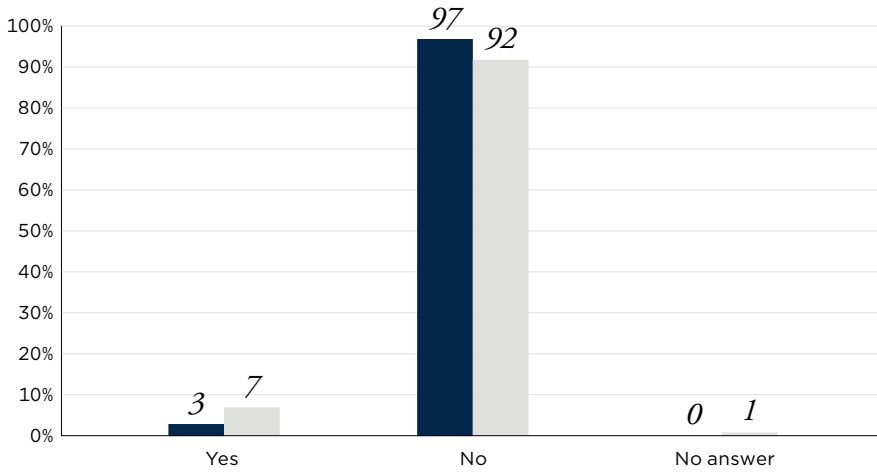
INVESTMENT FREEZE



Industry-wide stop for planned investments, most evidently in the *Food* industry.

■ Until now
■ Until end of February 2023

PARTIAL CEASING OF BUSINESS OPERATIONS

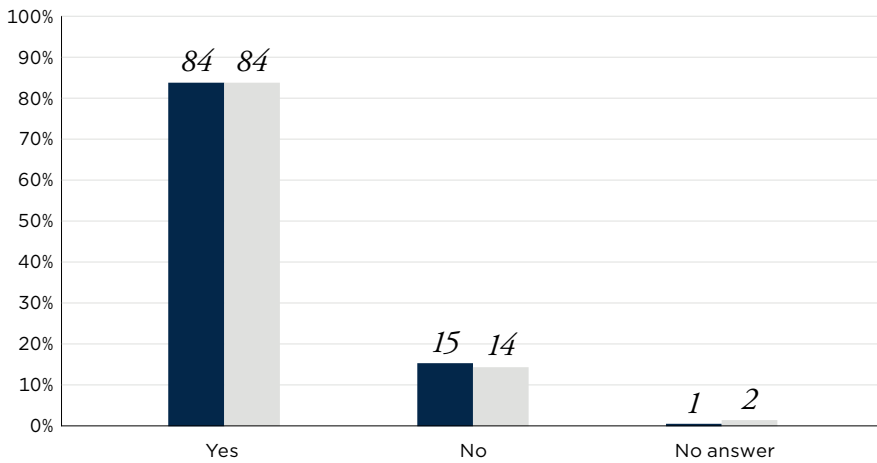


Very little inclination overall among companies to partially cease business operations.

Exception in *Chemicals and pharmaceuticals*, and *Automotive*, where inclination to cease certain operations in the next few months is greater.

■ Until now
■ Until end of February 2023

MEASURES TO REDUCE ELECTRICITY CONSUMPTION



Overwhelming majority have implemented or are planning to implement measures. Almost 100% of companies in *Automotive*.

■ Until now
■ Until end of February 2023



ABOUT THE SURVEY

Business Sweden commissioned the research company Origo Group to map the impacts of the increased price of electricity on manufacturing companies in Sweden and their countermeasures. The target group for the survey is Swedish and foreign-owned manufacturing companies involved in the production or assembly of goods in Sweden with exports to foreign markets, also having at least 20 employees in Sweden. Statistics Sweden (SCB) has on Business Sweden's request provided a register of approximately 3,000 companies based on the above criteria which Origo Group have used in their field work.

The survey was conducted via telephone interviews with Chief Financial Officers or equivalent decision-makers at the companies during the period 31 October – 23 November 2022. The respondents answered a survey consisting of 11 multiple-choice questions put together by Business Sweden. A total of 501 companies took part in the survey. In the analysis of the survey results, Business Sweden has categorised the companies into 8 industries based on their registered SNI codes (the Swedish Standard Industrial Classification). All participating companies in the survey are manufacturers (SNI 10–33), in one of the following industries: Food (10–12), Wood

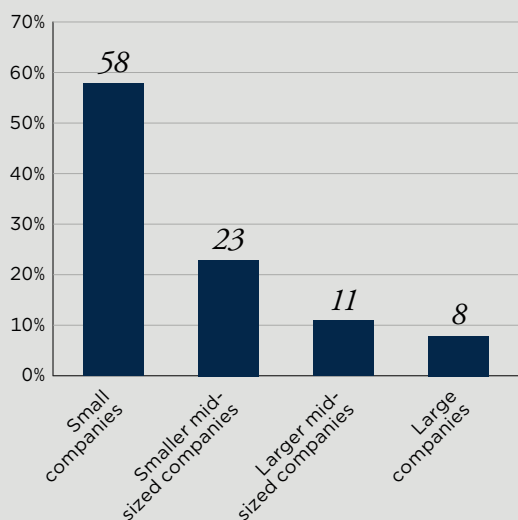
and paper (16–17), Chemicals and pharmaceuticals (19–23), Steel and metals (24–25), Electrical equipment (26–27), Machinery (28), Automotive (29–30) and Other manufacturing (13–15, 18, 31–33).

In addition, Business Sweden has grouped the companies into three size classes based on the number of employees in Sweden, according to data from Statistics Sweden. This categorisation is carried out to enable separate reporting of the survey results of small companies with 20–49 employees, smaller medium-sized companies with 50–99 employees, larger medium-sized companies with 100–199 employees and large companies with 200 or more employees.

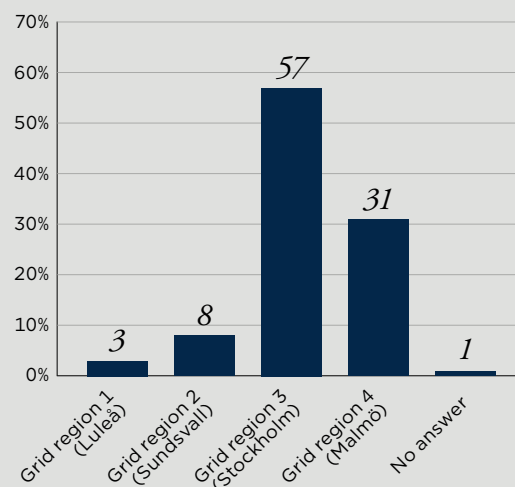
The distribution of the respondents by industry and size matches well with the corresponding distribution of companies in the register delivered by Statistics Sweden. Companies in grid region 1 (Luleå) are somewhat underrepresented in the survey compared to the distribution of companies by grid region in Statistics Sweden's register.

Business Sweden is able to make a further, in-depth analysis of the survey findings thanks to access to the companies' individual responses to the survey questions. The results were anonymised by Origo Group in terms of the identity of the companies.

DISTRIBUTION OF COMPANIES BY SIZE

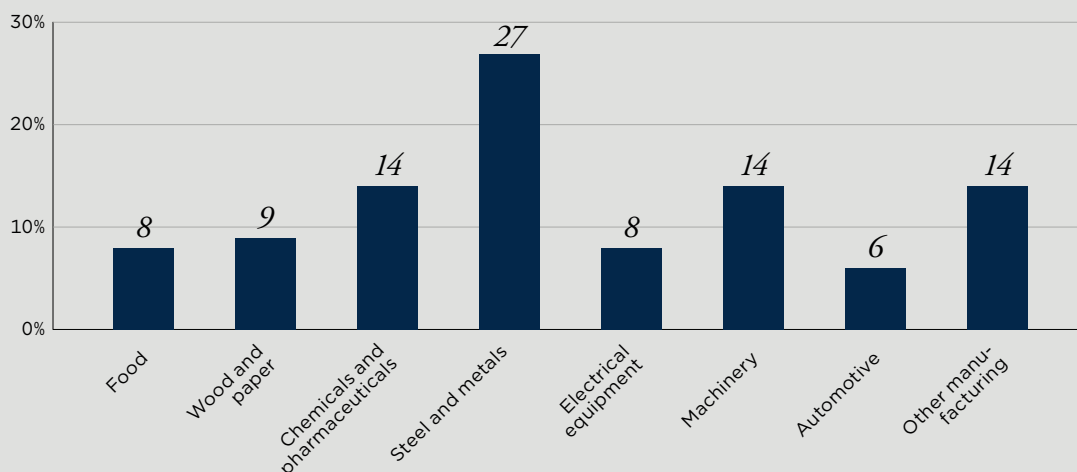


DISTRIBUTION OF COMPANIES BY GRID REGION



Note: Grid region where the company has its largest share of electricity consumption

DISTRIBUTION OF COMPANIES BY INDUSTRY





*We help Swedish companies grow global sales and
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