EUROPEAN ALLIANCE TO
SAVE ENERGY
Creating an Energy-Efficient Europe

ENERGY EFFICIENCY AND THE ENERGY SYSTEM INTEGRATION STRATEGY

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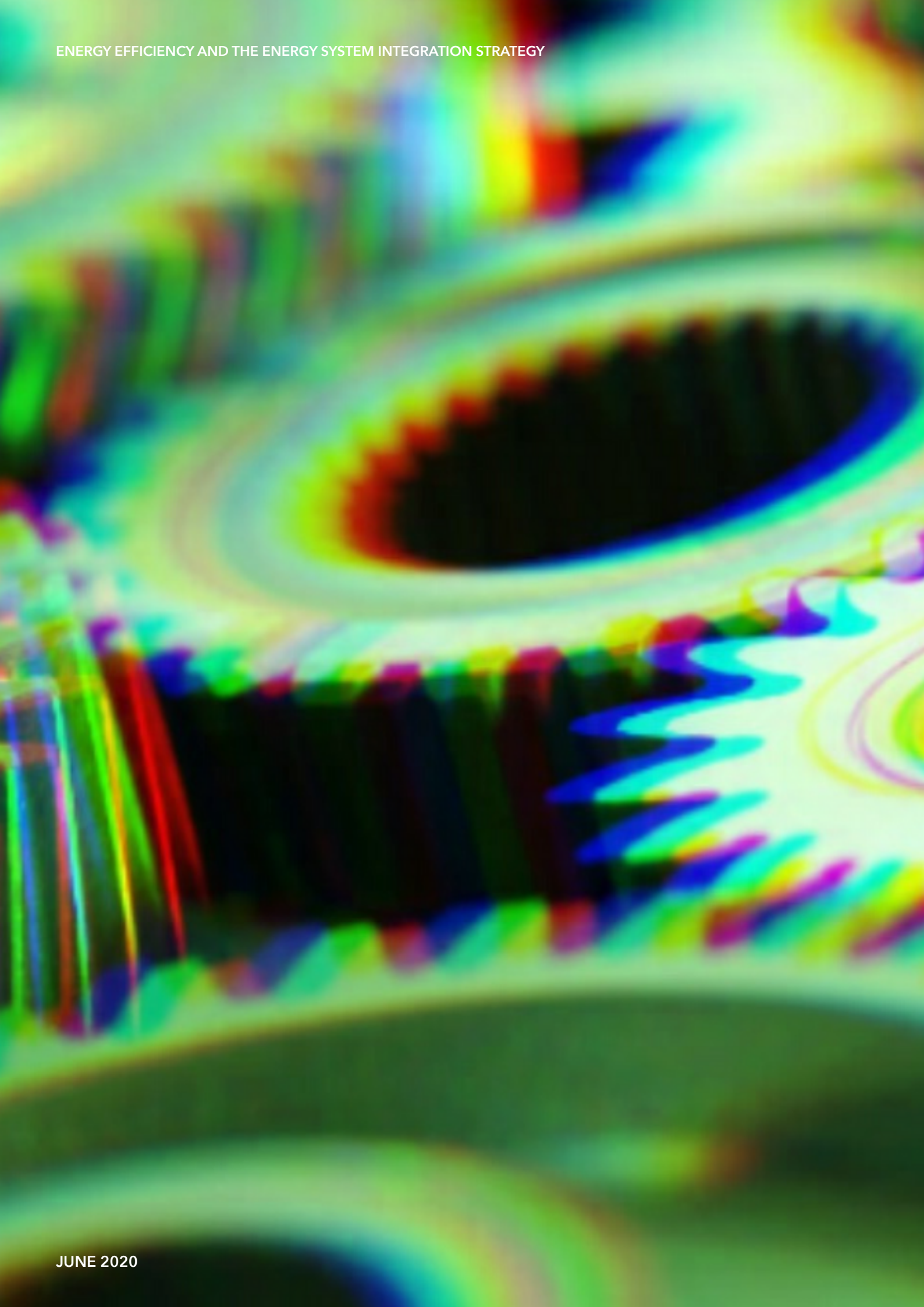

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The EU has been at the forefront of international efforts to fight climate change. In the current context, more than ever, it should continue in this direction by **focusing its economic recovery efforts on technologies and sectors where Europe is leading, like energy efficiency.** Doing so offers Europe the twin benefit of stimulating economic recovery and creating jobs[1], as well as of enabling the energy transition to climate neutrality by 2050 through sector and energy system integration.

Reducing emissions across all sectors and decarbonizing "hard-to-abate sectors", which include buildings, industry and transport, **will strongly depend on the EU ability to apply the energy efficiency first principle**, which should be mainstreamed to all energy policymaking, planning and investments, including into the upcoming EU Strategy on energy sector integration. Enforcing this principle is a pre-condition for reducing demand, delivering a cost and energy efficient system integration, and make decarbonization of the energy system economically feasible.

Energy efficiency is the first fuel and should be the starting point for all decarbonization efforts, and this according to the energy efficiency first principle as defined in the Governance for Energy Union Regulation. Together with renewables, it must represent the lion's share of the measures needed to meet the 2050 target. Energy efficiency and renewable electrification are two key pillars of a 1.5C decarbonization pathway[2].

To achieve its climate neutrality goal by 2050, the Commission has also announced an Energy System Integration Strategy as part of its Green Deal. This new strategy will look at how to facilitate the interlinkages between electricity, heating, building, transport and industry sectors, to better use synergies likely to emerge (including in energy conversion and storage), thereby enabling a more cost-efficient decarbonization of the energy system. This includes looking at **how integrating sectors can improve the overall efficiency of the energy system** through enabling reuse of excess/waste energy, storage of surplus electricity in thermal networks, buildings and transport as well as to incentivize the clean electrification of sectors, interconnectivity and energy storage.

The following recommendations put forward some key ideas to fully consider the potential for energy efficiency and its role in facilitating the transition towards more integrated energy and other sectors.

1. Institut Delors, "Making the Energy Transition a Success", 2017.
2. IPPC, 2018.

DEFINING AND MAINSTREAMING SECTOR INTEGRATION TO IMPROVE THE EFFICIENCY OF THE ENERGY SYSTEM

- The Commission should define sustainable energy sector integration as a concept that is in line with the energy efficiency first principle.

- By doing so, the Commission should assess the overall efficiency of the entire energy supply chain (generation, conversion, transmission, and distribution) by benchmarking different technologies with the aim of achieving a highly efficient and renewable based energy system. Reducing energy demand before extending capacities is key to avoiding the creation of an oversized energy system, stranded assets, and to keep energy prices affordable for citizens and businesses.

- The Commission should evaluate and compare the role and the potential that various energy sources and carriers play in different sectors based on their whole lifecycle greenhouse gas footprint and system sustainability and flexibility considerations. For example, while green hydrogen could play a role in hard-to-decarbonize sectors such as primary industry and heavy-road transport, for buildings, there are more cost-effective and "ready to use" solutions. In this light, technologies for direct electrification are already available and their deployment should be accelerated. A careful analysis of local context is necessary, with mapping and identification of heating and cooling supply and demand potential (as already required in article 14 of Energy Efficiency Directive). Depending on the results of this exercise, various options are available, including highly efficient district heating and cooling networks in densely urbanized areas and heat pumps in less urbanized areas.

- Digitalization is a fundamental prerequisite for energy efficiency and energy system integration, as most energy efficient technologies are digital in nature. Hence applying the energy efficiency first principle will support the acceleration of EU's digital agenda by creating smart buildings and infrastructure. Digitalization will allow energy producers and consumers to play a more dynamic and pro-active role in matching supply and demand.

- More needs to be done to raise awareness by involving and encouraging all stakeholders to work towards achieving energy system efficiency - through the creation of a communication platform, the promotion of best practices and by enabling and encouraging prosumers' active participation in integrated energy systems.

2 PRIORITISING ENERGY EFFICIENCY IN ALL PLANNING, POLICY, AND INVESTMENT DECISIONS

- To fully reap the benefits of competition, mainstreaming energy sector integration requires that equivalent services (in terms of the end results such as primary energy and greenhouse gas emissions savings or energy security) should have an equivalent access to markets. For example, investments in energy efficiency improvements currently do not benefit from the same secure remuneration as regulated network assets, despite their considerable contribution to Energy Union objectives such as energy security and reduced consumer cost.

- Energy efficiency investments should be prioritized as part of the EU recovery plan Next Generation EU and sectoral programmes such as InvestEU, Horizon Europe, and Life Program. All EU funds should be allocated following the energy efficiency first principle and well as the ratio between each euro invested and energy saved and/or greenhouse gas emissions avoided.

- Energy efficiency investments should be considered as critical infrastructure at the EU level. As recognized by the EIB in its recent energy lending policy revision, energy efficiency significantly contributes to energy security. This contribution, alongside with the energy efficiency first principle, should be reflected in how priority infrastructure and strategic value chains are defined and selected, for example through changes to the energy infrastructure governance in the TEN-E regulation[3], and through the inclusion of the energy efficiency value chain as IPCEI.

3. ACER and CEER (2019) establish in "The Bridge Beyond 2025" that in the current governance "The owners of those network assets […] may not be incentivised to encourage more economic alternatives to come to the market through forward-thinking and planning."

3 BUILDINGS AS THE CENTRAL PILLAR OF A MORE INTEGRATED AND EFFICIENT ENERGY SYSTEM

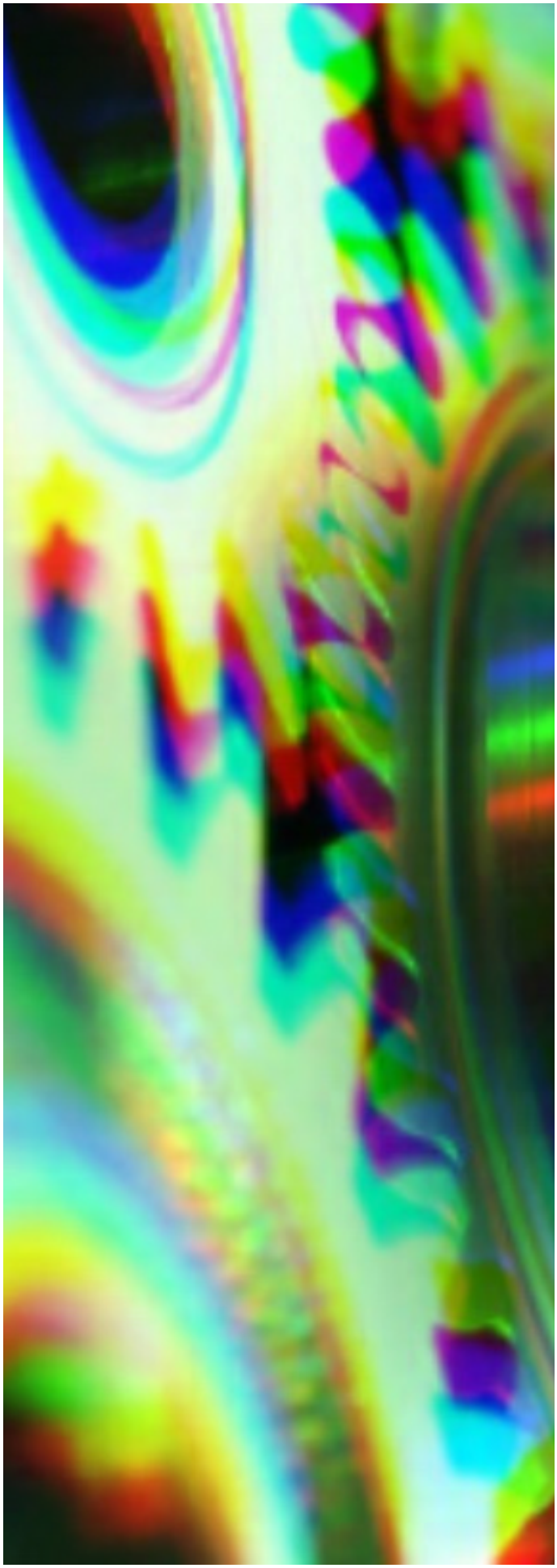
- Increasing the integration of highly efficient buildings with the energy producing sector relying more upon on renewables will trigger significant final energy demand and greenhouse gas emissions reduction. At the same time, a bigger share of renewables in the system will require increased efforts to deal with intermittent energy flows. This will call for a more decentralized and flexible energy system (a move from a centralized, through decentralized, to a distributed energy system).

- Buildings have a critical role to play in this new configuration, as they can participate in distributed energy systems by providing renewable electricity production, storage and demand response. These three elements are not only complementary, but even enforce each other[4]. Energy efficient buildings and the resulting reduction of energy needs for heating and cooling are indispensable prerequisites for a rapid transition towards renewable based energy supply and self-consumption, the urgent decarbonisation of urban areas and deployment of Electric Vehicles (EVs). Indeed, thanks to their lower energy demand, new and renovated and thus more efficient buildings avoid system overload, ensuring grid capacity to sustain the EVs revolution[5].

- New demand response capabilities of buildings should be enhanced to facilitate this transition, alongside with improvements in end-use efficiency, in order to increase the efficiency of the entire energy system. This would facilitate reducing losses associated with producing and distributing energy, avoiding curtailment of renewables, and unnecessary investments in energy infrastructure[6]. In other words, the Energy Sector Integration strategy should look at ways to enable and accelerate buildings renovation and digitalization to trigger both end-use and energy system efficiency. This should start with the ambitious implementation of the revised Energy Performance of Buildings Directive (EPBD) and Long Term Renovation Strategies (LTRS). It could be complemented with the implementation of smart buildings indicators, and a technology roadmap to accelerate the deployment of Best Available Technologies (BAT). Solutions such as Building Renovation Passports can help to define for each renovated building and district, its ability to interact with its environment and contribute actively towards energy sector integration.

The energy sector integration of buildings will also be facilitated by a neighbourhood approach to energy planning and renovation, enabling the identification and realization of synergies starting at the local level.

To support the Sector Integration Strategy and the Building Renovation Wave, the Commission should set up a flagship initiative for "Smart Skilled Workforce". This will help educate and train the necessary skilled workforce, essential for deploying low carbon technologies and intelligent systems to manage renovated and digital-ready buildings. This new pool of workforce can also help those currently dependent on fossil technologies to transition to a growing market for decarbonized services and products, and be a short-term boost of disposable income for those impacted by Covid-19.



4. The active role of buildings in a transforming energy market, BPIE, 2015, see here.
5. Energy Efficiency and Electric Vehicles: How Buildings Can Pave the Way for the Global EV Revolution, Rocky Mountain Institute, 2018, see here.
6. IEA, Energy Efficiency, 2019

4 UTILIZING SYNERGIES BETWEEN ELECTRICITY AND HEATING AND COOLING SECTORS TO INCREASE ENERGY EFFICIENCY AND MEET DECARBONIZATION GOALS

In order to meet its decarbonization goals, the EU must tackle the heating and cooling consumption. This sector consumes 50% of the energy used in Europe, and 75% of heating and cooling in Europe is currently provided by fossil fuels[7].

The first step is to accelerate the renovation of the large majority of the inefficient European building stock. Highly energy efficient buildings are a pre-condition for the decarbonization of the heating sector. They have lower annual energy demands for space heating and therefore lower linear heat densities than the existing building stock.

The 2016 EU Strategy on Heating and Cooling[8] identified several viable solutions for decarbonization and increased efficiency in the heating sector that can enable a successful energy system integration. Such sectoral efficiency both on the demand as well as on the supply side; and decentralizing, diversifying and decarbonizing energy sources (wind, solar, biomass, geothermal and waste heat).

7. Heat Roadmpa Europe 2050, see here.
8. EU Strategy on Heating and Cooling, February 2016, see here.

The **European Alliance to Save Energy** (EU-ASE) was established in December 2010 by some of Europe's leading multinational companies. The Alliance creates a platform from which our companies (Danfoss, Kingspan, Knauf Insulation, Saint-Gobain, Schneider Electric, Siemens, Signify, and Veolia) can join with politicians and thought leaders to ensure the voice of energy efficiency is heard from across the business and political community.

EU-ASE members have operations across the 27 Member States of the European Union, employ over 340.000 people in Europe and have an aggregated annual turnover of €115 billion.

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