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# GOOD PRACTISES

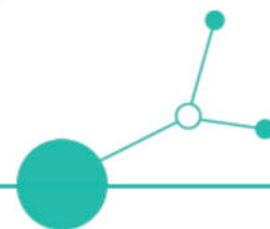
OF SMES IN  
DECARBONIZATION



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Goodvalley sp. z o.o

Goodvalley sp. z o.o., a Polish company that specializes in food production and agriculture, has adopted a fully integrated „field-to-fork” production model. It comprises crop farming, livestock farming, producing feed, meat processing, and the production of renewable energy. Nine biogas facilities at the heart of this system use agricultural wastes and animal excrement to generate green heat and electricity. The digestate, a by-product of biogas, is converted into organic fertilizer to reduce the use of synthetic equivalents. This recirculation cycle significantly minimizes waste and greenhouse gases.

#### PUBLIC SECTOR COOPERATION AND EXTERNAL ASSISTANCE

Goodvalley biogas projects have also been supported by national policies and certification schemes for renewable energy, including participation in Poland's „blue certificates” scheme. Goodvalley has also partnered with third-party institutions to expand its installation capacity for biogas, aligning with national sustainable agricultural and energy conversion policies.

#### IMPLEMENTATION CHALLENGES AND OVERCOMING BARRIERS

Implementation of such a large-scale biogas system posed several challenges: ensuring reliable supply of feedstock to biogas plants, ensuring technological compatibility of integrated processes, and navigating complex regulations for renewable energy and organic fertilizers. Goodvalley addressed these issues successfully by establishing stable supply chains, investing in flexible technologies, and adopting proactive strategies, working with policymakers to simplify regulations wherever possible.

#### ENVIRONMENTAL, OPERATIONAL, AND MARKET OUTCOMES

Thanks to its green approach, Goodvalley went carbon neutral in 2013. Its biogas plants now generate sufficient renewable energy to power all business activities, entirely halting the use of fossil fuels. The use of digestate as a fertilizer has also reduced the use of synthetic fertilizers, leading to a considerable reduction of greenhouse gas emissions. These victories have brought environmental benefits,

savings through operations, enhanced brand value and competitive position that attracts environmentally conscious consumers and business partners.

#### THE INSPIRATION TO OTHERS

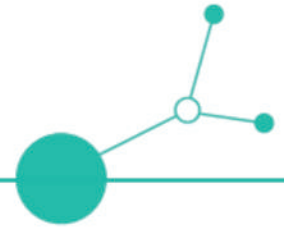
Goodvalley demonstrates that effective decarbonization requires a cyclical process by which the waste from one process is used to supply input to another. Investment in renewable energy technology such as biogas can reduce reliance on fossil fuels and stabilize production costs. Involvement of workers, locals, and stakeholders in green causes is necessary. Continuous analysis of the environmental impacts using means such as Life Cycle Assessment (LCA) allows companies to continuously optimize and improve their sustainability performance.



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**logistics**

**No Limit  
sp. z o.o**

Poland-based international logistics and transportation firm No Limit Sp. z o.o. has launched a comprehensive decarbonization strategy to revolutionize its urban delivery system. Recognizing the environmental effects associated with conventional logistics, No Limit concentrated on incorporating electric vehicles (EVs) into its urban fleet to curb emissions as well as noise. The company also employed telematics systems to track fuel use and driver behavior, allowing for more efficient route planning and reduced environmental effects. By integrating fleet electrification with sophisticated logistics control, No Limit demonstrates the potential for urban delivery to proceed towards a more sustainable paradigm.

### COLLABORATIVE EFFORTS TOWARDS CHANGE: PARTNERSHIPS AND EXPERIMENTAL

Advancing its sustainability aspirations, No Limit engaged in various cooperative projects and pilot programs, including EKO-LOG. All these collaborations offered the company required technical knowledge, access to new technologies, and useful insight into sustainable logistics practices. Above all, the EKO-LOG program allowed No Limit to trial electric trucks in real-delivery situations, thereby propelling it faster towards cleaner urban transportation solutions. The incentives provided by these programs facilitated the integration of energy-efficient technologies and enable the company to remain competitive in sustainable logistics.

### PLANNING TO OVERCOME CHALLENGES OF TRANSITION

The incorporation of electric vehicles into No Limit's pre-existing logistic framework posed a variety of challenges. Route optimization modifications, the administration of charging infrastructure, and employee training were necessary to provide seamless operations. It was also necessary to resolve compatibility problems between newly implemented technologies and current IT systems. Through the utilization of prudent strategic planning, stakeholder buy-in, as well as transparency with workers, No Limit overcame these challenges, achieving little disruption amid the transition to an environmentally friendly delivery model.

### EMISSIONS REDUCTION, COST SAVINGS, AND MARKET ADVANTAGE

The decarbonization efforts were extremely successful. The introduction of electric vehicles coupled with more efficient logistics operations yielded tangible reductions in CO2 emissions and significant savings in fuel expenditures and vehicle maintenance. Further, the implementation of telematics significantly enhanced fuel efficiency across the current conventional fleet. This good environmental track record, coupled with enhanced operational efficiency and better customer satisfaction, reinforced No Limit's reputation as an innovative and green logistics company, thereby giving the company a competitive advantage in the market.

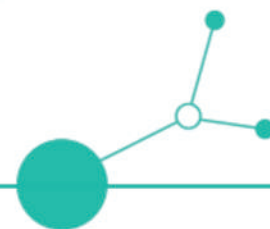
### PRACTICAL TIPS FOR SUSTAINABLE LOGISTICS

No Limit's experience provides important lessons to other companies that want to reduce the carbon footprint of their logistics operations. Some of the key suggestions include initiating a comprehensive review of existing environmental footprints, building partnerships and engaging in pilot initiatives to gain practical experience, and investing in training employees to implement new technologies properly. Extended monitoring of important sustainability metrics such as carbon dioxide emissions, fuel consumption, and electric vehicle fleet ratio enables constant optimization. In addition, transparency in reporting on sustainability initiatives strengthens trust among clients, partners, and stakeholders.

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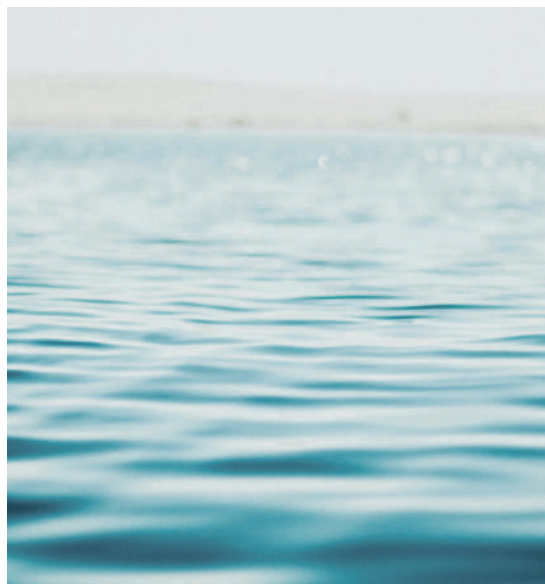
## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### BIOAQUA GROUP sp. z o.o.

BIOAQUA GROUP is a Polish company that specializes in water and wastewater treatment, environmental protection, and the circular economy. With a small but dedicated group of experts, the company provides tailored technological solutions for the upgrade of municipal and industrial wastewater treatment plants. It aims to help municipal authorities and industry become more efficient, reduce environmental pressure, and comply with strict EU environmental policies.



#### OBJECTIVES AND GOALS

The organization has chosen to specialize in decarbonization and energy efficiency because of the mounting demand for sustainable infrastructure within the water sector. The company's central aim is to assist customers in saving operational expenses while, at the same time, lowering CO<sub>2</sub> emissions and energy consumption. BIO-AQUA is convinced that process optimization and substitution of inefficient, old equipment are feasible and significant means of advancing climate objectives with minimal disruption to installed infrastructure.

#### ACTIONS IMPLEMENTED

BIOAQUA's strategy relies on large-scale modernization of treatment plants. This includes:

- substituting aging aeration and pumping equipment with energy-efficient equipment;
- implementing advanced process control and IoT monitoring systems to optimize oxygen supply and treatment cycles;
- training and supporting plant operators to enable long-term sustainability of gains;
- aside from technical solutions, BIO-AQUA frequently assists clients in obtaining funds for modernization by working in conjunction with local government agencies and utilizing public programs.

#### RESULTS AND IMPACTS

The company's initiatives have resulted in tangible outcomes:

- significant reductions in energy consumption at upgraded plants;
- enhanced treatment efficiency, ensuring compliance with EU and national environmental standards;
- financial savings for clients through lower electricity bills and optimized operations;
- improved reputation of municipal utilities as environmentally responsible service providers;
- these results demonstrate that even small-scale technological upgrades can deliver measurable progress towards decarbonization goals in the water sector.

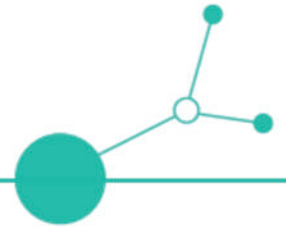
#### LESSONS LEARNED AND RECOMMENDATIONS

With its actions, BIOAQUA has come to understand that stakeholder involvement in the beginning is essential for effective implementation of modernization programs. Establishing trust in new technologies and facilitating smooth implementation serve to minimize resistance to change. The firm invites other corporations to begin with comprehensive energy audits so as to determine the greatest possibilities for improvement. Ongoing monitoring, enabled by intelligent sensors and ESG frameworks, serves to ensure transparency and measure the actual impact of the changes undertaken. BIO-AQUA's experience confirms that investment in new technologies and energy efficiency is a cost-effective and efficient way towards decarbonization, even for small or medium utilities.

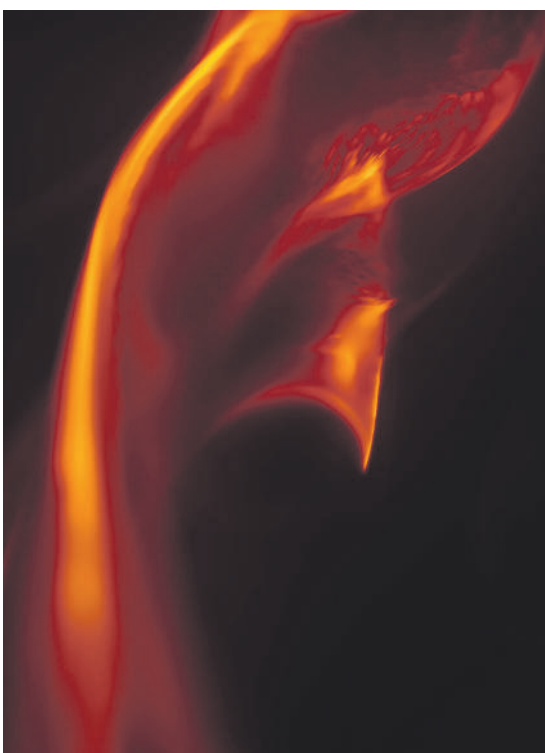
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**TERMA**  
**sp. z o.o**

TERMA sp. z o.o. is a Polish manufacturer of electric heating elements. At the company's facility, decarbonization has been integrated into operations with an emphasis on reducing energy-related emissions while preserving dependable production.



### FIRST STEPS TOWARDS DECARBONIZATION

TERMA decided to install a photovoltaic micro-installation to reduce Scope 2 emissions. The operation was challenging due to the size of the company's roof - the installation was placed on a facility measuring approximately 7,000 m<sup>2</sup>. The PV plant was coupled with UPS/battery integration to backup critical IT loads and module-level power electronics for granular monitoring.

### IMPLEMENTATION AND FIRST CHALLENGES

The operation required a structural review and the adoption of a non-penetrating "aero" mounting to minimize the roof load. Integrating the PV system with three batteries and chargers enabled the plant to charge UPS systems that safeguard sensitive servers during outages - an added resilience objective beyond carbon reduction.

### LESSONS, RECOMMENDATIONS AND NEXT STEPS

Since commissioning in early 2019, the system has generated approximately 40,000 zł in annual savings, reduced electricity grid usage, and achieved an estimated 137 t CO<sub>2</sub> saved to date, with an expected payback of less than five years at current energy prices. Real-time monitoring enables performance improvement and operation and maintenance. Beyond financials, the initiative improved TERMA's energy resilience and environmental profile among stakeholders.

### TIPS AND BEST PRACTICES

TERMA's experience shows that right-sizing a PV system to micro-installation needs can accelerate

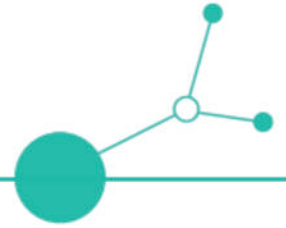
deployment, while module-level monitoring ensures performance and confirms savings. PV can achieve both decarbonization and business continuity goals, while designing for high self-consumption maximizes carbon and cost savings. TERMA urges businesses to begin with a data-driven assessment, plan for permitting thresholds, incorporate storage for critical loads, and collaborate with competent EPCs for mounting, safety, and O&M - principles that the company is implementing as it considers prospective system growth.



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### 3DSmart

3DSmart is a Polish company based in Kalisz that specializes in designing and installing renewable energy solutions for residential, commercial, and industrial clients. Since its establishment in 2012, the company has grown to employ a team of several dozen specialists who cover the entire process: from energy audits and system design to installation, grant consulting, and long-term maintenance. 3DSmart's offer includes rooftop and ground-mounted photovoltaic systems, modern heat pumps, electric vehicle (EV) charging stations, and integrated battery storage systems. Their mission is to make the transition to green energy simple and financially viable for clients across various sectors.

### MOTIVATION AND GOALS

3DSmart's decarbonization drive was spurred by the growing pressures on households and businesses to reduce energy costs and meet tougher EU climate policy requirements. The founders recognized the huge potential in the integration of renewable energy technologies into systems designed to optimize energy self-consumption, reduce CO<sub>2</sub> emissions, and achieve energy independence for their clients. Its primary objective has consistently been to assist clients in realizing concrete cost savings, improving green reputation, and developing resilience to escalating energy costs. By offering end-to-end support, such as support in availing government subsidies, 3DSmart hopes to eliminate obstacles that could otherwise deter individuals from investing in green technologies.

### ACTIONS IMPLEMENTED

To achieve this, 3DSmart starts with a detailed energy audit and designs tailored systems. They install high-efficiency solar panels for homes, farms, and businesses, often adding heat pumps for heating and hot water. With the rise of electric vehicles, they also build EV charging stations powered by their PV systems. Battery storage is integrated to maximize self-consumption, and the company helps clients secure funding through national subsidy programs, handling paperwork to make it easy.

### RESULTS AND IMPACTS

So far, 3DSmart has delivered over 2,700 installations, totaling about 29 MW of solar power. One

flagship project is a 1 MW solar plant for a wastewater treatment facility that now covers over 90% of its energy needs. Clients typically cut energy bills by up to 85%, with payback in about four years. Homeowners gain comfort and security, while businesses improve their ESG profile and reputation. Robust monitoring and service ensure systems keep delivering savings long-term.

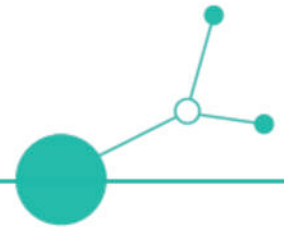
### LESSONS LEARNED AND RECOMMENDATIONS

3DSmart's experience shows that success depends on customized solutions and financial support. They recommend starting with an energy audit and combining PV, heat pumps, and storage for best results. They stress making the most of available grants and being ready for the paperwork involved. Finally, they advise investing in high-quality systems and ongoing monitoring to ensure savings and sustainability for years to come.



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## GOOD PRACTICES OF SMES IN DECARBONIZATION



**YORK PL**  
**sp. z o.o. sp.k.**

With its head office located in Poland, YORK PL sp. z o.o. sp.k. is a company that produces cleaning supplies. Through its website, the company interacts with stakeholders, creates and provides a wide variety of cleaning equipment for both professional and consumer use. The company's activities are based on sustainable development and care for the natural environment.



### DECARBONIZATION FOCUS

Operational procedures that reduce resource consumption and environmental effect at the plant level are indicative of YORK's decarbonization initiatives. The company claims that instead of relying solely on traditional methods, it recovers process heat by using energy from the operation of its production machinery to heat buildings and on-site water. It also follows an environmental ISO standard and uses a closed-circuit approach to water with low manufacturing use.

### IMPLEMENTATION AND PRACTICAL CONSIDERATIONS

To successfully reuse process heat for space and water heating, connecting the company's utility system with manufacturing operations is essential. Closed-loop water systems depend on monitoring and control to maintain quality and reduce usage of water. Maintaining an environmental management structure that is compatible with ISO standards enables standardized procedures.

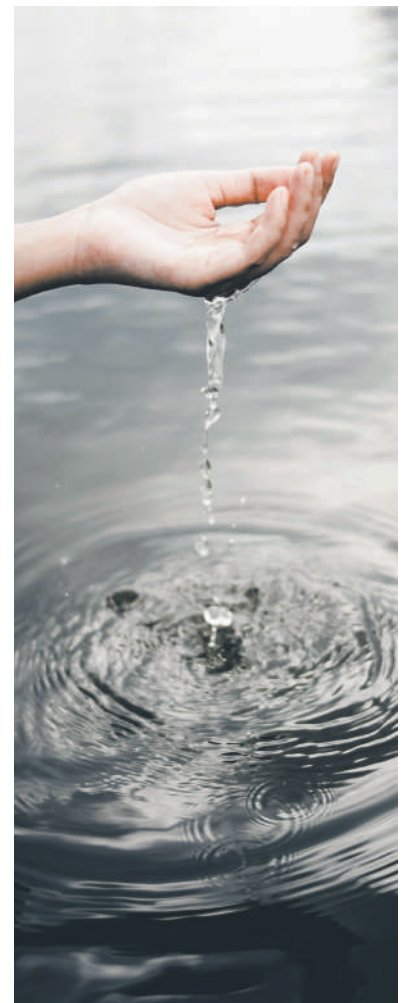
### OUTCOMES

Company's reliance on conventional energy sources is reduced by recovering heat from production. Market-wise, product lines that make reference to renewable and recycled materials, along with statements about responsible sourcing, support a brand positioning that is focused on environmental responsibility.

### LESSONS AND RECOMMENDATIONS

YORK's example shows how

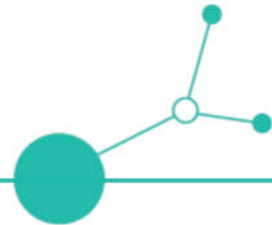
other companies can pursue decarbonization by starting with utilities and processes that they already control. Using process heat and optimizing water usage create a foundation for ongoing reductions. Other manufacturers following a similar path can begin with an operational review of heat, water, and materials, formalize procedures under a recognized management standard and then communicate progress through clear, verifiable policies.



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### **Arix Poland sp. z o.o**

Arix Polska Sp. z o.o. is a Polish company that produces domestic and professional cleaning products and supplies. Arix operates mostly in the manufacturing and plastics processing sectors, serving the national and global markets. The company has integrated energy efficiency and workplace quality improvements, balancing operational requirements with environmental responsibilities.



#### **DECARBONIZATION STRATEGIES**

The company found that a main focus for emissions reduction should be its energy-intensive warehouse halls and manufacturing sites. After both an internal evaluation and outside advice, Arix decided to upgrade its lighting system. The plan called for installing advanced control systems to maximize use and substituting energy-efficient LED technology for antiquated lighting systems. This strategy sought to solve operational efficiency as well as environmental objectives, so ensuring that energy savings would show real commercial advantages.

#### **IMPLEMENTATION OF CHANGES**

Modernization work was carried out in busy production areas, needing careful planning to avoid disruptions. The company faced challenges such as installing at extreme heights, adhering to lighting specifications, and ensuring the new system was efficient. To fulfill operational patterns while maximising potential energy savings, the control system had to be carefully segmented into lighting zones.

#### **OUTCOMES AND IMPACT ON THE COMPANY**

Arix reported a substantial reduction in energy use for lighting, resulting in decreased indirect emissions and operating costs. The change additionally improved lighting quality, and that led to a safer and more comfortable work environment. The control system allowed a better oversight of lighting schedules and conditions, which helped to ensure that energy consumption was in line with actual operational requirements. Beyond

environmental benefits, the project reinforced the company's reputation as a forward-thinking manufacturer concerned with both sustainability and employees well-being.

#### **LESSONS LEARNED AND TIPS FOR OTHER COMPANIES**

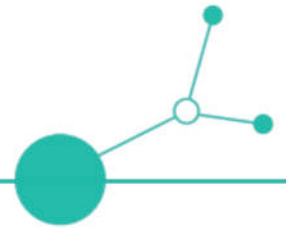
Arix's experience in decarbonization highlights the value of starting with a comprehensive assessment to identify priority areas for emissions reduction. Arix recommends that other businesses engage experienced partners, plan implementation to maintain production continuity, and use data from control systems to monitor and fine-tune performance over time.



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### Hofstetten Brewery

Considered as the oldest constantly running brewery in St. Martin im Mühlkreis, Upper Austria, Hofstetten is a family-owned brewery. The company has linked quality brewing with a clear aim to reduce process energy and emissions, and its production features modern and historic brewhouses on one site.



#### MODERNIZATION

Important turning point was the 2016 commissioning of a brand-new high-efficiency brewhouse. The upgrade allowed for significant heat recovery from the brewing process and cut main energy demand by roughly 50%. This is building the basis for energy-efficiency on which later decarbonization finds support.

#### FIRST CHALLENGES AND DIFFICULTIES

Hofstetten investigated possibilities including flue gas condensation to capture previously wasted heat and a feasibility study for rooftop photovoltaic installations as she upgraded production. These studies exposed difficulties: implementing PV systems depends on available roof area, orientation, and seasonal generating patterns; heat condensation systems need exact control to be effective. Still, these studies help to find reasonable routes for additional decarbonization.

#### MANAGEMENT AND AUTOMATION

The brewery installed smart automation systems including real-time control of lighting, heating, and monitoring of thermal and electrical flows to support its energy strategy. These technologies help the brewery to be ready for including future low-carbon or renewable energy sources and enhance operational stability and efficiency.

#### RESULTS AND OUTLOOK

Already, the upgraded brewhouse with heat recovery shows significant energy savings. Promising solutions for additional reductions

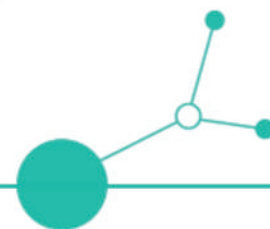
come from investigating flue gas condensation and PV potential. Hofstetten shows how conventional medium-sized businesses can methodically lower their carbon footprint by combining process improvements, digital controls, and efficiency analyses without sacrificing output quality.



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OPTOMER is a Polish manufacturer specializing in fibre-optic equipment for telecommunications networks. The company employs over 50 people and focuses on combining its technical expertise with a commitment to responsible management and embedding environmental care into its long-term business strategy.



### ACTIONS THAT LEAD TO DECARBONIZATION

The company's environmental policy highlights several initiatives that are focused on reducing emissions. These include designing, implementing and operating energy-efficient production machines, closely monitoring electricity consumption and adopting low emission technologies. OPTOMER made systematic efforts to reuse and recycle incoming packaging, segregate waste, and minimize paper and plastic use by focusing on digital process.

### COMPANY'S CHALLENGES

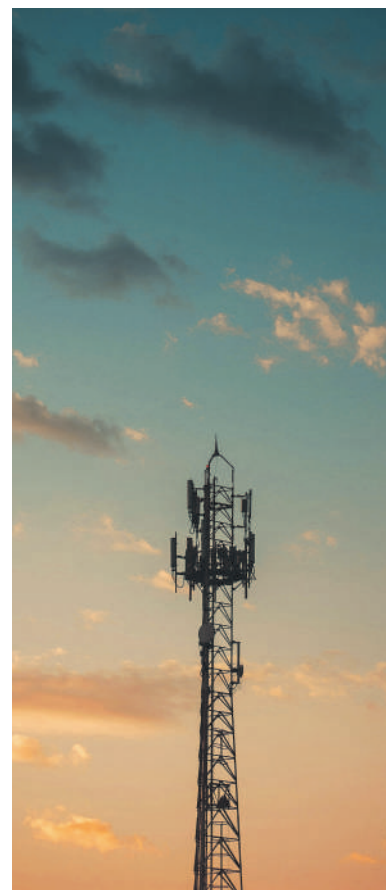
OPTOMER underlines the importance of integrating environmental principles into everyday operations. Challenge involves making sure that continuous monitoring become part of standardized procedures across the company. To address this, OPTOMER relies on an Environmental Management System that is regularly improved with ISO standards. Employee training also plays a essential role, helping to spread environmental awareness.

### OUTCOMES

Company's reliance on conventional energy sources is reduced by recovering heat from production. Market-wise, product lines that make reference to renewable and recycled materials, along with statements about responsible sourcing, support a brand positioning that is focused on environmental responsibility.

### LESSONS AND RECOMMENDATIONS

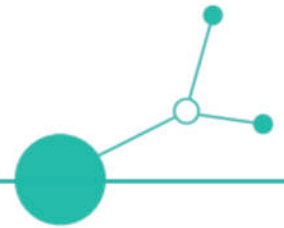
OPTOMER integrates sustainability into its daily operations through an ISO 14001-certified Environmental Management System. Key measures include using energy-efficient production machinery, monitoring electricity consumption, adopting low-emission technologies, and reducing its carbon footprint. The company also focuses on reusing and recycling packaging, segregating waste, and minimizing paper and plastic by switching to digital processes. Employee training and continuous EMS improvements ensure these practices are consistently applied.



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**Lucart  
Group**

Lucart Group is a medium-sized paper manufacturer headquartered in Porcari, in the province of Lucca, Tuscany. Founded in 1953, the company has grown into a prominent producer of tissue and specialty papers, with well-known brands such as Tenderly, Grazie, and Lucart Professional. Providing consumer and professional-grade hygiene products for the retail, medical, and industrial sectors, it runs modern production facilities in Italy and Europe. Lucart distinguishes itself despite its size by a strong dedication to sustainability; it is one of a few European paper producers regularly including environmental stewardship into their main approach instead of considering it as a side project.

### DECARBONIZATION ACTIONS

Optimizing energy efficiency, increasing the use of renewable energy, and implementing circular economy ideas form the foundation of Lucart's decarbonizing plan. The company has made large investments in modernizing its combined heat and power (CHP) systems, which concurrently produce heat for manufacturing operations and electricity. Originally implemented in the 1980s, these systems have lately been updated to lower energy intensity and emissions while guaranteeing continuous energy supply - which is essential for the production of paper. In addition, This strategy shows the company's great dedication to sustainable production models by enabling the recovery of premium fibers, so helping to lower emissions during the whole product lifetime.

### CHALLENGES DURING THE PROCESS

Lucart faced several difficulties on its decarbonization route even with its successes. One of the most important is the difficulty of energy management in an industry running nonstop that depends on a consistent and continuous power source. Because of their intermittency, integrating renewable energy sources like solar and wind can be challenging. Although using recycled fibers is good for the environment, often increasing energy demand during processing calls for careful planning to prevent offsetting emission reductions. Particularly in light of increasing demand for sustainable packaging solutions, the company must also negotiate more general issues including adjusting to changing European climate rules

and guaranteeing resilience in raw material supply chains.

### MEASURING PROCESS AND IMPACT

Using thorough monitoring tools and thorough sustainability reporting, Lucart tracks its decarbonization progress. Supported by investments in more efficient technologies and renewable energy sources, the company has recorded constant decreases in energy intensity and CO<sub>2</sub> emissions per tonne of product. As the business seeks to direct most production by-products from landfills, waste recovery rates continue to improve while water consumption has also dropped dramatically over the past ten years.

### KEY INSIGHTS AND LESSONS

Lucart's experience shows how effectively a mid-sized industrial company might include decarbonization into its corporate plan. The company shows a complete approach to sustainability by combining energy efficiency measures with adoption of renewable energy sources and creative circular economy techniques. Lucart's path also shows that decarbonization in energy-intensive industries calls for balancing technical, financial, and regulatory aspects while guaranteeing ongoing operational stability, quality.

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### SONNENTOR

Based in Sprögnitz (Waldviertel), SONNENTOR is an Austrian organic herbs, teas and spice company. The brand's identity and governance reflect sustainability; the company publishes a yearly, audited Common Good Balance (Gemeinwohl-Bericht) and runs a public "Mission Null-Emission" program outlining how each site will cut fossil emissions. With the remaining sites following by April 1, 2030, the most recent mission page notes an on-site target of fossil-free operations in Sprögnitz by April 1, 2028.

#### DECARBONIZATION ACTIONS

The roadmap of SONNENTOR combines low-carbon heat, on-site renewable energy, process optimization, and greener mobility. Historically the company reports buying only renewable sources since 1992; it generates electricity with rooftop PV and covers any residual demand with 100% certified green power. SONNENTOR also plans waste-heat recovery from compressed air in 2025, has rolled out site-wide energy monitoring to match loads with PV (e.g., staggered EV charging), and recycles CO<sub>2</sub> in its pressure disfigure step to reduce fresh CO<sub>2</sub> use by more than half. An e-truck for intra-site and regional logistics and a growing EV fleet constitute part of mobility decarbonization.

#### CHALLENGES

SONNENTOR candidly points out that most of the remaining emissions come from the up- and downstream value chain (farm operations, processing, logistics). Operationally, rural grid constraints and intermittent solar demand careful load management and continuous green-power procurement; thus, the focus on energy monitoring, self-generation, and synthetic electrification of transportation. Closed-loop CO<sub>2</sub> reuse and heat/efficiency improvement research addresses process-specific challenges including using CO<sub>2</sub> for pest-safe disinfestation in organic spice/herb production.

#### PROGRESS AND GOVERNANCE

Under direction from annual greenhouse-gas accounting and focused investments, the mission

page reports SONNENTOR has already reduced company-site emissions by more than half in recent years.

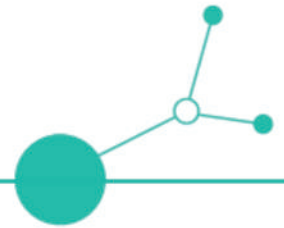
#### LESSONS

Three main factors really stand out for SMEs aiming at decarbonization. First, one must map all activities toward a clear, site-specific goal with a defined timeline—such as attaining fossil-free operations. Second, businesses should use a layered approach combining several solutions: installing on-site photovoltaic systems supported by 100% green power back-up, using biomass or biogenic residues for heat, optimising processes by means of CO<sub>2</sub> recirculation and waste-heat recovery, and deploying digital energy monitoring to raise efficiency. Last but not least, open reporting - through a common-good or sustainability report, for instance - helps maintain investment in further emission reductions by keeping stakeholders informed, involved, and supportive. Even in a rural manufacturing environment, this combined approach shows how a values-driven food brand like SONNENTOR can effectively link organic sourcing with operational decarbonizing.

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### Mine Master sp. z o.o.

Poland's Mine Master sp. z o.o. is an equipment and machinery fabrication firm that specializes in underground drilling rigs and mining equipment. With increasing energy costs and thermal losses in its aging production facility in Wilków, Lower Silesia, the firm switched to successfully decarbonize its operations. The solution was a comprehensive energy efficiency project that reduced heating energy consumption - one of the largest sources of emissions in the plant. Mine Master replaced its old, inefficient heating system with a highly efficient one and insulated its production halls adequately, greatly improving the energy performance of the building.

#### LEVERAGE EXPERT ASSISTANCE AND FINANCE SUPPORT

Mine Master's ambitious initiative was enabled by professional advisory and financing from the Polish Sustainable Energy Financing Facility (PolSEFF). Through the program, the company received an in-depth energy audit, technical design assistance, in addition to co-financing schemes. The energy audit was critical in the identification of significant inefficiencies and the creation of an action road map. The external advisory support guaranteed that the selected insulation materials and heat technologies gave maximum energy saving as well as strong returns on investment - rendering the project financially feasible for the SME.

#### INTELLIGENT PLANNING TO COUNTER IMPLEMENTATION BARRIERS

Installation of energy-efficient upgrades within an operating manufacturing environment posed a number of challenges. The management had to decide on the best alternatives under tight budget and time constraints, and integrating new systems within the available facilities. Intermittent shut-ins to production and some worker resistance to construction operations were other issues. Mine Master addressed these through ideal scheduling, flexible work arrangements, and frequent communication with staff, as the upgrades were easily implemented and with minimal shutdowns.

#### REDUCED EMISSIONS AND COST SAVINGS

Mine Master's project result was even more favorable than

anticipated. Its heat energy consumption went down by 50%, much higher than the expected 30%. This automatically reduced the CO<sub>2</sub> emissions considerably, huge savings in the cost of energy, and the high-standard indoor climate for the employees. Post-project assessment validated the results, and the success of the company was independently assessed by its president in a PolSEFF case study. Besides environmental benefits, the project improved thermal comfort, raised the level of operating performance, and enhanced the public image of the company as a responsible, future-oriented industrial player.

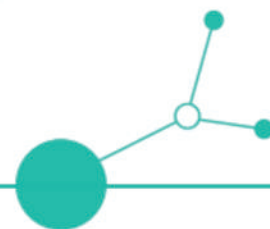
#### LESSONS FOR INDUSTRY: PRACTICAL STEPS TO DECARBONIZATION

Mine Master's experience validates that even traditional manufacturing firms can achieve substantial decarbonization with targeted, well-designed efficiency enhancements. The company recommends starting with a detailed professional energy audit to identify high-priority opportunities for improvement. Early technical and financial expert involvement can unlock valuable resources and information. Low-cost but efficient interventions such as insulation and boiler replacement can generate large environmental and financial dividends. Effective implementation also requires good internal communication and staff motivation to foster a culture of continuous sustainability improvement.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### DAVINES GROUP



[comfort zone]  
COSMETICS AND SKINCARE

### Davines Group

With "sustainable beauty" across its Davines (haircare) and Comfort Zone (skincare) brands, Davines Group is an Italian beauty company based in Parma. Every year the company reports on its social-environmental impact; it bases its strategy on a long-term climate pathway. Its Parma headquarters was envisioned as a showcase of environmentally friendly architecture and operations combining nature, efficiency, and well-being.



#### DECARBONIZATION ACTIONS

Combining site energy transformation, science-based targets, and supply-chain innovation, Davines' 100% renewable electricity and a change away from fossil gas to biomethane and geothermal energy, the group is also adding controls to minimize energy use and artificial lighting; 100% certified renewable sources (photovoltaic, solar thermal and geothermal) meet energy needs in heartlands.

#### FIRST CHALLENGES DURING THE PROCESS

Like many companies, Davines has to decarbonize operations and value chain. Reaching higher shares of self-generated renewable energy on site calls for capital investment and seamless integration with production and building systems; the company specifically frames self-generation at Davines Village as part of its 2030 plan.

#### MEASURED PROGRESS

Davines releases its annual Sustainability Report and shares its climate road map online. While the 2030 plan outlines the -55%/kg bulk product target and the self-generation approach at the Parma site, the SBTi has confirmed the group's ambition for Net-Zero by 2050 (2022 base year). At Davines Village the company reports 100% renewable electricity for production, biomethane + geothermal in place of fossil gas, and global rollout of renewable sourcing policies for other offices. Underlying a disciplined decarbonization program is this combination of reporting, targets, and site-level actions.

#### LESSONS AND TIPS

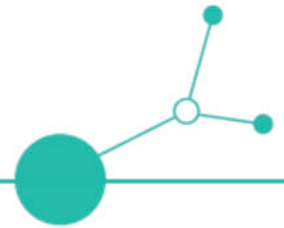
Davines shows how a mid-sized brand can combine hard-to-abate operations work (renewable heat/electricity, controls), science-based governance (SBTi, absolute and intensity goals) and value-chain transformation (regenerative agriculture) into one coherent program. Three lessons stand out for peers: design flagship sites as living labs for renewable energy and efficiency; embed SBTi-aligned targets to guide investment and accountability; and fund supplier-side innovation to progressively reduce Scope 3.



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### Save the Duck

Italian lifestyle and outerwear company Save The Duck S.p.A. uses no leather, feathers, or other materials derived from animals. The business, which has been a B Corp since 2019, bases its decisions on social, ethical, and environmental principles. Circularity, cruelty-free fashion, and transparency in their environmental impact reporting are all emphasized in their mission and product lines.



### DECARBONIZATION ACTIONS

By 2030, Save the Duck wants to be carbon neutral. They first mapped their greenhouse gas emissions in 2018, put a systematic plan in place to reduce them, and started funding climate action in 2021 through community support and renewable energy projects. Their SBTi-approved science-based goals include reducing Scope 1 and Scope 2 emissions by -50% by 2030 compared to 2018, as well as continuously monitoring and lowering Scope 3 emissions across their supply chain.

### FIRST CHALLENGES

Even though Save the Duck takes the initiative, decarbonization presents certain difficulties for fashion brands. The first is the supply chain: the procurement, manufacturing, and transportation of raw materials account for a large portion of their environmental impact. The second is striking a balance between performance and fashion appeal while preserving durability, design, and cruelty-free material selections. Third, establishing challenging goals necessitates regular data gathering, validation, and funding, particularly for offsets, clean energy acquisitions, and research and development for substitute materials.

### PROGRESS AND RAPORTING

Company provide information on accomplishments, emissions metrics, and areas for improvement as they move closer to their goals. The credibility of their disclosures is increased by third-party certification, such as their ISO 14064-1 GHG inventory and B Corp status.

### ADVICES FOR OTHER COMPANIES

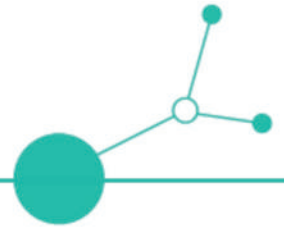
Several lessons can be learned from Save the Duck's strategy: Incorporate sustainability into product design and material sourcing from the start (no animal testing, circularity, durability); report openly, share both successes and gaps to gain stakeholder trust; start by mapping out all emission sources (Scopes 1–3); invest in external verification and science-based target setting; and think about compensating or funding external climate-positive projects while lowering internal emissions.



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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Leading hotel and camping operator Valamar Riviera of Croatia has properties along the Adriatic coast and an expanding ESG program focused on climate, biodiversity, and resource economy. The business supports international frameworks and management standards applied in hotel sustainability and keeps a specific ESG portal publishing integrated reports tracking environmental targets and progress.



### DECARBONIZATION PROCESS

Combining clean electricity procurement, on-site renewables, and grid-support innovation, Valamar's decarbonization levers address Since 2020 it has publicly committed to 100% renewable electricity for hotels and campsites (ZelEn certificate with HEP) and it keeps stating 100% green electricity usage in recent ESG materials and reports. Valamar has been expanding solar generation in parallel with E.ON to meet some of its needs and shares plans to raise PV output across several properties.

### FIRST CHALLENGES

The seasonality of hospitality and varying occupancy make energy planning difficult; coastal sites have intermittent solar and grid constraints, which Valamar has partially addressed with VPP participation that increases system flexibility. The company also observes fluctuation in energy prices, thus long-term green procurement and on-site generation become strategically crucial to balance expenses and reduce emissions.

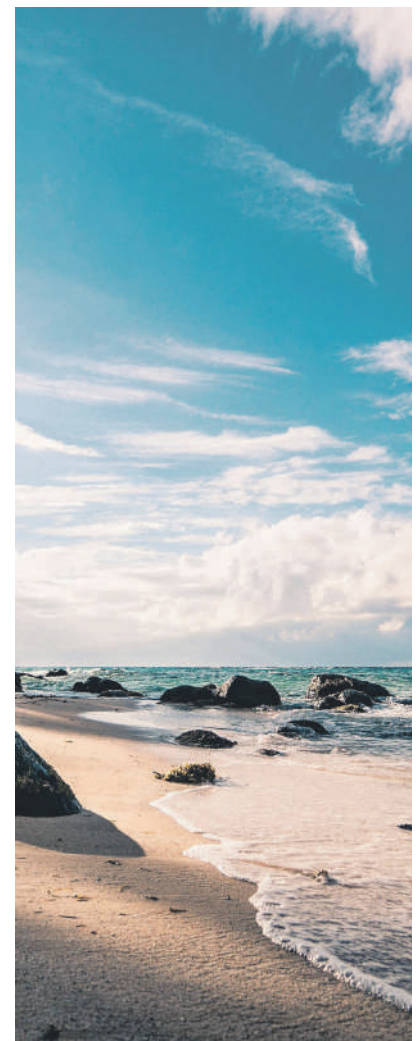
### PROGRESS

Valamar notes consistent benchmarks: 100% renewable electricity use confirmed in 2024 reporting; earlier announcements cited a significant drop in direct and indirect emissions following the switch to certified green power and efficiency measures.

### LESSON LEARNED DURING THE PROCESS

Valamar's approach demonstrates how a tourism SMEs-to - mid-cap

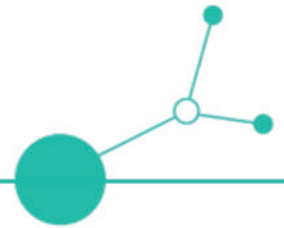
can combine demand-side/grid services, on-site solar builds-out, and renewable electricity purchase to decarbonize operations without sacrificing guest experience. Clear governance (dedicated ESG portal, integrated reporting, international standards) offers transparency and momentum, so providing a practical blueprint for resort operators in sunny, grid-constrained areas trying to lower Scope 2 emissions while supporting national energy transition targets.



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Jet Line

Specialising in outdoor and digital-out-of-home (DOOH) advertising, Jet Line is a Polish company. Renowned for its LED screen network called MORE, the company has long-standing presence in the Polish advertising scene. Beyond running successful campaigns, Jet Line has become a leader in including environmental practices into the advertising industry, proving that even medium-sized businesses can significantly contribute to decarbonization.



#### DECARBONIZATION IN ADVERTISING

The company first calculated its carbon footprint using the GHG Protocol, then started its decarbonizing path in 2022. At that point, annual emissions topped 1,000 tCO<sub>2</sub>e, with almost 80% of the total consumed for electricity. Understanding this, Jet Line replaced the lighting in its billboard network and changed to run its advertising equipment on renewable energy sources. In just two years, it nearly 50% reduced total emissions, bringing them down to about 524 tCO<sub>2</sub>e.

#### MAIN ACTIONS

With 98% of its energy consumption green, the company also obtained renewable electricity supplies. The launch of a clear reporting system helped to support these initiatives by letting clients of Jet Line view the carbon footprint of every billboard or campaign. By including sustainability into its product range, Jet Line not only lowered its own emissions but also promoted ethical behavior all around the advertising industry.

#### OUTCOMES AND IMPACT

The almost halved carbon footprint resulting from these projects was the most obvious result. Beyond emissions, however, Jet Line also improved operational efficiency, enhanced brand reputation, and positioned itself as a leader in sustainable advertising. The company gave marketers a new tool by tying campaign reporting with ESG performance: the capacity to match communication strategies with values related to climate change. This all-encompassing

strategy raised a new standard for the DOOH sector by combining environmental responsibility with extra value for consumers.

#### LESSONS LEARNED AND TIPS FOR OTHER COMPANIES

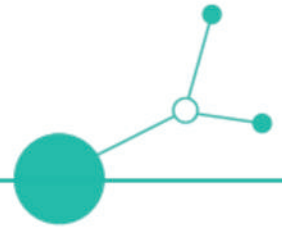
Experience of Jet Line reveals that even small and medium-sized businesses can engage in significant climate action. The salient features of the lessons are:

1. Measure first: credible action is built on accurate data.
2. Concentrate on high-impact areas: jet line's electricity consumption.
3. Establish great relationships with reliable professionals to guarantee responsibility.
4. Incorporate responsibility into products and services so that sustainability helps the business and its customers simultaneously.

The path of Jet Line emphasizes a strong lesson: sustainable development is about daily, consistent, quantifiable decisions taken, not about grand announcements.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

**CREDIT4CE**

### **WINDKRAFT SIMONSFELD AG**

Windkraft Simonsfeld AG, based in Austria and with between 50 and 250 employees, has fully rooted sustainability in each of its operations. The company sources 100% green electricity to be used in offices as well as wind/PV parks in Austria. The corporate office of the company is a plus-energy office with klimaaktiv Gold certification. The majority of the company fleet is electric, and organizational mobility and travel policies are in place to promote climate-conscious behavior among staff. Even though the company has not employed external consulting or government grants to specifically focus on decarbonization, it has achieved significant progress through internal efforts.

#### **OVERCOMING CHALLENGES IN IMPLEMENTATION**

The path to implementation was not without obstacles. Technological limitations and restricted data availability - particularly regarding Scope 3 emissions from external companies - posed significant challenges. Nevertheless, Windkraft Simonsfeld successfully implemented an environmental management system that was certified under ISO 14001 and achieved a company-wide reduction in CO emissions, despite the challenges involved. Progress is assessed annually by calculating the Corporate Carbon Footprint (CCF) in tons of CO<sub>2</sub> equivalent and comparing the results from year to year.

#### **INNOVATIVE MOBILITY CONCEPT**

One standout initiative is the company's comprehensive mobility concept. To encourage sustainable commuting, Windkraft Simonsfeld implemented a rewards-based system due to the difficulty of accessing the corporate headquarters via public transportation. When employees cycle, walk, use public transportation, or carpool to work, they accumulate points through an application. These points can be exchanged for vouchers, such as grocery store discounts. In parallel, employees are continuously trained and sensitized to sustainability topics. Although the company experienced an increase in staff in 2024, it was able to decrease emissions associated with employee commuting.

#### **DECARBONIZATION AS A CORPORATE MISSION**

Decarbonizing the company has

one mission: to be leading the energy transition not only in producing renewable electricity but by leading it in doing so in the most sustainable way. Windkraft Simonsfeld acts as a corporate commitment and does so across departments and borders

#### **A CULTURE OF SUSTAINABILITY AND INCLUSION**

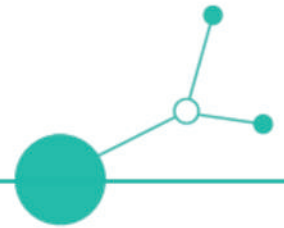
The key lesson they share with others is simple but powerful: If sustainability is approached boldly, innovatively, and inclusively - where all employees work toward a common goal - real change is achievable. It's about taking the first step, because every step counts.



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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**MEXEM**  
**sp. z o.o.**

Operating in the logistics and transport sector, MEXEM sp. z o.o. is a medium-sized Polish company. Established in 2000 and with its headquarters in Warsaw, the company offers a complete spectrum of services including forwarding, domestic and international road transportation, warehouse solutions. By stressing dependability, customized customer service, and technological support in fleet management over the years, MEXEM has developed a strong presence in the Polish and European logistics markets.

### EARLY COMMITMENTS

Through its first ESG-oriented projects in 2024, MEXEM signaled a new chapter in sustainability. The company is getting ready to compute its first carbon footprint for 2023 and started testing electric semi-trucks. These actions clearly show a strategic turn towards decarbonization and open emissions monitoring.

resilience, cost economy, and open ESG reporting.

### OPERATIONAL CHALLENGES

For logistics firms, integrating electric trucks into current fleets, guaranteeing availability of charging infrastructure, cost-effectiveness analysis, and operational efficiency with new technologies constitute challenges. Carbon footprint reporting also calls for organized data collecting and monitoring systems.

### INITIAL OUTCOMES

A long-term ESG strategy has a strong basis from the continuous pilot tests with electric vehicles and the expected carbon footprint evaluation. These initiatives will probably help the company's standing among stakeholders and customers as well as provide a road map for quantifiable climate-related development in next years.

### NEXT STEPS

MEXEM shows how medium-sized logistics firms might start their path of decarbonization. Important actions include establishing emissions monitoring using carbon footprint computations and testing low-emission technologies including electric trucks. These steps set the foundation for creating a more general climate strategy with an eye toward operational



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Veľký Krtíš

Veľký Krtíš, a small town in Slovakia governed by a local administrative body, has undertaken extensive measures to reduce emissions and promote environmental sustainability. The municipality has established the integration of renewable energy sources and the implementation of water retention mechanisms as cornerstones of its decarbonization strategy. They were driven by a strong urge to have a positive effect on the environment, better the lives of the surrounding community, and aid the economic sustainability of the city.

#### RESPONDING TO THE ENERGY CRISIS WITH LOCAL SOLUTIONS

The town realized that its dependency on conventional energy sources not only raised operational costs but also resulted in environmental degradation. The city responded to this, especially with the recent energy crisis, by enhancing energy efficiency in municipal buildings and diversifying energy resources. Utilizing the region's favorable climate, which is dominated by numerous sunny and warm days, Veľký Krtíš invested in solar energy technologies. A photovoltaic power generation system was installed at city hall in January 2024, followed by the launch of a second system at the Indoor Swimming Pool in February. These projects are expected to reduce energy costs related to municipal operations, decrease the town's carbon footprint, and enhance the overall percentage of renewable sources of energy in its local energy mix.

#### LEVERAGING SUPPORT AND OVERCOMING BUREAUCRATIC CHALLENGES

Over the duration of the project, the municipality utilized consulting services, governmental assistance, and various grant schemes. In spite of this, there were major issues faced, mainly pertaining to navigating intricate legislative processes. Nevertheless, the city remained committed to implementation and overcame these challenges through persistence and collaboration with experts.

#### TANGIBLE OUTCOMES AND CONTINUOUS MONITORING

In spite of these challenges, the city realized quantifiable results, among them CO<sub>2</sub> savings, energy efficiency, and economic gain. An additional benefit of the program has been enhanced public reputation and higher operational effectiveness. The city monitors the success of its initiatives through the utilization of an advanced powerplant monitoring system, thereby providing transparency and ongoing assessment of developments.

#### LESSONS FOR OTHER MUNICIPALITIES

Based on this experience, Veľký Krtíš recommends to other actors, especially those responsible for schools and public buildings, to prioritize regulatory and legal compliance when embarking on decarbonization actions. The experience of Veľký Krtíš demonstrates that smaller local authorities can also contribute significantly to the shift towards greening, provided that they are able to reconcile their environmental ambitions with those of the population and harness their natural resources in combination with support mechanisms available.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### GREENOX s. r. o.

GREENOX, s. r. o., a Slovakian micro-enterprise specializing in renewable energy - particularly photovoltaic systems - has made a strong commitment to decarbonization by offering solar solutions that enable significant reductions in CO<sub>2</sub> emissions and energy costs. The company's approach centers on providing photovoltaic systems to clients across sectors such as heavy industry, transport, energy, and agriculture, helping them transition from conventional to renewable energy sources. Their solutions typically result in clients saving up to two-thirds of their electricity consumption, improving energy efficiency, lowering operational costs, and enhancing environmental performance.

#### NAVIGATING INCENTIVES AND IMPLEMENTATION BARRIERS

In support of these projects, GREENOX utilizes national financial incentives like the Green Households programme and is going to use support from the Green Business programme in its future projects. Nonetheless, putting these plans into action has not been without challenges. The limited capacity in more sparsely populated areas of Slovakia has hindered the realization of projects, while postponed releases of grants have impacted scheduling and resource allocation. Still, the outcomes have been effective: clients indicate monetary savings, enhanced corporate reputation, and greater operational effectiveness by leveraging renewables and streamlined energy processes.

#### SHOWCASING INNOVATION: THE PHOTOVOLTAIC CARPORT

One example that best describes the creativity of GREENOX is their photovoltaic carport project. In a rural area where aesthetic uniformity was paramount, the firm designed and mounted a carport with a 5.25 kWp capacity, incorporating bifacial solar panels and energy optimization technologies. The solution implemented not only gave cars protection against meteorological factors but also facilitated the generation of clean energy, amounting to approximately 3.6 tonnes of CO<sub>2</sub> emissions avoided per year. Despite the technical challenges associated with compatibility of technology and waterproofing, and logistic and regulatory issues, diligent coordination between architects and engineers ensured that the end product was not just

effective but aesthetically in sync with the environment. This project exemplifies how aesthetic design, energy efficiency, and sustainability can coexist.

#### PURPOSE-DRIVEN DECARBONIZATION

GREENOX's purpose is fundamentally based on the conviction that there needs to be a switch to clean energy. Through the provision of photovoltaic systems, the company seeks to enable individuals and institutions to cut greenhouse emissions, minimize the use of fossil fuels, and transition towards a sustainable and energy-efficient tomorrow.

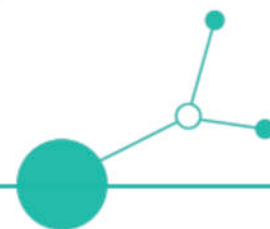
#### ADVICE TO OTHER BUSINESSES

Their advice to other businesses is simple: start with a company-wide energy audit, seek expert counsel, stay abreast of regulations, and take maximum advantage of funding incentives. Investing in renewables is not just a green decision — it's a strategic investment that makes a business stronger and more sustainable, as well as more appealing, to the public.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### J&J Holding s.r.o.

J&J Holding s.r.o., which is a small Slovak company operating in the field of renewable resources, has embarked on ambitious projects in decarbonization by installing an innovative photovoltaic (PV) system to enhance energy demanding processes of a municipal wastewater treatment plant (WWTP) that is situated in the village of Kamienka. With fewer than 10 employees, the company prioritized a solution that leaned towards self-consumption rather than energy export, decreased grid dependency, and higher economic feasibility — particularly in light of the rising regulatory and distribution costs.

#### A TECHNOLOGICAL LEAP: WINDING PHOTOVOLTAIC INNOVATION

Unlike traditional rooftop solar installations, J&J Holding's innovative winding PV system was designed for daily adjustment and maximum perpendicular sun exposure throughout the day. The adaptive installation was able to maximize generation efficiency, especially in cold weather conditions. Early 2024 actual results confirmed its performance with peak outputs of 20.5 kW - above the nominal DC rating - and over 170 kWh of daily generation in ideal conditions. The system delivers stable production in winter and spring, precisely when the load of the WWTP is still significant. The installation not only reduces the operational expenses but also positions the local grid well for better load balancing, delivering a decentralized and stable source of renewable power.

#### ECONOMIC MOTIVATION AND LONG-TERM STRATEGY

Economic was one of the primary driving factors for J&J Holding: making energy cost savings for the municipality and making WWTP financially viable, together with creating a basis for future EU grant funding possibilities to implement advanced treatment technologies.

#### RECOGNITION AND BROADER SYSTEM IMPACT

The project attracted the attention of industry professionals and the general public alike, as a model of how small-scale innovation can deliver broader systemic benefit.

#### ACHIEVING SUCCESS WITHOUT EXTERNAL SUPPORT

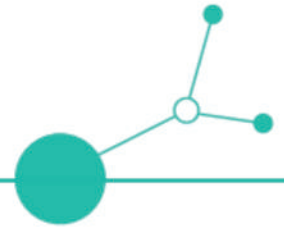
Without the help of government support or consultancy services, the company navigated intricate engineering and regulatory hurdles - like structural wind analysis and PLC integration - with ease, demonstrating that even untested new technology can be reliable with the right know-how and local cooperation.



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### MYMS di Buldrini Roberto & C s.n.c

MYMS, an Italian micro-business engaged in the carpentry and welding production sector, is making a giant leap towards energy efficiency by investing in renewable energy. This SME in Emilia-Romagna with less than 10 employees opted for the installation of photovoltaic panels in the year 2023 due to the sudden increase in energy prices. Whereas the original impetus was economic - avoiding reliance on the energy market and lowering operating expenditures - the choice also delivered spectacular decarbonization and environmental sustainability system development.

#### OVERCOMING IMPLEMENTATION CHALLENGES

Project implementation needed strong external support. There were many challenges that the company had to overcome, including defining the ideal size of the solar equipment, the return on investment calculation, and a complicated administrative process. This consisted of registration with the national producer register of energy, in addition to regional customs authorities. Due to regional financing from EBER (the Bilateral Institution for Crafts in Emilia-Romagna) and the support of professional consultants, MYMS was able to install a 40 kW photovoltaic system.

#### SIGNIFICANT ENVIRONMENTAL AND ECONOMIC IMPACT

The outcomes have been dramatic: the business has managed to prevent the emission of 16,220 kg of CO<sub>2</sub>, cut reliance on grid electricity by 58%, and lowered energy procurement expenses by 34%. On top of that, MYMS now generates additional income from feeding excess energy into the grid. All these have significantly enhanced the economic viability of the business. Continual improvement monitoring is facilitated by a mobile application that monitors energy savings and system efficiency in real time.

#### FROM COST SAVINGS TO CLIMATE COMMITMENT

While cost savings were MYMS' original motivation, and not

decarbonization, the company now values the added contribution to meeting environmental goals. Its shift in perspective reflects how practical business needs and sustainability can reinforce one another over time.

#### ADVICE FOR OTHER BUSINESSES

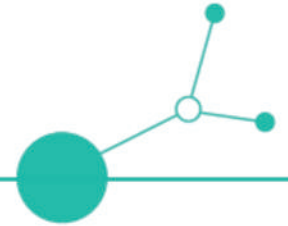
The MYMS experience underscores the requirement for planning carefully and consulting professionals when investing in solar energy systems. For other firms - particularly sectors like automotive and transport, which can benefit from similar installations - MYMS recommends employing professional consultants to correctly assess needs and avoid over-dimensioning so that the full potential of the investment is realized.



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### Fornovo Gas S.p.A

Fornovo Gas S.p.A., a prominent Italian producer of reciprocating compressors, has made sustainability one of the central activities of its business as an essential aspect of its mission as a Benefit Society. The company, with 50 to 250 employees, has taken active measures to mitigate greenhouse gas emissions, embracing renewable energy sources and enhancing the efficiency of use within its plants. These actions are not the result of regulatory pressure, but a deliberate, strategic choice for reducing environmental impact, benefiting the community, and ensuring the long-term sustainability of the business in a changing energy landscape.

#### FLAGSHIP PROJECT: ROOFTOP SOLAR AT HEADQUARTERS

One such success was the installation of a 252 kW photovoltaic system on the rooftop of the company's headquarters in Traversetolo. Commissioned in May 2024 after being completed in March, this rooftop solar power facility now feeds clean electricity into the company's operations. The effect has been quantifiable and significant: overall CO<sub>2</sub> emission savings of 11.5% against 2023, reduction of fossil energy consumption by 55.8%, and a rise in the proportion of renewable energy from 47.07% to 79.41%. On-site renewable energy generation now totals over 107,000 kWh of electricity, with overall renewable consumption rising by 91.5%. These initiatives were supported by EU and Emilia-Romagna regional funding, together with carbon footprint analysis and recommendations provided by external consultants.

#### TACKLING IMPLEMENTATION CHALLENGES

The implementation of these projects faced numerous hurdles. The adjustment of infrastructure to suit solar panels required significant coordination and monetary investment. The company had to navigate a complex regulatory environment while building robust monitoring systems to ensure transparency and accuracy in the evaluation of decarbonization projects.

#### BEYOND EMISSIONS: BROAD ORGANIZATIONAL BENEFITS

But the results have transcended purely environmental significance: Fornovo Gas has achieved energy efficiencies, reinforced its position as a sustainability leader, and passed the renewal of its ISO 9001, 14001, and 45001 certifications - further solidifying its reputation for quality, environmental responsibility, and occupational health and safety.

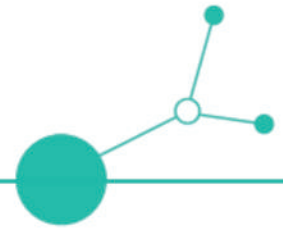
#### LESSONS LEARNED AND INDUSTRY LEADERSHIP

Fornovo Gas offers instructive insights in its development process. It underscores the value of establishing clear, quantifiable objectives, going ahead with proactive action prior to the requirement for regulation, and addressing controllable factors such as internal energy consumption. The early engagement of employees in the process and maintaining open communication channels have been discovered essential to integrating sustainability into organizational culture. With these initiatives, Fornovo Gas not only propels its own transformation but also contributes to the creation of a more sustainable industrial future for the energy and utilities sector and the circular economy.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### RT LOGISTIC, a.s.

RT LOGISTIC, a.s., a Slovak company operating in the logistics and transport sector with 10 – 50 employees, has become a national pioneer in reducing emissions from rail operations through the innovative use of 100% biodiesel (B100). In an effort to explore renewable alternatives to fossil fuels, the company decided to replace standard B7 diesel with B100 in the real operation of a ČKD 740 diesel locomotive built in 1988. This locomotive is used on a non-electrified private siding in Leopoldov, running approximately 125 kilometers weekly and consuming around 3,000 liters of fuel monthly.

#### A NATIONAL FIRST: PIONEERING BIODIESEL USE IN RAIL

The project was the first one in Slovakia in which the B100 fuel was used, since it was not utilized in non-specialized locomotives. The primary issue was the unknown performance of the locomotive over the long term, particularly the energy content difference - B100 has 33 MJ/l calorific value versus 35.793 MJ/l for B7. As predicted, the B100 exhibited approximately 8% greater fuel consumption. After ten months of operation, one technical problem was experienced: the corrosion of rubber seals in the fuel pump. This was corrected by replacing the seals with more resistant viton parts, which are standard in most new diesel engines.

#### TANGIBLE ENVIRONMENTAL IMPACT

Despite these initial difficulties, the results were astounding. Emissions data indicated that, per kilometer traveled, the locomotive fueled by B100 emitted 8.9 kg less CO<sub>2</sub> than with B7, a reduction of about 65%. On an hourly basis, this translated to a CO<sub>2</sub> savings of 24.84 kg. Not only did the project demonstrate the feasibility of using biodiesel in rail transport but also showed significant environmental gain with minimal technical modification.

#### SELF-FINANCED AND INDEPENDENT IMPLEMENTATION

Despite the absence of public funding or consultant support, RT LOGISTIC confirmed for itself the efficiency and operational viability of utilizing B100. The company independently navigated the testing and validation process, proving that such decarbonization actions are achievable without reliance on external resources - provided there is technical insight and operational commitment.

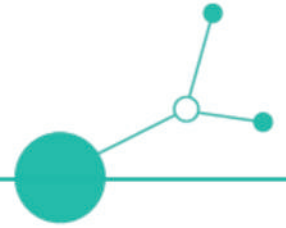
#### A SCALABLE ALTERNATIVE FOR INDUSTRY

The company began this project with one objective in mind: to evaluate the everyday use of B100 in older locomotive engines and prove that renewable fuels can be utilized as an effective and scalable decarbonization method. With its success, RT LOGISTIC encourages other firms - especially logistics, transport, and heavy industry companies - to choose biodiesel as a readily adoptable, low-emission alternative to fossil diesel. In spite of moderately higher consumption, environmental gain and simplicity of rollout render B100 an attractive choice for operators wanting quick-track sustainability gains without waiting for full electrification.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### Pollution Srl

Pollution Srl, a metalworking firm based in Italy with 10 to 50 employees, undertook a strategic initiative in 2020 to minimize its impact on the environment by investing in renewable energy. Without the support of public grants or consultancy from a third party, the firm self-financed and conducted the installation of solar photovoltaic panels at its facility. This was motivated by two primary objectives: decreasing emissions and electricity bills by substituting conventional sources of energy with clean, self-produced solar energy.

#### OVERCOMING FINANCIAL BARRIERS

The switch was not without a few difficulties. Among the greatest hurdles were the lofty up-front investment price and absence of public incentives, which usually renders such initiatives cost-effective for small and medium-sized enterprises. Despite these financial challenges, the management group remained committed to long-term environmental and economic goals.

#### RESULTS THAT VALIDATE THE DECISION

Pollution Srl has witnessed spectacular savings in electricity costs since the installation, demonstrating that environmental sustainability can walk hand-in-hand with financial efficiency, even in the absence of external economic support. The internal generation and use of solar power have proven to be a stable and cost-effective solution.

#### MEASURING SUCCESS THROUGH ENERGY SELF-CONSUMPTION

Today, the initiative's success is gauged by how much renewable power is generated and consumed internally. This focus on self-consumption not only maximizes return on investment but also reduces dependency on the external grid, strengthening operational resilience in times of energy price volatility.

#### INSPIRING OTHERS IN ENERGY-INTENSIVE SECTORS

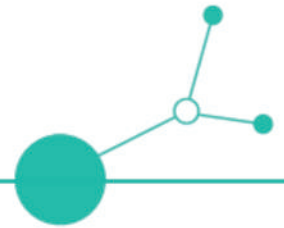
The experience of the company highlights the real benefits of adopting renewable energy, especially for highly energy-intensive sectors such as heavy manufacturing and utilities. Pollution Srl urges other businesses to make comparable investments — not only as an ethical necessity but also as a strategic way of achieving considerable cost savings and better energy consumption management. As the authors emphasize, „Investing in solar panels is not merely an environmentally friendly decision but a sound means of saving on energy expenses.”



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### Miret d.o.o.

MIRET d.o.o. is a Croatian SME with business interests in both industrial and fashion design. The company has achieved a lot in the area of sustainable footwear innovation. Dedicated to making the shoes that are, by their nature, eco-friendly, the company has transformed its process of designing and manufacturing its shoes to minimize its environmental impact significantly. In its sneakers, MIRET uses bio-based natural materials including hemp, kenaf, cork, and wool, thereby achieving an impressive rate of use of up to 97% of non-toxic, renewable materials.



#### PRODUCT INNOVATION AS A PATH TO DECARBONIZATION

MIRET d.o.o., a Croatian SME engaged in industrial and fashion design, has embarked on a product-led decarbonization strategy centered on emissions mitigation via the application of low-carbon materials. Compared to traditional leather and petroleum-based synthetic materials, the company has invested in the utilization of natural, bio-based materials like hemp, kenaf, cork, and wool in the production of its sneakers. This shift has led to a 65% reduction in CO<sub>2</sub> emissions from the industry average and supports a circular and regenerative supply chain model.

#### CERTIFICATION AND COMMITMENT TO SUSTAINABILITY

One of the company's milestones is having attained the OEKO-TEX STANDARD 100 certification for the whole shoe, a stringent and independent certification that all of the shoe's components are devoid of harmful substances. This success, along with B Corp certification, strengthens MIRET's firm commitment to social and environmental responsibility. Despite the difficulties it has faced, such as the limited financial resources and lengthy contracting times, MIRET managed to overcome these constraints thanks to EU-funded projects. These projects supported the digitalization, research, innovation, and intellectual property protection of the company.

#### BEYOND EMISSIONS: BUILDING A PURPOSE-DRIVEN BRAND

The implications of MIRET's decarbonisation strategy extend beyond environmental outcomes. The public image of the brand has significantly improved, leading to increased trust levels among customers and stakeholders. By embracing transparency and seeking third-party verification, the company has been able to differentiate itself in a crowded market.

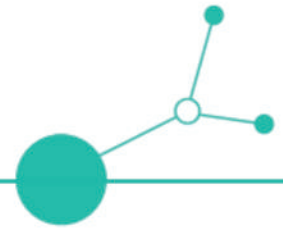
#### TRANSPARENCY AND THIRD-PARTY VALIDATION AS MARKET ADVANTAGES

A very notable example was the entire OEKO-TEX certification process, where each material was thoroughly sourced and checked with utmost care to meet high levels of safety and sustainability requirements. This rigorous approach has positioned MIRET as a model for how environmentally responsible design can be integrated with product excellence in the fashion sector.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



### T&AT solutions

T&AT solutions, a Slovak energy firm with fewer than 10 employees, is a textbook example of how small firms can be at the forefront of marrying profitability with sustainability. Their strategy is based on the coupling of Battery Energy Storage Systems (BESS) and solar photovoltaic (PV) systems for emissions reduction, energy management optimization, and grid stability enhancement. Through this innovative configuration, the firm is able to provide flexible, AI-based energy supply solutions that minimize carbon emissions while simultaneously producing stable revenues from the sale of green-certified electricity.

#### MOTIVATIONS AND CONDITIONS FOR THE DECARBONIZATION STRATEGY

Economic viability was the most important driver for the decarbonization strategy of T&AT solutions. In today's energy environment, a wisely configured PV installation with an AC-coupled battery system not only reduces the exposure to energy imbalance penalties but also provides an affordable roadmap for building decentralized power stations. While the technical implementation was straightforward, navigating the permitting process with the distribution system operator was the biggest challenge. Notwithstanding this challenge, the organization effectively executed the system and currently provides carbon-neutral electricity while concurrently reducing the financial risks linked to variations in energy prices.

#### MEASURING THE IMPACT AND BENEFITS OF IMPLEMENTATION

T&AT solutions quantifies the success of its activities in terms of the volume of green electricity (kWh) flowing into the system. The above advantages consist of better revenues, lower regulatory expenses, and improved system robustness. Their approach enables both economic returns and positive environmental outcomes - especially relevant for energy suppliers seeking greater grid flexibility and resilience.

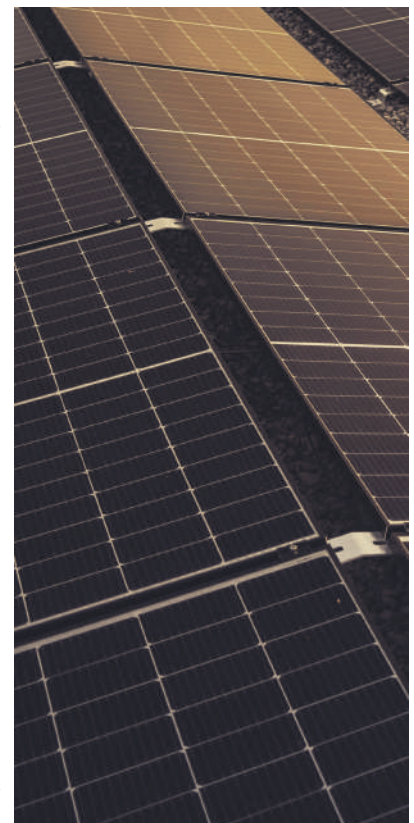
#### THE OFFER AND ITS VERSATILE APPLICATIONS

Their offer - a smart energy package combining solar PV and AI-

managed storage - is appropriate not only for their consumption but also as a replicable solution for clients across diverse industries.

#### RECOMMENDATION AND CALL TO ACTION FOR OTHER COMPANIES

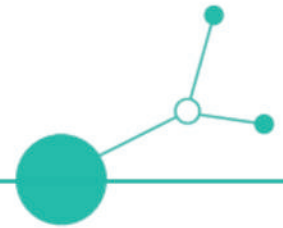
The firm strongly recommends this solution to other businesses, with the key argument being that an AC-coupled battery in combination with solar PV both improves individual profitability as well as overall power system efficiency. According to their statement, „Solar PV with AC-coupled battery will benefit the business - and also the power suppliers like us.“



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



**SYMBIOSIS**

**Laboratorium Symbiosis  
sp. z o.o.**

Symbiosis sp. z o.o., a Polish cosmetics firm with 10 to 50 employees, has joined decarbonization by adopting innovative processing techniques that utilize minimal energy and adopting circular practices. Instead of depending on outside investments or conventional certification programs, the firm carved out its own path to reduce emissions, focusing chiefly on energy-efficient technologies and waste management reimaged as an asset. Among its most innovative ventures is converting byproducts generated from tofu production - emission whey, to be exact - into raw materials for cosmetics.

### **BIG IMPACT: SMART ENERGY INTEGRATION**

This innovative approach not only minimizes the organization's reliance on raw materials but also keeps organic waste out of storage or disposal systems, thereby reducing its potential contribution to CO<sub>2</sub> emissions. By repurposing waste streams - such as emission whey from tofu production - into cosmetic ingredients, Laboratorium Symbiosis creates value while actively mitigating emissions and advancing circular economy practices within the cosmetics sector.

### **LOW-TECH, SCIENCE-BASED MONITORING**

Even though the organization has not introduced automated software to calculate its carbon footprint or acquired environmental certifications, it assesses its footprint using descriptive analyses based on scientific literature and ESG monitoring standards. This method has returned quantifiable reductions in both cost expenditure and manufacturing time, demonstrating that efficiency and sustainability can be achieved together within the cosmetics industry — even without digitalized systems or formal accreditations.

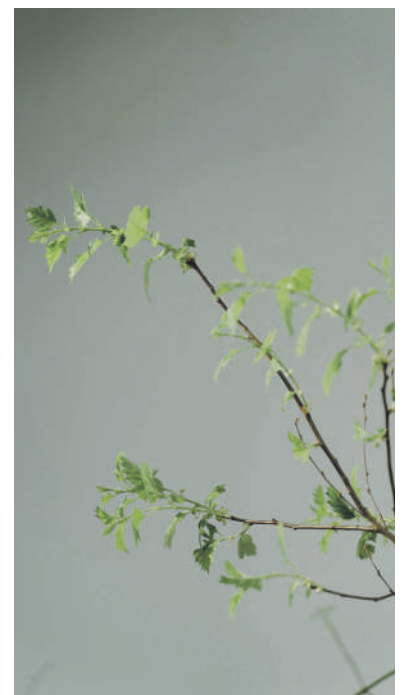
### **RETHINKING DECARBONIZATION BOUNDARIES**

Laboratorium Symbiosis encourages the necessity of a broader vision of decarbonization in various enterprises, particularly those that play a role in food production, agriculture, waste management, and cosmetics. They emphasize that

carbon reduction extends beyond energy consumption in production facilities and needs to incorporate upstream and downstream operations, including organic waste disposal and raw material sourcing.

### **INNOVATION WITHOUT INFRASTRUCTURE: A SCALABLE MODEL**

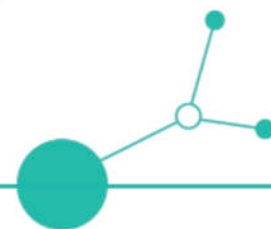
Their own experience illustrates that environmental innovation can be achieved without large-scale infrastructure or investment - what is needed is vision, cross-sectoral collaboration, and a willingness to make every element of the value chain more sustainable. Laboratorium Symbiosis stands as a model for other SMEs looking to combine ecological responsibility with resource efficiency, even on a limited budget.



# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### CENTROMETAL

#### Centrometal d.o.o.

Centrometal d.o.o. is a 50 – 250 employee Croatian heating systems and energy technologies company. The company has been following a very extensive decarbonization policy for the last several years, encompassing both the operations and products delivered to the customers. By modernizing the production processes, utilizing energy-efficient technology, and incorporating renewable energy solutions like biomass boilers, solar thermal solutions, and heat pumps, Centrometal has managed to successfully establish itself as a regional leader in sustainable innovation. Additionally, in-house measures like LED lighting installation, energy-efficient heating systems, and digital monitoring systems have further enhanced its environmental footprint.

#### PUBLIC SECTOR IMPACT THROUGH BIOMASS INNOVATION

One notable project began in 2022, as Centrometal joined forces with Croatian local government authorities to equip more than 20 rural schools and municipality buildings with biomass-heating systems. The mission was to substitute inefficient oil-based heating systems with low-emission, efficient ones. Each solution was tailored to the particular building, and training for local operators was provided. By December 2023, the project had saved over 400 tons of CO<sub>2</sub> annually and lowered heating bills by up to 40%. It showed how public sector decarbonization plans can be supported by renewable heating solutions in addition to real economic benefits.

#### OVERCOMING OPERATIONAL AND ORGANIZATIONAL CHALLENGES

While successful, the firm faced implementation challenges, particularly retrofitting its production infrastructure without halting production. Additional obstacles included securing skilled staff, transforming company culture, and navigating complex EU funding mechanisms. However, the results have been exemplary: a 25% reduction in CO<sub>2</sub> emissions per unit produced, reduced operation energy consumption, and ISO 14001 environmental certification. These benefits have also been mirrored in enhanced brand reputation and competitiveness in environmentally aware markets.

#### DATA-DRIVEN SUSTAINABILITY MONITORING

Centrometal monitors its decarbonization program progress through energy consumption monitoring, CO<sub>2</sub> emissions per product, and product efficiency scores. Its own success has been underpinned by measurement of KPIs linked to sustainability goals and continual customer feedback. This ongoing data collection ensures transparency, drives improvement, and aligns daily operations with long-term environmental targets.

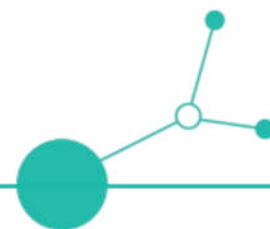
#### A BLUEPRINT FOR OTHERS: START SMALL, THINK LONG-TERM

Going forward, the company recommends others embark on a step-by-step journey - starting with measurable internal change, leveraging available financing, and embedding innovation and sustainability into the core business model. Centrometal's story proves that mid-sized manufacturing firms can successfully merge environmental responsibility with competitiveness, especially when public-private collaboration and tailored solutions are embraced.

# CASE STUDY

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



**VepeL d.o.o.**

Croatian manufacturing firm and electrical equipment expert VepeL d.o.o. has taken big steps towards becoming more sustainable with the help of renewable heating systems and innovativeness in production. In 2023, the company, which has 10 to 50 employees, addressed increasing energy expenses and ecological issues by installing a high-efficiency wood log boiler. This innovative system now supplies heat and domestic hot water to two big production facilities in Velinci, Kumrovec, substituting a natural gas system based on fossil fuels and reducing CO<sub>2</sub> emissions significantly.

### PUBLIC SECTOR IMPACT THROUGH BIOMASS INNOVATION

At the same time, VepeL developed its production process with the acquisition of Croatia's first UV printer approved for traffic sign manufacturing. With support from the European Structural and Investment Funds (ESIF) and HAMAG-BICRO, the investment increased energy efficiency, reduced material wastage, and established the company as a technological leader in the country. The introduction of the printer marked a major innovation in an otherwise traditional production field.

### NAVIGATING CHALLENGES IN IMPLEMENTATION

While integration of the UV printer and implementation of the biomass system proved difficult — primarily from the viewpoint of investment, infrastructure compatibility, and training of employees - it became quickly evident that the benefits would outweigh the challenges. VepeL's commitment to modernization and decarbonization helped them overcome these barriers.

### MEASURABLE IMPACTS AND MARKET BENEFITS

Thus, VepeL lowered its greenhouse gas emissions, attained significant energy cost savings, and enhanced operational effectiveness. The firm monitors its progress through measurement of lowered energy consumption, CO<sub>2</sub> emissions savings, and financial performance metrics. These gains have triggered customer confidence,

enhanced its market reputation, and drawn clients concerned with environmental sustainability. helped them overcome these barriers.

### RECOMMENDATIONS FOR PEER COMPANIES

VepeL encourages other firms, particularly those in energy-intensive industries, to develop renewable heating and process modernization. They recommend an assessment of existing energy use, determining the sources of finance available, investing in comprehensive staff training, and ongoing result monitoring to bring it into line with sustainability objectives. Smaller firms can spearhead low-carbon transformations with the appropriate support and exact vision.



# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

CREDIT4CE



Poznański Park  
Naukowo-Technologiczny

### The Carbon Footprint Calculator

The Carbon Footprint Calculator is an innovative tool developed under the CREDIT4CE project to support small and medium enterprises (SMEs) in assessing and managing their greenhouse gas (GHG) emissions. SMEs contribute significantly to global carbon emissions, yet many regions lack the resources to guide them through decarbonization processes. This tool bridges that gap, empowering businesses to measure their environmental impact, comply with evolving regulations, and transition towards sustainability.

#### By utilizing this calculator, companies can:

1. Quantify emissions across Scopes 1, 2, and 3.
2. Identify key areas for emission reductions.
3. Set measurable sustainability goals.
4. Enhance transparency and stakeholder trust.

Incorporating cutting-edge methodologies, the Carbon Footprint Calculator enables SMEs to align with global net-zero goals while discovering innovative opportunities for growth and efficiency.

#### Getting Started

Once the Carbon Footprint Calculator website is launched, there is no need to create an account or log in to use the tool and view your company's carbon dioxide emissions results.



Start with choosing your preferred language. Available languages include English, Croatian, German, Italian, Polish, Slovak, and Slovenian. By default, the tool is set to English.

Before beginning the carbon footprint calculation, you will be asked to choose one of the three available privacy options. Your selection determines how your data will be handled, stored, and displayed in the results section.

"I am just testing the tool. No data will be displayed in the results section." Choose this option if you're only testing the tool or prefer full anonymity.

1. Your data will not be stored in the database.
2. Your results will not be visible in the results section.
3. Your input will not be included in the comparison functionality.

"My calculations will be visible in the results section, but company data will be anonymous."

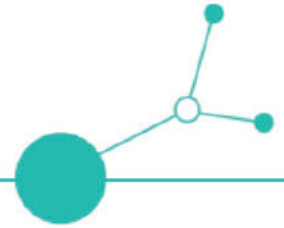
Select this option if you want to contribute your emissions data to broader comparisons but without revealing your company identity.

1. Your calculated results will be visible in the results section.
2. Company data will remain anonymous.
3. Your data will be stored in the database to support the comparison of results among different companies.
4. Provide your e-mail address.
5. Your data will be added to the database and included in the company comparison feature (CO2 Rank subpage).

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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When this option is selected, additional fields will appear, allowing you to provide the following details:

**Email Address:** for receiving the results via email.

**Company Name:** to display alongside the emissions results.

**Country Location:** choose your country from the provided list.

**Industry Sector:** select the relevant sector from the available options.

**Company Size:** indicate the range of employees from the provided options.

**Annual Revenue:** select the range that applies to your company.

All fields in this section are optional, and any of them can be left unfilled based on your preferences.

Once clicked, additional fields related to the chosen scope will appear, grouped into multiple categories.

Step 2: Access Explanations and Tips

For detailed information, explanations, and tips about each criterion, click the “?” icon near the title of the corresponding field.

### Mobile combustion

Step 3: Submit Data

Enter the required data for each category by submitting relevant digits.

Note: Data should be entered on an annual basis unless stated otherwise.

Note: Some fields allow multiple entries. In this case, after selecting the appropriate category from the pop-up list, enter your data and click “Add New”.

If additional data is needed for the same category or for another sub-category within the pop-up list, click “Add New” after each entry. To correct a mistake, click “Remove” to delete the erroneous entry.

### Entering Data

Step 1: Select an Emission Category

Choose one of the emission categories:

Scope 1 – Direct Emissions

Scope 2 – Indirect Emissions from Energy Consumption

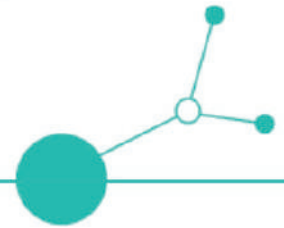
Scope 3 – Other Indirect Emissions

To begin, click the “+” button on the right side of the corresponding row.

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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**Optional Fields:** If data for a specific category is unavailable, the corresponding fields can be left unfilled.

**Session Limitation:** The questionnaire must be completed in the same session. If the browser window is closed without submission, your progress will not be saved, and it will not be possible to resume the work.

**Data Accuracy:** Ensure all submitted data is accurate and relevant to achieve the most reliable results.

### Finalizing the Session and Reviewing the Results

**Step 1: Accept the Privacy Policy**

Before viewing the results, you must accept the privacy policy by checking the box next to the statement "I accept the privacy policy."

**Step 2: Emailing Results (Optional)**

If you wish to receive the results via email, ensure your email address is provided as explained in the "Getting Started" section.

Mark the box next to "Send results to my e-mail" to request the results be sent to your provided email address.

**Step 3: Show Results**

Once all of selected fields are filled, click "Show results" to display your company's carbon dioxide emissions results.

**Note:** If any required fields have been left empty, the tool will highlight them in red. Complete the necessary fields before proceeding to ensure accurate results.

**If you have entered the above data - click on the button below and check your carbon footprint!**

☒ I accept the privacy policy ☐ Send result to my e-mail address

**Show Results →**

**Step 4: Review the Results**

Once the session is finalized, the total annual emissions in tons of CO<sub>2</sub> will appear on the screen.

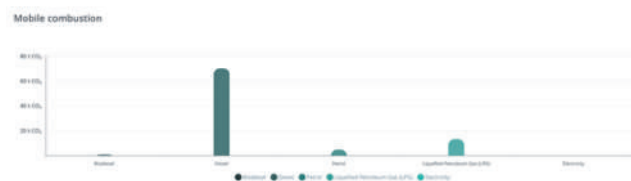
**Carbon footprint summary**

Company Name: Sample company  
Company Type: Manufacturing  
Manufacturing Industry Sector: Health  
Company Size: 10-49 employees  
Annual Revenue: Less than €1 million

Once you finalize your session, the tool presents a detailed breakdown of your company's carbon dioxide emissions. The results are organized by Scope 1, Scope 2, and Scope 3, and include emissions from various activities and categories.

Visual charts for each category within each emission scope will be displayed, enabling easier and deeper understanding of the impact of each category on the total emissions.

Total emissions for each scope are summarized at the end of each section. This breakdown allows users to identify emission hotspots and prioritize actions for reduction and sustainability efforts.



### Downloading a CSV File

If you wish to download a detailed spreadsheet of all data submitted in the tool:

Click the "Download CSV" button.

This will generate and download a file containing all the information you entered during the session.

**Total emissions**

**2164.36 t CO<sub>2</sub>**

**Download CSV →**

If you wish to download a detailed spreadsheet of all data submitted in the tool:

By following these steps, you can easily finalize your session, view your results, and retain a detailed record of your emissions data.

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Living Cities: Biodiversity-Friendly Urban Design for a Warming Europe

#### From Planetary Crisis to Street Level

Global biodiversity is in free-fall. The 2022 Living Planet Index documents an average 69 % decline in monitored vertebrate populations since 1970, while the IPBES Global Assessment warns that as many as one million species could vanish within “the next few decades” unless drivers such as land-use change are curbed. Urbanisation is a prime engine of that loss. A global modelling study in Nature Communications projects that converting land for new cities will remove 11–33 million ha of natural habitat this century and, at the site level, cut terrestrial vertebrate species richness by 34 % and abundance by 52 %. Parallel work shows that in the world’s 80 most heavily impacted ecoregions, urban build-out could erase a further 1.2–2.8 % of remaining natural habitat—up to 19 times the projected global average.

Beyond outright habitat loss, cities re-shape ecological communities. A meta-synthesis of 225 studies on “urban biotic homogenisation” finds consistent replacement of specialised, range-restricted species by a narrow suite of disturbance-tolerant generalists across taxa and continents. A 2023 trait-based analysis of 379 cities worldwide pinpoints four recurring “urban trait syndromes”, underscoring how reproductive strategy, mobility and diet filter which species persist in built environments. Climate change intensifies these pressures at street level. Recent epidemiological modelling of 854 European urban areas shows that, without ambitious adaptation, heat-related deaths will outweigh any decline in cold-related mortality, producing a net 49.9 % rise in temperature-attributable deaths and more than 2.3 million extra fatalities between 2015 and 2099. Urban heat-island amplification and limited green cover are identified as key risk multipliers.

Meanwhile, economic signals lag far behind the scale of the crisis. UNEP’s State of Finance for Nature 2022 calculates that current annual flows to nature-based solutions stand at US \$154 billion—barely one-third of the US \$484 billion required each year by 2030 to meet climate, biodiversity and land-degradation targets. Taken together, these findings reinforce a simple conclusion: tackling biodiversity loss and urban climate risks demands action inside city boundaries just as urgently as in remote rain-forests or coral reefs. The remainder of this article explores how European municipalities can translate that science into on-the-ground practice.

### Europe’s Political Turning Point

#### 2.1 A global-to-local policy cascade

Europe’s nature legislation now sits inside a wider, legally binding architecture set by the Kunming-Montreal Global Biodiversity Framework (GBF), adopted at COP-15 in December 2022. The GBF’s Target 3 obliges every Party to protect at least 30 % of land and sea by 2030, while Target 12 calls for cities to integrate biodiversity into spatial planning. The EU has translated these goals into the EU Biodiversity Strategy for 2030, which pledges 30 % protection, 10 % strict protection and restoration of 25 000 km of free-flowing rivers, alongside the planting of three billion additional trees by 2030.

#### 2.2 Urban greening goes mandatory

Under the Strategy, every municipality above 20 000 inhabitants must file an Urban Greening Plan by 2025, mapping ecological corridors, pollinator habitat and temperature-risk hot-spots. Progress is accelerating: as of April 2025, 277 EU cities have submitted draft plans and 112 are already financed through the Horizon-Europe “Mission Cities” programme.

#### 2.3 The 2024 Nature Restoration Law (NRL)

Europe’s policy turning-point arrived on 15 August 2024 when the NRL entered into force. It requires Member States to:

- restore at least 20 % of the EU’s degraded land and sea by 2030;
- halt any net loss of urban green space and tree-canopy cover by 2030 and increase both thereafter;
- re-wet 30 % of drained peatlands and daylight 25 000 km of rivers.

Cities must include these targets in binding municipal plans and report annually to the Commission.

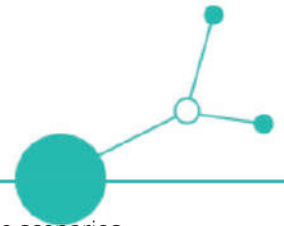
#### 2.4 A ‘New Deal for Pollinators’

The revised EU Pollinators Initiative (January 2023) pairs the NRL with sector measures: phasing-out of the most harmful pesticides in sensitive areas by 2030, a continent-wide network of “pollinator corridors”, and compulsory monitoring for all Member States.

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### 2.5 National and municipal trail-blazers

| Scale                  | Example                                                      | What makes it relevant?                                                                                                                                    |
|------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| National               | England's Biodiversity Net Gain rule (Feb 2024)              | All major developments must demonstrate +10 % biodiversity post-construction, creating a transferable credit market that other EU states are now studying. |
| Regional               | Valencia – European Green Capital 2024                       | 97 % of residents live within 300 m of a green area; the city will test EU Mission tools for climate-neutrality by 2030.                                   |
| City finance           | Paris €300 m Sustainability Bond (2021)                      | Bond proceeds fund a pathway to 40 % territory greening and guarantee that every resident reaches a "cool-island" in <7 minutes on foot by 2030.           |
| Long-running city plan | Barcelona Green Infrastructure & Biodiversity Plan 2013-2020 | Delivered a 55 % rise in ecological connectivity and street trees now sequester ≈19 000 t CO <sub>2</sub> yr <sup>-1</sup> .                               |

### Cities, Climate and Microclimate Pressures

#### 3.1 Europe's fastest-warming continent reality check

The European State of the Climate 2024 confirmed that last year was the warmest on record, with several eastern and south-eastern regions enduring 13-day heatwaves and >60 "strong heat-stress" days. The European Climate Risk Assessment (EUCRA, 2024) lists urban heat stress, flash floods and water scarcity among the five risks already at "critical" levels.

#### 3.2 Quantified health impacts of the Urban Heat Island

A Lancet-linked study of 93 European cities estimated that raising average tree-canopy cover from 11 % to 30 % would have prevented 2 644 premature summer deaths in 2015 —almost 40 % of all heat-attributable mortality that year. The same dataset shows local cooling of up to 5.9 °C in neighbourhoods achieving the 30 % target, providing a robust evidence base for the NRL's urban-canopy clause

#### 3.3 Impervious surfaces, flash floods and water-quality knock-ons

Urban land sealed with asphalt or concrete intercepts only ≈15 % of rainfall; natural soils can absorb 80–90 %. Field work in the Netherlands found that porous paving retained 50–75 % of stormwater even after a decade in service. In contrast, heavily sealed catchments can amplify peak run-off by an order of magnitude, a driver of the flash floods that already threaten 10 % of Europe's urban population and will become nine times

more frequent under mid-century climate scenarios.

#### 3.4 Compound risk: heat-driven storms

Hotter air holds more moisture; the record July 2024 heatwave was followed by cloudbursts that dumped >120 mm in 3 h over parts of Bavaria and Czechia, overwhelming drains designed for 20-year-return periods. The EEA notes that such compound heat-rainfall extremes are one of the 36 EUCRA risks requiring "urgent and decisive" adaptation before 2030.



# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### 3.5 Local adaptation case studies

Copenhagen Cloudburst Plan retrofits 300 ha of “sponge streets” and detention basins, expected to avert €1.7 bn in flood damage by 2070.

Glasgow's East-End Blue-Green Infrastructure diverts surface water into wetlands and canals, enabling 20 % additional green-field housing while cutting flood peaks by up to 35 %.

### 3.6 Co-benefits beyond climate

Greening interventions improve air quality and carbon balance: Barcelona's 161 000 street trees remove ≈305 t of pollutants per year and offset 19 000 t CO<sub>2</sub>. Pollinator-friendly planting along sponge corridors further links climate adaptation with EU goals to reverse insect decline by 2030.

#### Cities, Climate and Microclimate Pressures

### 4.1 Interconnected Green-Blue Networks — practical specs and budgets

•openhagen Cloudburst Plan retrofits 300 ha of “sponge streets” and detention basins, expected to avert €1.7 bn in flood damage by 2070.

Glasgow's East-End Blue-Green Infrastructure diverts surface water into wetlands and canals, enabling 20 % additional green-field housing while cutting flood peaks by up to 35 %.

| Aspect             | Typical figures & notes                                                                                                                                                                                                                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spatial scales     | 1. Pocket parks” retrofit plots as small as 400–2 000 m <sup>2</sup> – ideal for leftover lots or traffic triangles.<br>2. Linear greenways (shared walking/cycling paths with bioswale verges) need ≈ 10 m width in dense blocks but can pinch to 6 m at pinch-points.                                                                       |
| Up-front costs     | 1. Kraków's award-winning pocket-park programme averages ≈ €120 000 per site (design, planting, furniture, first-year care).<br>2. New-build urban greenways benchmark €3.7 million km <sup>-1</sup> for landscaping, path, lighting and drainage; smaller “green corridor” retrofits (Castletroy, IE) have delivered 1.27 km for €2 million. |
| Durability & O / M | Paths and drainage are engineered for a 40-year design life; vegetation is self-renewing with 5- to 7-year pruning cycles. Annual maintenance of soft estate typically runs €2–4 m <sup>2</sup> yr <sup>-1</sup> —well inside most park budgets.                                                                                              |
| Business case      | Cost-benefit studies of UK and Irish urban greenways show social returns (health + active travel) of €2.9–€5.8 per €1 invested.                                                                                                                                                                                                               |

Implementation tip: combine civic-budget micro-parks with longer regional corridors so small nodes quickly plug into a habitat network.

### 4.2 Expanding the Urban Tree Canopy — costs, life-cycle and survival

| Item                 | Typical value                                                                                                                                       |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Median planting cost | €210 per tree, Bare-root or 10–12 cm girth container stock, incl. stake, mulch, initial watering.                                                   |
| Median annual care   | €27 per tree yr <sup>-1</sup> , Water, pruning, pest check; drops to < €15 after year 5 if irrigation rings and gator bags are used.                |
| Survival challenge   | Mean annual street-tree mortality ≈ 4.4 %; only 64 % of cohorts remain after 10 years unless soil volume ≥ 12 m <sup>3</sup> and guards are fitted. |
| Service life         | Population half-life 13–20 years; individual trees can exceed 70 years with structural soils and root corridors.                                    |

#### Practicality notes

Minimum pit: 2 × 2 × 1 m plus load-bearing “Silva-cell” or similar under paving.  
Compaction-tolerant natives (e.g. *Tilia tomentosa*) cut heat-stress risk without high irrigation demand.  
Where budgets are tight, prioritise clusters along pedestrian “heat-hot-spot” streets to maximise shading per euro.

### 4.3 Green Roofs & Living Walls — cost bands, loads and life-spans

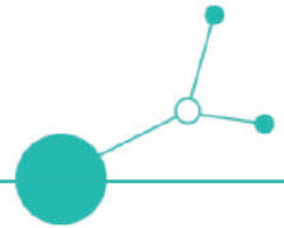
Capex (installed)  
Extensive roof: €110 m<sup>2</sup> mean for shallow sedum build-ups  
Intensive roof: €180–250 m<sup>2</sup> incl. deeper substrate & railing  
Living wall: €400–1 200 m<sup>2</sup> (modular panels; median €550 m<sup>2</sup>)

Extra structural load  
Extensive roof: + 0.7–1.5 kN m<sup>2</sup> (often no retrofit reinforcement)  
Intensive roof: + 3–4 kN m<sup>2</sup> (may need slab upgrade ≈ €123 m<sup>2</sup>)  
Living wall: Negligible on ground-mounted frames; façade systems < 60 kg m<sup>2</sup>

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Annual O / M

Extensive roof: €3–12 m<sup>2</sup> yr<sup>1</sup> (1–2 weeding + drain check)

Intensive roof: €10–18 m<sup>2</sup> yr<sup>1</sup> incl. irrigation check

Living wall: €25 m<sup>2</sup> yr<sup>1</sup> (irrigation, nutrient top-up, dead-plant swap)

Service life

Extensive roof: Waterproofing typically lasts 40–50 years, twice that of a bare roof.

Intensive roof: Same as extensive (membrane protected by substrate).

Living wall: Irrigation hardware 10–15 years; planting modules 20–25 years.

#### 4.4 Sponge-City Surfaces — permeable pavements & rain gardens

Solution: Permeable concrete, blocks or PU binder

Capex: €22–54 m<sup>2</sup> materials; full install ≈ 10–20 % above asphalt

Annual O / M: €0.30–0.47 m<sup>2</sup> yr<sup>-1</sup> (vacuum sweep 2 × yr)

Functional life: 25–30 years (vs 15–20 for asphalt)

Hydrologic performance: Peak-flow cut 60–75 %

Solution: Linear rain gardens / bioswales

Capex: £300–460 m<sup>2</sup> (≈ €350–540) depending on attenuation cells

Annual O / M: Mow or prune 1 × yr + litter clean; usually absorbed into parks budget

Functional life: 50-year design if inlets cleared

Hydrologic performance: Capture 75–80 % of roadway runoff in 1:30 events

#### 4.5 Pollinator Corridors & Flower-Rich Lawns — conversion economics

Metric: Establishment cost

Conventional lawn: n/a (existing)

Flower-rich meadow: €800–3 000 ha<sup>1</sup> (ground prep + seed)

Metric: Annual maintenance

Conventional lawn: €3 500 ha<sup>-1</sup> mowing (Nordic city average)

Flower-rich meadow: –€650 ha<sup>-1</sup> (saving) – once-or-twice-a-year cut & lift

Metric: Pollinator richness

Conventional lawn: Baseline

Flower-rich meadow: × 3 (Cambridge 1.7 ha trial)

#### Roll-out advice:

Start with 10 % of park turf to build public acceptance.

Use locally sourced seed to cut cost and boost resilience.

Pair with “no-spray buffer” policies to comply with the EU Pollinators Initiative.

#### 4.6 Citizen Science & Community Stewardship — low-cost, high leverage

Digital tools: Warsaw’s “Milion Drzew” app lets residents pin preferred planting sites; > 10 500 requests logged in its first 9 months, directing municipal crews without extra survey costs.

Finance hooks: The city’s Green Fund lets SMEs or developers adopt a pocket park or tree-row and cover annual upkeep — a model now spreading to Gdańsk and Łódź.

Budget profile: Typical app build + first-year hosting is < €50 000 — less than planting 250 street trees — yet mobilises thousands of volunteer watering and monitoring hours.

Data dividends: Open APIs feed directly into i-Tree or city climate dashboards, creating an evidence loop for maintenance and policy tweaks.

#### 4.7 Biodiversity Action Playbook for Small & Medium Enterprises (SMEs)

Europe’s 23 million SMEs occupy more than half of the continent’s commercial floor space and control large slices of supply-chain spending; taken together, their footprint rivals that of many city authorities. Yet most guidance on urban nature still speaks to municipalities or global corporations.

The good news is that a growing toolbox now scales down easily to a business park, workshop yard or high-street storefront.

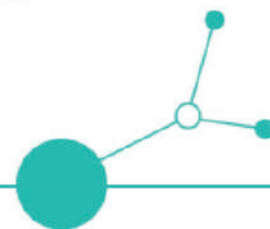
On-site “micro-habitats” that pay for themselves Start with what you own: roofs, car parks, verge strips and staff courtyards. Retrofitting a lightweight extensive green roof can cut summertime roof-surface temperatures by >20 °C and reduce a building’s cooling demand by up to 70 %, while also adding nectar-rich vegetation; Basel’s small-business subsidy scheme (€25–€35 m<sup>2</sup>) helped create the world’s highest per-capita green-roof area and is now cited as an adaptation success story.

Swapping decorative turf for a wildflower strip, leaving 10 % of lawn unmown, or installing bee-nesting boxes are all evidence-based actions from the All-Ireland Pollinator Plan’s Business Guide—each costs under €500 and can be logged on a public GIS portal that showcases corporate progress.

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Frameworks that shrink the paperwork For SMEs wondering “where do we even start?” two freely available standards give a ready-made roadmap:

Science-Based Targets for Nature (SBTN) outline a three-step method—assess, prioritise, disclose—designed explicitly “for companies of all sizes,” with beta validation now open for land and freshwater targets.

The EU’s Corporate Sustainability Reporting Directive will require listed SMEs to report nature impacts from FY 2026 (opt-out until 2028), so early adopters gain a head-start on data gathering and supplier engagement.

Quick-win actions to cut climate risk and operating costs A SustainableX review of SME case studies highlights four high-impact, low-budget steps: plant native wildflowers on unused ground, fit modular green roofs over shipping containers or bike shelters, phase out pesticides and peat in landscaping contracts, and pool resources with neighbouring firms for shared rain-garden maintenance. Each intervention improves storm-water retention and local cooling, directly lowering insurance risk and energy bills.

Influencing the wider value chain Even micro-enterprises punch above their weight by choosing certified raw materials (FSC, PEFC, RSPO), demanding deforestation-free commodities, and embedding pollinator-friendly clauses in catering or cleaning tenders. The EU Pollinators Initiative encourages businesses to champion “buzz lines” that connect factory sites to municipal green corridors, multiplying the ecological value of small plots.

Employee and community engagement Biodiversity actions double as staff-well-being and brand-building tools. Pollinator plans provide downloadable signage, volunteer days can be mapped in the AIPP “Actions for Pollinators” portal, and citizen-science apps like iNaturalist give real-time feedback on which species your site is helping.

Bottom line: by greening their own premises, setting science-based nature targets and nudging suppliers, Europe’s SMEs can convert modest plots into a continent-wide mosaic of cooling, sponge-like habitats—reducing operational costs today and future-proofing against both regulatory and climate shocks tomorrow.

Intervention: 30 % tree canopy  
Mean Air-Temp Reduction:  $-2^{\circ}\text{C}$  city-wide; up to  $-4^{\circ}\text{C}$  locally  
CO<sub>2</sub> Sequestration:  $0.5\text{ t C ha}^{-1}\text{ yr}^{-1}$   
Run-off Reduction: + intercepts 60 % rainfall under crowns  
Biodiversity Index: avian richness +20 %

Intervention: Extensive green roof  
Mean Air-Temp Reduction:  $-0.8^{\circ}\text{C}$  on roof; lowers UHI by  $-0.3^{\circ}\text{C}$   
CO<sub>2</sub> Sequestration:  $0.15\text{ t C ha}^{-1}\text{ yr}^{-1}$   
Run-off Reduction: Retains 50–80 % rainfall  
Biodiversity Index: Bee visits  $\times 5$

Intervention: Permeable pavement  
Mean Air-Temp Reduction: Negligible direct cooling  
CO<sub>2</sub> Sequestration: n/a  
Run-off Reduction: Peak flow 60–75 %  
Biodiversity Index: Improved soil fauna

Intervention: Flower meadow strip  
Mean Air-Temp Reduction: Local evapotranspiration  
CO<sub>2</sub> Sequestration:  $0.05\text{ t C ha}^{-1}\text{ yr}^{-1}$   
Run-off Reduction: Minor  
Biodiversity Index: Pollinator richness  $\times 3$

### Governance, Economics and Social Justice

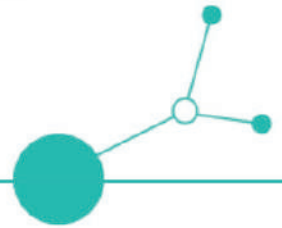
Nature-based solutions (NBS) deliver multiple co-benefits, yet up-front costs can deter cash-strapped municipalities. The European Commission’s NBS policy platform provides technical guidance and opens access to LIFE and Horizon Europe funds for pilot projects. Innovative financing—green bonds issued by cities such as Paris or Warsaw—blends public and private capital for large-scale park restorations. Crucially, equitable distribution matters: the poorest urban districts often show the lowest canopy cover and highest heat mortality. Embedding environmental justice criteria in Urban Greening Plans can ensure that the benefits of biodiversity reach every postcode.



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### Implementation Checklist for City Planners

1. Baseline Mapping: Combine LiDAR canopy scans, eBird, iNaturalist and local flood models to pinpoint priority zones for cooling and habitat connectivity.
2. Quick Wins (1 – 2 years): Reduce mowing schedules, convert vacant plots to pocket meadows, pilot permeable parking bays, revise tree procurement lists toward native, climate-resilient species.
3. Mid-Term Actions (3 – 5 years): Mandate green roofs on new public buildings, retrofit schoolyards with rain gardens, draft a pollinator corridor masterplan.
4. Long-Term Strategy (to 2030): Align with Nature Restoration Law targets, secure budget lines for canopy maintenance, integrate biodiversity indicators into city climate dashboards, and set binding minimum green-space per capita thresholds.

### Outlook: Toward Regenerative Cities

Cities concentrate the very drivers of biodiversity loss—land sealing, pollution, heat—but also the ingenuity to reverse them. The Nature Restoration Law provides the legal floor; citizen energy and creative design can raise the ceiling. By treating every curb, courtyard and roof as habitat, European municipalities can cool their streets, buffer floods and give pollinators room to thrive—turning urban landscapes from biodiversity sinks into climate-smart, living ecosystems.

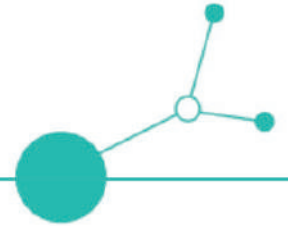
If the next decade sees widespread adoption of the practices outlined here, the urban future may look less like a concrete expanse and more like a mosaic of micro-forests, sponge streets and rooftop meadows—places where people and nature flourish together.



# TRAINING MATERIAL

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### Introduction to ESG: Sustainable business for the future

#### Understanding ESG frameworks, compliance, and strategic integration

#### Training Objectives

Participants will learn to:

1. Understand the history, pillars, and principles of ESG.
2. Develop and implement an ESG strategy.
3. Navigate international and EU ESG reporting frameworks
4. Assess material ESG issues and perform stakeholder mapping.
5. Understand the importance of ESG ratings and how to improve them.

Skills and knowledge gained:

1. ESG risk and opportunity assessment.
2. Familiarity with standards (CSRD, ESRS, SDGs, GRI, CDP, TCFD, ISSB).
3. Strategic alignment of sustainability goals with business models.
4. ESG reporting and due diligence compliance.

Expected outcomes:

1. Preparedness for CSRD and ESRS requirements
2. Integration of ESG into business strategy
3. Clear roadmap for ESG reporting and rating improvement

#### Agenda / Schedule

|               |                                                                  |
|---------------|------------------------------------------------------------------|
| 09:00 – 09:15 | Welcome & Introduction                                           |
| 09:15 – 10:30 | Theoretical Module: ESG Principles & Business Models             |
| 10:30 – 11:15 | ESG Strategy Development & Stakeholder Engagement                |
| 11:15 – 12:00 | Practical Exercises: Materiality Assessment & ESG Score Analysis |
| 12:00 – 12:30 | Discussion & Q&A                                                 |
| 12:30 – 13:00 | Summary & Wrap-up                                                |

#### Introduction

Context of the topic:

ESG (Environmental, Social, Governance) represents a structured approach to sustainable business, built on responsible environmental practices, social impact, and transparent governance.

Why is it important now?

With the CSRD coming into force in 2024 and extending to SMEs in 2027, ESG reporting is no longer optional. Businesses must understand ESG principles to remain competitive, compliant, and resilient.

Trends and Challenges:

1. Mandatory ESG disclosures (CSRD, ESRS)
2. Investor and market demand for transparency
3. Regulatory and reputational risk management
4. Need for responsible supply chain and stakeholder engagement

#### Theoretical Content (Modules)

##### Module 1 – ESG Principles and Historical Context

Introduction: From CSR to ESG – a shift towards measurable sustainability

Key Concepts: 3 ESG pillars; Sustainable Business Model (People, Planet, Profit)

Best Practices: Alignment with ISO standards (14001, 45001, 26000)

Quiz Questions:

1. What are the key differences between CSR and ESG?
2. Which ESG pillar addresses energy efficiency?

##### Module 2 – Strategic ESG Planning and Materiality

Introduction: Why and how to develop an ESG strategy

Key Concepts: Stakeholder mapping, materiality matrix, implementation planning

Examples: Case of ESG strategy implementation steps (from management support to data collection and reporting)

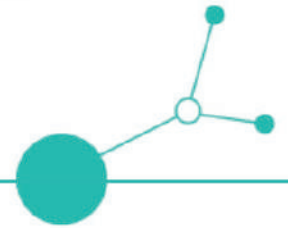
Reflection:

Which ESG issues are most material for your industry?

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### Summary

#### Module 3 – ESG Frameworks and EU Regulatory Landscape

Introduction: Navigating ESG frameworks and standards

Key Concepts:

1. Global: UN SDGs, GRI, CDP, TCFD, ISSB
2. EU: CSRD, ESRS, EU Taxonomy, CSDDD

Best Practices: Companies listed on CDP A-list, ESG disclosures using ESRS

Mini Quiz:

1. Which ESG reporting frameworks are mandatory under CSRD?
3. What is the concept of double materiality?

#### Module 4 – ESG Ratings and Due Diligence

Introduction: ESG scores as tools for trust and performance monitoring

Key Concepts: Rating providers (CDP, Sustainalytics, MSCI, ISS, S&P)

Examples: ESG scoring methodologies and their impact on investor interest

Discussion Prompt: How can SMEs improve their ESG rating?

#### Exercises and Activities

Case Study: ESG strategy development for a Croatian SME

Group Work:

1. Identify key stakeholders and ESG risks
2. Facilitated Discussion: ESG compliance roadmap (2024–2027)

Worksheets: ESG Self-Assessment

#### Tools & Resources

Official Documents:

1. CSRD Directive Summary – EU Parliament
2. EU Green Deal Roadmap
3. ESRS Overview – EFRAG
4. Templates & Checklists:
5. ESG Risk & Opportunity Assessment
6. Reporting Structure in Line with ESRS

Additional Resources: HGK ESG Rating methodology

Key Takeaways:

1. ESG is both a compliance requirement and a strategic opportunity.
2. Integration of ESG principles enhances long-term business resilience and competitiveness.
3. Understanding and applying EU regulatory requirements is essential for all market actors.
4. ESG reporting is transitioning from narrative to structured, auditable disclosures.

What's Next:

1. Distribution of digital training materials
2. Optional one-on-one ESG readiness consultation
3. Follow-up the project CREDIT4CE 9. Training Evaluation

Feedback Collection:

1. Clarity and relevance of content
2. Usefulness of practical tools and exercises
3. Suggestions for future topics

Engagement Questions:

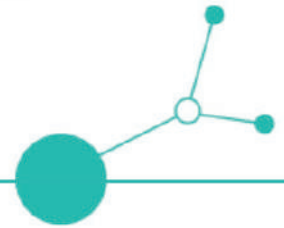
1. What was the most valuable insight you gained?
2. What ESG action can your company start today?



# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Energy Management in small and medium-sized Enterprises (SMEs)

#### Empowering Businesses to Lead the Green Transition

##### Training Objectives

This training aims to empower SME stakeholders to integrate energy management as a core strategic and operational practice, improving resource efficiency, reducing costs, and contributing to EU climate objectives.

Upon completion, participants will be able to:

1. Understand core concepts and strategic relevance of energy efficiency in SMEs.
2. Identify technical and organizational energy-saving opportunities.
3. Implement behavioral and structural interventions in energy use.
4. Establish a foundation for ISO 50001-aligned Energy Management Systems.
5. Engage employees and stakeholders in fostering a culture of sustainability.
6. Translate EU energy policy into practical measures at the company level.

##### Agenda / Training Schedule

|               |                                                 |
|---------------|-------------------------------------------------|
| 09:00-09:15   | Welcome & Introduction                          |
| 09:15-10:15   | Module 1: Energy Efficiency Principles          |
| 10:15-11:15   | Module 2: Energy Management Systems             |
| 11:15-11:30   | Coffee Break                                    |
| 11:30 – 12:30 | Module 3: Technical Measures in SMEs            |
| 12:30-13:30   | Lunch Break                                     |
| 13:30-14:15   | Module 4: Behavioral and Operational Strategies |
| 14:15 – 15:00 | Case Study Analysis                             |
| 15:00 – 15:30 | Interactive Group Work                          |
| 15:30 – 16:00 | Wrap-Up & Q&A                                   |

##### Strategic Context

Energy efficiency is central to the EU Green Deal and Fit for 55 Package. SMEs, though individually small-scale, collectively account for a large share of the EU's energy use and carbon emissions. Their participation is vital to a successful and inclusive green transition.

Why SMEs?

1. Represent 99% of all businesses in the EU.
2. Often lack capacity and resources for structured energy management.

3. Hold enormous untapped potential for low-cost energy savings.

##### Current Challenges

1. Rising operational costs due to energy prices.
2. Insufficient knowledge and incentives for SMEs to act.
3. Gaps between environmental policy ambition and SME practice.

##### Theoretical Content (Modules)

##### Module 1: Fundamentals of Energy Efficiency

1. Definition and importance
2. Key benefits: cost reduction, CO<sub>2</sub> mitigation, competitiveness
3. EU and national energy efficiency targets

##### Module 2: Energy Management Systems (EnMS)

1. Structure and function of ISO 50001
2. Roles and responsibilities (management, employees)
3. Developing an energy policy and action plan

##### Module 3: Technical Optimization in SMEs

1. Efficient electric motors, HVAC, pumps, lighting
2. Use of waste heat recovery, insulation, solar thermal systems
3. Digital tools: smart meters and energy monitoring

##### Module 4: Behavioral and Organizational Approaches

1. Green Office concepts and daily practices
2. Employee motivation and awareness
3. Case: energy savings from non-investment behavioral changes

##### Exercises and Activities

Scenario Workshop: Participants develop a tailored Energy Action Plan for their company.

Behavioral Mapping: Identifying everyday actions that impact energy consumption.

##### Tools & Resources

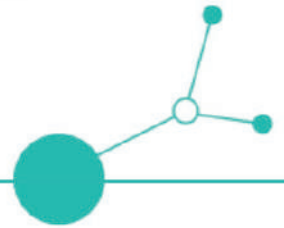
##### Technical and Strategic Tools

1. RETScreen software (energy modeling and analysis)
2. ISO 50001 implementation roadmap
3. SME EnMS Self-Assessment Toolkit

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Key Policy Resources

1. EU Green Deal
2. Energy Efficiency Directive (EED)
3. National Energy and Climate Plans (NECPs)

### Summary and Next Steps

#### Key Takeaways

1. SMEs have the potential to drive real change in energy consumption and emissions reduction.
2. Energy management is not just a technical challenge — it requires leadership and culture change.
3. Even low-cost and no-cost measures can lead to measurable improvements.

#### Next Steps

Participants are encouraged to:

1. Initiate an energy audit or review in their organization.
2. Engage with local/national programs or funding schemes for SME energy efficiency.

#### Follow-Up

1. Access to full training materials
2. One-on-one consultation sessions available for project development support
3. Follow up the project CREDIT4CE

### Training Evaluation

Participants will complete a post-training evaluation form addressing:

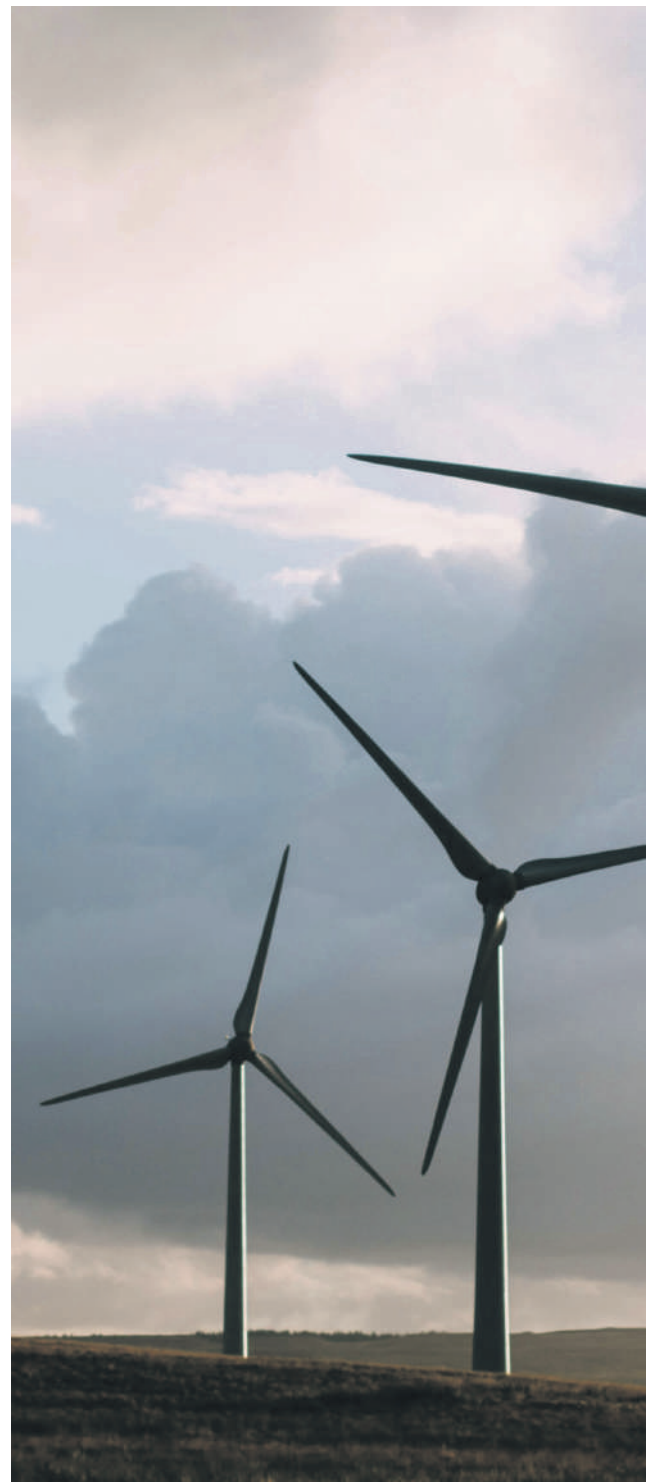
1. Clarity and relevance of content
2. Confidence in applying learned skills
3. Suggestions for improvement
4. Plans for applying concepts in their own SMEs

### Templates and Checklists

1. Energy Policy Template (aligned with ISO 50001)
2. Employee Engagement Plan
3. Green Office Checklist

### Key Policy Resources

1. EU Green Deal
2. Energy Efficiency Directive (EED)
3. National Energy and Climate Plans (NECPs)



# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Corporate Carbon Footprint & Environmental Certifications

#### Understanding and using Carbon Footprint tools to improve Corporate Sustainability

Participants will gain a clear understanding of what the Corporate Carbon Footprint (CCF) is, why it matters, and how it can be used as a strategic tool to improve environmental performance and demonstrate commitment to sustainability. The session will also provide an overview of the main environmental certification schemes that include or require carbon footprint assessments.

1. Which ESG reporting frameworks are mandatory under CSRD?
2. What is the concept of double materiality?

What skills or knowledge will they gain?

1. Basic knowledge of Carbon Footprint concepts and terminology
2. Awareness of the main standards and methodologies used to calculate the CCF (e.g., GHG Protocol, ISO 14064)
3. Understanding of the role of Carbon Footprint in corporate sustainability strategies and reporting
4. Insight into how CCF results can support decision-making, stakeholder communication, and access to environmental certifications (e.g., ISO 14001, EMAS, PEF/OEF)

What outcomes are expected after the session?

After the webinar, participants will be able to:

1. Recognize the relevance of the Corporate Carbon Footprint for their business
2. Identify the main steps and data requirements involved in a carbon footprint assessment
3. Evaluate how environmental certifications and carbon accounting can support regulatory compliance, brand reputation, and market competitiveness

tion, and market competitiveness

4. Take the first steps toward integrating Carbon Footprint analysis into their corporate sustainability roadmap

#### Agenda / Schedule

1. Welcome and Opening Remarks – 5 minutes Framing the session and its objectives Introduction to the training, speaker, and structure of the webinar.
2. The Strategic Relevance of Carbon Footprint – 15 minutes Business drivers, regulatory trends, and market expectations Understanding why carbon accounting is becoming central to corporate sustainability.
3. Corporate Carbon Footprint – 25 minutes Methodologies, key principles, and practical implementation Overview of CCF calculation methods, scope definitions, and strategic applications.
4. ESG Systems and Corporate Environmental Certifications – 25 minutes Frameworks, standards, and compliance pathways Analysis of ESG integration, voluntary and mandatory schemes, and their relation to carbon metrics.
5. Product Carbon Footprint – 20 minutes Life Cycle Assessment and product-level sustainability Introduction to PCF methodologies, with a focus on ISO and PEF standards and sectoral examples.
6. Interactive Q&A Session – 15 minutes Clarifying key concepts and addressing participant questions An open discussion to explore practical concerns and deepen understanding.
7. Closing Remarks and Key Takeaways – 10 minutes Summary, resources, and next steps Final considerations, access to follow-up materials, and guidance for implementation.

#### Introduction

1. Context of the topic
2. Why is it important now?
3. Market trends, challenges, needs

#### Theoretical Content (Modules)

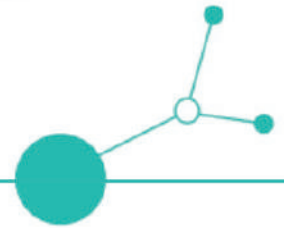
##### Module 1 – Corporate Carbon Footprint

1. Introduction
2. Key Concepts
3. Examples / Best Practices

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Module 2 - ESG Systems and Corporate Environmental Certifications

1. Introduction
2. Key Concepts
3. Examples / Best Practices

### Module 3 – Product Carbon Footprint

1. Introduction
2. Key Concepts
3. Examples / Best Practices

#### Exercises and Activities

This webinar does not include hands-on exercises or group work. However, both the Corporate Carbon Footprint and Product Carbon Footprint modules will feature real-world case study explanations to contextualize the concepts and illustrate their practical application.

Participants will also have the opportunity to engage in a facilitated Q&A session to clarify doubts and deepen their understanding of the topics covered.

#### Tools & Resources

We will provide participants with the following resources to support their understanding and further exploration of the topics covered during the webinar:

1. Useful Links: A selection of external websites and resources for additional reading, including carbon footprint calculators, relevant standards (e.g., GHG Protocol, ISO 14064), and sustainability guidelines.
2. Policy or Report Excerpts: Selected excerpts from policies, reports, or case studies that illustrate the application of Carbon Footprint methodologies and environmental certifications in practice.

While the presentation slides will not be shared, these materials will help participants access useful information, which they can explore further through the provided links and policy excerpts.

#### Summary

At the end of the webinar, participants will receive a summary of the key takeaways, which will be outlined in a detailed e-book. This resource will synthesize and highlight the key points shared during the session, offering valuable insights for future reference.

#### Key Takeaways

The e-Book will provide a concise overview of the most important concepts and strategies discussed during the webinar, helping participants to better apply the knowledge gained.

#### Participant Questions

A dedicated Q&A session will be held during the webinar, where participants can ask questions and engage with the speaker to clarify doubts and deepen their understanding.

#### What's Next?

After the session, participants will be able to access the e-Book, along with follow-up materials. Additional resources, such as certificates of participation and contact information for further inquiries, will also be provided.

This approach ensures that participants have all the necessary tools and support to implement the insights gained from the webinar effectively. Please note that the presentation slides will not be shared with participants.

#### Training Evaluation

To ensure continuous improvement and provide valuable insights for future sessions, we will ask participants to complete a quick feedback form at the end of the webinar. This will allow us to gather feedback on their experience and the content shared.

What did they remember?: The feedback form will include questions to assess which key takeaways participants found most memorable and impactful.

Suggestions for Improvement: Participants will have the opportunity to share their thoughts on how the webinar could be improved, including suggestions for content, delivery, and interactivity.

This feedback will be invaluable in refining future sessions and ensuring they meet the needs and expectations of all participants.

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Energy Audit for Small and Medium-Sized Enterprises (SMEs)

#### Reducing Energy Consumption and Improving Energy Efficiency

The Slovak Innovation and Energy Agency (SIEA) within the CREDIT4CE project, which focuses on promoting sustainability, reducing the carbon footprint, and improving environmental and energy standards in businesses.

#### Training Objectives

1. Understand what an energy audit is, how it works, and what outputs to expect
2. Learn how to identify energy-saving opportunities within your business
3. Know how to prepare input documents and requirements for the auditor and interpret audit results
4. Get familiar with practical examples and technologies
5. Increase readiness for legislation and funding tools related to energy

#### Program / Agenda

|               |                                                                            |
|---------------|----------------------------------------------------------------------------|
| 09:00 – 09:15 | Welcome and training introduction                                          |
| 09:15 – 10:00 | Theoretical Module: Basics of Energy Audits                                |
| 10:00 – 10:45 | Practical Aspects – What to include in contracts, how to choose an auditor |
| 11:00 – 12:00 | Case Study: Demonstration of an SME audit                                  |
| 13:00 – 14:00 | Technologies: Measurement tools, usage demonstration                       |
| 14:00 – 14:30 | Discussion and Q&A                                                         |
| 14:30 – 15:00 | Summary and Feedback                                                       |

#### Introduction

1. Context  
Energy audits are a key tool for reducing energy costs, identifying waste, and improving a company's environmental profile.

#### 2. Why now?

With rising energy prices and growing pressure on environmental standards (ESG, carbon footprint), an audit is an important step toward long-term sustainability and competitive advantage.

#### 3. Trends and Needs:

1. Increasing energy prices
2. Green Deal and support for sustainable measures
3. Subsidy schemes supporting energy efficiency

#### Training Objectives

##### Module 1 – Basics of Energy Auditing

1. Introduction: What is an energy audit
2. Key Terms: Primary energy, energy intensity, efficiency
3. Examples: Lighting, heating, hot water preparation, compressed air
4. Mini quiz: What must be included in an audit report?

##### Module 2 – Legislative Framework

1. Laws and obligations related to energy audits
2. Who is required to conduct audits and to what extent?

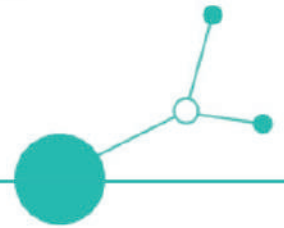
##### Module 3 – Practical Issues from Experience

1. What should be included in the contract before the audit?  
Agree on the scope of the audit, consultations, and site inspections.
2. When to order the audit?  
Depends on the technology used
3. How to choose an auditor?  
References and successful projects are more important than just price. Beware of low-cost offers that may lead to additional fees for consultations after delivery.
4. Technical equipment  
Demonstration of a thermal imaging camera and U-value measuring device.
5. Sample audit of a small business – step-by-step walkthrough  
A practical example showing the full audit process from initial assessment to final report.

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Exercises and Activities

1. Case Study: Real SME with identified energy-saving measures
2. Simulation: Selecting an auditor based on offers
3. Creating a custom brief for your business audit
4. Group Discussion: What measures are applicable to your business?

### Tools and Resources

1. Audit brief template
2. Sample audit reports
3. List of certified energy auditors ([link](#))
4. Guides: Energy Management in SME Practice, ESG and Energy
5. SIEA information portal, CREDIT4CE project link

### Summary

1. Why audits are beneficial for small businesses
2. When and how to conduct an audit effectively
3. How to communicate with the audit contractor
4. How to connect audit results with real energy savings

### Training Evaluation

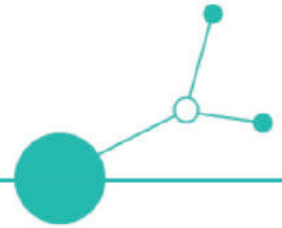
1. Feedback questionnaire
2. What participants remembered, what was most useful
3. Certificate of completion
4. Contact for follow-up or consultation



# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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**A hands-on session to help early-stage companies understand funding options and requirements for climate-related projects.**

### Training Objectives

1. Learn about available EU funds for decarbonisation and sustainability.
2. Understand eligibility, evaluation criteria, and application processes.
3. Map your startup's readiness for applying.
4. Draft the first steps of a funding strategy.

### Agenda / Schedule

Welcome & Introduction – 10 min  
Theoretical Module – 45 min  
Group Activity – 30 min  
Q&A and Open Discussion – 15 min  
Summary & Wrap-up – 5 min

### Introduction

Climate-focused funding is growing rapidly across the EU, but many startups miss out due to a lack of information, preparation, or alignment with programme goals. This training helps startups understand where and how to look for decarbonisation-related funding, and how to assess their own readiness to apply.

### Theoretical Content (Modules)

#### Module 1 – Overview of Funding Opportunities

Horizon Europe, LIFE Programme, European Innovation Council (EIC), Innovation Fund, national and regional calls. These programmes offer a wide array of funding instruments for green innovation, from early-stage research to scale-up.

Types of support: grants, blended finance, accelerator schemes

Startups can apply for grants, equity support, and accelerator programs, depending on their stage and scope. What funders look for: impact, innovation, scalability. Successful applications highlight measurable decarbonisation impact, novel solutions, and growth potential.

#### Module 2 – Preparing to Apply

1. Eligibility criteria: legal form, TRL, environmental alignment. Understand if your startup qualifies in terms of structure, maturity level, and green alignment.
2. Typical documents required (pitch deck, budget, work plan). Preparation includes clear and realistic project documentation tailored to funder priorities.
3. Common pitfalls and how to avoid them. Avoid unclear goals, poor budgeting, or failure to prove impact with specific KPIs.
4. Self-assessment checklist. Use a structured checklist to evaluate your current readiness and gaps.

### Exercises and Activities

1. Matching exercise: Which fund fits which startup?
2. Startup readiness checklist (fill-in form)
3. Peer feedback on funding idea pitches
4. Q&A and Open Discussion (15 minutes)

### Tools & Resources

1. EU Funding & Tenders Portal (link)
2. Sample pitch deck for green projects
3. Checklist for SME funding readiness (PDF)

### Summary

1. Key takeaway: Green funding is competitive, but accessible with the right preparation
2. Focus on aligning with decarbonisation impact and clear project planning
3. Funding applications are also learning tools for strategy refinement

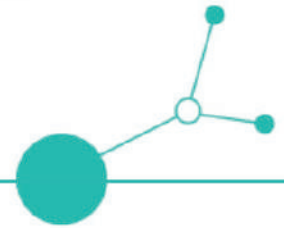
### Training Evaluation

1. Which funding call seemed most relevant to you?
2. What was the biggest barrier to applying so far?
3. Do you feel more prepared to explore funding options after this session?

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Carbon Footprint Basics for Startups: Measuring Emissions and Taking Action

A practical guide for early-stage innovators, startups and SMEs on understanding and calculating carbon emissions.

#### Training Objectives

1. Understand what a carbon footprint is and why it matters for startups.
2. Learn how to categorize and measure emissions (Scope 1, 2, and 3).
3. Get familiar with simple tools (CREDIT4CE Carbon Calculator) tailored for SMEs.
4. Identify the next steps and strategies to reduce emissions.

#### Program / Agenda

Welcome & Introduction – 10 min  
Theoretical Module – 30 min  
Practical Exercise / Case Study – 30 min  
Discussion / Q&A – 15 min  
Summary & Wrap-up – 10 min

Total duration: 95 minutes

#### Introduction

Startups today operate in a rapidly shifting climate-conscious landscape. As customers, investors, and regulators increasingly expect transparency and sustainability, measuring and managing carbon emissions has become essential — even at an early stage. This training provides startups with a clear, practical introduction to understanding their carbon footprint, without the need for technical expertise or large budgets.

#### Theoretical Content (Modules)

##### Module 1 – Understanding Carbon Footprints Fundamentals

1. Introduction: Why it matters for startups  
Understanding carbon emissions can improve business efficiency, customer trust, and funding access.
2. Key Concepts:

What is a Carbon Footprint?

A carbon footprint represents the total amount of greenhouse gases expressed in CO<sub>2</sub> equivalents (CO<sub>2</sub>e) that an organization emits through its activities. This concept is based on life cycle analysis (LCA), which enables a holistic approach to measuring climate impact.

CO<sub>2</sub> Equivalent (CO<sub>2</sub>e):

A standard unit to compare the global warming potential of different greenhouse gases.

Scopes of Emissions:

Scope 1: Direct emissions (e.g., fuel combustion on site)

Scope 2: Indirect emissions from purchased electricity, heating, or cooling

Scope 3: All other indirect emissions (e.g., supply chain, travel, waste)

3. Examples: Tech startup vs. manufacturing startup

Tech startups have higher Scope 3 (e.g., cloud usage); manufacturers face more Scope 1 and 2 emissions.

4. Reflection: What emissions does your startup create?

Encourages participants to identify and reflect on their specific emission sources.

##### Module 2 – Simple Measurement Tools for Startups

1. Introduction: Intro to the CREDIT4CE Carbon Calculator (and similar tools)

CREDIT4CE tool exists to help SMEs measure emissions based on inputs like energy, travel, procurement...

2. Data needed: energy bills, travel, procurement...

Emphasize easy-to-gather data sources startups likely already track.

3. Best Practices: Keeping it simple but consistent

Start small, track the same categories monthly or quarterly.

4. Mini Quiz: Match activities with Scope 1/2/3

Interactive activity to reinforce understanding of scope classifications.

#### Exercises and Activities

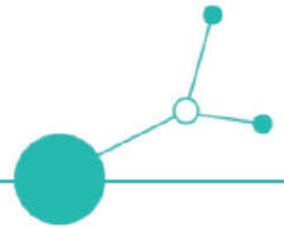
Case study: Calculating emissions for a (fictional) startup

Worksheet: Your startup's emission sources

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Facilitated Discussion Topics

Implementation Challenges:

„What’s the biggest barrier to starting carbon measurement in your company?“

„How do you balance accuracy with resource constraints?“

Tool Selection and Resources:

Comparison of available measurement platforms

Free vs. paid tool recommendations

Integration with existing business systems

Regulatory and Investment Landscape:

EU Corporate Sustainability Reporting Directive (CSRD) implications

Investor expectations and ESG due diligence preparation

Science-Based Targets initiative for startups

### Tools & Resources

CREDIT4CE Carbon Calculator

Carbon footprint calculator manual

### Summary

Key takeaway: You can’t reduce what you don’t measure

„Measure to Manage” Paradigm: Precise carbon footprint measurement is a strategic tool for identifying operational efficiencies and cost reduction opportunities, not just compliance.

Most startups can begin with basic estimates

Competitive Advantage: Early adopters of sustainability practices create lasting competitive advantages through brand differentiation, talent attraction, and investor appeal.

Carbon reporting builds credibility and prepares you for funding rounds

Implementation Strategy: Start with Scope 1 and 2 measurement using available tools, then gradually expand to Scope 3 as organizational capability grows.

### Training Evaluation

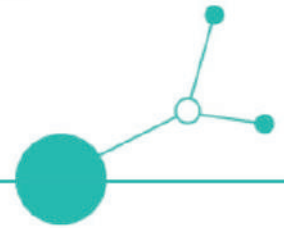
1. What did you find most useful?
2. On a scale of 1–5, how confident are you in starting measurement?
3. What would help you take the next step?



# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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### Getting Ready for Green Funding: Preparing Startups for EU Decarbonisation Finance

A hands-on session to help early-stage companies understand funding options and requirements for climate-related projects.

#### Training Objectives

1. Learn about available EU funds for decarbonisation and sustainability.
2. Understand eligibility, evaluation criteria, and application processes.
3. Map your startup's readiness for applying.
4. Draft the first steps of a funding strategy.

#### Program / Agenda

Welcome & Introduction – 10 min  
Theoretical Module – 45 min  
Group Activity – 30 min  
Q&A and Open Discussion – 15 min  
Summary & Wrap-up – 5 min

#### Introduction

Climate-focused funding is growing rapidly across the EU, but many startups miss out due to a lack of information, preparation, or alignment with programme goals. This training helps startups understand where and how to look for decarbonisation-related funding, and how to assess their own readiness to apply.

#### Theoretical Content (Modules)

##### Module 1 – Overview of Funding Opportunities

Horizon Europe, LIFE Programme, European Innovation Council (EIC), Innovation Fund, national and regional calls. These programmes offer a wide array of funding instruments for green innovation, from early-stage research to scale-up.

Types of support: grants, blended finance, accelerator schemes. Startups can apply for grants, equity support, and accelerator programs, depending on their stage and scope.

What funders look for: impact, innovation, scalability. Successful applications highlight measurable decarbonisation impact, novel solutions, and growth potential.

##### Module 2 – Preparing to Apply

Eligibility criteria: legal form, TRL, environmental alignment. Understand if your startup qualifies in terms of structure, maturity level, and green alignment.

Typical documents required (pitch deck, budget, work plan). Preparation includes clear and realistic project documentation tailored to funder priorities.

Common pitfalls and how to avoid them. Avoid unclear goals, poor budgeting, or failure to prove impact with specific KPIs.

Self-assessment checklist. Use a structured checklist to evaluate your current readiness and gaps.

#### Exercises and Activities

Matching exercise: Which fund fits which startup?  
Startup readiness checklist (fill-in form)  
Peer feedback on funding idea pitches

Q&A and Open Discussion (15 minutes)

#### Tools & Resources

EU Funding & Tenders Portal (link)  
Sample pitch deck for green projects  
Checklist for SME funding readiness (PDF)

#### Summary

Key takeaway: Green funding is competitive, but accessible with the right preparation. Focus on aligning with decarbonisation impact and clear project planning. Funding applications are also learning tools for strategy refinement.

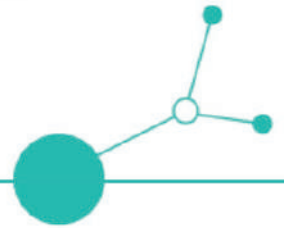
#### Training Evaluation

1. Which funding call seemed most relevant to you?
2. What was the biggest barrier to applying so far?
3. Do you feel more prepared to explore funding options after this session?

# TRAINING MATERIAL

## GOOD PRACTICES OF SMES IN DECARBONIZATION

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Politechnika  
Wroclawska

### **Product-as-a-Service and Decarbonisation: New Pathways for Circular Product Management**

#### **Training Objectives**

What will the participants learn?

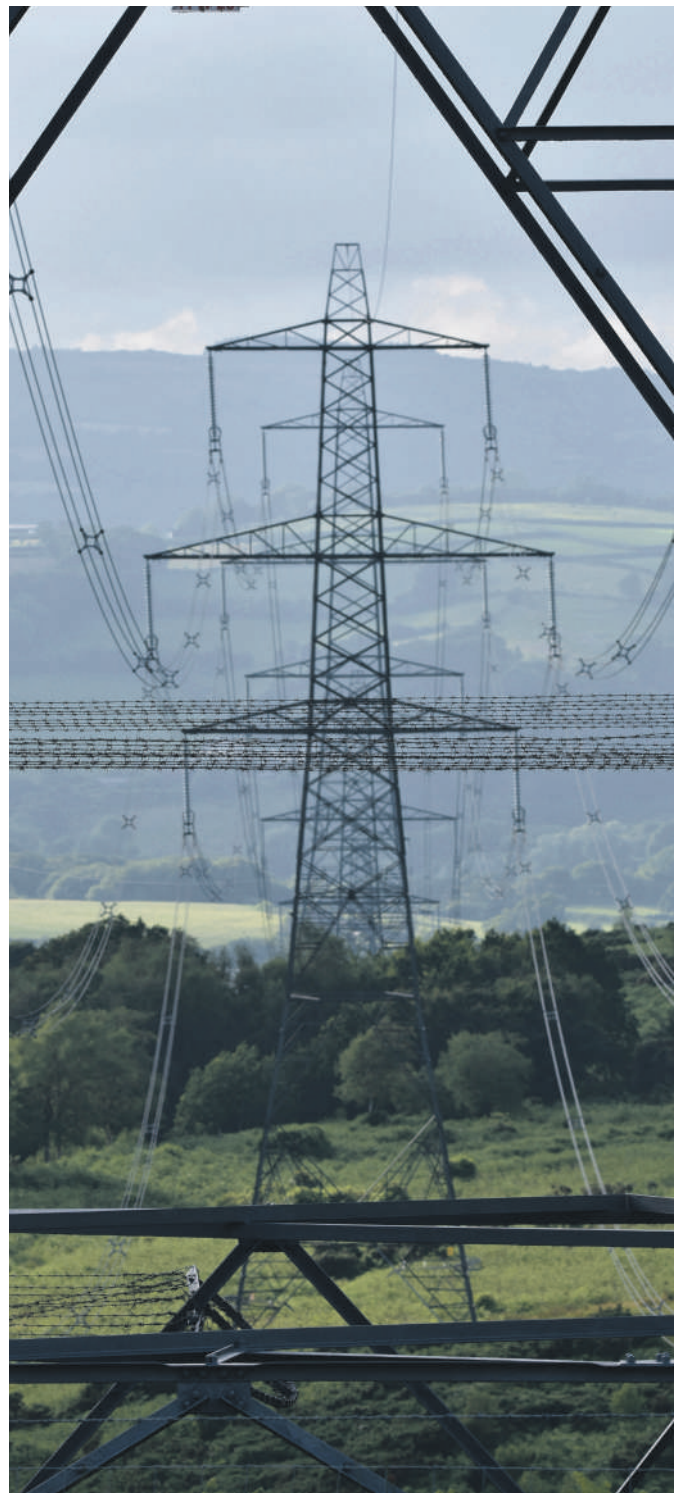
1. Understand fundamentals of Product-as-a-Service (PaaS) business model
2. Learn how PaaS can support decarbonisation
3. Learn the characteristics of R-strategies which are suitable for PaaS
4. Understand product management in circular economy in the framework of PaaS

What skills or knowledge will they gain?

1. Apply circularity matrix for products in the context of PaaS
2. Assess the suitability of the product for R-strategies
3. Apply the circular canvas business model for PaaS

What outcomes are expected after the session?

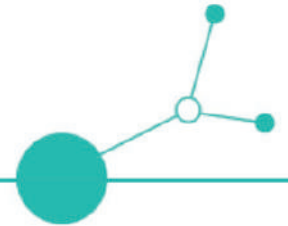
1. Have an awareness and knowledge of PaaS and its role in decarbonisation
2. Have the basic skills to develop a Circular Business Canvas for PaaS
3. Have the basic skills to select suitable R strategy for a product



# TRAINING MATERIAL

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### Introduction

# G-FORCE.

## HELPING THE PLANET

### De-risking Innovation for Decarbonisation

**Public Funding and Innovation Management Approaches  
for Manufacturing SMEs driving positive climate impact**

Delivery Method: Interactive Workshop

#### Training Objectives

What will participants learn?

1. How to identify and access public funding opportunities for decarbonisation projects
2. Innovation management principles tailored to high-risk climate-tech and manufacturing innovation
3. Strategies to de-risk the development and deployment of innovative decarbonisation solutions

What skills or knowledge will they gain?

1. Understanding of EU-level funding mechanisms (e.g., Horizon Europe, Innovation Fund, LIFE)
2. Practical tools for managing innovation risk
3. Ability to align innovation projects with funders' priorities

What outcomes are expected after the session?

1. Increased confidence in applying for public funding
2. Improved innovation planning and risk mitigation
3. Clear next steps for SMEs to integrate decarbonisation innovation into business strategy

#### Agenda / Schedule

Welcome & Introduction (10 min)  
Theoretical Module (30 min)  
Practical Exercises / Case Study (30 min)  
Discussion / Q&A (15 min)  
Summary & Wrap-up (5 min)

#### 1. Context of the topic

The path to net-zero in the manufacturing sector requires bold, innovative solutions—but these often come with high risk and uncertain ROI. Public funding can help de-risk these investments, but SMEs need support to navigate and manage this process effectively.

#### 2. Why is it important now?

With tightening emissions regulations and evolving supply chain expectations, SMEs that fail to innovate may fall behind. Decarbonisation is both a compliance necessity and a competitive advantage.

#### 3. Market trends, challenges, needs:

Rising interest in deep-tech and climate innovation  
Limited internal R&D capacity among SMEs  
High need for accessible, strategic support for funding and risk mitigation

### Theoretical Content (Modules)

#### Module 1 – Accessing Public Funding for Climate Innovation

1. Introduction: Why public funding is essential for SME decarbonisation
2. Key Concepts: TRLs, funding readiness, funding vs. financing, non-dilutive capital
3. Examples / Best Practices: Success cases from Central European SMEs
4. Mini quiz / Reflection questions: "Which EU programme best fits your project?"

#### Module 2 – Innovation Risk Management for Climate Solutions

1. Introduction: Types of risk in climate-tech innovation
2. Key Concepts: Innovation funnel, stage gates, piloting and scaling strategies
3. Examples / Best Practices: Innovation management frameworks used by startups and corporates
4. Mini quiz / Reflection questions: "What is your highest innovation risk—and how can it be mitigated?"

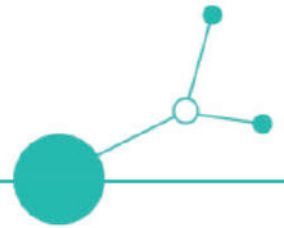
### Exercises and Activities

1. Case study analysis:  
Review a successful EU-funded manufacturing decarbonisation project

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2. Group or pair work:  
Draft a one-page innovation plan aligned with a funding programme

3. Facilitated discussion:  
“What are your biggest hurdles in innovation?”

4. Worksheets / Forms to complete:  
Innovation risk assessment template  
Public funding opportunity mapping tool

### Tools & Resources

Useful materials:

1. EU Funding & Tenders Portal
2. Enterprise Europe Network
3. Templates / Checklists:  
Innovation Risk Mitigation Plan  
Public Funding Readiness Checklist
4. Policy or report excerpts:  
EU Green Deal Industry Plan summary  
National climate strategies for manufacturing SMEs

### Summary

1. Key takeaways:
  - a) Public funding can significantly reduce innovation risk
  - b) Strategic innovation planning is essential for decarbonisation success
  - c) Many tools exist to support SMEs—knowing how to use them is key

2. Participant questions:  
Open space for final queries and feedback

3. What's next?
  - a) Follow-up email with all materials
  - b) Certificate of participation (optional)
  - c) Invitation to join the CREDIT4CE community platform

### Training Evaluation

1. Quick feedback form:  
“What was the most useful insight you gained today?”

2. What did they remember?  
Recap and word cloud activity

3. Suggestions for improvement:  
Anonymous comment box (online or paper)

