Supporting the **EU Green Deal**

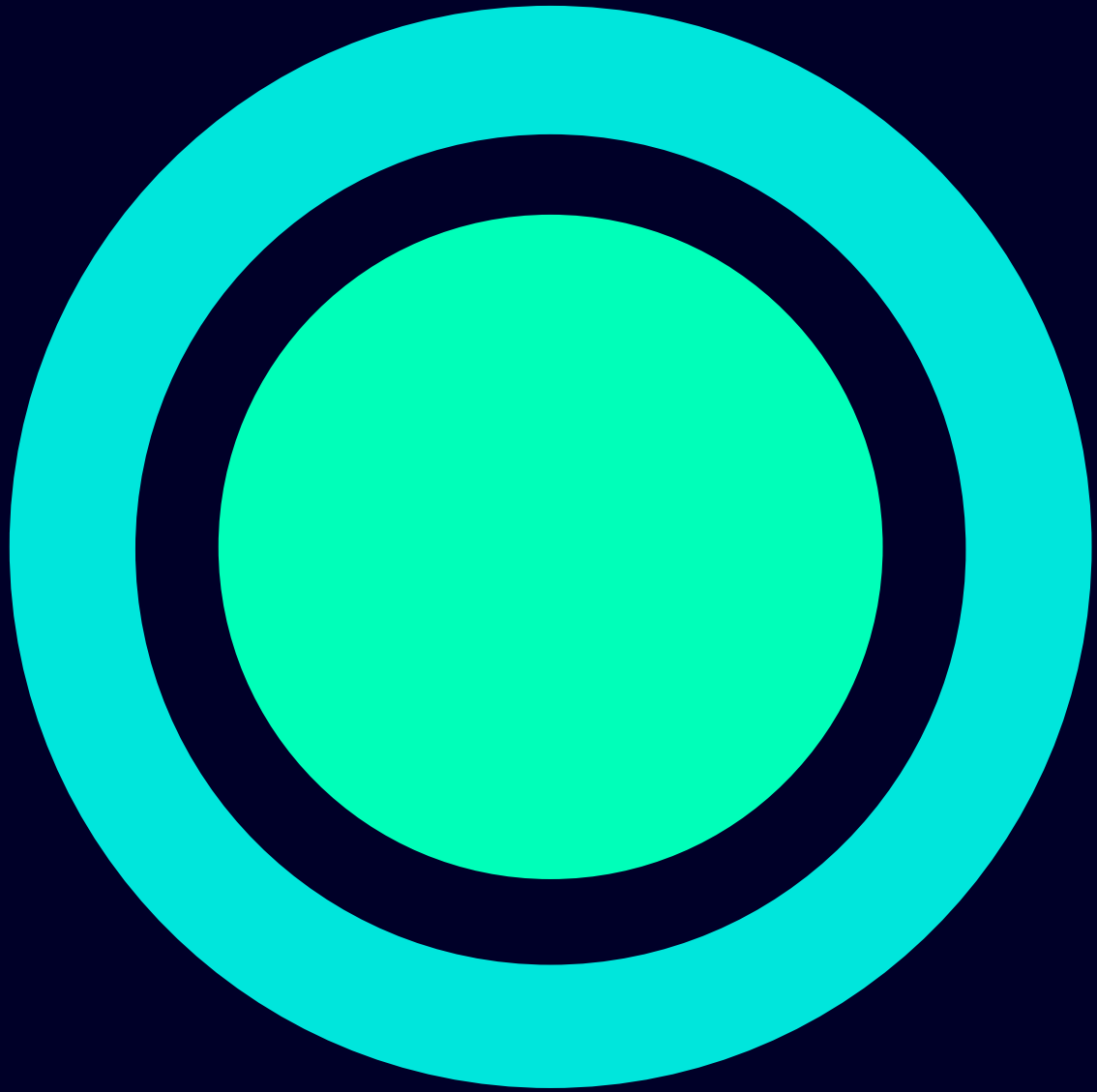
Sustainable business through technology with purpose.

SIEMENS

Multiply impact

The world has reached a critical turning point. We need change on a massive scale to solve the biggest threats facing humanity and improve the lives and prospects of people around the world.

Only together can we succeed in applying innovative and environmentally friendly technologies where they are needed: in industries, mobility, buildings, and infrastructure.



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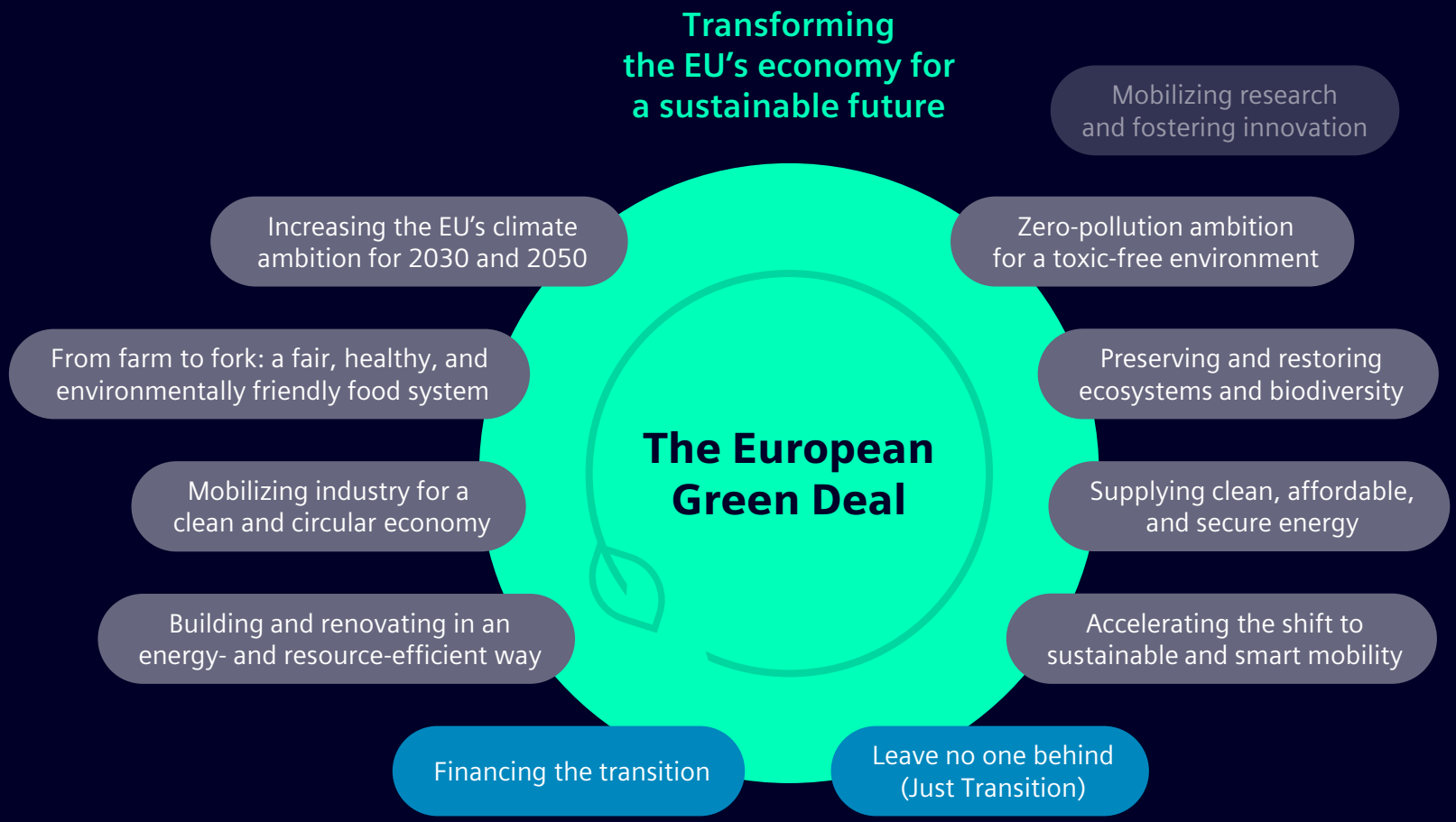
Roadmap
to sustainability

The European Green Deal is Europe's growth strategy. It is an initial roadmap of key policies and measures designed to make the EU's economy more sustainable. The main goal of the European Green Deal is to make Europe climate-neutral by 2050. Key milestones of that journey include shifting to circular systems in production and consumption and decoupling economic growth from resource use.



Source: eur-lex.europa.eu/

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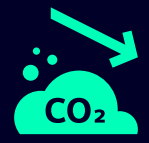
Key policy areas of the EU's Green Deal

The European Green Deal can be categorized into four fields of action: climate neutrality, zero pollution, circular economy, and biodiversity. To help achieve its ambitious goals and to additionally bolster the effectiveness of the policies launched, the Commission has pledged to mobilize at least €1 trillion in sustainable investments over the next decade. In addition, sustainable finance measures for classifying green investments will contribute to the EU's Green Deal by boosting private sector investment in green and sustainable projects.

Climate neutrality and decarbonization



Global carbon emissions are rising at an unsustainable rate. They are the main reason for climate change, which has an adverse impact on natural ecosystems as well as human health, livelihoods, food security, water supply, and economic growth.

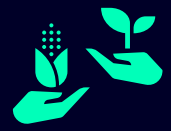
Zero pollution and toxic-free environment

Pollution is a major cause of multiple mental and physical diseases as well as premature deaths. By obstructing biological processes in ecosystems, it further accelerates biodiversity loss.

Circular economy and resource efficiency

Circular economy is an approach that moves away from a linear model of economy and society: Instead of sourcing new products and components, materials are reduced, reused, recycled, and recovered, thus alleviating their environmental impact.

Biodiversity and sustainable agriculture



Sound ecosystems ensure clean air, clean water, fertile soils, and protection against floods and erosion. An intact nature also plays a major role in economic activities, as it provides the raw materials for our economy and the basis for agricultural production.

SIEMENS

When, if not now?

Europe acts as a trailblazer, with more and more countries and economic unions also adopting ambitious legislative packages that aim at promoting economically, environmentally, and socially sustainable development. Comprising systematic approaches toward the creation of a sustainable, low-carbon future, these ESG legal packages will reshape economies on a global scale and redefine the way business is done.

As a focused technology company, Siemens provides innovative solutions and services supporting this global ambition by empowering our customers to positively transform the industries that form the backbone of our economies – industry, infrastructure, and transport.

SIEMENS

Decarbonization is not optional

Climate-neutral business is sustainable business

The implementation of decarbonization measures in industrial systems, manufacturing, and transportation can help to dramatically reduce emissions and slow the progression of climate change. Making buildings more efficient and connecting them to smart energy systems optimizes energy use and reduces their environmental impact. In view of increased CO_2 pricing and ever more stringent climate targets for the entire supply chain and product life cycle, this is as much of a business imperative as it is a moral one.

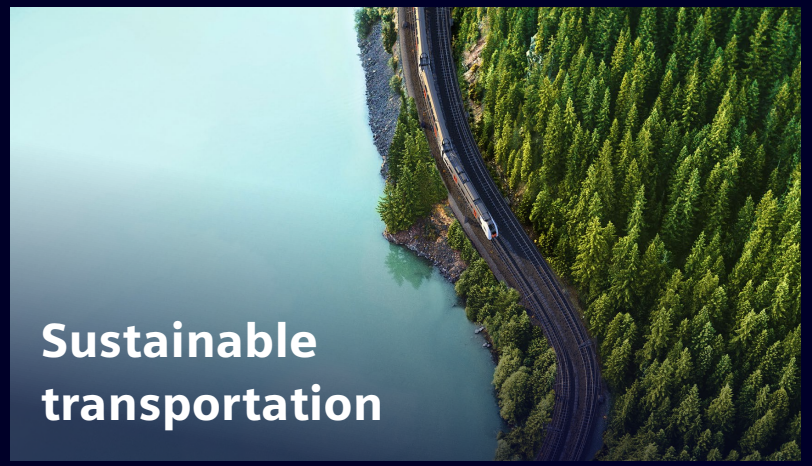
With our deep domain know-how, customers can decarbonize their infrastructure and operations and make whole industries truly future-proof.

SIEMENS

Technology **with purpose**

By combining technologies from the real and the digital worlds, we support our customers in decarbonizing their existing infrastructure easily already today – and offer optimal solutions and services for their journey to a net-zero future.

Our technologies help our customers to optimize their energy productivity, roll out energy management systems, and decarbonize their facilities and operations.



SIEMENS

Sustainable industries

A soaring global population and environmental pressures are challenging industries at every level of the value chain. Industrial processes have large environmental footprints and are a prominent source of greenhouse gas emissions, creating an urgent need for greater sustainability and decarbonization.

We provide the necessary tools to create sustainable industrial innovation. We enable our customers through digitalization, automation, and the intelligent use of data to optimize their energy efficiency and reduce CO_2 emissions to transform the industries that constitute the backbone of our economies.

SIEMENS

SUSTAINABLE INDUSTRY

Knauf Insulation, United Kingdom

Utilizing a systematic data-driven and outcome-based approach and through close collaboration with the customer, Siemens leverages data across two manufacturing plants to ensure the highest level of operational efficiency, resulting in reduced energy consumption, operating costs, and waste.

Learn more

12,000 MWh
annual energy savings

5,000 tons
yearly carbon emissions reduction

SIEMENS

Smart buildings

Energy demand in buildings is expected to further rise significantly over the next two decades. However, the mitigation of climate change requires buildings to be built and operated in a manner that is more sustainable and energy-efficient – in other words: smarter.

We enable smart buildings to actively minimize their impact on the environment and to use sustainable energy supplies from diverse sources. Energy performance contracting and decarbonization programs that include attractive financing schemes help owners and operators to reach climate goals.

SIEMENS

SMART BUILDINGS

Sello Shopping Center, Finland

Siemens has transformed Finland's largest shopping center, Sello, into a smart building. Data-driven services enable it to continuously optimize its energy consumption, generate power from renewable sources, store it, and even sell it on the electricity market. And all of that without compromising on comfort.

Learn more

17 percent
less annual energy consumption

500 kWp
photovoltaic system installed

2 MW
battery storage installed

SIEMENS

Intelligent energy systems

The world's energy demand keeps rising. But given the mounting impacts of climate change, the energy provided needs to be clean and emissions-free, and the entire energy system must be based on smarter technologies to support and reach ambitious climate targets.

Leveraging data in energy systems, we create opportunities for a new energy age. We empower our customers to master the increasingly distributed energy landscape, benefit from electrification, integrate renewables, and roll out electric mobility on a large scale.

SIEMENS

INTELLIGENT ENERGY SYSTEM

Isabela Island, Ecuador

In the framework of the “Zero Fossil Fuel Galápagos Initiative”, Siemens developed a hybrid power generation system for Isabela Island, a UNESCO World Heritage Site. The completely carbon-neutral system uses solar energy and biodiesel in addition to a battery storage system to supply electricity to the almost 900 households on the island.

↗ Learn more

42 tons
monthly diesel savings

134 tons
monthly carbon emissions savings

114 MWh
average monthly PV output

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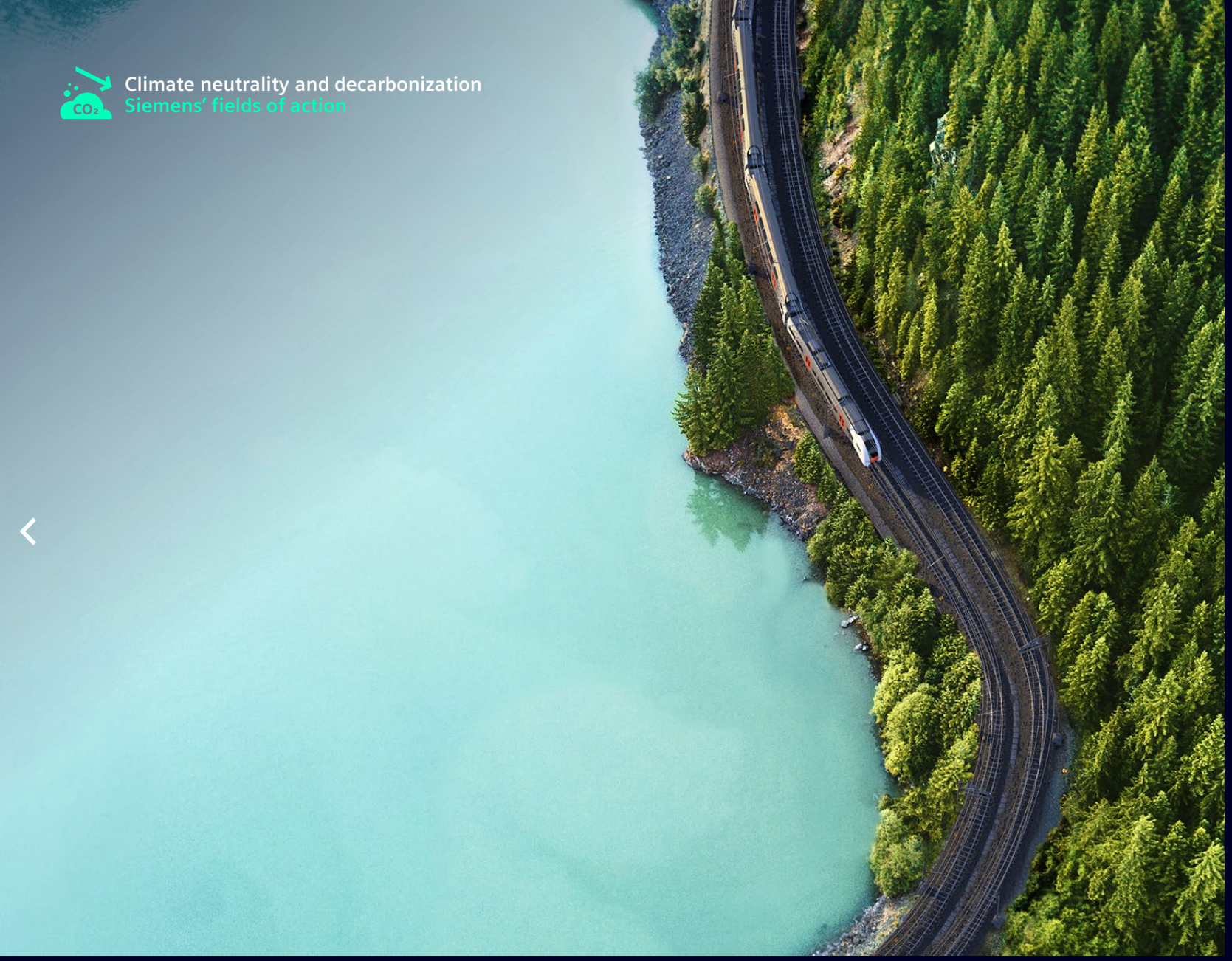


Sustainable transportation

Sustainable infrastructure and sustainable transportation systems are the backbone of prosperous economies. In order to provide seamless, safe, reliable, and sustainable transportation, it is not enough to focus solely on combating climate change. Economic, environmental, and societal impacts must be considered as well.

We help customers to improve throughput and availability, reduce local traffic emissions, and offer innovative means of sustainable intermodal mobility. Energy-efficient and weight-optimized design as well as carbon-neutral options for non-electrified rail tracks reduce energy demand and emissions.

SIEMENS

SUSTAINABLE TRANSPORTATION

Mireo Plus H Krefeld, Germany

In a joint project, Deutsche Bahn and Siemens developed an emissions-free hydrogen-powered version of the Mireo Plus train that can cover long-distance rail routes of up to 1,000 km and is as powerful as its electric multiple-unit counterpart. It provides local, emissions-free mobility on non-electrified routes.

Learn more

0 percent
carbon emissions during operation

1,000 km
maximum range

160 km/h
maximum speed

SIEMENS

A clean world is essential for a thriving future

In view of an increasing resource scarcity, not least due to the exacerbating effects of climate change and a growing global population, reducing pollution and the spread of toxins is one of the most serious challenges we face today. It helps to bolster ecosystems and their essential biological processes, which are crucial for the preservation of water, air, and soil quality. At the same time, it is the lever to curb environment-related diseases and premature deaths.

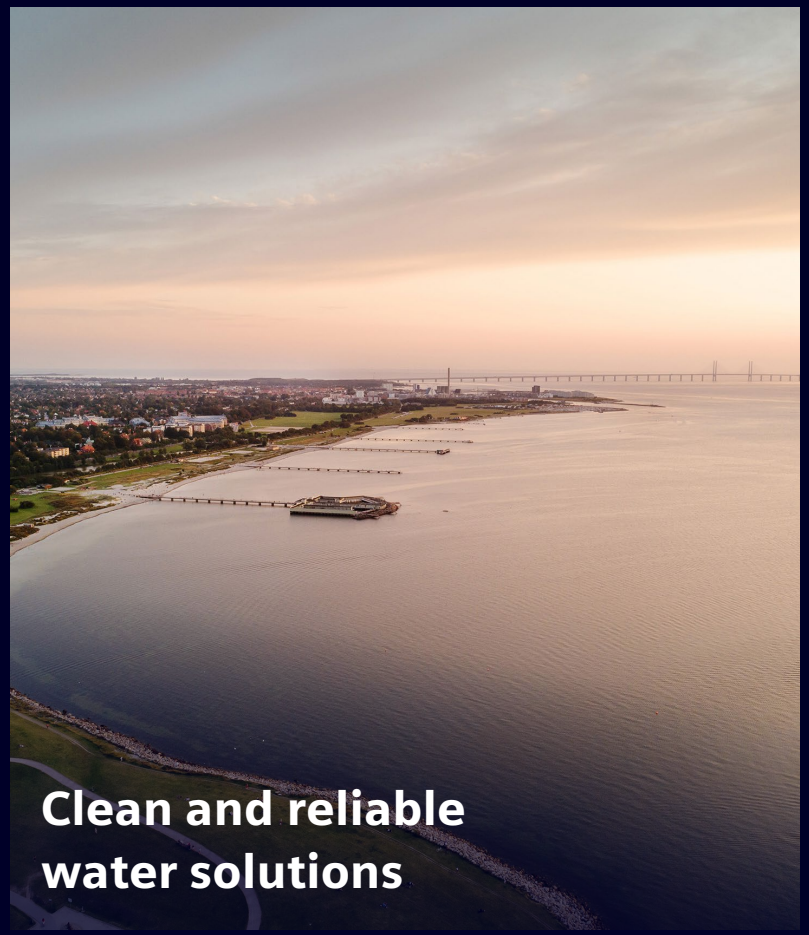
Through our “technology with purpose” approach, we are improving people’s quality of life by empowering our customers to transform the technological backbone of our societies and make the world a better place for everyone. We provide our customers with digital solutions that help reduce pollution to levels that are harmless to human health and ecosystems.

SIEMENS

Technology **with purpose**

We are convinced that the future is both digital and sustainable. We combine technologies from the real and the digital worlds to support our customers in minimizing their environmental impact from natural resource usage.

Our technologies help to ensure reliable water supply and sanitation while reducing water pollution, they avoid and lower air pollution wherever possible, curtail nutrient losses and the use of chemical pesticides, and reduce all kinds of waste to a minimum.



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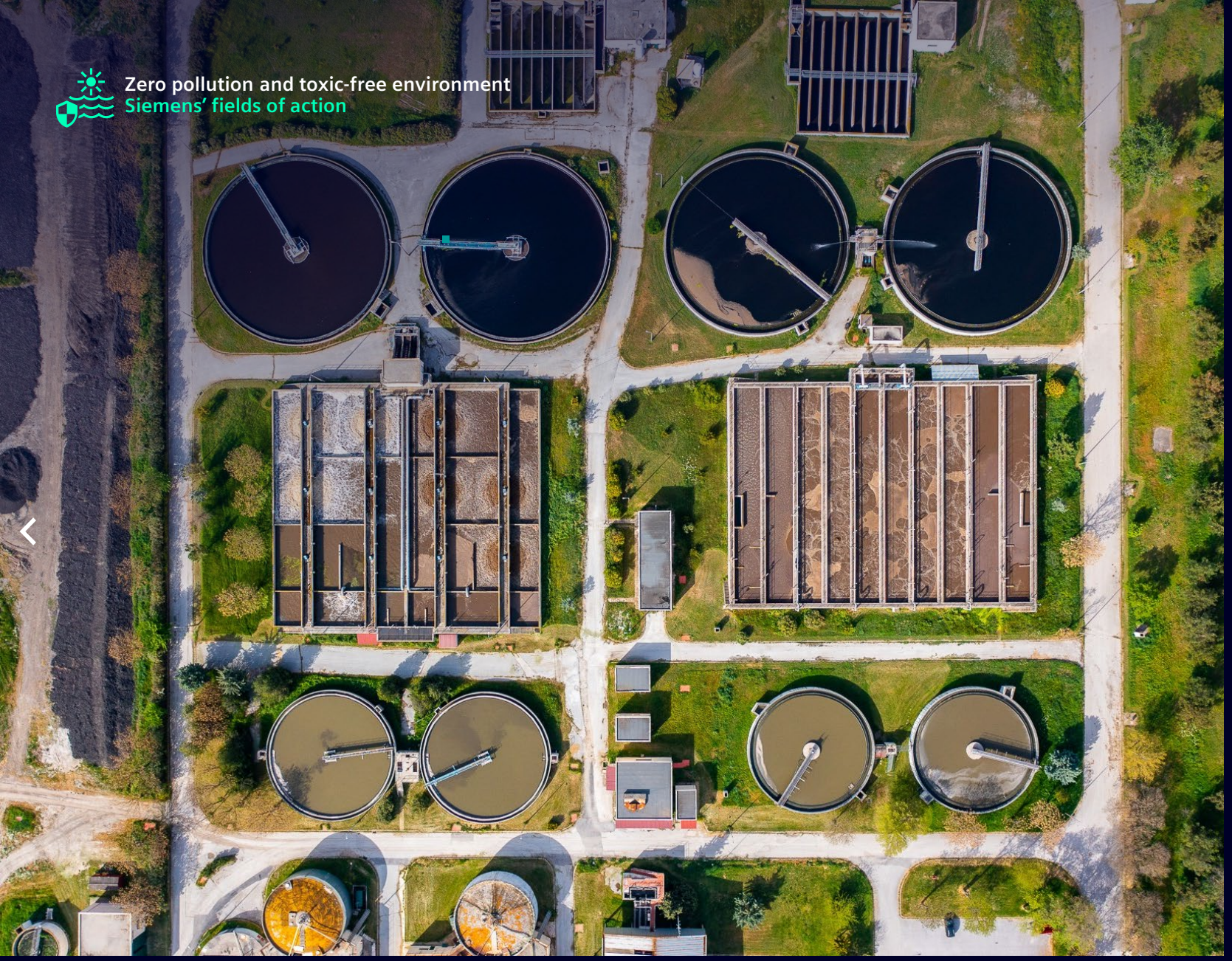


Protection from harmful substances

The protection of humans and the environment from hazardous substances and the harmful effects of pollution is key to improved health, well-being, and quality of life – just as much as for future business success.

Our PLM software Teamcenter helps customers to phase out non-sustainable and restricted substances from products while supporting the design and production of innovative, more sustainable replacements in line with all applicable laws and regulations.

SIEMENS

SUSTAINABLE PRODUCTION

Metsä Äänekoski Mill, Finland

The largest wood-processing plant in the northern hemisphere now generates excess bioenergy and has expanded its product portfolio to include new bioproducts. The mill relies on process automation and digital solutions from Siemens, generates power with a highly efficient steam turbine from Siemens Energy, and uses hybrid locomotives from Siemens Mobility for transport purposes.

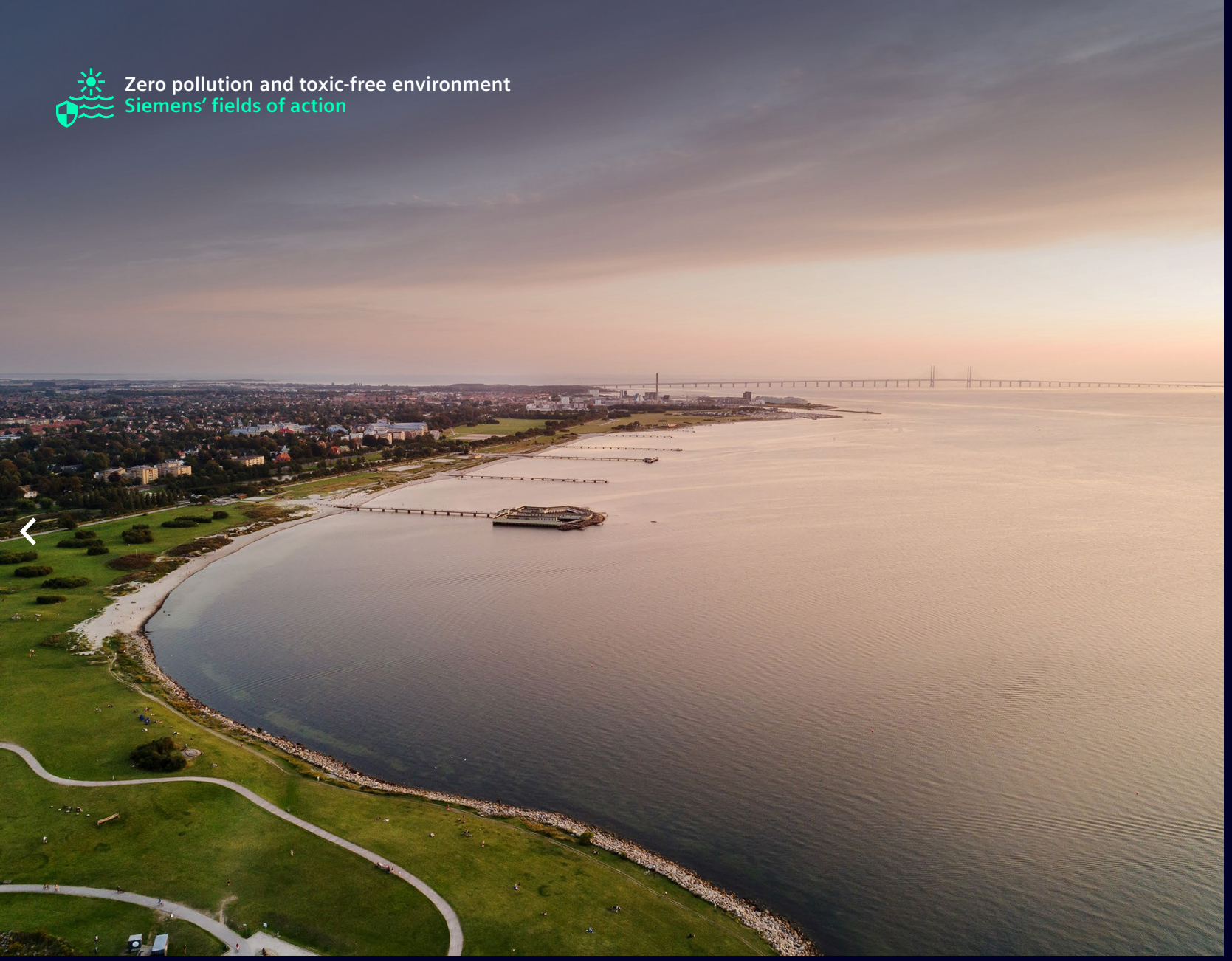
↗ Learn more

0 percent
fossil fuels

100 percent
raw wood material usage

2.4 times
as much power generated as required for own operations

SIEMENS



Clean and reliable water solutions

The fact that one in three people worldwide do not have access to safe drinking water and two out of five people do not have basic hand-washing facilities underlines the importance of efficient water management, water quality improvement, and the most responsible use of water resources possible.

Automation and software apps – such as the Siemens Water (SIWA) applications, as well as our digital twin for brownfield and greenfield plants – help customers prevent water loss, reduce water contamination, make water supplies more resilient, and ensure reliable wastewater disposal, thereby conserving and managing water in an energy-efficient manner.

SIEMENS

POLLUTION PREVENTION

Yorkshire Water, United Kingdom

Using artificial intelligence and the Internet of Things, the innovative SIWA blockage predictor from Siemens enables Yorkshire Water to locate combined sewer outlet blockages before overspills occur. This made it possible to cut pollution incidents by half while simultaneously reducing the number of false positive alarms significantly.

Learn more

50 percent
reduction of pollution incidents

88 percent
of confirmed incidents detected by AI system

50 percent
false alarm rate reduction

SIEMENS

Circular economy makes the most of finite resources

The future is regenerative

Circular economy moves away from the linear “cradle-to-grave” system that focuses on sourcing new products toward a circular, more sustainable, and design-driven “cradle-to-cradle” approach. The basic idea is to reduce, reuse, recycle, and recover as much as possible and to preserve and enhance components and materials to increase ecosystem effectiveness.

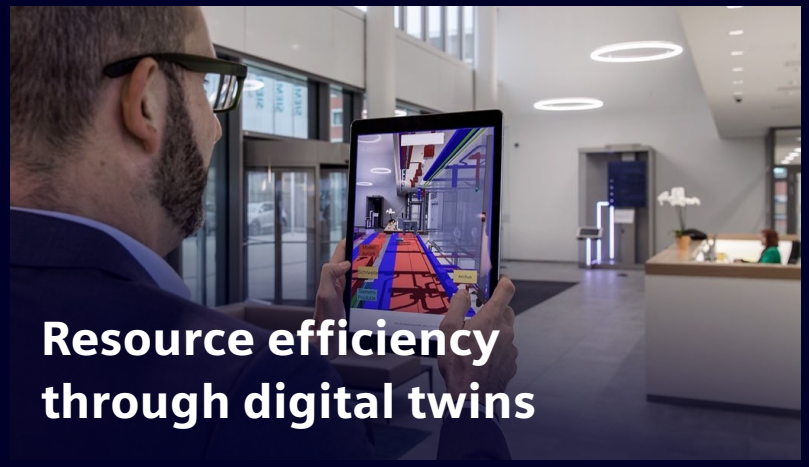
Following our commitment to the responsible use of resources, we leverage our domain knowledge with digital solutions to provide technology with purpose that helps our customers at every step of their journey toward greater efficiency.

SIEMENS

Technology **with purpose**

The shift to circularity and sustainable consumption builds on value retention loops.

We combine state-of-the-art technologies from the real and the digital worlds to help our customers establish such loops. We also bring to bear over five decades of practical experience in environmental protection to promote the responsible use of all resources while ensuring sustainable long-term growth.



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Recycling with **smart automation**

While resource efficiency is a proven approach to decarbonization and profitability, operations must also become more circular if you want to turn today's products into tomorrow's resources. Recycling not only gives waste material a new lease on life, but also saves energy – meaning fewer fossil fuels are burned, and the carbon footprint is reduced.

Flexible and intelligent automation processes as well as monitoring and predictive analytics in complex chemical environments create a positive impact by optimizing resource consumption and improving the environmental footprints of products.

SIEMENS

FLEXIBLE AUTOMATION

Plastic Energy, United Kingdom

Siemens is supporting a leading recycling operator in turning hard-to-recycle plastics into new, high-quality materials. This tackles the challenge of plastic pollution by decreasing the volume of end-of-life plastic waste. Through flexible and smart automation processes, Siemens monitors and manages complex chemical processes and uses predictive analytics to preempt issues and guarantee operational stability.

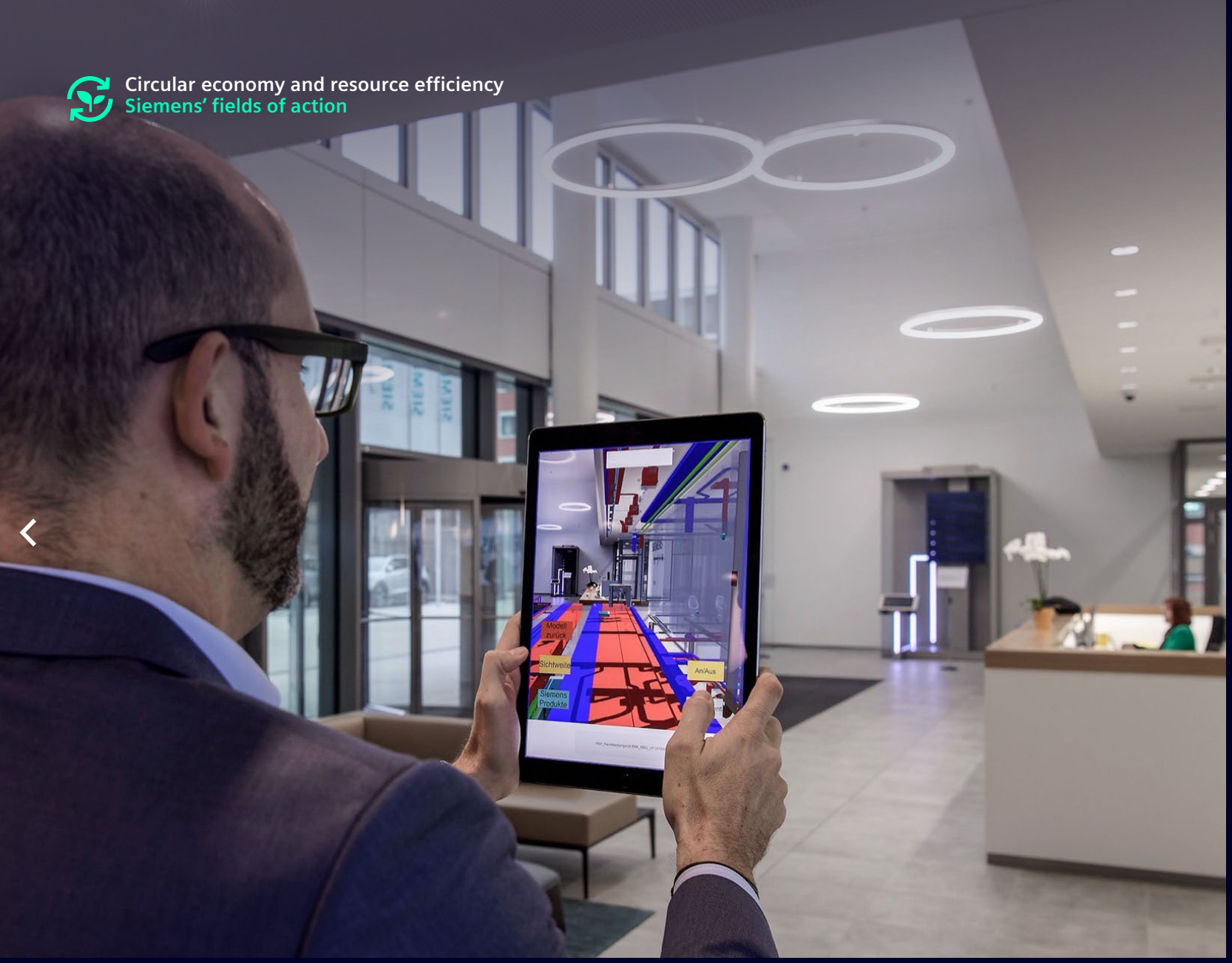
↗ Learn more

Full circle
from plastic to oil

Substitute
for fossil oils

Protecting
the environment and natural resources

SIEMENS



Resource efficiency through digital twins

Designing and developing sustainable and resource-saving products and plants becomes possible by using simulation as early and often as possible. Simulating and testing everything in a digital environment helps industry to reduce prototypes, analyze thousands of what-if scenarios, and gain the necessary insights to drive innovation and resource-efficient products and production methods.

Simulation solutions and digital twins enable the design and operation of better-performing and more sustainable products while optimizing resource consumption and production processes. They also improve the ecological footprints of products and integrate the principles of resource-efficient design along their lifecycle to minimize their environmental impact across entire production sites.

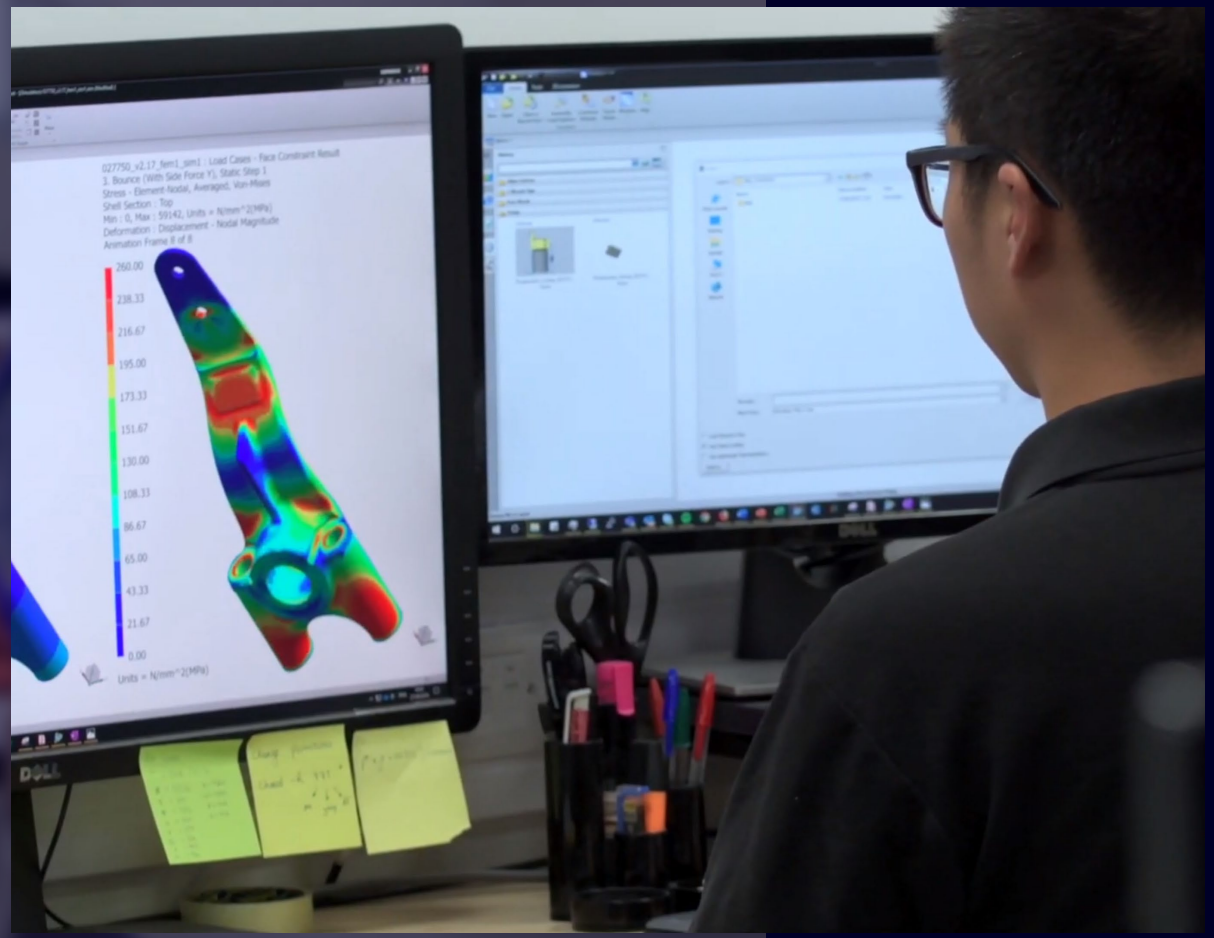
SIEMENS

FEWER PHYSICAL PROTOTYPES

Cox Marine, United Kingdom

To develop a more fuel-efficient, durable, and cleaner outboard engine for the global marine industry, Cox Marine chose Siemens simulation software to create a digital twin. Because the design process took place in a fully digital environment, development time was significantly shorter. Simulation also helped reduce design uncertainties and troubleshoot problems on the prototype, of which only one was needed. The result: improved engine performance, greater fuel efficiency, and lower emissions.

↗ Learn more



25 percent
less fuel consumption

3 times
longer lifespan

1 prototype
instead of 24

SIEMENS

Preventing waste through repair processes

Recycling is an important contribution to improving sustainability. However, it will not be sufficient to reduce the current amount of waste to sustainable levels. This is why a major focus of the circular economy lies on preventing waste by repairing tools instead of manufacturing new ones.

Siemens is providing innovative production methods such as industrial 3D printing to provide spare parts faster while reducing waste and energy usage.
In combination with digital twin technology, completely new business models become possible.

SIEMENS

LOCAL 3D PRINTING

Chiron, Germany

Industrial 3D printing, also known as Additive Manufacturing (AM), can help to save energy and reduce waste. Chiron chose Siemens to utilize this new production method to provide spare parts faster, all while saving costs and reducing its ecological footprint. Used for the repair of large gear wheels in wind turbines, AM in combination with digital twin technology can generate up to 85 percent of energy savings compared with the classical manufacturing of new parts.

↗ Learn more

85 percent
annual energy savings

30 percent
productivity increase

30-70 percent
weight reduction

SIEMENS

Energy-efficient production processes

Across all industries, the sustainability of an entire company can be systematically and significantly improved through digital production planning and production process optimization.

We help our customers save up to 40 percent of energy and the corresponding amount of greenhouse gas emissions with digitally optimized production processes, while our performance-based contracting solutions enable further resource optimization.

SIEMENS

ENERGY EFFICIENCY

Pikolin, Spain

In line with the customers' needs to guarantee quality, sustainability, and responsibility to their stakeholders, Siemens has implemented a flexible and future-proof solution that can adapt to company requirements. Enhanced automation processes as well as energy monitoring and optimization have greatly improved process efficiency and significantly reduced energy consumption.

↗ Learn more

14 percent
less power per square meter company-wide

30 percent
increase in production capacity

40 percent
less natural gas use in production area

SIEMENS

Have a positive impact on biodiversity

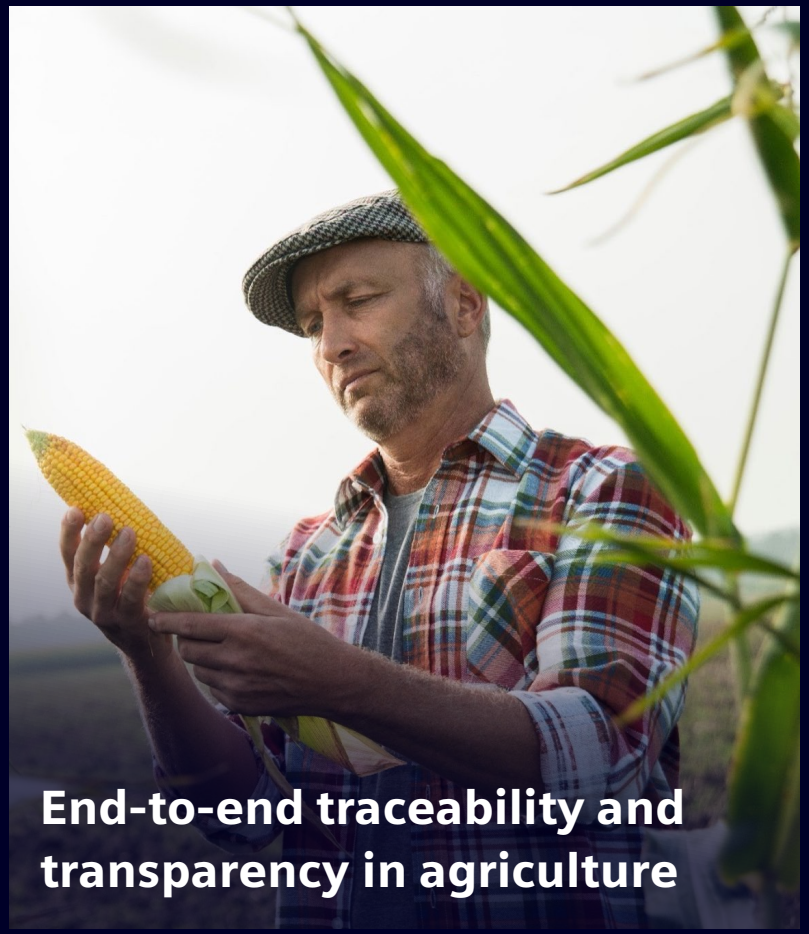
Healthy ecosystems and rich biodiversity ensure clean air, clean water, and fertile soils, and they provide protection against floods and erosion. Every organism plays an important role in its ecosystem that directly impacts the stability and health of that ecosystem. Healthy ecosystems are also of huge economic value, as they provide the basis for numerous economic activities and are essential for agricultural production.

Biodiversity and economic success are not contradictory, but mutually reinforcing. We deliver technologies that help our customers capitalize on this relationship and gain a lasting competitive edge.

SIEMENS

Technology **with purpose**

We support our customers with optimal solutions and services based on technologies from both the real and the digital worlds to meet their biodiversity ambitions, help assess, act, and report on their progress, and scale their approach.



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End-to-end traceability and transparency in agriculture

Exact knowledge of the origin of primary products and their ecological footprint is increasingly becoming an economic necessity – even more so as a growing number of end customers attach greater importance to ecological transparency.

Using a unique combination of IoT and blockchain technology, we provide end-to-end traceability and transparency solutions that cover the entire agriculture supply chain and help to make products and production methods more resource-efficient.

SIEMENS

END-TO-END TRACEABILITY AND TRANSPARENCY IN AGRICULTURE

From farm to table, Global

The introduction of blockchain technology has already seen widespread impacts in the financial industry.
As the technology matures, it now seems ripe to tackle challenges in the food and beverage industry. Siemens' cloud-based IoT operating system provides the perfect means to transparently capture data across supply chains and find the source of each product component and the location where it has been produced.

↗ Learn more

Transparent
supply chain for food traceability thanks to blockchain technology

Trace origin
and the path of the product

Capturing
data of the raw materials

SIEMENS

Controlled-environment agriculture

In numerous cases, controlled-environment agriculture can be a far more sustainable alternative to common intensive open-space farming.

We provide smart farming technologies that enable the continuous optimization of plant growing systems, production efficiency, and sustainability.

SIEMENS

UNDERWATER FARMING

Nemo's Garden, Italy

Nemo's Garden is a startup focused on the sustainable underwater-based cultivation of crops. Using Siemens Xcelerator and a digital twin, the Nemo's Garden team can test concepts without the need for physical testing, enabling rapid design iteration.

Learn more

0 percent
pesticides used

30 percent
increase in crop micronutrient density

SIEMENS

The green transition requires smart financing solutions

Financing a sustainable future

A sustainable world needs sustainable finance. Many businesses that could be transitioning faster are held back not only by a lack of technology, but often also by financial barriers. By 2030, the expansion of green energy projects and infrastructure will require approximately USD 4 trillion per year.[1] To accelerate the digitalization and decarbonization of the global industry, infrastructure, and mobility sectors, private sector investment is key.

Based on our unique combination of technology know-how and financing expertise, we can offer a wide range of tailored financing solutions, enabling our customers to access efficient and sustainable technologies. We have long-standing experience in financing greenfield renewable projects and sustainable transportation while enabling resource-efficient manufacturing and buildings.

1 Source: IEA

SIEMENS

FINANCING A SUSTAINABLE FUTURE

Electrify America, USA

To drive eMobility in North America, Electrify America owns and operates the largest open ultra-fast public charging network and aims to double its charging infrastructure to 1,800 sites and 10,000 ultra-fast chargers by 2026 – which requires significant capital, technology innovation, and industry know-how. Siemens Financial Services (SFS) has invested a triple-digit million USD amount in Electrify America alongside existing owner Volkswagen, becoming its first external shareholder.

↗ Learn more

1.8k
charging sites
in North America
by 2026

10k
ultra-fast chargers
across North America

$2.54 billion
post-money valuation
for Electrify America

SIEMENS

Our contributions and commitments

Climate neutrality and decarbonization

Carbon-neutral operations in line with the SBTi pathway by **2030**

Supply chain emission reduction by 2030 **20%**

Zero pollution and toxic-free environment

Waste-to-landfill reduction by 2025 **50%**

Emission reduction of VOC from 2020 to 2021 **31%**

Circular economy and resource efficiency

Robust Eco Design for all relevant product families by **2030**

Improving energy efficiency until 2030 by **10%**

Biodiversity and sustainable agriculture

New urban forest in India by planting 3,200 trees on **1,100m²**

Natural drones at Siemensstadt Square **80k bees**

DEGREE

We accelerate our sustainable transformation with our **DEGREE framework**

SIEMENS

"If we want to put the world on a more sustainable path, then we need to accelerate the transformation of our economy. The good news is that the technologies that boost efficiency and drive growth for businesses, while using fewer resources, can also play a key role in creating a sustainable future."

Roland Busch
President and Chief Executive Officer
of Siemens AG

"Sustainability is a vital part of our path to high-value growth. Siemens backs its deep understanding of technology with financing expertise. As a result, we can enable our customers to reach their decarbonization and resource efficiency goals while achieving economic growth. We have incorporated sustainability considerations into all decision-making and portfolio-shaping processes, such as merger-and-acquisition investments, customer-project approvals and supplier evaluations."

Ralf P. Thomas
Chief Financial Officer
of Siemens AG

"Our commitment and contributions to the green transition stand as firm as ever. We walk the talk by driving sustainability across the whole organization – demonstrating leadership in our own operations and strategically developing our portfolio. This transition enables us to support our customers to become more sustainable. Only by acting together can we multiply our impact and create a better tomorrow."

Judith Wiese
Chief People and Sustainability Officer (CPSO),
Member of the Managing Board of Siemens AG and Labor Director

SIEMENS

Dedicated to pulling together

Siemens is forging strong partnerships around the globe and driving collaboration and co-creation in many fields of action, in this way making sure that everyone can contribute to managing the green transition.

Strategic alliances

WEF Alliance of CEO Climate Leaders
to set the bar higher and catalyze action across all sectors

Business@Biodiversity
to integrate natural capital into business practice

UN CEO Water Mandate
to achieve a net-positive water impact and stronger resilience

Circular Plastics Alliance
to boost the EU market for recycled plastics

Charter of Trust
to shape digitalization through security

Science Based Targets
to reach ambitious emissions reduction targets

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