Statement of the German Business Initiative on Energy Efficiency – DENEFF e. V. and DENEFF EDL_HUB gGmbH

Regarding the Call for Evidence of the EU Commission from 27.08.2025

Heating & Cooling Strategy

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Thank you for the opportunity to participate in the EU Commission's Call for Evidence regarding the Heating & Cooling Strategy. We want to share our comments with you from the perspective of the energy efficiency sector, and we will be available for further consultation as the process continues.

Background and Summary

Representing nearly half of Europe's final energy demand and still 70% reliant on fossil fuels, the heating and cooling sector is central to the energy transition – making a dedicated and ambitious strategy essential.

Persistently high energy costs and reliance on energy imports put both European industry and households under pressure. Energy bills now account for up to 25% of average housing costs, with one in ten Europeans struggling to afford adequate heating. Europe still imports roughly 60% of its energy, and 19% of total gas imports still come from Russia. At the same time, electrification for decarbonisation reasons and to meet the demand for growing energy-intensive infrastructure, such as data centres and AI facilities, further strains electricity grids.

Ambitious energy efficiency measures are vital in achieving energy resilience, affordability, and decarbonisation in the heating and cooling sector. They significantly boost energy productivity, reduce energy bills, and lessen the need for costly energy system expansions. The untapped energy efficiency potential in Europe's buildings and industry sectors remains substantial. Europe is already a global technology leader in both energy efficiency and clean heating and cooling solutions. Unlocking this combined potential means strengthening the domestic market, creating and securing millions of high-quality jobs, and building long-term economic wealth for Europe. Targeted policy frameworks and smart state aid can realise the full growth potential of this sector, while supporting a socially fair transition and climate neutrality.

We therefore fully endorse the Commission's ambition to update and deepen the EU Heating and Cooling Strategy. Decarbonising the heating and cooling sector is a cornerstone of climate neutrality, competitiveness, and energy sovereignty, with energy efficiency at its core, supported by clear targets, investment incentives, and structural reforms.

We recommend considering the following measures:

1. **Energy Efficiency First** – include the principle in the heating and cooling sector and enforce implementation (prioritise efficiency if more cost-effective than supply-side investments)
2. **Connect electrification with efficiency policies** – reduce electricity prices conditional on policies increasing energy efficiency
3. **Unlock massive market potential and secure Europe's technology leadership** – elevate the domestic heating and cooling technology market
4. **Mandate waste heat/cold recovery from all major sources and standardise reuse**
5. **Energy Efficiency as a Service** – unlock transformation for SMEs, vulnerable households, and heating and cooling networks

Our Recommendations in Detail

1. Energy Efficiency First – include the principle in the heating and cooling sector and enforce implementation (prioritise efficiency if more cost-effective than supply-side investments)

Fact Box: Savings potentials in heating and cooling

In Germany, massive energy savings potentials exist in various areas of the **industrial sector**. In total, 44% of the industry's final energy consumption could be saved economically without production cuts. The biggest saving potential lies within industrial process heat[1], which accounts for two-thirds of the final energy consumption of the German industry[2]. Half of the energy (~226 TWh/a) required to produce process heat – representing one third of the total industrial energy use – can be saved economically. This means lower greenhouse gas emissions and bringing down the industry's energy bill by about 21 bn euros every year. It would also ease the transition away from fossil fuels and Russian gas. In the case of Germany, it could remove four big coal-fired plants and two LNG terminals[3]. Energy efficiency measures not only bring down system costs but also cut the energy bills of industrial companies and enable the transition towards climate neutrality. Many energy efficiency measures are realised with low investments – e.g. hydraulic balancing of heating systems or replacement of inefficient heat distribution pumps, reducing on average 15-30% of the total costs for heating.

Concurrently, **new infrastructure demands** are emerging as data centres and AI facilities proliferate, concentrating energy use in urban hubs and straining local grids. AI-ready racks now consume 40 to 135 kW each compared to traditional 4 to 6 kW, with upcoming systems announced to exceed 500 kW. These rapidly growing energy consumers accelerate the need for more robust, flexible, and decarbonised systems.

Energy efficiency in buildings is one of the largest untapped levers for reducing electricity demand and easing pressure on the energy system. In the area of decentralised heat supply alone, electricity demand would increase drastically without energy efficiency measures, requiring up to 98 GW of additional capacity and 153 TWh/year just in Germany. This alone would equal the output of around 200 additional gas power plants (each 500 MW) – roughly three times today's installed gas generation capacity in Germany[4]. Energy Efficiency measures not only lower total energy use but also reshape demand curves. By flattening winter peaks, they reduce the need for costly backup power and grid expansion. More efficient buildings also retain heat longer, effectively acting as thermal buffer storage. This allows for greater flexibility in electricity supply, as buildings can be temporarily taken off the grid—or shift demand—without sacrificing comfort or even being noticed by occupants. With renovation rates still far below 1% (Germany), the potential remains immense. Monitoring technologies can provide real-time information on heat and

[1] Source: Meyer, Jörg et al. 2023: Kurzstudie Energieeffizienzmaßnahmen in der Industrie. Krefeld.
[2] Source: IN4climate.NRW (Ed.) 2022: Prozesswärme für eine klimaneutrale Industrie – Impulspapier der Initiative IN4climate.NRW. Gelsenkirchen.
[3] Source: Meyer, Jörg et al. 2024: Short Study: Energy-Efficient and CO_2-Free Process Heat. Krefeld.
[4] Source: iöw (Ed.) 2025: Die Rolle der Gebäudeeffizienz für die Wärmewende. Berlin.

electricity consumption, enable evidence-based energy management while simultaneously empowering consumers. Efficiency in buildings thus serves not only climate goals but also plays a vital role in ensuring system stability, reducing infrastructure needs, and enabling secure and affordable heating and cooling in a fully decarbonised energy system.

The expansion of **heating networks** from a current 13% to 20% of EU demand could save 24 billion cubic meters of gas by 2030[5] – equivalent to nearly half of Europe's 2024 Russian gas imports – offering a pathway to energy independence while enabling the integration of renewable and waste heat sources. Modernisation of existing heating networks offers further major opportunities.

Cooling systems account for a growing share of energy demand, especially in summer peak periods. Innovative solutions – such as thermally driven cooling, adiabatic cooling, waste-heat-to-cooling technologies, passive building design and adaptive facade and shading solutions – can significantly reduce electricity peaks and system costs. Also, cooling energy demand should be reduced by efficiency measures first to avoid unnecessary demand and stress on the electricity system.

Situation and Problem

The heating and cooling sector still depends on fossil fuels. In the German industry, three-quarters of all industry-related CO2 emissions can be traced back to process heat[6], as the provision of industrial process heat is highly dependent on fossil fuels (in Germany, to more than 70%[7]). In the German building sector, nearly 80% of space heating (including hot water) is based on fossil fuels like gas and oil[8].

Fossil dependency makes European industry and tenants equally vulnerable to price shocks resulting from external events like the Russian invasion of Ukraine or the unstable situation in the Middle East. Furthermore, it is a great barrier to reaching climate neutrality in the heating and cooling sector.

Solution

Emission reduction should be achieved by prioritising both emission-free heating and cooling solutions and energy efficiency measures. An effective strategy must tackle not only the decarbonization of the energy supply but also the reduction of demand for heating, hot water, and cooling. The latter can be achieved by reducing overall heating and cooling demand, switching to the most efficient heat-generating technologies, reducing energy losses and operating heating systems efficiently. Investments should be directed where they deliver the greatest benefits per euro to a resilient energy system and to greenhouse gas mitigation. In most cases, this will involve switching to the most efficient 'green' heating systems combined with targeted energy renovations that are a direct lever to cut bills for tenants and owners, shield households and businesses

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[5] Source: Aalborg University (2023): Heat Matters: The Missing Link in REPowerEU. Aalborg.
[6] Source: Agora Industry (ed.) 2024: Direct electrification of industrial process heat. An assessment of technologies, potentials and future prospects for the EU. Berlin.
[7] Source: Fraunhofer ISI & Institut für Industrieofenbau und Wärmetechnik (IOB) (ed.) 2024: Policy Brief Co2-neutrale Prozesswärme durch Elektrifizierung und Einsatz von Wasserstoff. Karlsruhe.
[8] Source: dena (ed.) 2023: dena-Gebäudereport 2024: Klimaschutz im Gebäudebestand. Berlin.

from volatile energy prices and reduce the public investment needs for generation, grids and storage. Measures to optimise and reduce the heat demand of buildings and industries, like (serial) renovations of buildings, integration of energy management systems, process optimisation, prevention and usage of waste heat, electrification where possible, etc., are crucial.

- Minimise energy demand through ambitious energy efficiency end-use requirements and meet the residual demand with on-site and district-level generation primarily, with priority given to emission-free energy solutions. Making this sequence mandatory would give Member States a clear decision tree and operationalise the Energy Efficiency First principle embedded in EU energy legislation.
- Enforce an effective Energy Efficiency Directive (EED) and Energy Performance of Buildings Directive (EPBD): The success of the heating and cooling strategy depends on the large-scale deployment of emission-free solutions and energy efficiency measures in a cost-efficient manner – and therefore on the implementation and enforcement of the EED and EPBD. The following measures are necessary for that:
    - The European Commission should monitor and ensure the effective implementation of Article 3 of the recast Energy Efficiency Directive (EED) – the "Energy Efficiency First" principle – and initiate infringement proceedings against Member States that fail to apply this principle substantively. (Note: In Germany, municipalities are already developing local heat plans without fully considering the "Efficiency First" principle.) It is not sufficient for the principle to be mentioned only loosely in national legislation. It must be legally binding, enforceable, and materially applied in planning processes – particularly in regulations concerning power plant strategies, spatial planning, and infrastructure projects if energy efficiency investments (or in combination with zero-emission generation) are more cost-effective than supply-side investments in central power stations.
    - Enforce the quick and ambitious implementation of the recast of the EPBD and especially of minimum energy performance standards (MEPS) (Art. 9 EPBD). (Note: Rapid planning security for building owners, industry and all relevant stakeholders is essential. Meanwhile, German officials have already held out on the prospect of using all possible loopholes to exceed the deadline of transferring the EPDB into national law. This undermines the directive's impact and creates uncertainty at a time when stable planning conditions are urgently needed.)
- To ensure effective implementation, we recommend establishing an EU-wide governance framework for heating and cooling, including:
    - Annual reporting by Member States on energy efficiency progress and decarbonisation pathways for heat and cold.
    - A public EU Heat & Cooling Scoreboard with standardised indicators for demand reduction and clean heat deployment.
    - Binding requirements for Member States to apply the "Energy Efficiency First" principle in heat planning, with infringement procedures in cases of non-compliance.
- Tap the full flexibility and integrated energy potential: Energy efficiency and flexibility are falsely claimed to be mutually exclusive by some stakeholders. In fact, they complement

each other. Therefore, it is necessary to connect efficient decarbonisation of process heat with, e.g. digital control, monitoring and automatic optimisation systems as well as energy management systems as a prerequisite for flexible production, high temperature heat storage, battery storage devices or hybrid heat production setups to cut peak demand and reduce the demand for grid expansion. While flexibility may decrease efficiency in some isolated processes, this does not apply to most industrial processes, building efficiency or the economy. We recommend:

  - Mandatory integration of digital control and demand-side management in heat networks and industrial heat processes[9].
  - Incentives for temporal heating systems as a transition enabler towards fully decarbonised process heat and thermal storage to reduce electricity peaks.
  - Introduction of dynamic tariffs and flexible markets to reward consumption shifting.

- Develop a strategy for industrial process heat decarbonisation which includes guidance for European companies and member states, measures to remove market barriers and support to enable companies to adopt the best energy efficiency solutions. Energy Efficiency First should be a guiding principle for the strategy. In addition, we recommend setting a decarbonisation target that aims to reduce CO2 emissions from industrial process heat by 90% by 2040.
- EU-wide minimum performance standards for cooling appliance, combined with stronger integration of cooling into district heating and cooling networks, are essential for a comprehensive Heating and Cooling Strategy combined with stronger integration of cooling into district heating and cooling networks, are essential for a comprehensive Heating and Cooling Strategy.
- Advance the incentives for renewable and efficient district and local heating networks (see potential in fact box above).

2. Connect electrification with efficiency policies – reduce electricity prices conditional on policies increasing energy efficiency

Situation and Problem

The current gas-to-electricity price ratio often hinders the uptake of decarbonisation measures in the heating and cooling sector. In Germany, electricity is three times more expensive than gas. Thus, it makes many electricity-to-heat solutions economically unattractive, despite their often much higher efficiency. Additionally, Europe's industrial competitiveness is undermined by significantly higher energy costs, with electricity costs 2.5 times higher than in the US[10]. Many stakeholders, therefore, call for lower electricity prices, e.g. through tax cuts and subsidies. Although decreasing electricity prices across the board will make the heat transformation economically more attractive, it will reduce the incentive for companies and households to use electricity efficiently. Without a parallel push for energy efficiency, electricity demand for all types of heat

[9] Networked devices for consumption metering and control, along with sensors, enable energy savings of 10% to 15% in district heating plants and heating installations (BaltBest Study, 2021). Current evaluations by an Eschborn-based energy service provider confirm that the use of the Digital Heating Room in a portfolio consisting exclusively of heat pump systems enables an average reduction in energy consumption of 29%.

[10] Source: AFRY (2023): Internationaler Vergleich von Strompreisen für die Industrie. Leipzig.

generation would rise significantly, requiring an increasing total electricity subsidy volume. Potentially, this will result in a subsidy spiral keeping prices low while the costs of the electricity system continue to rise. A new study has found that the current policy framework does not sufficiently pave the way towards electrification[11]. It is time for a coordinated policy mix to unlock the industry's and buildings' potential to decarbonise.

Solution

It is necessary to overcome the disparate ratio of gas and electricity prices. To avoid a subsidy spiral, we recommend reducing electricity prices for the industry and buildings sector, conditional on policies increasing energy efficiency, and, where applicable, as a precondition for access to subsidies as foreseen in the Clean Industrial Deal State Aid Framework (CISAF) and Climate, Energy and Environmental Aid Guidelines (CEEAG).

- In parallel to energy price reduction through tax relief and subsidies (aim: price ratio < 2), smart and, if possible, uniform investment incentives for increasing energy efficiency and thus increasing energy productivity should generally be set. Otherwise, we risk ending up in a subsidy spiral, as increasing electricity usage will automatically increase the subsidy demand. The following macro instruments and options are expected to have a particularly broad, cross-technology and cross-sector impact (> 10 TWh/a by 2030 in each case):
    - The consistent implementation of highly cost-effective energy efficiency measures. (Note: In initial drafts of the German Energy Efficiency Act, this was planned to be mandatory but was dropped later.)
    - A significantly higher CO_2 price, which does not allow political price caps in the ETS II.
    - Energy Efficiency Certification Schemes as a market-based incentive system with quantity control (e.g. tendering models which could also be tailored to savings that are most effective in peak-consumption periods).
- Ecological compensation requirements, as mentioned in CISAF, are important measures turning pure price subsidies into strategic measures improving climate impact. They should be maintained and consequently enforced.
- Maintaining and enforcing the implementation of an effective Energy Efficiency Directive (EED), Energy Performance of Buildings Directive (EPBD), and Ecodesign- and labelling directives are requirements for energy price subsidies. An effective implementation of those directives and contained mandatory energy efficiency measures limits the risk of a subsidy spiral. Furthermore, we request the quick national implementation of minimum energy performance standards for non-residential buildings as laid out in the EPBD, as well as the introduction of MEPS for residential buildings and allowing an extended system approach for industrial equipment, to unlock additional efficiency potentials in Ecodesign regulations.

[11] Source: Rosenow et al. (2025): The heat is on: Policy solutions for industrial electrification. *Energy Research & Social Science*. 127.

3. Unlock massive market potential and secure Europe's technology leadership – elevate the domestic heating and cooling technology market

Fact Box: Electricity-based process heat technologies at mid- and high-temperature levels are available

The former Heating & Cooling Strategy from 2016 talks about the low-temperature range and holds out the prospect that electricity-based technologies up to 250 degrees will soon be ready for the market. Today, electricity-based technologies reaching mid- and high-temperature levels are available as well and market-ready already. Besides the use in buildings, in total, also 60% of all industrial process heat is electrifiable with existing technologies and more than 90% until 2035[12]. Therefore, the decarbonisation of process heat through direct electrification is not only possible at low-temperature levels, but at mid- and high-temperature levels.

Massive market potential – heating and cooling technology as a domestic market

Low-exergy heat technologies are a key driver of Greentech growth in Germany. Clean and efficient process heat technologies alone have grown by 6.8 percentage points per year, which is 1.2 percentage points faster than the overall Greentech sector. Tapping the energy savings potentials and achieving full decarbonisation could drive up the market volume for the EU manufacturers of clean and efficient process heat technologies by a factor of 22. Nearly one million new jobs could be created in Germany alone[13].

Situation and Problem

Despite great growth rates, Europe's share of exports in the global export market has decreased. In particular, this is the case for clean and efficient process heat technologies[14]. China is advancing rapidly in this market. Germany and Europe-based manufacturers have already lost the race against China in many segments of generation technologies (e.g. wind turbines, PV).

Solution

Advancing the transition to clean and efficient industrial process heat and space heat, as well as hot water, including ambitious efficiency measures, not only contributes to Europe's path to climate neutrality, but it is also an investment in the domestic market and Europe's leadership in technology, benefiting European companies and employees in the long term. For example, in Germany alone, energy-efficiency measures in buildings generated around €85 billion in gross production and sustained approximately 575,000 jobs (directly and indirectly)[15]. The EU needs to act if it wants to secure the potential. Necessary measures are in line with several objectives of the new plan for Europe's sustainable prosperity and competitiveness, and reinforce Europe's advantage in green and efficient technology.

- Foster planning security by defining crucial targets: Define energy efficiency and decarbonisation targets for the heating and cooling sector. Define ambitious targets for

[12] Source: Agora Industry (ed.) 2024: Direct Electrification of Industrial Process Heat. An Assessment of Technologies, Potentials and Future Prospects for the EU. Berlin.
[13] Source: Prognos (ed.) 2025: Marktanalyse: Net-Zero Technologien für energieeffiziente Prozesswärme. Berlin.
[14] Source: Prognos (ed.) 2025: Marktanalyse: Net-Zero Technologien für energieeffiziente Prozesswärme. Berlin.
[15] Source: UBA (2024): Ökonomische Indikatoren von Maßnahmen zur Steigerung der Energieeffizienz - Materialien Berichtsjahr 2023. Berlin.

renewable heat and cold for buildings and industries. In general, define energy efficiency targets that go beyond 2030.

- Ramp up support schemes to enable companies and households to adopt the best energy efficiency solutions to decarbonise their heat and cold demand (e.g. consistent funding, easier access to loans specifically for SMEs, specific loans with an option of the adjournment of repayment cycles, secure carbon contracts for difference).
- Promote the introduction of derisking instruments such as tripartites at the national level to encourage the uptake of decarbonisation projects in the heating and cooling sector.
- Mandate member states to put up roadmaps for the efficient decarbonisation pathways of low-, medium-, and high-temperature heat and connect them with the Electrification Action Plan.
- Allocate Horizon Europe funds for R&D pilots in emerging heat technologies.
- Elevate lead markets for decarbonised basic commodities through guidelines for public procurement.

4. Mandate waste heat/cold recovery from all major sources and standardise reuse

Fact Box: Massive waste heat potential – largely untapped until now

Large amounts of waste heat from industrial processes, data centres, and urban infrastructure remain untapped across Europe. In Germany, 95% of the potential of over 300 TWh of industrial waste heat remains untapped – part of a much larger EU-wide potential of 2,860 TWh (which predominantly originates from industrial processes, although data centres and wastewater also have significant potential that is only beginning to be tapped[16]). This energy is often released unused into the environment, despite its potential to significantly contribute to decarbonising district heating systems and improving overall energy system efficiency.

Integrating waste heat into heating networks remains a challenge due to fragmented infrastructure, lack of data transparency, and regulatory hurdles.

In addition, systematically unlock untapped low-temperature waste heat sources in urban areas and from digital infrastructure – an estimated 45–55 TWh per year in Germany alone[17].

Situation and Problem

The ongoing transformation of industrial processes – through electrification, efficiency gains and structural change – will have the potential to reduce high-temperature waste heat availability significantly in the future. If today's policies do not push for change and, in consequence, heat planning does not take this development into account, there is a real risk of locking in infrastructure that depends on vanishing sources.

In addition to the decreasing industrial waste heat potential with relatively high temperatures, low-temperature waste heat will come into focus more in the coming years. Driven by the

[16] Source: EY Parthenon. (ed.) 2023: Wie industrielle Wärmepumpen ungenutzte Potenziale erschließen können. Berlin.
[17] Source: ReUseHeat 2018. Accessible Urban Waste Heat. Brussels.

dynamic growth of the data centre industry and urban sources, this potential is expected to increase significantly soon.

A lack of EU- and member-state waste heat strategies continues to hamper the strategic use of this potential. Without clear policy guidance and integrated planning tools, Europe risks missing a key opportunity for cost-effective and socially fair decarbonisation.

Solution

Only by strategically integrating waste heat into future-oriented heating systems today can Europe avoid stranded investments tomorrow and secure a resilient, efficient heat supply for decades to come. To address these challenges and fully unlock the potential of waste heat, we recommend the following measures:

- Require new major urban/industrial developments, data centres, cold stores and other entities with waste heat potential to be DHC-connectable. Require DHC networks to accept waste heat from such entities.
- Waste heat recovery from industrial processes should be eligible for free allocation (credits) within the ETS to increase attractiveness for industries to adopt waste heat recovery. Exempt waste heat provided to other users from scope 3.11 for the provider.
- Apply a waste heat cascade logic: avoid waste heat generation where possible, reuse it within the company, and only then feed it into local heating networks.
- Align the dynamics of industrial transformation with municipal heat planning: the decarbonisation of industry will significantly reduce available waste heat volumes from traditional waste heat sources – fossil-based giants will gradually disappear as electrification progresses. New waste heat sources like decentralised electrolysers are becoming more available.
- Planning and funding frameworks must anticipate this shift to prevent today's investments from being tied to tomorrow's shrinking sources.
- Modernise existing district heating networks, including implementing digital technologies to increase energy efficiency.
- Systematically unlock untapped low-temperature waste heat sources in urban areas and from digital infrastructure, consider the cold chain, deploy monitoring and predictive maintenance tools and expand waste heat recovery. Ramp up targeted support for the switch to low-temperature heating and hot water systems: converting the consumer side, particularly in buildings, is crucial for the efficient use of waste heat. This enables the direct use of increasing urban waste heat sources and minimises the energy required to raise the temperature.
- Strengthen tripartite coordination between energy producers, users and member states in the spirit of Action 6 of the Action Plan for Affordable Energy.
- Support knowledge-sharing, network-building and digital matchmaking for waste heat integration via platforms such as AwaNetz – and consider scaling such solutions at the EU level.
- Recognise and promote dual-function technologies which make use of waste heat and generate electricity at the same time in the EU and Member States waste heat via integrated thermo-electric generators. Water infrastructure – including abstraction, pumping,

treatment, and wastewater processing – consumes significant amounts of energy, while leakages of up to 25% cause unnecessary losses. At the same time, wastewater heat recovery could cover up to 5% of the overall residential heat demand in Germany alone – saving 4.4 Mio. t CO_2 emissions per year[18]. We recommend aligning the Heating and Cooling Strategy with the EU Water Resilience Strategy by:

- Introducing joint targets for water and energy efficiency in national heat and cooling plans.
- Supporting wastewater heat recovery by establishing an EU-wide action plan to enforce stakeholder networks between the energy and water sector, enabling the sharing of technical and regulatory knowledge of frontrunners and establishing guidance for tapping wastewater as a carbon-neutral energy source.
- Supporting high-efficiency pumping technologies via EU funding programmes, including the Water Resilience Investment Accelerator.
- Establishing a European data platform to share best practices and benchmarks for combined water and energy efficiency measures.

5. Energy Efficiency as a Service – unlock transformation for SMEs, vulnerable households, and heating and cooling networks

Situation and Problem

Despite the urgent need to decarbonise heat supply in industry and buildings, progress is hindered by persistent barriers affecting key actors. Small and medium enterprises (SME) lack internal expertise, financial resources, and capacity to plan and implement energy efficiency measures independently, leaving cost-effective savings untapped. Local authorities and utilities struggle with insufficient technical guidance, financial means, and a shortage of qualified installers to develop and operate district heating and cooling (DHC) systems. Vulnerable households risk exclusion from the energy transition due to high upfront renovation costs, regulatory uncertainty, and limited ability to bear additional expenses.

These challenges threaten to stall the heat transition and exacerbate social inequalities. Without clear frameworks and support, necessary investments will not materialise, and infrastructure risks will become stranded. To address these issues and to push the ESCO markets, the regulatory playground needs to be consistent. As of today, the major challenges can be grouped into four key areas requiring tailored solutions:

a) Stable and Supportive Regulatory Framework

- Non-discriminatory market access for energy services is lacking or inconsistently applied across Member States, restricting access to finance, subsidies, and customers.
- Delays and uncertainties in implementing EU directives (EED, EPBD, RED III) undermine investor confidence.
- Electricity pricing structures and taxation currently impede electrification efforts crucial for decarbonisation.

[18] Source: ifeu 2018. Kurzgutachten: Kommunale Abwässer als Potenzial für die Wärmewende? Heidelberg.

b) Ignite and stabilise District Heating and Cooling (DHC) Expansion

- Existing DHC infrastructure is insufficient in coverage and scale, limiting the distribution of decarbonised heat and cold.
- Heat mapping obligations are insufficiently enforced or set at too high thresholds for only large municipalities, and disregard the large potential.
- Local governments and utilities face a lack of technical and financial resources to implement comprehensive heating and cooling strategies.

c) Waste Heat Reuse

- Sectoral targets and obligations for waste heat recovery and reuse are missing or underdeveloped beyond district heating and cooling systems.
- Insufficient incentives hinder industries from investing in waste heat recovery, including limited ETS crediting and unclear reporting exemptions.
- New urban and industrial developments are not uniformly required to connect to DHC networks or enable waste heat utilisation.

d) Social Contracting and Energy Poverty

- Vulnerable households face financial and structural barriers to participating in energy efficiency and clean heating measures.
- Lack of dedicated support mechanisms prevents equitable access to renovation and clean heat supply.
- Innovative funding models combining energy service providers and social subsidies are not yet widely implemented or scaled.

Solution

ESCOs are key actors in delivering the heat transformation across sectors. Their role is to plan, finance and implement complex and capital-intensive solutions that combine efficiency, renewable heat and digitalisation – and make them accessible for a broad range of actors, including industry, public institutions, building owners and low-income households. They reduce investment risks and enable the bundling of decarbonisation measures into manageable service models. To fully leverage their potential, the following measures are needed:

a) Stable and Supportive Regulatory Framework

- Create non-discriminatory national frameworks: Require Member States to ensure fair market access, financing options and subsidies for energy service providers within the next 2 years at the latest.
- Ensure stable implementation: Avoid disruptive changes such as "energy omnibus" laws. Ensure full and swift implementation of the EPBD, EED and RED III to provide legal certainty.
- Support electrification: Scale up electrification by introducing fair electricity pricing (electricity-to-gas ratio <2), reforming electricity taxation, and implementing carbon pricing for fossil heating (ETS 2). Support flexible and smart integration of electrified processes.

b) District Heating and Cooling (DHC) is one of the major playgrounds of ESCO businesses, but is still hampered by inconsistent, unambitious framework conditions

- Boost expansion and decarbonisation: Strengthen legal mandates and tie financial support for new DHC systems to smart, low-temperature, waste heat/cold-ready and renewable-based networks.
- Strengthen heat mapping: Lower the threshold for municipal heat planning obligations (e.g., from 45,000 inhabitants), include district cooling, and link planning outcomes to ESCO and utility action. Mandate recovery from major waste heat/cold sources.
- Standardise technical interfaces: Define standards for contracts and technologies used to feed into DHC networks to ease integration.

c) Set Waste Heat Reuse Targets

- Sectoral reuse obligations: Expand waste heat use beyond DHC. Introduce sectoral targets (e.g., industry, large commercial buildings) and require basic data collection.
- Mandate connections: Require new major urban/industrial developments (e.g. data centres, cold stores) to be DHC-ready. Oblige DHC networks to accept such heat.
- Incentivise recovery: Make waste heat recovery eligible for free ETS allocations and exempt waste heat delivered to third parties from Scope 3.11 reporting obligations.
- Integrate the cold chain: Recognise cold infrastructure as critical. Mandate digital monitoring (temperature, leakage, predictive maintenance) in supermarkets, logistics, and cold storage. Enable integration of recovered cold chain heat into DHC networks.

d) Roll out Social Contracting and mitigate Energy Poverty

- Implement social contracting models: Empower low-income households to participate in the heating transition. Social contracting combines energy-efficient renovation and clean heating via ESCOs, while investments are refinanced through the heat price and subsidised by the EU Social Climate Fund.
- Ensure affordability: These models make climate-friendly heat supply cost-neutral, preserving affordable warm rents after renovation and supporting a just heat transition.