ELECTRIFICATION & DIGITALIZATION

Unlocking SME Competitiveness in Europe

SOLARIMPULSE FOUNDATION

Schneider Electric Foundation

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Table of contents

Foreword by Bertrand Piccard 04

Foreword by Laurent Bataille 05

Summary 06

Context & Objectives 07

- Context, Objectives & EU Policy Framework 08
- Why Electrification and digitalization for EU Industry 08
- Energy Sovereignty for Europe 09
- Strategic Importance for Innovation, Sustainability & Resilience 10

Market Overview 11

- SMEs & Mid-Caps: Central Role and Current Status 12
- EU Electrification & digitalization: Supply Side 12
- EU Electrification & digitalization: Demand Side 13
- Global Overview: China, US, EU 14

China: Rapid Electrification in Emerging Industries

United States: Incentive-Driven Electrification

Europe: Boosting Competitiveness – The Imperative to act

Global Comparison & Strategic Implications

Challenges & Opportunities 16

- Technical Challenges & Opportunities 17
- Financial Challenges & Opportunities 19
- Market Challenges & Opportunities 20
- Regulatory Challenges & Opportunities 21

Business Model & Case Studies 22

- Service-Based Models 23
- Aggregated / Cooperative Models 24
- Public-Private & Hybrid Financing Models 24
- Case Study: Achieving Zero-CO_2 plants through the use of microgrids 25
- Case Study: Optimizing industrial water management, manufacturing and energy consumption 27
- Spotlight Partnership: Unlocking SME decarbonization – powered by finance, enabled by service models 29

Recommendations & Conclusion 30

- Recommendations (for SMEs & Mid-Caps) 31
- Policy Recommendations (for EU / Member States) 33
- Conclusions 35

Foreword by

Bertrand Piccard

Founder and Chairman,
Solar Impulse Foundation

Our current way of dealing with energy is holding us back, technologically, economically, and environmentally. Many SMEs and Mid-Caps companies still rely on outdated processes and systems that were designed one hundred years ago for a world very different from today's: rigid production lines, fossil-fuel-dependent operations, and disconnected, inefficient workflows.

This is not only unsustainable, it is also costly. Billions are wasted every year through inefficiency, while opportunities for growth, resilience, and competitiveness remain untapped. Hundreds of solutions exist today to modernize the world. By embracing electrification and digitalization, companies can cut energy use, reduce costs, and unlock new value across their operations. While Europe is working on an Electrification Strategy, electrification and efficiency investments are progressing too slowly.

Efficiency is Europe's hidden superpower. Every kilowatt-hour saved, every streamlined workflow, every smarter process strengthens competitiveness, reduces dependency on foreign energy imports, and boosts resilience. Efficiency is not a limitation, it is a source of wealth and sovereignty, as it allows to do more with less. The European Green Deal provides a roadmap, but real change comes from action at the company level.

Electrification and digital tools are not just technical upgrades, they are levers for transformation. Smart, connected processes can make businesses more agile, reduce environmental impact, and prepare them for the economic challenges of tomorrow. Efficiency and innovation go hand in hand: smarter SMEs spend less, pollute less, and gain more.

Electrification and digital tools are not just technical upgrades, they are levers for transformation. Smart, connected processes can make businesses more agile, reduce environmental impact, and prepare them for the economic challenges of tomorrow.

Real-world examples identified by the Solar Impulse Foundation show that the transition is already underway. A company that optimizes energy use through digital tools can save millions annually, while a small municipality implementing smart climate controls can reduce costs and emissions simultaneously. Initiatives like the European Investment Bank's Energy efficiency for SMEs initiative, developed in collaboration with the Solar Impulse Foundation to support over 350,000 SMEs to become more energy efficient, demonstrates that financing solutions also exist to accompany these companies and ease the investment.

Entrepreneurs, industry leaders, and policymakers must work together, question assumptions, and embrace solutions that make operations smarter, cleaner, and more profitable. Efficiency is not a cost – it is a gain. Electrification and digitalization are two sides of the same coin, offering a path to a stronger, more resilient, more efficient, and more sustainable economy.

EUROPE CANNOT AFFORD TO WASTE ENERGY, AS THIS WOULD DECREASE ITS COMPETITIVENESS. THE SOLUTIONS AND THE FINANCING MECHANISMS EXIST TO ACT NOW.

Foreword by

Laurent Bataille

Executive Vice President,
Europe Operations, Schneider Electric

Europe's industrial future is at a crossroads. Electrification and digitalization are not ambitions,they are imperatives. The tools exist. The technologies exist. What matters now is adoption, scale, and execution.

Today, 40% of Europe's electricity grid is older than 40 years. It is reaching the end of its lifecycle, and the urgency to modernize, digitalize, and interconnect infrastructure has never been greater. According to the European Commission, around €584 billion in grid investment will be required by the end of this decade to remain on track with electrification and energy transition goals. These investments are not abstract, they determine the competitiveness, resilience, and sustainability of European industry.

At Schneider Electric, we see the results of the technology's adoption every day. Smart grids, microgrids, AI-driven energy management, and IoT-enabled analytics deliver measurable savings, operational flexibility, and new revenue opportunities. Electrification paired with digitalization allows small and medium size companies to optimize energy use, reduce costs, and participate in flexibility and energy-as-a-service markets. Scaling these solutions strengthens Europe's industrial sovereignty, reduces reliance on imported energy, and builds resilience against global shocks.

Digitalization also allows industries to take a proactive approach to energy management. Strategically shifting non-critical loads, leveraging on-site generation during peak periods, and deploying storage helps small and medium size companies save money while strengthening their ability to navigate disruptions. Microgrids, combining generation, storage, and intelligent energy management, enable industrial sites to operate independently in "island mode," ensuring continued functionality even during grid stress.

Small and medium size companies are Europe's backbone. They innovate, they create jobs, and they anchor our local economies. Yet too many face hurdles: a fragmented EU single market, including the lack of harmonisation in regulatory requirements across Member States, which is preventing them to develop and scale at speed. These challenges are real, but they are not insurmountable. Collaboration is the solution.

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This report provides practical insights and actionable solutions. It highlights business models, real-world case studies, and steps small and medium size companies can implement today. The transition is not only technically possible but financially viable, when supported by smart policy, innovative financing, and cooperative approaches.

EUROPE CANNOT WAIT. EXECUTION IS THE ONLY PATH TO A COMPETITIVE, RESILIENT, AND SUSTAINABLE INDUSTRIAL FUTURE. ELECTRIFICATION AND DIGITALIZATION ARE NOT JUST TECHNICAL TOOLS, THEY ARE STRATEGIC LEVERS THAT TRANSFORM OPERATIONS, UNLOCK VALUE, AND SECURE EUROPE'S LEADERSHIP IN INNOVATION AND INDUSTRIAL EFFICIENCY.

Electrification powers a resilient, competitive, and climate neutral industry, reducing reliance on fossil fuels and driving the transition to sustainability.

Why SMEs matter

SMEs & Mid-Caps
=
99% OF EU BUSINESS
>50% OF EU GDP

- They are central to Europe's competitiveness, yet adoption of electrification and digitalization is limited: only 11% have made substantial green investments.
- With volatile energy prices and ongoing geopolitical risks, SMEs are disproportionately exposed.

EXPERT INSIGHT

"Energy efficiency investments and electrification offer SMEs far more than cost savings – they cut carbon emissions, create jobs, and boost green credentials. Yet too often, red tape and missing support stand in the way. With targeted funding and tailored guidance, SMEs can better unlock these multiple benefits."

Ms. Véronique Willems, Secretary General, SME United

The Opportunity

Electrification
+ Digitalization
=
Cost Savings
+ Competitiveness
+ Resilience

- Switching to electrified and digital solutions can cut energy use by 20-30%, reduce CO_2 emissions by up to 40% in key sectors, and unlock billions in untapped value by 2030.
- EU policy (Clean Industrial Deal, Electrification Plan 2026) provides the right framework, but rapid SME adoption is the missing link.

OBJECTIVE OF THIS REPORT

This publication provides an overview of Europe's electrification landscape, identifying key barriers, opportunities, and actionable business models. It is directed toward business leaders, policymakers, and financial stakeholders who can enable and accelerate the transition. The objective is to foster an enabling environment that supports the digital and energy transformation of SMEs and Mid-Caps, contributing to a more sustainable, resilient, and competitive European economy.

Context & Objectives

With 80% of climate change driven by carbon emissions (IPCC,2021), and the majority coming from energy generation and consumption (Ge, M., Friedrich, J., & Vigna, L., 2024), transforming industrial energy use is critical. Achieving net-zero goals requires transformational changes across production, distribution, consumption, and energy management (United Nations, 2025).

EXPERT INSIGHT

"This evolution is not merely technological, it's strategic. Electrification has catalyzed cross-functional collaboration, requiring closer alignment between sustainability teams, operations, and finance departments. Companies are now viewing sustainability not as a cost center, but as a value-creation strategy."

Jorge Rafael Gonzalez-Teodoro, Expert, Solar Impulse Foundation

EU Policy Framework

Europe's Clean Industrial Deal (CID), introduced in February 2025, set a voluntary KPI to raise the economy-wide electrification rate from 21.3% today to around 32% by 2030 (European Parliament Research Service, 2025). Complementary targets include installing 100 GW of renewable electricity annually and producing 40% of key clean tech components domestically. The upcoming 2026 Electrification Plan will further support SMEs and Mid-Caps with frameworks and incentives to adopt electrified and digital solutions.

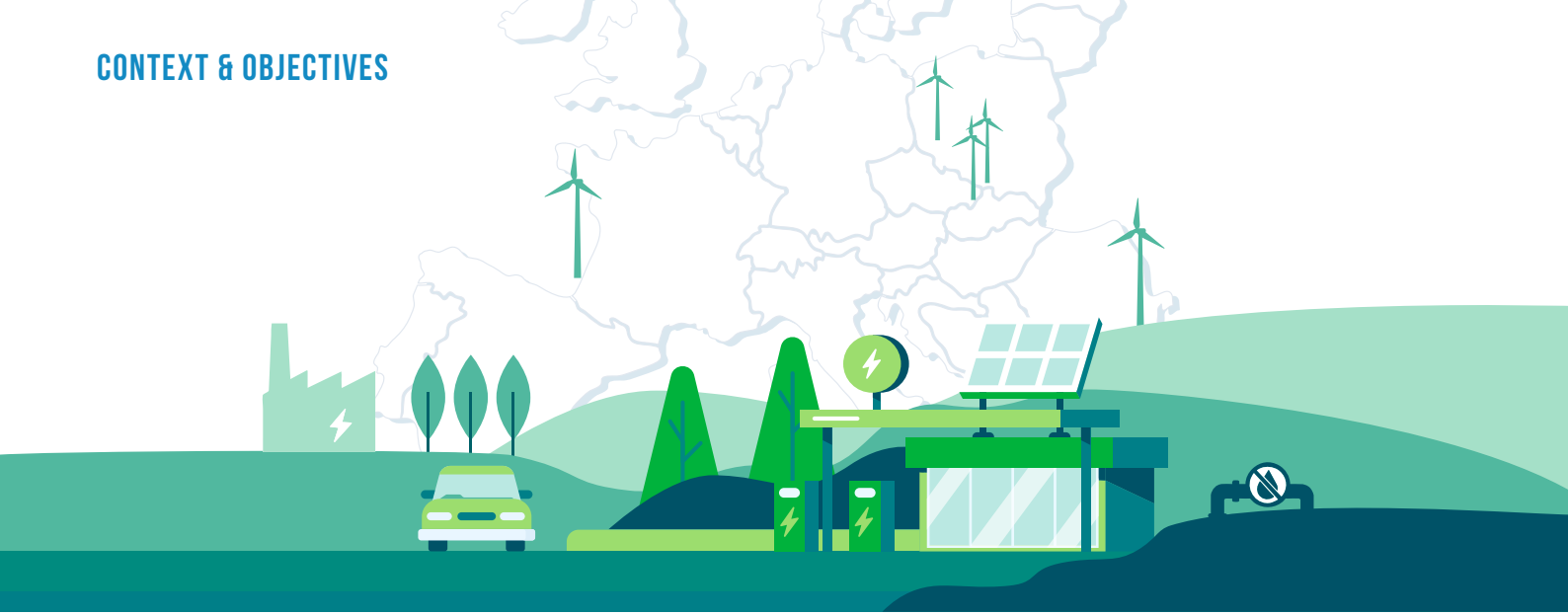
Initiatives such as the EU Action Plan on Digitalising the Energy System (European Union, 2022) and the Clean Industrial Deal (European Commission, 2025) demonstrate the EU's strategic ambition: to decarbonize energy-intensive industries, enhance competitiveness, and enable SMEs to actively contribute to the energy transition.

Why Electrification and Digitalization for EU Industry

Studies show that direct electrification of industrial heat could reduce European industrial CO_2 emissions significantly, particularly in sectors such as chemicals, food processing, and textiles (Madeddu et. al., 2020). By substituting fossil-fuel-based heat with electric solutions, companies can meet climate targets while gaining cost savings from improved energy efficiency.

Innovative, energy-efficient technologies have reshaped entire sectors, with 2023 data showing more than 80% of renewable energy projects were cost-competitive or cheaper than fossil fuel alternatives (IRENA, 2024, Reuters, 2025). For example, solar panels are now 41% cheaper and onshore wind projects 53% cheaper than in previous years, making electrification financially attractive.

Electrification combined with digital intelligence maximizes efficiency and reduces waste. IoT-enabled devices, AI-driven analytics, and remote energy management provide real-time insights, predictive control, and operational flexibility (Schneider Electric, 2023; Schneider Electric SRI, 2024). Smart charging, microgrids, and energy optimization further reduce costs and strengthen grid stability.



Energy Sovereignty for Europe

Electrification is central to Europe's energy sovereignty, reducing dependence on imported fossil fuels that leave the EU exposed to geopolitical and economic risks (ECFR, 2024). Despite progress in cutting Russian supplies, EU member states continue to import oil, gas, and coal, making them vulnerable to volatile prices and international shocks, from conflicts in Ukraine and the Middle East to shifts in U.S. policy (ECFR, 2024). Rapid industrial electrification not only lowers CO_2 emissions but also strengthens strategic autonomy, while delays would increase costs and jeopardize competitiveness (Nucleareurope, 2024).

Energy sovereignty is inseparable from a strong Single Market. As Executive Vice-President of the European Commission Stéphane Séjourné noted, Europe must "Europeanise before it internationalises" ensuring companies first benefit from seamless intra-EU trade before competing globally (European Commission, 2024). Electrification and digitalization are key enablers, simplifying operations, lowering barriers, and boosting competitiveness across borders.

Expanding domestic production of clean technologies, solar panels, wind turbines, batteries, and heat pumps, can secure supply chains and reinforce EU industrial capacity. The record growth in renewable energy capacity in 2023, with renewables surpassing 30% of electricity generation, shows that scaling is feasible and cost-effective (IEA, 2023; Ember, 2023). To remain resilient, Europe must also integrate digitalization, flexible demand, advanced storage, smart grids, green hydrogen, and AI-enabled energy solutions (Sustainable Energy Week, 2025).

SMEs and Mid-Caps play a pivotal role. By adopting electrification and digitalization, they pilot innovative solutions, optimize operations, and reduce energy costs, strengthening Europe's energy sovereignty, resilience, and industrial competitiveness.

TAKEAWAYS

EU Electrification KPI Drives Action
Europe aims to raise electrification from

21.3% to 32% by 2030

Action

> Use KPI to guide modernization, invest in electrification-ready technologies, and prioritize decarbonization projects.

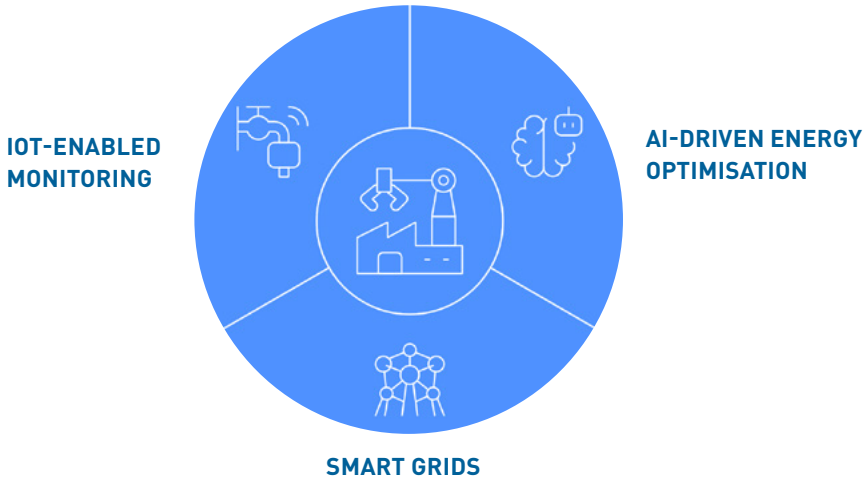
Digital + Electric = Efficiency
Combining electrification with IoT, AI analytics, and energy management

Action

> Implement digital energy solutions to boost efficiency, operational flexibility, and participation in new energy markets.

Strategic Importance for Innovation, Sustainability & Resilience

Europe is emerging as a global innovation leader through electrification and digitalization. AI-driven energy optimization, smart grids, and IoT-enabled monitoring enable resilient industrial operations. SMEs serve as innovation incubators, testing new technologies that strengthen Europe's technological leadership.



TAKEAWAYS

Targeted Support & Investment Opportunities

Many SMEs face financial and technical barriers when adopting electrification and digital solutions, despite clear cost-saving and efficiency opportunities. Smaller firms are particularly constrained in accessing financing for green and digital investments. (EIB, 2024)

Action

> Use advisory programs, funding instruments, and collaborative approaches to share risks and accelerate adoption of electrification and digital solutions.

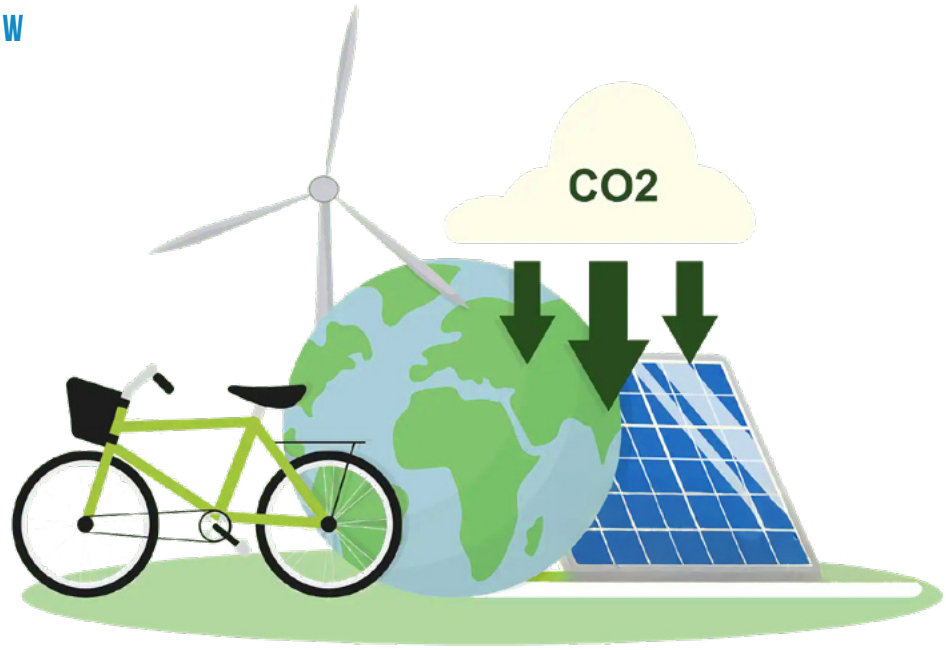
Electrification combined with digital intelligence not only improves operational efficiency but also allows SMEs to participate in emerging flexibility and energy-as-a-service markets. These opportunities generate revenue streams and cost savings, critical for smaller companies seeking both sustainability and competitiveness. Electrification combined with digital intelligence not only improves operational efficiency but also allows SMEs to benefit from participation in emerging flexibility markets. Service-based financing solutions, such as Energy-as-a-Service, further support adoption by reducing upfront investment barriers. These opportunities generate revenue streams and cost savings, critical for smaller companies seeking both sustainability and competitiveness.

This shift is especially relevant for Europe's 23 million SMEs, which account for nearly three-quarters of employment (EIB, 2025), and for Mid-Caps across both energy-intensive and secondary industries making them central to the energy transition (CCCE, 2024). Electrification combined with digitalization is more than an environmental initiative; it is a strategic lever to reduce costs, improve efficiency, and enhance competitiveness. Smart grids, microgrids, AI-driven energy optimization, and remote monitoring enable operational flexibility and new revenue streams, such as more efficient energy use or energy-as-a-service models.

Market Overview

SMEs and Mid-Caps are Europe's economic backbone and have huge potential to lead the energy transition. Growing access to renewable energy and digital tools opens new opportunities for modernization and efficiency.

Electrifying key systems and leveraging IoT and AI can cut costs, reduce emissions, and boost productivity. By embracing these solutions, SMEs can strengthen competitiveness while driving a cleaner, smarter future.



SMEs & Mid-Caps: Central Role and Current Status

Small and medium-sized enterprises (SMEs) and Mid-Caps form the backbone of the European economy, representing 99% of all businesses and contributing over half of GDP (European Commission, 2024). They are also significant contributors to corporate greenhouse gas emissions, making their energy transition central to EU climate objectives. While 93% of SMEs have implemented at least one resource-efficiency measure and approximately 25% have adopted carbon-reduction strategies, only about 11% have made substantial green investments (CCCE, 2024). This highlights a clear gap between environmental ambition and actual adoption of electrification and digital solutions, underscoring the need for targeted modernization strategies.

The EU SME Strategy (European Commission, 2020) recognizes SMEs as drivers of innovation and sustainability, emphasizing access to finance, support for digital and green technologies, and simplified regulations. Aligning electrification and digitalization initiatives with this strategy helps SMEs contribute to Europe's energy transition while boosting competitiveness.

EU Electrification & digitalization: Supply Side

Europe's renewable electricity supply is robust, led by wind and solar deployment, creating favorable conditions for electrification. SMEs in secondary industries increasingly leverage distributed solar, either generating energy on-site (12%) or purchasing via green electricity contracts (23%) (European Commission, 2024). However, the availability of skilled installers, advanced equipment, and advisory services remains uneven across Europe, which can slow deployment despite strong renewable capacity.

EU Electrification & digitalization: Demand Side

SMEs and Mid-Caps face diverse energy demands across industrial sectors, which influences how quickly electrification and digitalization can be adopted. Major energy consumers in SMEs include electric motors, pumps, fans, compressors, steam systems, and heating equipment (Hasanbeigi & Price, 2012; De Almeida et al., 2003; Saidur et al., 2010), making them key targets for electrification and energy efficiency measures. While some applications, such as conveyor belts and motors, are technically mature and already partially adopted (Agrawal et al., 2023), heat-intensive processes, particularly in food processing or low-temperature operations, face slower uptake due to process-specific modifications and integration challenges. Heat pumps are technically viable but often require system integration adjustments, limiting current penetration.

Digitalization, from IoT connectivity to AI-driven optimization, can help SMEs optimize these energy-intensive systems, supporting predictive maintenance, peak load management, or improved productivity (Schneider Electric, 2022). By adopting these solutions, SMEs can monitor energy use in real time, participate in local microgrids, and enhance both operational efficiency and resilience.

The figure below (Fig.1) extracted from Schneider Electric SRI (2022) illustrates electrification penetration by sector as a percentage of final energy demand. It highlights that low- to mid-temperature processes, common in SME and Mid-Cap sectors, have substantial potential for electrification, reinforcing the opportunities discussed above.

TAKEAWAYS

ELECTRIFICATION RATES VARY WIDELY ACROSS EUROPE – KEY NUMBERS

Nordics

>30%,

reflecting a balance between ample renewable electricity supply and strong demand, notably from heat pumps and electric vehicles

Western Europe (DE, FR, Benelux)

~20-25%,

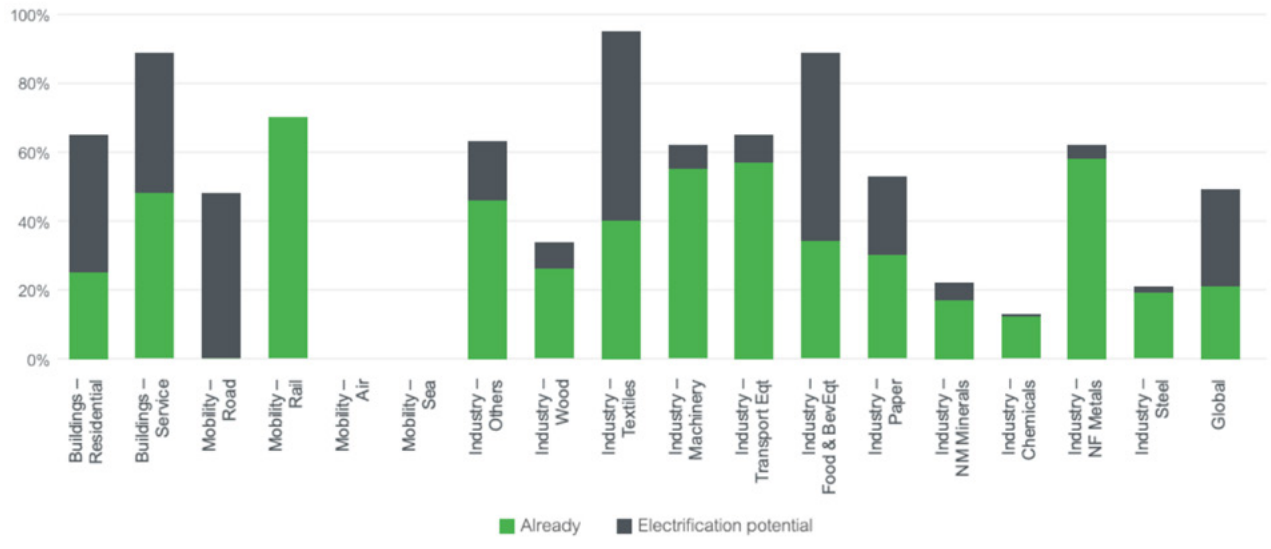
but energy-intensive sectors still lag

Southern & Eastern Europe

<20%,

with SMEs facing higher financing barriers

Fig. 1: Electrification penetration by sector as a percentage of final energy demand (2022).



Global Overview: China, US, EU

China: Rapid Electrification in Emerging Industries

China's electricity consumption has been growing faster than its economy since 2020, driven primarily by industrial demand (Ember, 2025; IEA, 2025a). Between 2022 and 2024, nearly half of the increase in electricity demand came from industry, while commercial and residential sectors accounted for roughly 40% of growth. The industrial surge is largely concentrated in electricity-intensive sectors such as battery manufacturing, semiconductors, and electric vehicles, which now consume more than 300 TWh annually, roughly equivalent to Italy's total annual electricity use (IEA, 2025b).

China's strategy emphasizes highly automated, electrified production facilities with widespread adoption of heat pumps in both industrial processes and building applications. Workforce training, digital tools, and centralized coordination accelerate adoption, particularly in emerging sectors, while traditional industries such as chemicals and cement remain less electrified due to competitiveness and technological challenges. Europe can draw lessons from China's strong government support for industrial innovation and rapid scale-up, while preserving SME flexibility and market-driven initiative.

United States: Incentive-Driven Electrification

In the U.S., electrification has largely been driven by financial incentives, particularly under the Inflation Reduction Act (IRA) of 2022, the most significant climate legislation in U.S. history (EPA, 2025; U.S. Congress., 2022). The IRA commits hundreds of billions of dollars to electrification across transport, buildings, and industry, combining tax credits, grants, and loans to stimulate adoption. For example, new electric vehicles are eligible for tax credits up to $7,500, and heat pumps receive rebates up to $2,000 (IRS, 2023). Industrial tax credits (45X, 48C) provide long-term certainty for manufacturers in hard-to-abate sectors such as steel and cement.

This incentive-driven approach has catalyzed reshoring of supply chains, gigafactory investments, and local job creation, particularly in the Midwest and Southern states (Financial Times, 2025). SMEs benefit from stable, predictable incentives that reduce investment risk, although they sometimes face barriers accessing programs compared with larger players. The U.S. approach emphasizes financial carrots over regulatory sticks, relying on market signals to drive adoption and private investment.

KEY TAKEAWAYS FOR SMES & MID-CAPS

SMEs are central to Europe's energy transition

SMEs and Mid-Caps account for 99% of EU businesses and a large share of corporate emissions, yet adoption of electrification and digital solutions remains limited.

Action

> Prioritize modernization to close the adoption gap and enhance competitiveness

Digitalization amplifies electrification benefits

IoT, AI-driven analytics, and predictive energy management boost energy efficiency, operational flexibility, and resilience.

Action

> Integrate digital solutions alongside electrification projects to maximize cost savings and performance.

Europe: Boosting Competitiveness – The Imperative to Act

The EU leads globally in renewable energy deployment and distributed solar, but industrial electrification remains slower, particularly among SMEs and hard-to-electrify sectors. Distributed generation allows secondary industries to produce energy on-site (12%) or purchase via green electricity contracts (23%) (European Commission, 2024). While digital solutions, IoT, AI, and digitally enabled energy management help SMEs improve efficiency and resilience, adoption remains uneven (Benedetti, Guarini, & Laureti, 2023).

Europe combines a "stick and carrot" approach: regulatory requirements ensure baseline compliance, while incentives encourage voluntary adoption of electrification and digitalization. This balances industrial competitiveness with climate goals and enables SMEs to experiment with decentralized, innovative solutions (Energy EC, 2025). To remain competitive globally, Europe must accelerate both electrification and digitalization adoption among SMEs and Mid-Caps. Policy alignment, investment incentives, workforce training, and knowledge-sharing platforms are critical enablers to close the adoption gap and maintain EU leadership in clean energy and industrial innovation (ECCOClimate, 2025).

Global Comparison & Strategic Implications

China, the U.S., and the EU illustrate very different electrification trajectories (IEA 2025). China demonstrates rapid adoption in emerging, electricity-intensive sectors with centralized coordination and strong workforce training. The U.S. relies on stable financial incentives to mobilize private investment and support hard-to-abate sectors. In 2023, electricity accounted for 34% of final energy use in the EU industrial sector, compared to 26% in the U.S., showing that Europe leads against the U.S. in industrial electrification while China reached a 35% electrification rate far ahead. (IEA US, 2025; IEA EU, 2025; IEA China, 2025). However, the composition of electricity generation also shapes the strategic focus: the EU's relatively high share of renewables provides stronger incentives for industries to electrify and optimize processes, while in regions where grids remain carbon-intensive, such as parts of the U.S. and China. Policy emphasis should also include accelerating renewable generation capacity through solar, wind, and other low-carbon infrastructure.

By combining lessons from China and the U.S. with Europe's SME agility, decentralized innovation, and growing renewable base, EU stakeholders can accelerate electrification and digitalization to strengthen competitiveness and industrial resilience.

KEY TAKEAWAYS FOR SMES & MID-CAPS

Accelerate adoption to maintain global competitiveness
Europe leads in industrial electricity use, yet SMEs can further boost electrification in key sectors by leveraging training, funding, and decentralized innovation.

Action

> Align investments with EU electrification and digitalization targets to secure long-term market advantage.

Challenges & Opportunities

Electrification and digitalization offer SMEs and Mid-Caps a path to greater efficiency, lower emissions, and stronger resilience. Adoption faces hurdles, technical limits, high upfront costs, and regulatory complexity, but these also create space for innovation.

Smart tools, AI-driven energy management, and modernized equipment help companies overcome hurdles, reduce costs, and unlock growth, turning challenges into competitive advantage.

Electrification and digitalization are decisive levers for SMEs and Mid-Caps to strengthen competitiveness, cut emissions, and enhance resilience. Yet adoption remains uneven. The journey is shaped by a series of interlinked technical, financial, market, and regulatory challenges that slow down deployment. Crucially, each barrier also reveals a parallel set of opportunities, new business models, policy levers, and innovation pathways, that can accelerate the transition if seized (OECD, 2025).

Technical Challenges & Opportunities

The challenge

Europe's energy system was designed for a centralized fossil-fuel era. Today, industrial electrification, distributed renewables, EV charging, and the explosive growth of AI data centers are creating new pressures on the electricity grid (WEF, 2025; IEA, 2025).
For SMEs and Mid-Caps, these systemic issues are compounded by firm-level constraints: legacy production lines, rigid processes, and limited engineering capacity make the integration of new electrified systems sometimes complex and disruptive (Zühlsdorf, 2024).

SME and Mid-Caps -specific challenges include:

- Process Integration
  SMEs and Mid-Caps face varying levels of adaptation when integrating electrified technologies into production workflows. Motors and conveyors are easy to electrify. Low- and medium-temperature heat pumps can often be installed with minor changes. High-temperature or large systems may require major changes to processes or equipment layout.

EXPERT INSIGHT

"Digitalization enables SMEs to turn electricity cost volatility into a strategic advantage. If you want to know where energy consumption is cheapest for your SME, you have to know where your consumption and production happen, and be able to steer it economically."

Rainer Notter, Expert, Solar Impulse Foundation

TAKEAWAY

Technical barriers are real but solvable.

They create a business case or digital solutions, flexible operations, and localized supply chains where SMEs can play a leading role.

- Grid Integration
  Some installations, particularly low-power systems, require no changes to site electrical capacity. Larger systems, such as high-capacity heat pumps or industrial electrification projects, may necessitate upgrades, including new MV/LV transformers or additional connections, to operate safely and efficiently. Limited in-house engineering and project management resources can slow implementation compared to larger firms, making external advisory support and planning essential.
- Supply chain vulnerability
  SMEs can be slowed down by shortages of equipment and financing. Strengthening European supply chains for electrification components could help SMEs adopt faster and more flexibly (CCCE, 2024).
- Human capital & knowledge gaps
  Adopting electrified technologies requires new skills, technical awareness, and training (as widely observed in the manufacturing industry (SME, 2023; UK Research and Innovation, 2024; The Manufacturer, 2025). SMEs and Mid-Caps often lack the knowledge to identify the most suitable technologies, integrate them efficiently, or operate and maintain them safely. Addressing these gaps may require upskilling existing staff, hiring specialized personnel, or partnering with external advisors, which can be time- and resource-intensive.

The opportunity

Digitalization is the bridge between technical challenge and operational benefit. IoT-enabled devices, predictive analytics, and AI-driven energy management allow SMEs to integrate electrified processes with minimal disruption, optimize operations in real time, and enhance resilience (Schneider Electric, 2022 Schneider Electric SRI, 2024). Investing in human capital, through training, upskilling, and knowledge-sharing, enables SMEs to leverage these digital tools effectively, turning technical expertise into a competitive advantage. Grid constraints, while real, also create opportunities for innovation in local storage, microgrids, and demand-side flexibility (Sustainable Energy Week, 2025).

EXPERT INSIGHT

"Electrification requires significant investments that many SMEs simply cannot afford on their own. For them, financial incentives and supportive public policies from national governments and the EU are essential."

Dr. Antoine Belleguie, Expert, Solar Impulse Foundation

TAKEAWAY

The financing gap is significant, but it also acts as a catalyst for new business models that combine innovation with sustainability, cooperative solutions, and targeted policy support, making electrification and digitalization accessible to SMEs while supporting long-term efficiency and qualitative growth.

Financial Challenges & Opportunities

The challenge

Electrification and digitalization require upfront capital, often while legacy fossil-based systems remain in place. For SMEs and Mid-Caps with small balance sheets, uncertain returns, and limited borrowing capacity, these investments may be perceived as risky. Electricity price volatility makes payback periods unpredictable, while complex funding schemes are difficult to access without specialized teams (OECD, 2025; EIB, 2024). This creates a paradox: while SMEs understand that electrification can reduce long-term costs, the high upfront investment and uncertain returns make it difficult for them to act.

The opportunity

Innovative business models are transforming how SMEs access and finance energy and digital solutions. By shifting costs from capital expenditure (CAPEX) to operational expenditure (OPEX), these approaches lower entry barriers, ensure professional operation and maintenance, and can even open up new revenue streams. A detailed exploration of these service models follows in the next chapter. (Agora Industry, 2024; McKinsey, 2024; Schneider Electric, 2022; EIB Advisory Hub, 2020; Trama, 2021; ENS Denmark, 2020).
A detailed deep dive on these models follows in the next chapter.

Beyond this, as-a-service and cooperative approaches can leverage diverse financing sources, from private investors to public funds or blended mechanisms, reducing risk and making it easier for SMEs reducing risk and making it easier for SMEs to adopt electrification and digitalization (Solar Impulse Foundation & EIB, 2024).

EXPERT INSIGHT

"Policies lead energy transition. For SMEs, external barriers to electrification mostly come down to costs, supply chain instability, and gaps in infrastructure and skills. They can overcome these challenges by strategically prioritizing easy wins first, then carefully planning for medium- and long-term improvements."

Eric Griess, Expert, Solar Impulse Foundation

TAKEAWAY

Market exclusion is a current reality, but aggregation, digitalization, and targeted workforce investment can empower SMEs and Mid-Caps to participate in markets once out of reach, improving resilience and competitiveness.

Market Challenges & Opportunities

The challenge

SMEs and Mid-Caps are disproportionately exposed to energy market risks:

- They typically buy electricity at retail prices, including taxes and grid fees, leaving them vulnerable to sharp price increases (Bruegel, 2022; European Commission, 2024).
- Like small consumers they are likely to be excluded from participating in wholesale or flexibility markets due to technical thresholds, regulatory barriers, or insufficient operational scale (Vallés et. al., 2016; Bogdanova, et. al., 2023; Rosales-Asensio et. al., 2024; Leinauer et. al., 2022).
- Skills shortages, from specialized installers to energy engineers, delay deployment (EIB, 2023).
- Regional disparities in infrastructure, compounded by limited EU market integration, mean adoption opportunities vary widely across Europe. Differences in national rules and administrative procedures can also slow down solution providers, indirectly limiting SMEs' access to electrification services (ECFR, 2025).

The opportunity

Aggregation and digital platforms can flip these disadvantages into advantages:

- Aggregated PPAs or buyers' clubs give SMEs access to predictable renewable energy contracts normally reserved for large players (Norton Rose Fulbright, 2021). More details on these models into the next chapter.
- Digital platforms enable SMEs to pool demand, share data, and participate in demand response markets (Schneider Electric, 2022), and take advantage of dynamic pricing and off-peak tariffs, particularly when combined with battery management systems solutions to optimize costs and flexibility.
- Workforce partnerships between SMEs, vocational schools, and regional governments can turn the skills gap into a source of local competitiveness (European Commission, 2020).

Regulatory Challenges & Opportunities

The challenge

Permitting and grid connection processes remain slow, particularly for industrial sites. Incentives have historically favored renewable generation over industrial electrification, leaving SMEs underserved. A lack of harmonized standards creates uncertainty for manufacturers and adopters, while fragmented energy taxation and carbon pricing distort cost competitiveness between fossil-based and electrified processes.

The opportunity

Addressing market fragmentation at the EU-level could transform barriers into accelerators. Harmonizing administrative procedures, permitting, technical standards, taxation, and carbon pricing would create a more integrated European market, giving SMEs access to predictable, scalable opportunities and enhancing competitiveness for both small and large companies. Streamlined policies, combined with SME-focused incentives and support for demand-side solutions, would reduce delays, lower uncertainty, and strengthen the business case for industrial electrification. This approach would not only simplify compliance but also encourage cross-border collaboration, shared innovation, and market growth.

EXPERT INSIGHT

"Public funds must be used strategically to leverage private investments and reduce risks associated with high-capital energy projects."

Nathalie Hemeleers,
Director of EU Affairs,
Solar Impulse Foundation

TAKEAWAY

Regulatory and administrative hurdles are significant but solvable. With EU-level harmonization, simplified administrative procedures, and SME-focused incentives, regulation can become a powerful driver of adoption, creating a level playing field and an integrated market that supports both small and large enterprises.

Business Models & Case Studies

Electrifying SMEs and Mid-Caps is essential for decarbonization, but high upfront costs and limited scale can slow adoption. New business models, service-based, cooperative, and public-private partnerships help share costs, reduce risks, and create new revenue streams.

Service-based models allow SMEs to access advanced technologies without large investments. Aggregated and cooperative approaches enable joint procurement, renewable energy sharing, and participation in flexibility markets.

BUSINESS MODELS

Electrifying SMEs and Mid-Caps is key to decarbonizing the economy. However, SMEs often face adoption barriers due to limited capital, high upfront costs, and being small scale businesses. New business models are emerging to address these challenges by sharing costs, financing equipment as a service, and creating new revenue streams. These new revenue streams include selling surplus power, providing grid flexibility, and leveraging "energy-as-a-service" arrangements. At the same time, financing (leasing, PPAs, etc.) and public-private partnerships (PPPs) help reduce risks for SMEs.

Service-Based Models

Service-based models allow SMEs to access advanced electrification and digitalization technologies without large upfront capital expenditure. Providers retain ownership of equipment while SMEs pay for delivered services, such as heating hours, cooling, kilowatt usage, or energy optimization (Agora Industry, 2024; McKinsey, 2024). This shifts investment from CAPEX to OPEX, lowers financial barriers, aligns incentives for efficiency, and ensures guaranteed maintenance and operational support.

Examples:

- **Energy-as-a-Service (EaaS) / Electrification-as-a-Service (aaS)**
  Provides electrification technologies (heat pumps, motors, storage) as a service.
- **Digitalization-as-a-Service (DaaS)**
  Offers IoT, AI, predictive analytics, and remote monitoring as subscription or managed services.
- **Flexibility-as-a-Service**
  Aggregates SMEs' energy loads to participate in grid flexibility, demand response, or peak-shaving programs.
- **Microgrid-as-a-Service (MaaS)**
  Third-party-managed microgrids supplying energy to SMEs on a subscription basis, improving resilience and energy independence.

Aggregated / Cooperative Models

Aggregated and cooperative models enable SMEs to pool demand, resources, or expertise, accessing technologies or contracts that would be infeasible individually. These models reduce financial and operational risks while fostering local engagement and sustainability.

Examples:

- **Aggregated PPAs / Buyers' Clubs:**
  SMEs collectively purchase renewable energy, gaining access to large-scale contracts and advisory support. Traditional PPAs are often out of reach for SMEs due to small electricity demand, limited credit rating, or lack of in-house expertise (EIB Advisory Hub, 2020; Trama, 2021; ENS Denmark, 2020). New approaches, such as aggregated or "buyers' club" PPAs, overcome these barriers by pooling demand and providing advisory support, giving SMEs access to the benefits of large-scale renewable procurement (Norton Rose Fulbright, 2021; Schneider Electric, 2022).
- **Cooperatives:**
  SMEs pool resources to develop shared renewable energy projects or provide energy services, with profits reinvested locally.
- **Peer-to-Peer (P2P) Energy Sharing (emerging):**
  SMEs or cooperatives sell surplus energy locally, creating revenue streams and enhancing resilience.

Public-Private & Hybrid Financing Models

PPPs combine public and private sector resources to develop, finance, operate, and maintain energy infrastructure. They mitigate risk, guarantee returns for private participants, and accelerate SME access to clean technologies.

Example:

- **Hybrid PPP / Incentive Models**
  Combining grants, subsidies, or carbon credits with service-based solutions, hybrid PPPs reduce SME investment risk and encourage early adoption. These mechanisms complement traditional PPPs by aligning public policy goals with SME operational need.

CASE STUDY

Achieving Zero-CO_2 plants through the use of microgrids

Achieving a Zero-CO_2 factory through a microgrid deployment of 1'000 solar panels and 216 kWh of battery storage, and 5 EV charging stations, in an "as-a-service model"

At its Molins de Rei factory near Barcelona, Schneider Electric implemented an advanced microgrid solution to achieve Zero CO_2 Factory status. The project, developed in partnership with Iberdrola and leveraging Schneider's EcoStruxure Microgrid technology, integrates on-site solar generation, battery storage, smart controls, and electric vehicle (EV) charging to transform the plant's energy system.

In traditional industries, electricity consumption remains highly dependent on the local grid and on fossil fuels, which in turn translates into high emissions, large cost volatility and continuously increasing prices. These challenges put a strain on energy-intensive operations, where reliability and sustainability must go hand in hand to reduce impacts. The Barcelona site was facing the increasing need to decarbonize their activities, all while maintaining their operational resilience and cost efficiency.

By combining nearly 1,000 rooftop solar panels, Schneider Electric's plant is able to generate about 670 MWh per year through a microgrid structure, intelligently managing and storing large amounts of electricity in their 216 kWh battery energy storage system. EcoStruxure Microgrid Operation and Advisor is a digital solution that continuously analyzes consumption, weather forecasts, tariffs and storage status in order to optimize energy production, consumption and storage in real-time. Unlike conventional setups, the energy-intensive plant is now able to dynamically balance loads at the local scale, smooth demand peaks, and increase financial resilience by reducing exposure to fluctuating energy prices.

Beyond energy management, the plant also wished to manage and optimize its growing EV charging stations, a challenge that EcoStruxure also took in charge with their EV Charging Expert control software.
By ensuring efficient load distribution and preventing grid overload, the platform allows reliable EV charging, aligned with required schedules, and maximizes renewable consumption and revenues with the grid's dynamic pricing. This way, e-mobility adoption directly supports renewable self-consumption and reduces overall emissions.

The results are significant, as the plant's emissions dropped by 2,250 tons of CO_2e annually. The microgrid now covers about 10% of the site's energy demand with clean, locally produced power, increasing renewable self-consumption substantially.
By adopting Microgrid-as-a-service, Schneider Electric was able to limit its upfront investment, increasing financial stability, while leaving financing and operation support to external partners.

This demonstrates how industries can become both greener and more resilient. By combining renewable generation, digital optimization, and innovative service models, Schneider Electric has turned its Barcelona plant into a benchmark for sustainable, flexible, and future-ready industrial operations.

CASE STUDY

Barcelona, Spain

Schneider Electric

THE ECONOMIC IMPACTS

- Yearly energy bill savings are estimated at €127,300.
- The 20-year Power Purchase Agreement for this Microgrid-as-a-service allows to spread expenses while benefitting from revenues, increasing financial stability, and aligns with environmental targets.

THE ENVIRONMENTAL & SOCIAL IMPACTS

- The 1,000 solar panels produce 670 MWh of self-consumed renewable energy per year, covering 10% of the plant's demand.
- 166 tons of CO_2e avoided every year by reducing grid reliance [1].
- The local grid is less strained and more stable.
- Combining EcoStruxure and other actions, the plant reached the Zero CO_2 Factory status, meeting 100% of its emissions reduction targets.

"The project we have launched at our Molins de Rei plant not only reinforces Schneider Electric's commitment to sustainability but also demonstrates that it is possible and profitable to transform the industry by combining electrification and digitalization. Most importantly, it is a replicable and scalable model that can be applied to any factory looking to move toward a more decarbonized and resilient model."

Josu Ugarte, president of Schneider Electric in the Iberian region (Microgrid Knowledge, 2025).

KEY DRIVERS FOR SCALABILITY

- The Microgrid-as-a-service allows all size industries to benefit from the economic and environmental savings without having to pay the solution's full cost upfront.
- The solution includes PV panels, a storage energy system, electromobility solutions, energy efficiency features, electricity distribution systems and global system management as well as maintenance.
- Economic benefits will scale up when there is a high electricity price volatility applied.
- The system can be managed remotely, but the location should be compatible with solar energy production.
- EcoStruxure Microgrid Operation and Advisor offers are scalable to adapt to any site size.

CASE STUDY

Integrating smart control for efficient industrial water management

Saving 1'200 MWh per year in water treatment with the help of a smart automation and analytics platform

Wastewater treatment is a vital public service, but also one of the most energy-hungry: aeration systems alone can account for 50 to 90% of a plant's electricity use (ScienceDirect, 2022). For Rennes Métropole, which oversees sanitation for 500,000 residents, soaring energy costs and a 2030 goal to halve emissions have turned efficiency into an imperative.

In 2020, Rennes Métropole partnered with Purecontrol to find savings without compromising water quality. Purecontrol is a smart control software that connects to already existing systems such as the one found in wastewater plants. It gathers data from sensors (like oxygen levels, water quality, and flow rates), as well as external inputs such as weather forecasts and electricity prices. With this information, it automatically fine-tunes how equipment operates – for example adjusting aeration intensity, pump cycles, or chemical dosing in real time. The result: the same treatment performance, but with far less energy and resource waste.

The first pilot focused on aeration, the single largest source of electricity demand. By dynamically adjusting aeration cycles, the software has cut energy use by 15% while maintaining water quality. Encouraged by these results, Rennes Métropole expanded the solution to 10 plants in 2021. At Laillé, it was combined with onsite solar generation, increasing the share of renewable electricity directly used in the plant by 18%. At Cesson-Sévigné, predictive control halved phosphorus chemical use, while at Beaurade in 2023, the system helped pioneer nitrous oxide (N_2O) reduction, tackling one of the most potent greenhouse gases in wastewater treatment.

In 2024, Rennes Métropole launched a four-year program to scale the solution across 17 plants and 150 pumping stations, aiming to further cut energy consumption, emissions, and operating costs while improving resilience during storms.

The project shows that even in a sector where energy use is unavoidable, digital optimization can unlock substantial efficiency gains. Additionally, this solution's scope of application is very broad and can accommodate processes ranging from biogas production to metallurgy, passing by wastewater treatment, heating units and drinking water. Rennes Métropole has become a reference point in France and abroad, proving that essential public services can lead the way in climate action through smarter, leaner operations.

CASE STUDY

purecontrol RENNES MÉTROPOLE

THE ECONOMIC IMPACTS

- **This reduction translates into ~€214,800 in avoided energy costs annually, compared to pre-2020 consumption levels (Statista, 2024).**
- **10% drop in pump energy use at lifting stations.**
- **These results support financial self-sufficiency and enable reinvestment into infrastructure.**

THE ENVIRONMENTAL & SOCIAL IMPACTS

- **Permanent 15% reduction in energy use at wastewater plants, equal to around 1,200 MWh saved every year since 2020.**
- **40 tons of CO_2e saved every year.**
- **Chemical usage is divided by 2, saving approximately 100 tons of CO_2 emissions annually.**
- **30% reduction in Nitrous oxide emissions, which has a 273 times higher global warming potential than CO_2.**
- **At the Laillé plant, Purecontrol synchronized operations with onsite solar production, increasing the share of renewable electricity used directly in the plant by 18% instead of drawing from the grid.**

"Purecontrol makes our agent's work easier, saves them time and gives them greater control over their operations. This is shown by energy savings, optimized management chemicals inputs and greater stability in waste."

Boris Guéguen – Waste water Director, Rennes Métropole

KEY DRIVERS FOR SCALABILITY

Solutions like Purecontrol's AI have high scalability in water and beyond. Wastewater treatment plants consume over 6.5 TWh annually in France alone – nearly 1% of national demand (MDPI, 2023). Aeration systems and lifting stations are the largest loads, and Purecontrol consistently delivers 15-25% savings on these processes.

Scaling this impact across utilities and industries is made possible by several key enablers:

- **LOW-CAPEX DEPLOYMENT:**
  relies on non-intrusive data collectors and edge devices, reducing upfront investment and avoiding costly infrastructure overhauls.
- **PERFORMANCE-BASED MODEL:**
  revenue is tied to verified savings, ensuring fast ROI and minimal risk for operators.
- **REMOTE SCALABILITY:**
  centralized cloud control and remote supervision allow easy replication across multiple plants or facilities.
- **CROSS-SECTOR VERSATILITY:**
  proven across wastewater, food processing, anaerobic digestion, and waste incineration, expanding its reach beyond the water sector.
- **SERVICE-BASED DELIVERY:**
  provided through an accessible, pay-per-performance model that eliminates the need for long-term capital commitments.

SPOTLIGHT PARTNERSHIP

"By combining finance with innovation, we can remove the barriers holding SMEs back from the energy transition. Service models supported by institutional guarantees enable small businesses to decarbonize without the burden of heavy upfront costs." **Bertrand Piccard, Founder of the Solar Impulse Foundation**

Unlocking SME decarbonization
powered by finance, enabled by service models

Electrifying operations and deploying digital solutions usually remains out of reach for many SMEs and Mid-Caps due to high upfront costs. A new partnership between the European Investment Bank (EIB) and the Solar Impulse Foundation shows how finance and innovation can combine to close this gap.

Access to capital is one of the biggest barriers preventing SMEs from adopting clean technologies such as efficient motors, heat pumps, smart sensors, and energy management systems. Traditional financing models often require high upfront investment, exposing both small businesses and technology providers to risk and slowing down adoption. To break this cycle, the European Investment Bank and the Solar Impulse Foundation have partnered to design financial vehicles that accelerate the uptake of clean technologies on a service basis. By shifting from ownership to access, companies can use energy solutions through service contracts, paying via operating expenses (OPEX) rather than capital expenditures (CAPEX). Costs are aligned with measurable savings, while institutional guarantees reduce provider risk and enable rapid scaling.

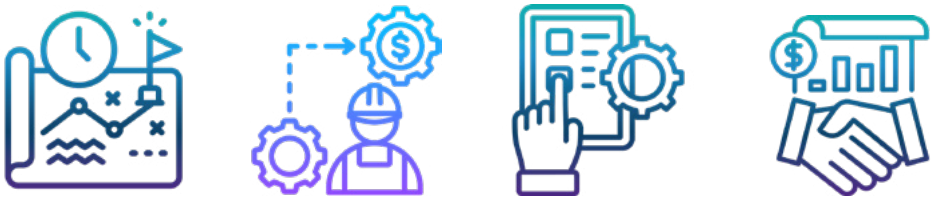
This business model, known as servitization, ensures that even resource-constrained SMEs can access advanced electrification and digitalization tools without waiting for capital budgets to become available. Beyond lowering barriers to entry, the approach guarantees professional operation and maintenance, securing the delivery of promised efficiency gains and CO_2 reductions.

The EIB-Solar Impulse partnership demonstrates how financial innovation can multiply impact. For SMEs, it unlocks faster access to innovation, predictable costs, and competitiveness in the clean transition. For policymakers, it proves that targeted financial mechanisms can de-risk the market and strengthen Europe's industrial base. By backing service-based business models, institutional players ensure no company is left behind in the race to decarbonize.

More information: EIB – Servitization for Energy Efficiency in SMEs

Recommendations & conclusion

Europe's SMEs and Mid-Caps are central to industrial competitiveness, energy sovereignty, and the transition to a climate neutral economy.



Recommendations (for SMEs & Mid-Caps)

As a first step, companies should assess their current energy use and digital maturity. For larger energy consumers, this aligns with the revised EU Energy Efficiency Directive (Directive (EU) 2023/1791): companies with an average annual energy consumption above 85 TJ over the previous three years are required to implement energy management systems, while those consuming more than 10 TJ and without an existing system must conduct an energy audit.

Based on this assessment, SMEs can develop a clear roadmap that targets high-impact processes, sets measurable KPIs for energy savings, CO_2 reduction, and cost efficiency, and identifies quick-win projects such as heat pump installations, variable-speed drives, or LED upgrades.

Equally important is workforce development: staff must be trained in digital energy management, predictive maintenance, and operational flexibility to ensure that electrified systems are used efficiently. Companies should also adopt flexible operational models, benefiting from manageable loads and microgrids deployment, energy-as-a-service arrangements, and when possible demand response programs. These strategies not only optimize energy consumption and costs but also create opportunities for new revenue streams, including surplus energy sales, peer-to-peer sharing, or grid flexibility services.

Innovative financing solutions, such as Energy-as-a-Service, digitalization-as-a-Service, or Flexibility-as-a-Service, can lower barriers by shifting investments from CAPEX to OPEX while providing maintenance and operational support. Cooperative approaches, including aggregated PPAs, buyers' clubs, or public-private partnerships, further reduce financial and operational risk, enabling SMEs to scale adoption more rapidly. Leveraging EU, national, and regional grants, advisory programs, and collaborative platforms can accelerate implementation while building internal capabilities.

TAKEAWAYS

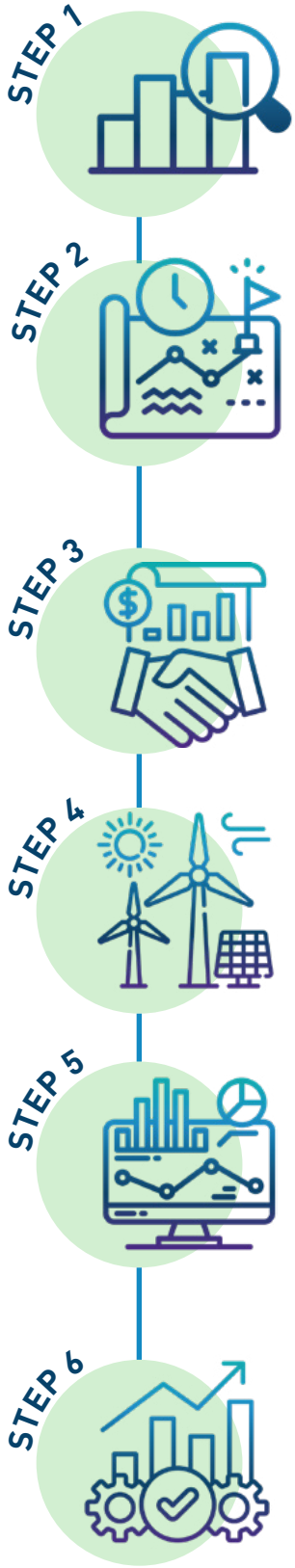
Strategic Investments
Electrification + digitalization roadmap

Workforce & Skill Development
Training for digital energy tools

Flexible Operations
Participate in microgrids, demand response, price-optimized operations

Funding & Partnerships
leverage service models, cooperatives, and PPPs

> SMEs & Mid-Caps Action Checklist



ASSESS CURRENT ENERGY & DIGITAL STATUS

- ☑ Audit electricity consumption by process, equipment, and facility
- ☑ Identify carbon-intensive operations
- ☑ Map current digital tools (IoT sensors, monitoring systems)

PLAN ELECTRIFICATION & DIGITALIZATION ROADMAP

- ☑ Prioritize high-impact processes for electrification (often heat generation)
- ☑ Identify quick-win efficiency projects (LED relamping, Variable Speed Drives, Heat pumps)
- ☑ Set measurable KPIs for energy savings, CO_2 reduction, and cost efficiency

EXPLORE FUNDING & PARTNERSHIPS

- ☑ Check eligibility for EU, national, or regional grants
- ☑ Consider Energy-as-a-Service or Digitalization-as-a-Service providers
- ☑ Explore cooperative purchasing, PPAs, or public-private partnerships

IMPLEMENT ELECTRIFICATION & DIGITALIZATION

- ☑ Deploy electrified equipment and renewable energy sources
- ☑ Integrate digital monitoring, predictive maintenance, and AI optimization
- ☑ Train staff on new systems and operational flexibility

MONITOR, OPTIMIZE & PARTICIPATE

- ☑ Track energy consumption and performance vs KPIs
- ☑ Adjust operations to leverage electricity price signals and demand response programs
- ☑ Selling excess energy or participating in shared energy markets

SHARE & SCALE

- ☑ Document success stories for benchmarking and internal learning
- ☑ Participate in SME networks to share lessons and collaborate
- ☑ Plan next phase of electrification and digital adoption (on-site or in other company site)

Policy Recommendations (for EU / Member States)

To accelerate Europe's industrial electrification and digitalization, policies must place SMEs and Mid-Caps at the center, recognizing their critical role in competitiveness, innovation, and the energy transition.

A first step to support the electrification of SMEs and mid-caps is to make electricity competitive. The taxation discrepancy between electricity and natural gas, making electricity more expensive, is still a significant barrier to switch to electricity. The revision of the 2003 European energy taxation Directive is still ongoing and must be finalized. Taxation at member State level should also better reflect the energy content and CO_2 emissions.

Public funds should be strategically deployed to de-risk high-capital projects, enabling smaller companies to adopt advanced technologies and modernize operations without prohibitive upfront costs.

The recent EIB's financing initiative of €17.5 billion to energy efficiency improvements of SMEs, could be replicated for electrification, including with the one-stop-shop.

Regulatory frameworks must be simplified, harmonized (European Commission, 2020), and SME-focused, ensuring permitting, grid connections, and technical standards are streamlined while incentives support both demand-side electrification and renewable generation. The "Industrial Decarbonization Bank" meant to finance the industrial green transition, can be a powerful instrument to support the electrification of SMEs and midcaps. The recent EIB's financing initiative of €17.5 billion to energy efficiency improvements of SMEs, could be replicated for electrification, including with the one-stop-shop. Another innovative way to increase investments and reduce uncertainty, would be to launch a tripartite contract for electrification, like the two first sectorial ones for offshore wind and grids and storage proposed by Commissioner for Energy and Housing Dan Joergensen.

Policies should integrate energy efficiency, electrification, and digitalization targets, encouraging SMEs to optimize energy use, operational flexibility, and participation in emerging energy markets. Market Design provisions must be properly implemented in all Member States. Prosumers of all sizes, including SMEs, should be able to participate in wholesale electricity markets, being through implicit or explicit participation in all Member states, to lower their energy bills. Urgent action should be taken at national level to address the bottleneck of smart meter deployment in some Member States (the penetration rate in the EU is still at 58%, behind the 80% target). Industrial demand flexibility must be further encouraged, by developing standardized compensation mechanisms to get more industrial companies involved in flexibility.

Service-based and collaborative business models, including Energy-as-a-Service, cooperative purchasing, and public-private partnerships, should be actively supported through technical advisory, capacity-building, and knowledge-sharing platforms, addressing gaps in infrastructure, market formation, and implementation capacity identified by stakeholders. Long-term financial and regulatory incentives must be stable and predictable, empowering SMEs and Mid-Caps to invest confidently and scale innovations, strengthening Europe's industrial competitiveness and energy sovereignty.

Long-term financial and regulatory incentives must be stable and predictable, empowering SMEs and Mid-Caps to invest confidently and scale innovations, strengthening Europe's industrial competitiveness and energy sovereignty.

Specific measures highlighted in Figure 6 of the Schneider Electric white paper include harmonizing standards and incentives for SMEs in line with the EU SME Strategy, simplifying permitting and grid connection processes, providing long-term financial instruments and technical advisory support, and promoting SME participation in flexibility and energy-as-a-service markets (Schneider Electric, 2024).

This includes tapping into low hanging fruits to accelerate the sustainability journey of SMEs and mid-cap companies. Firstly, by ensuring that new constructions (such as buildings, light industry facilities) are designed electrically and flexibly. Secondly, by deploying electric alternatives for steam production and water heating systems. The phasing out and ban of fossil fuel boilers in buildings, as required in the Energy Performance of Building Directive (EPBD) should be swiftly implemented. The fast deployment of building and industrial heat pumps, which are already mature technologies, could speed up electrification. And the upcoming European initiative on the greening of the corporate fleet could facilitate the uptake of EVs, with the relevant incentives.

Implementing these targeted actions will remove barriers, reduce investment risks, and create a supportive environment in which SMEs and Mid-Caps can scale electrification and digitalization, reinforcing Europe's industrial sovereignty and long-term competitiveness.

Finally, measuring over time the progress of electrification of SMEs and mid-caps will be essential, to trigger public action and support when needed. Along the target of 32% of electrification by 2030 proposed in the Clean Industrial deal, should come a dedicated tracker to monitor the journey of SMEs and midcaps toward electrification.

Conclusion

Electrification and digitalization together serve as dual levers for efficiency, sustainability, and competitiveness. For SMEs and Mid-Caps, these transitions reduce reliance on fossil fuels, optimize operations, and unlock new revenue opportunities. By following structured roadmaps, leveraging innovative financing and partnerships, and participating in supportive policy frameworks, SMEs can modernize effectively and lead Europe's energy transition. The time to act is now: embracing electrification and digitalization is not only a strategic choice but a pathway to sustainable growth, resilience, and global competitiveness.

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