HELEN

Turning Flexible Energy Use into Finland's Strategic Advantage

10 DECEMBER 2025

Executive summary

According to a study commissioned by Helen, Finnish energy-intensive industries are able to significantly improve their profitability without major investments by leveraging flexible energy use. Small, precisely timed adjustments in energy consumption during periods of high electricity prices can yield annual benefits of EUR 100 million, with minimal impact on overall production. Harnessing flexibility strengthens Finland's competitiveness and attractiveness as an investment destination.

Current situation

Electricity in Finland is inexpensive by European standards and nearly emission-free, but the growth of wind power is increasing price volatility.

Challenge

When electricity is cheap, it is mostly emission-free, but during sharp price spikes, the share of fossil-based production increases. Price support mechanisms do not solve price volatility but only raise costs and slow down innovation. Capacity subsidies have not delivered more stable prices anywhere in Europe.

Solution

Well-timed electricity use has a significant impact on adequacy of supply, company profitability, and emissions. Flexible energy use means making small adjustments to consumption and utilising self-generation assets. For example, a 10–20% reduction in electricity use during periods when the market price exceeds EUR 150 per MWh, combined with selling 20% of self-generation, can yield annual benefits of up to EUR 100 million. Successful flexibility is based on three factors:

1. **Technical feasibility:** Flexibility is compatible with the technical characteristics of the facility, enabling reliable and efficient implementation.

2. **Commercial feasibility:** Flexibility provides clear business benefits, such as cost savings or new revenue streams.

3. **Flexibility capability:** The operator has the expertise and willingness to utilise flexibility in practice.

The state can encourage flexible energy use through energy efficiency agreements, for example by directing energy efficiency subsidies to flexibility potential assessments. Flexible energy use is a cost-effective way to drive growth and ensure affordable electricity in the future.

Turning flexible energy use into Finland's strategic advantage

Finnish industrial companies can improve their profitability by responding flexibly to electricity price spikes. Small, precisely timed changes during periods of high electricity prices can deliver significant financial benefits with minimal impact on overall production. Flexible energy use enhances Finland's attractiveness as an investment destination, whereas a subsidy-based capacity model undermines it.

The Nordic open electricity market offers Finnish industry competitive and nearly emission-free electricity at a very low price by European standards. This has been a major factor in the competitiveness of domestic industry.

The increase in wind power has brought significant price volatility to the electricity market. When electricity is cheap, it is mostly emission-free, but during sharp price spikes, the share of fossil-based production increases. Well-timed electricity use has a significant impact on adequacy of supply, company profitability, and emissions.

Helen aims to encourage public dialogue on the significant impact that well-timed electricity use can have on company profitability. Free and competitive electricity markets are central to economic competitiveness. Price support mechanisms are not a sustainable solution, as they distort markets and slow innovation. Instead of subsidies, it would be more beneficial for the national economy to create incentives for the development of industrial flexibility solutions, for example through energy efficiency agreements. In the future, not only the total amount of energy, but also the timing of its use, will be decisive.

According to a study Helen commissioned from Afry, Finnish industry has significant, yet untapped flexibility potential that can deliver substantial financial benefits to companies and strengthen the entire energy system.

Price volatility is not just a problem, but also an opportunity

Price volatility is an inherent feature of all markets and should primarily be seen as an opportunity. In electricity markets, the most cost-effective production method is prioritised, ensuring the most efficient allocation of resources.

Price volatility should not be addressed with subsidies, as support mechanisms distort markets, create uncertainty, and increase costs. Evidence from elsewhere in Europe shows that electricity prices are twice as high as in Finland. In these countries, capacity subsidies have not delivered more stable prices but have instead raised price levels and weakened market-based investments. Ultimately, consumers pay for subsidies either through taxes or electricity surcharges.

All conditions for flexibility are in place for Finnish industry

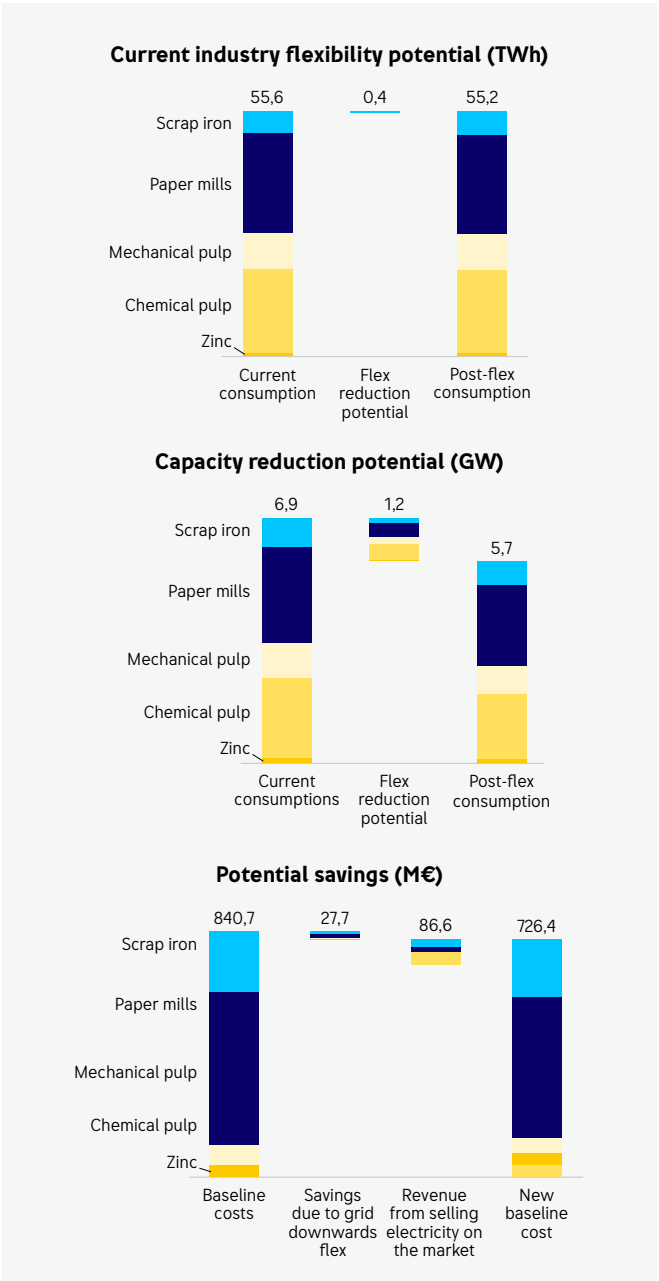
Helen's study focuses on a few energy-intensive industrial sectors that are well suited to flexible electricity use. In addition, many companies have their own generation assets, which are mainly used to cover their own consumption but could be better utilised by offering flexibility to the market. According to the study, more advanced management of both grid-sourced electricity and self-generation would yield significant financial benefits with minimal impact on overall production.

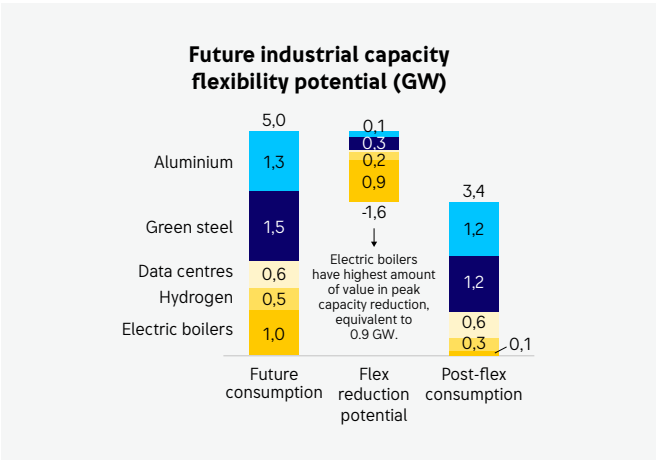
Flexible solutions do not mean shutting down production lines, but rather small, precisely timed adjustments to, for example, production speed or temperature. For companies with their own generation, flexibility opportunities are even greater. From a societal perspective, utilising flexibility can reduce electricity consumption during periods of tight supply. This reduces the need for grid investments and improves the efficiency of the entire energy system, supporting both current operators and companies considering new investments.

Big benefits through small changes

Small changes in electricity use and self-generation can yield significant results if timed correctly. According to Helen's study, even cautious flexibility – a 10% reduction in consumption and selling 20% of self-generation during price spikes – can deliver annual benefits of over EUR 100 million to industry. At the same time, this strengthens Finland's security of supply. A more ambitious approach to flexibility would yield even greater benefits.

Although current industry has significant flexibility potential, it is essential that future technology development ensures flexibility is built into design. This means that when developing new solutions, such as electric boilers, it is important to consider the potential for even broader use of flexibility. This will ensure that industrial flexibility opportunities grow in the future, supporting both company competitiveness and energy system efficiency.





▲ *Figure 2: Future flexibility potential in the total electricity consumption of different industrial sectors.*

◀ *Figure 1: Current flexibility potential in total electricity consumption of key Finnish industries, including grid-sourced and self-generation. In this example, flexibility is applied during hours when the price exceeds EUR 150 per MWh, based on 2024 price levels.*

Flexibility requires a shift in mindset

Making use of flexibility requires, above all, a change in mindset. Companies can view the price and production variability brought by the new energy system as an opportunity. According to Helen's study, Finnish companies have significant potential to improve profitability, grow their business, and strengthen their resilience to electricity price volatility if they see themselves not only as traditional process industries but also as active participants in the electricity market.

Variability in renewable energy production will be a permanent feature of the future energy system. Companies that learn to leverage this variability, for example by participating in flexibility markets or developing flexible technology solutions, can gain a competitive edge and strengthen the competitiveness of the entire Finnish economy.

Subsidies are not the solution

Capacity subsidies are sometimes proposed as a way to curb electricity price volatility, but they will not bring back the electricity system of the 1990s – quite the opposite. Introducing subsidies distorts market functioning, raises price levels, and reduces the attractiveness of market-based investments.

Finland has succeeded due to its market-based, mostly subsidy-free electricity system, where prices have remained significantly lower than in Central Europe. If electricity production were subsidised, Finland would move toward the high market prices of Continental Europe and the UK, weakening competitiveness and increasing costs. It is therefore important to stay on the current path, recognising that no subsidy model can override the fundamental laws of the market. Onshore wind is currently the cheapest form of production in Finland precisely because of market-based mechanisms.

Flexibility is key to affordable electricity and competitiveness

Finland already has all the resources needed for flexibility. What is needed now is the expertise and willingness to fully utilise them. Both Finnish industry and consumers will benefit significantly if costly subsidy systems are avoided and industrial competitiveness is improved. Flexible energy use makes Finland an attractive investment destination and ensures affordable electricity prices in the future.

Helen Ltd
00090 HELEN

www.helen.fi

Tel. +358 (0)9 6171
viestinta@helen.fi