Finnish Energy answer to Energy efficiency – legal framework after 2030

Finnish Energy is the main industry association representing Finland's energy sector. It represents companies that produce, acquire, transmit, and sell electricity, gas, district heating, and district cooling, as well as related services. Finnish Energy works to promote a clean, secure, and competitive energy system by supporting sound energy and climate policy at national and EU level, producing analysis and statistics, and providing guidance and advocacy for its member companies.

Energy efficiency – legal framework after 2030

Finnish Energy (ET) welcomes the EU's decision to achieve 90% net emission reductions by 2040 compared to emissions' level in 1990. Finland's own goal is to achieve carbon neutrality by 2035.

The most important thing is to commit to the climate target. Binding targets can be set for reducing the use of fossil energy, but non-binding targets must be used to monitor energy efficiency. Energy should be used efficiently, but the EED should not artificially constrain the use of clean energy.
Clean growth can increase energy use, while reducing emissions. The present EU's energy efficiency target must be re-oriented to measure and support clean growth outcomes, rather than serving solely to reduce energy consumption**.**

Even though Final Energy Consumption (FEC) target has provided a simple way to track energy use across the EU, it focuses solely on energy consumption, not actual efficiency. Today, as Europe electrifies and the economy changes, the effects from this limitation intensify. Focusing on only one consumption target, the following risks increase: discouraging beneficial electrification and confusing reduced activity with improved efficiency.

The energy efficiency target is based on the assumption that lower energy consumption leads directly to better energy efficiency, lower emissions and costs. In reality, this is not the case: reducing emissions requires the electrification of society, which in turn increases the consumption of clean energy.

A study has been carried out in Finland on how the EU's energy efficiency can be steered towards the objectives of the EU's climate and energy policy. The report shows that the current main target - the consumption ceiling for final energy use - does not describe true energy efficiency. It is unable to distinguish genuine efficiency gains from reduced production or delayed electrification. It can limit clean investment and industrial growth in Europe.

Therefore, it is emphasized that energy efficiency must continue to be a key EU tool, but at the same time it must support emission reductions, competitiveness and security of supply.

The report also includes options for indicators that can be used for monitoring. The proposed metrics group into four themes that together show whether energy use creates value, lowers emissions,

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strengthens security and affects energy prices. This multi-indicator view mirrors international best practice and reveals different aspects and consequences, unlike current absolute target

Scorecard Themes

Competitiveness. This indicator reveals if growth is occurring and whether it is becoming more energy-efficient over time, allowing analysts to distinguish real productivity gains from activity changes. Measures for example how effectively energy becomes economic value by tracking energy used per unit of value added and the scale of industry in the national economy.

Sustainability / Climate. This indicator reveals how clean the member state's energy system is and how much emissions the use of energy creates annually. It tracks for example annual emissions and how much of the energy mix still relies on fossil fuels, which help analysts to distinguish real decarbonization from simple reductions in activity.

Energy Security. This indicator assesses exposure to external shocks and reveals how dependent a country is on imported fuels. Compares for example imported energy with domestic primary supply and measures the share of imported fossil energy of all available energy. These ratios indicate structural resilience and progress toward self-sufficiency, not just changes in system size.

Affordability. This indicator examines how energy prices affect people and how efficiency actions may ease or worsen energy-poverty risks. Measures for example what energy costs to household consumers and what share of disposable income those costs consume. Observed together, these show both price levels and their real burden on typical household consumers.

Legislative flexibility is of paramount importance to the member states. An opportunity to implement the obligations to promote energy efficiency in the most cost-effective way and with the most locally suitable range of means. Finland's voluntary energy efficiency agreement activities produce good results in companies and municipalities, so it would be great if this possibility is included in the Commission's proposal.

The most significant impacts on energy efficiency are made in the energy system and energy-intensive industries. Therefore, the priority is to promote the energy efficiency of the energy system and to ensure that legislation does not weaken the functionality of the energy system and its energy efficiency through its decisions. The functioning of the energy system as a whole means security of supply, safety and self-sufficiency.

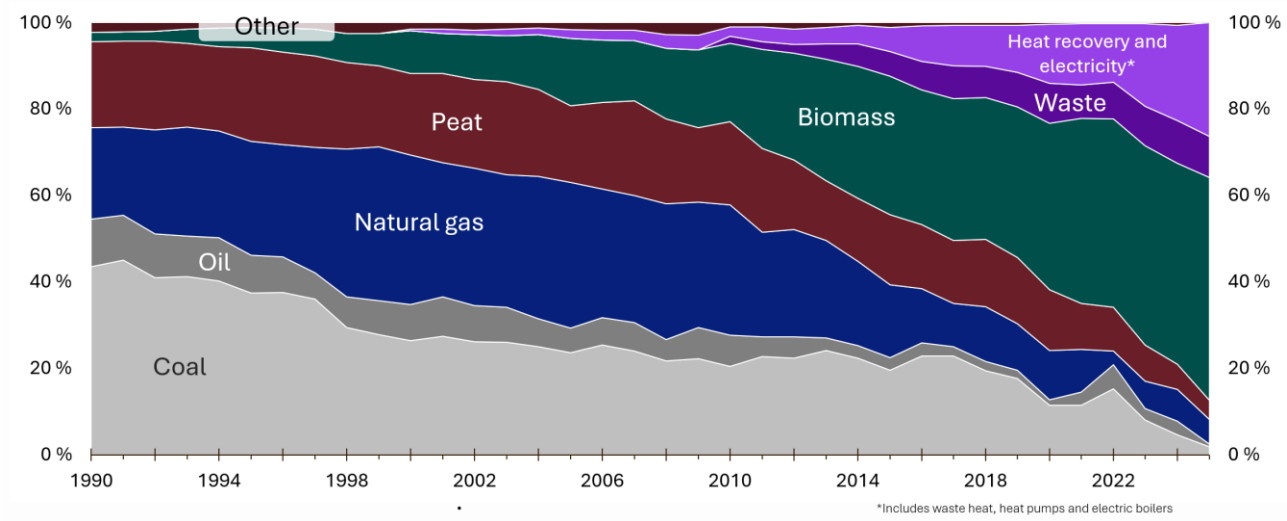
Reducing administrative burdens can free up resources where they are most useful. Mandatory energy efficiency first assessments, mandatory audits and energy management systems cause extra work, but do not necessarily generate investments in energy efficiency. Obligations may suit the largest companies. Obligations are not suitable for smaller companies and companies cannot be obliged to make investments based on the audit results.

District heating

Finnish district heating companies have been phasing out fossil fuels at a rapid phase and fossil fuels now make up only about 13% of the heat production. Coal usage ended during 2025 and decarbonization is continuing. Hence Finnish Energy considers the current framework of efficient district heating and cooling to be good and does not recognize the comment in the call for evidence - paper: "*Decarbonisation of district heating and cooling remains technically and administratively complex, with market distortions due to fossil fuel subsidies and unpriced externalities*". However,

Finnish Energy would like to point out that fossil fuel boilers for peak and back up use should still be allowed to be built. These are essential in ensuring security of supply either when temperatures are extremely cold or when there are, for instance equipment failures.

Figure 1: Heat sources for district heating 1990-2025



Finnish district heating companies actively participate into the electricity markets via CHP units and quickly growing number of heat pumps, electric boilers and heat storages ensuring the balance of the energy system.

As *Figure 2* shows, E-boilers' production curve closely follows the wind power production. This helps absorb excess renewable energy and significantly increases the flexibility of the energy system. The increased share of very flexible consumption also helps reduce the number of negative hours which can be seen from *Figure 3*.

Figure 2: Wind power production and E-boiler production in december 2025 in Finland. Source: Fingrid open data

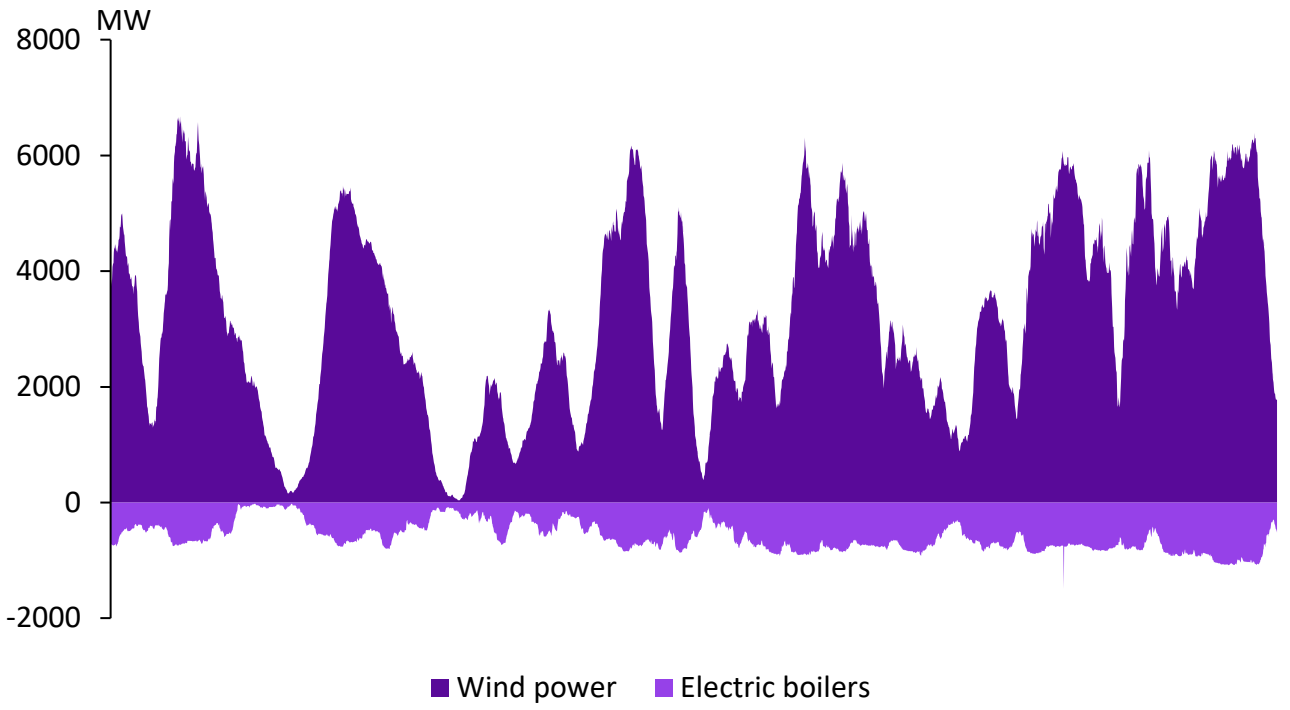
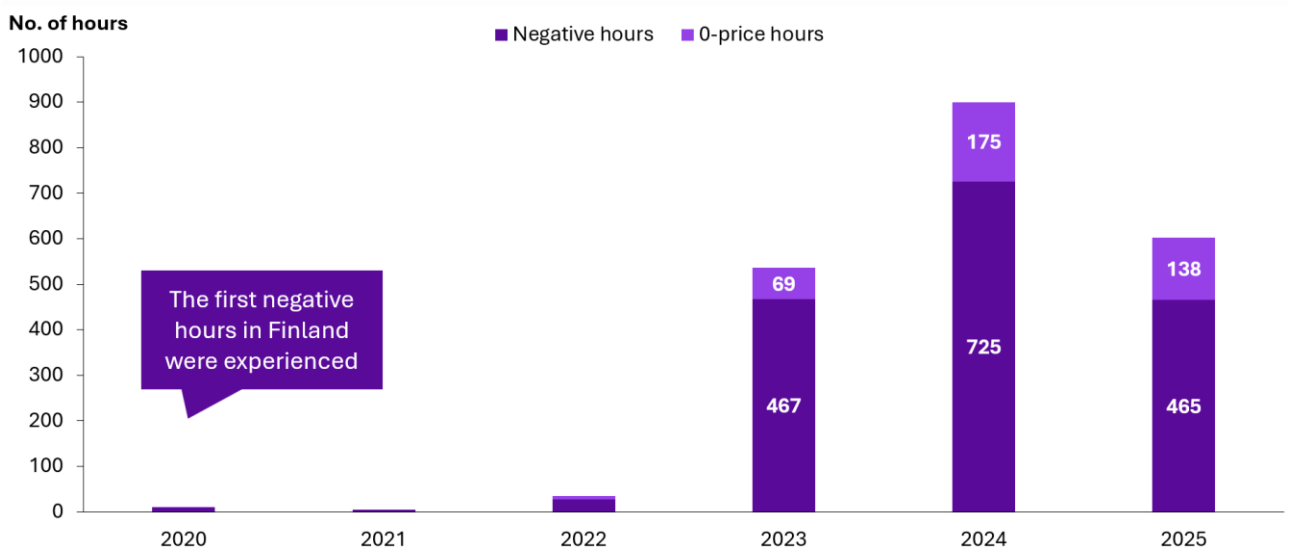


Figure 3: Number of negative and 0-price hours in Finland between 2020-2025. Source: Entso-E

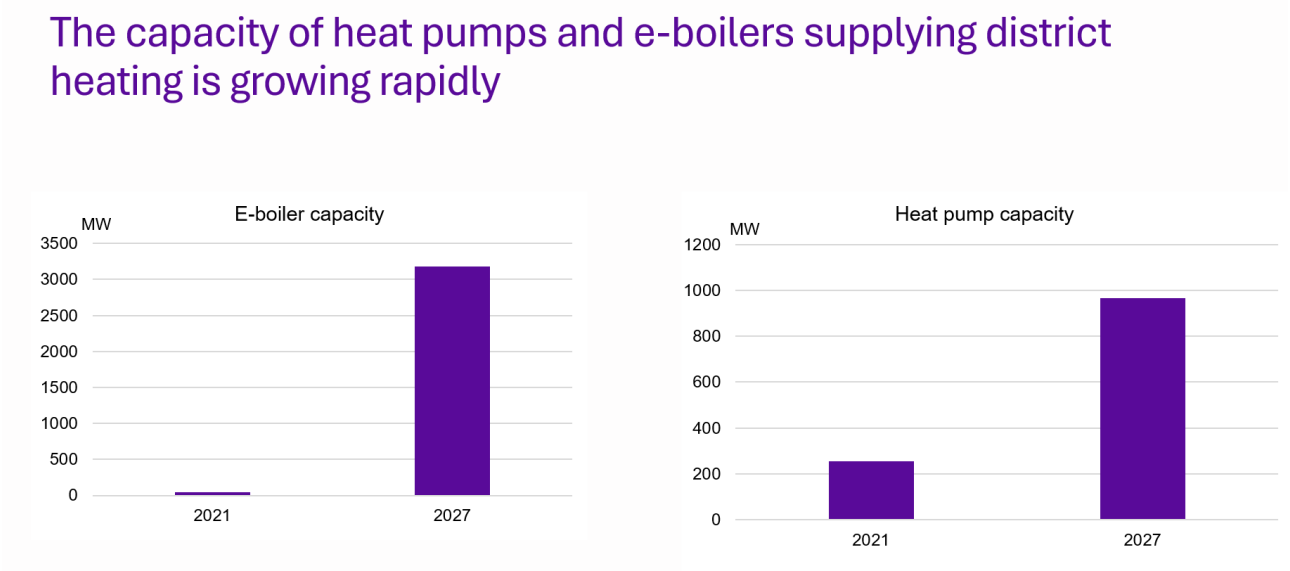


District heating can help solve some challenges created by electrification with its ability to utilize and combine multiple different heat sources. Smart electrification through district heating refers to the strategic and flexible integration of electricity into district heating systems to optimize energy efficiency, grid stability and infrastructure use, and decarbonization. It encompasses both electricity consumption (via electric boilers and heat pumps) and electricity production (via CHP plants), forming a bidirectional interface between heating and power systems.

Finnish district heating companies have been investing and are investing a lot to electric boilers and heat pumps as shown in Figure 4. Not many other industries are able to get 3 GW of flexible consumption to the electricity markets in a short timeframe (maximum demand of Finnish electricity system has been about 15 GW, hence 3 GW flexible consumption asset is large considering the size of the market). These new plants and investments are coming alongside existing generation assets such as biomass CHPs and HOBs and/or waste incineration plants. Hence many networks have now a combination of renewable biomass and electricity-based capacity that they can utilize flexibly, helping

Finland reach very high share of non-fossil-based electricity generation. Cogeneration plants enable the electricity system to be backed up in connection with heat production when the demand is highest and help to balance the electricity while the electrical boilers etc. are a great asset while the demand is low or renewable production output is high. Without this flexibility the district heating provides, the challenges balancing the energy system would be greater. Additionally, district heating companies are investing into heat storages which helps store some of the excess electricity for hours with less electricity supply. Finnish Energy views that it is essential to utilize district heating's flexibility in a cost-effective low carbon energy system as less fossil fuels are needed to keep the energy system balanced.

Figure 4: DH companies investments into electric boilers and heat pumps. Source: Finnish Energy



District heating acts as a buffer for electricity consumption peaks. During winter months, when electricity demand can be twice as high as in summer, district heating reduces the load on the electricity system and helps prevent price spikes. Without district heating, a shift to electric heating would significantly increase electricity demand and raise peak prices. Already the current consumption profile of residential consumers is very spiky. Challenge of electrification of heating is the matching of variable RES generation to consumption in a way that usage of fuels can be minimized or optimized. Heating demand is relatively inflexible and spiky in nature as it depends on the outdoor temperature as demonstrated by residential electricity consumption profile from Finland as demonstrated by Figure 5.

Figure 5: Hourly consumption profile of residential buildings on an hourly resolution 8/2023-9/2024. Source: Fingrid

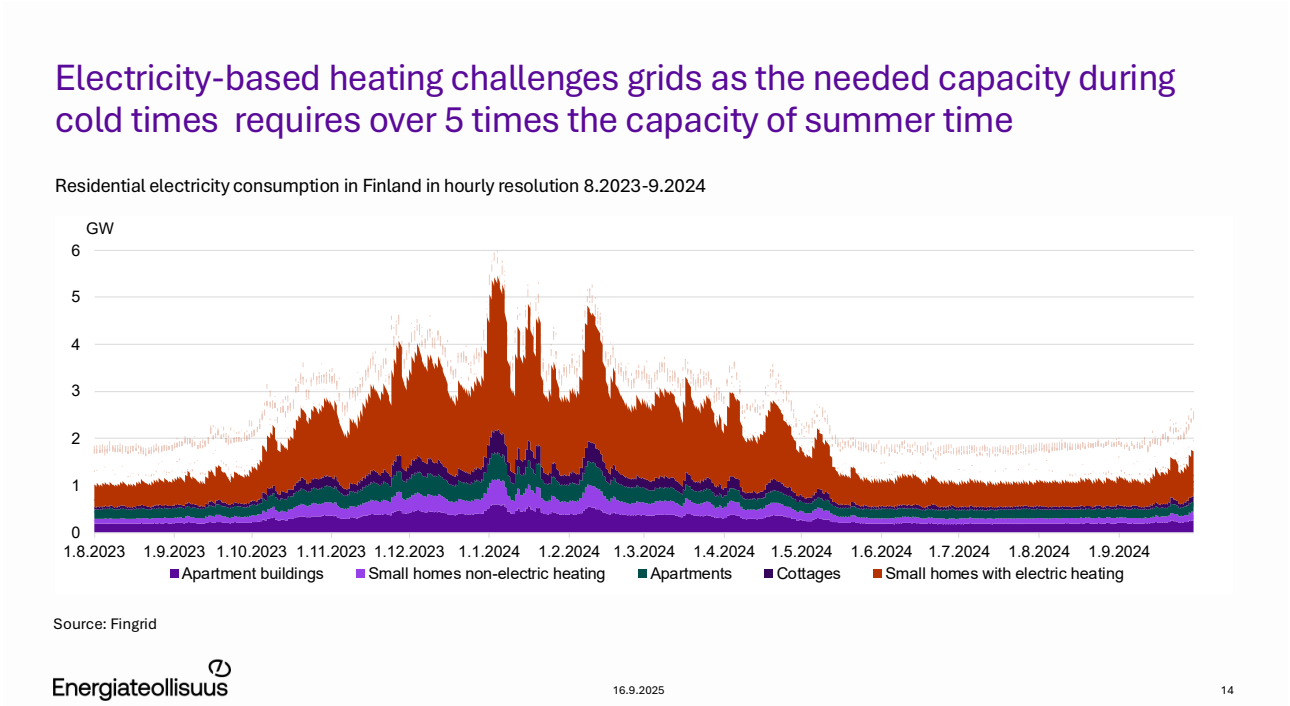


Figure 6 of hourly district heating and electricity demand from Finland demonstrates the mentioned significance of district heating for the balance of the energy system. During the highest demand spikes, district heating CHPs are producing the most electricity. Additionally, electric boilers with dynamic network connections 1) support the electricity system during excess supply hours by consuming significant amounts of cheap electricity 2) higher utilization of grid capacity as TSO can limit their power when grid capacity is low which reduces the need for grid investments for rare peak demand hours further supporting the cost efficiency of the energy system.

Figure 6:Peak consumptions of district heating and electricity in 2024. Source: Finnish Energy

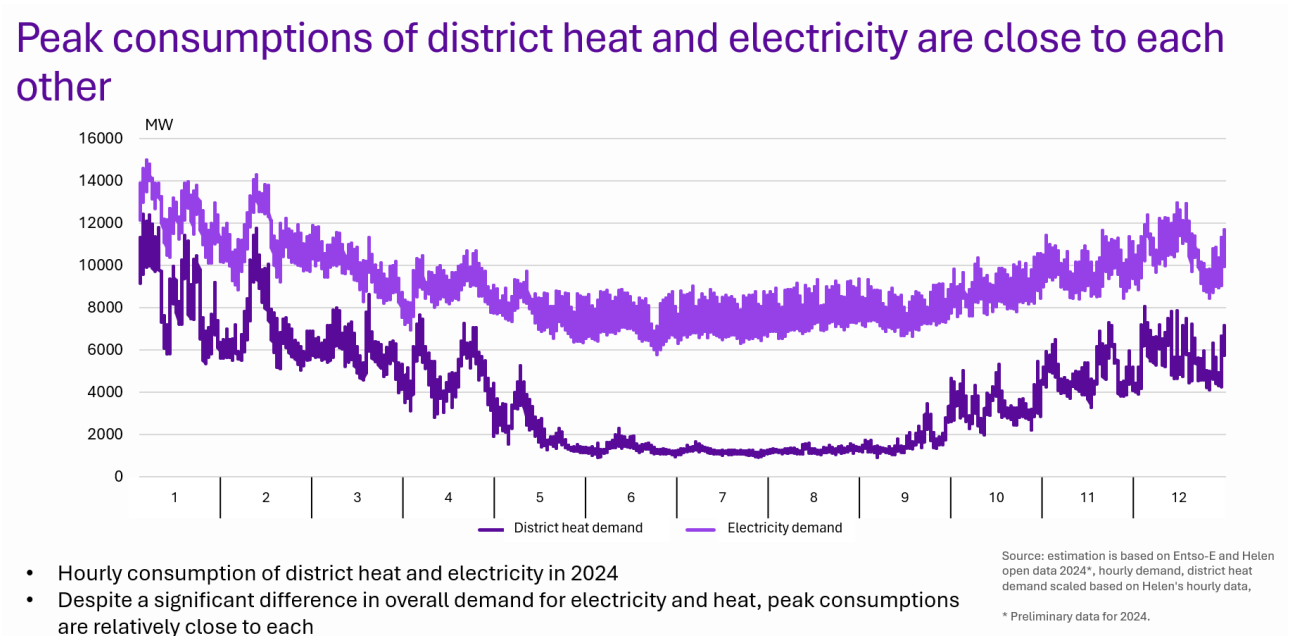
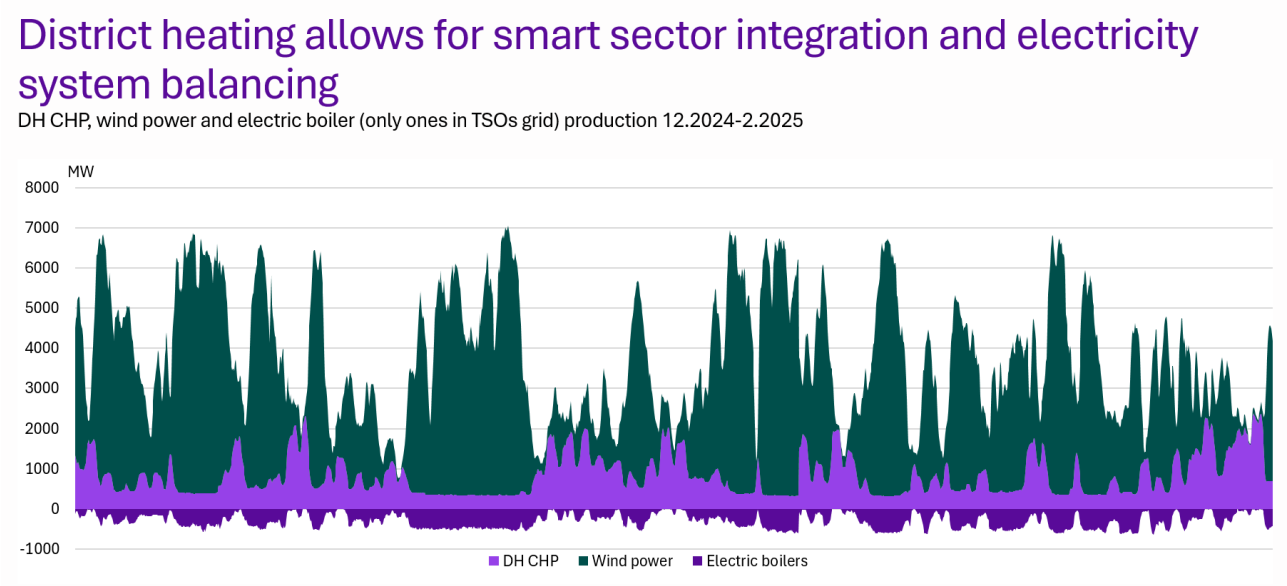


Figure 7 demonstrates the interaction between wind power and district heating companies. Data comes from Fingrid which is the TSO of Finland. In the picture, we can see that during periods of high

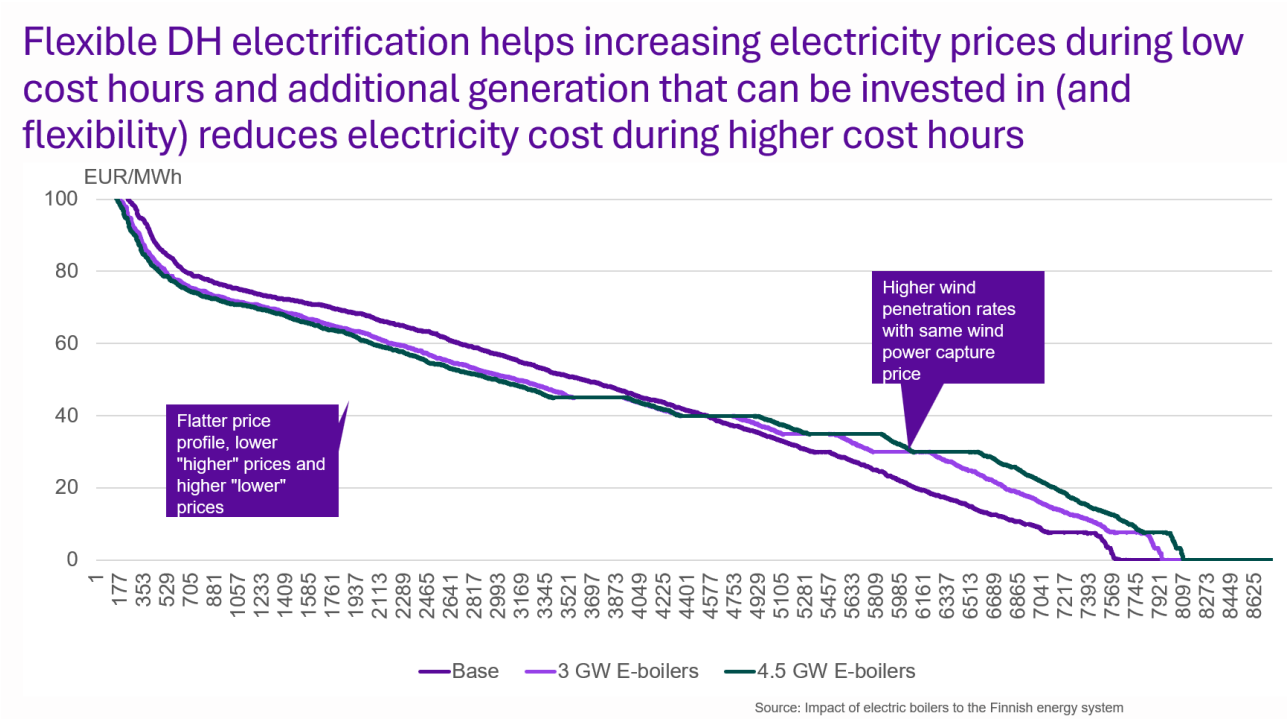
wind power production (and low electricity prices), the e-boiler production spikes. Then during periods of low wind power production, utilization of e-boilers drops drastically and the CHP electricity production increases.

Figure 7: DH CHP, wind power and electric boiler production 12/2024-2/2025. Source: Fingrid



The benefits of having flexible electricity consumption can be seen from Figure 8. Flexible demand increases prices during low-cost hours and hence can make more wind power projects feasible. Additional wind investments then help reduce electricity costs during hours that would otherwise be more expensive. This means that through the interaction in the electricity markets, district heating can help balance the electricity price, which is very much needed in the clean, mainly renewable-based electricity market.

Figure 8: Electricity price duration curve. Source: Finnish Energy



It is important to have multiple different heat sources in the energy system. Hence, FE considers that biomass and waste are still essential heat sources in the future, partly as shown before with providing

assets to whole energy system via CHP In addition to biomass and waste, FE finds heat only and CHP SMRs an interesting heat source in the future. Heat only SMRs offer a stable heat source that does not rely on electricity for heat production similarly to waste and biomass. CHP SMRs can in addition also produce electricity. SMRs in general can offer a competitive option for non-combustion-based heat production and should also be better considered in the EU regulation.

Decarbonisation potential that district heating and energy-as-a-service companies can provide to industries

In Finland, district heating companies and industries have co-operated for decades. This co-operation has many shapes and sizes. The main ways this has taken place are shared power plant investments and operation (CHP plants have been invested and built together), industries connected to the heat production unit producing both industrial steam and district heating and energy-as-a-service companies providing energy production services on industrial sites.

All these above-mentioned methods can also be utilized to further support industrial decarbonisation and electrification. During recent years, growth has been seen particularly in EAAS sector. The Energy-as-a-Service (EaaS) model allows customers to outsource their energy needs—such as heating, cooling, electricity, water solutions or energy efficiency upgrades—to a service provider who installs, owns, operates, and maintains the energy systems. Customers pay a recurring fee based on performance or consumption, avoiding upfront capital costs while benefiting from optimized, sustainable energy solutions. Unlike a leasing model where the customer typically pays to use specific energy equipment over time and may handle operations or maintenance, the Energy-as-a-Service (EaaS) model delivers a complete, outcome-based solution—covering design, installation, ownership, operation, and maintenance—while charging based on energy performance or usage rather than just equipment rental. EaaS shifts more responsibility and risk to the provider, offering a more integrated and service-focused approach than traditional leasing.

One key challenge on industrial decarbonisation and electrification are the payback times of required from the investments. Hence, it is not enough that an investment is profitable, it needs to pay itself back very quickly. The investment should have a payback time less than 5 years, though anything more than even 3 years will need to yield additional benefits to the company which may not always be the case depending on the industry. As energy service is the main business of EaaS-companies, they are fine with longer payback times than the industry hence widening the number of feasible projects and lowering the required subsidy for projects to be feasible (when subsidies are required). In Finland, EaaS-companies have been the primary driver of industrial electrification investments. EAAS-companies therefore are extremely important progressing energy efficiency in the industry. Hence, Finnish Energy considers that Commission should ensure that EaaS-providers are eligible for EU and national support schemes with even terms with companies own investments.

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