

The heavy costs of industrial carbon emissions.

*The manufacturers' dilemma and what
innovation leaders can do.*



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Introduction



Manufacturing companies should consider that they could potentially save huge amounts of money in the long-term by making early commitments towards a net-zero future.

We are currently seeing a worldwide shift towards [decarbonization](#), reducing greenhouse gas emissions by using zero-carbon renewable energy, eliminating CO₂ - emission rich technologies, and reducing energy requirements.

While the road ahead may be rough and long for industries like manufacturing, the long-term benefits are well documented. European businesses with a cornerstone in power, plastics, textiles, chemicals, automotives, paper and pulp, or other carbon-related industries may be hard-pressed to see the benefits of net zero manufacturing; it will require a considerable investment in terms of time and effort, but the benefits are twofold, both good for the environment and good for the company.

It is still imperative for companies to understand that even if they look past the global moral concern, they cannot escape price hikes, loss of insurance, and government fines while maintaining and improving consumer reputation in a net-zero world if they delay committing to the idea.

As of now, manufacturing companies can leverage the power of open innovation and clean technology, prevent costly losses, and create a more sustainable growth path.

01

Costly regulation

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Carbon taxes require companies to pay for direct emissions or invest in carbon offset projects.

Governments are also on the net-zero docket. Global leaders have put it on their agenda to incentivize sustainable business practices. Manufacturers will have to anticipate steep penalties or rising costs as a result of carbon-heavy processes.

Different countries worldwide developed a Cap & Trade system for companies to buy and sell carbon permits as the government dictates an upper limit or cap. By progressively lowering the cap on emissions, companies will pay more for each carbon unit, creating an unsustainable financial and environmental situation.

A second concern for heavy polluters is [carbon taxes](#) that require companies to pay for direct emissions or invest in carbon offset projects, adding to the price of carbon-intensive products and making them more expensive per unit emitted.



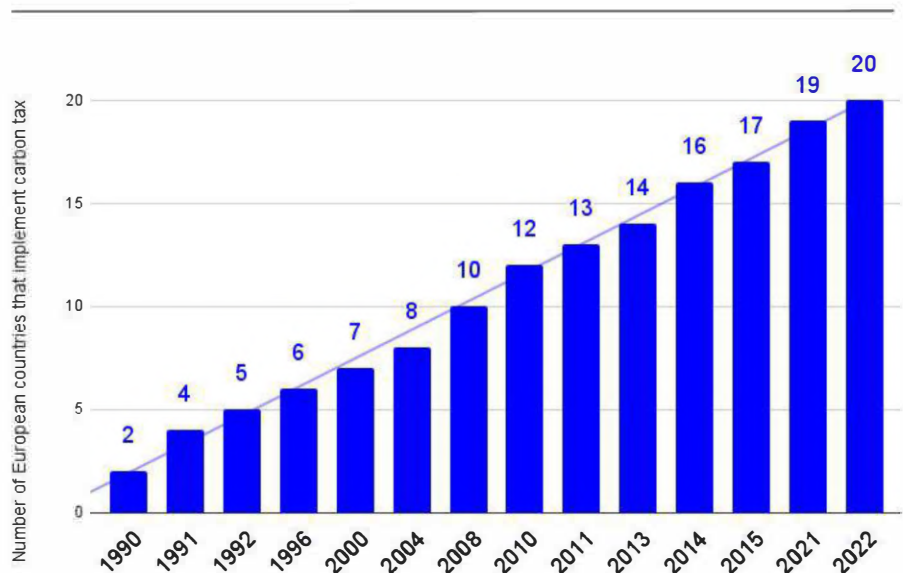


In April 2021, The European Parliament and Council reached an informal agreement to raise the EU's 2030 emissions target to at least 55% below 1990 levels, translating into tighter annual carbon caps out to 2030...

The number of European countries implementing a carbon tax is growing yearly.

In recent years, countries have taken all sorts of measures to reduce carbon emissions, such as instituting environmental regulations, emissions trading systems (ETS), and carbon taxes. In April 2021, The European Parliament and Council [reached an informal agreement](#) to raise the EU's 2030 emissions target to at least 55% below 1990 levels, translating into tighter annual carbon caps out to 2030, reducing the supply of carbon allowances for power plants, factories, and airlines.

Number of European countries that implement carbon tax, 1990-2022.



Source: SOSA based on [Tax Foundation](#), 2022

How does the EU Emissions Trading System (EU ETS) work?

01

EU ETS is a "cap and trade" program with a limit on the right to emit specific pollutants over a defined geographical area where companies can trade emission rights.

02

A maximum (cap) is set on the total amount of greenhouse gasses emitted by all participating installations, classified by the total number of emissions.

03

There's a cap limit on the overall volume of greenhouse gasses that can be emitted by power plants, factories, and the aviation sector covered by the EU ETS.

04

EU Allowances for emissions are then auctioned off or allocated for free and can subsequently be traded.

05

Participants must monitor and report their CO₂ emissions, certifying they submit enough allowances to cover their emissions.

06

If emissions exceed the allowances' limit, an installation must purchase allowances from others.

07

Conversely, if an installation has reduced emissions, it may sell its leftover credits.

This allows the system to identify the most cost-effective method of reducing emissions, eliminating government intervention.

Carbon prices in the EU are growing yearly and reached 85,9 Euro per ton of CO₂

Price of CO₂ in the EU Emissions Trading System, euro/tCO₂, 2012-2022.



Source: [Trading Economics](#), 2022

Setting and implementing the carbon tax

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Within the cap, companies can purchase or receive emission allowances, which can be traded as required. The cap decreases each year, ensuring that total emissions fall.

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In [phase 3 of the EU ETS](#) (2013–2020), the EU-wide cap for stationary installations decreased yearly by a factor of 1.74%. In phase 4 of the EU ETS (2021–2030), the cap on emissions continues to decline annually at an increased linear reduction factor of 2.2%.

Since 1990, when Finland was the first country to introduce the carbon tax, 19 European countries have followed. [From less than €1 per metric ton](#) of carbon emissions in Poland and Ukraine to more than €100 in Sweden, Liechtenstein, and Switzerland.

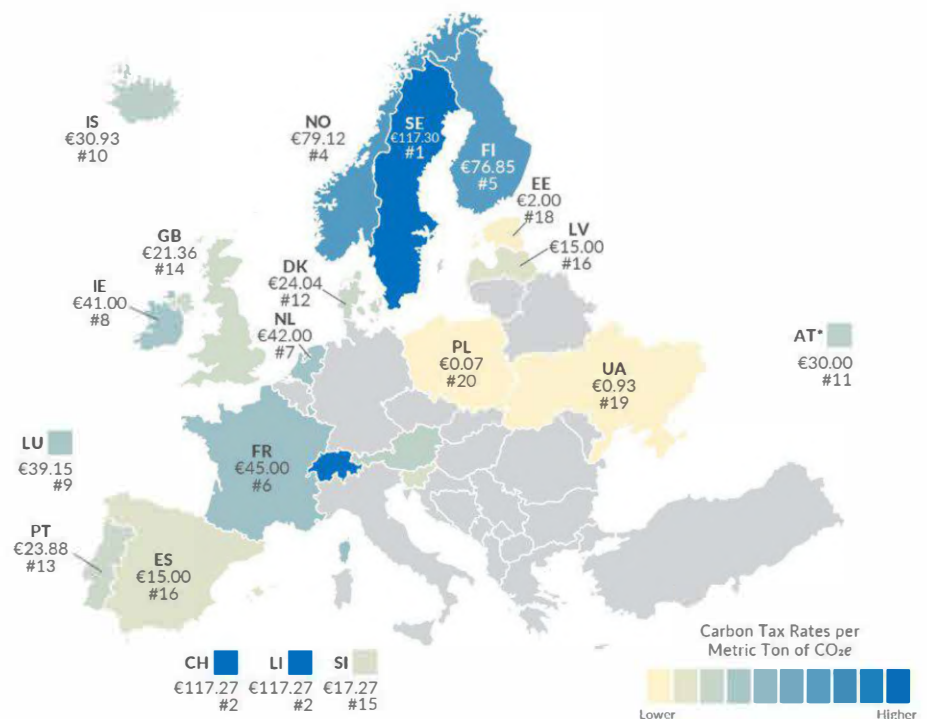


In July 2022, Austria will implement a carbon levy of €30/tCO₂e as part of broader fiscal reforms in the Eco-Social Tax Reform Act 2022. However, this is part of its national emissions trading system, not covered under the EU ETS.

The rate is planned to rise to €35/tCO₂e in 2023, €45 in 2024, and €55 in 2025 during the fixed-price phase. A market phase will follow from 2026, subject to review in 2024 and considering developments on the EU level.

Carbon taxes in Europe

Carbon tax rates per metric ton of CO₂e as of April 1, 2022.



Source: Tax Foundation, 2022

02

Manufacturers' insurance loss risk and banking restrictions

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Over the next few decades, it's possible that the world's major insurance providers will cease offering coverage to industries that are proven to contribute significantly to climate change.

Manufacturing companies are at imminent risk of losing their insurance coverage if they do not decarbonize or devise a carbon reduction strategy.

Over the next few decades, it's possible that the world's major insurance providers will cease offering coverage to industries that are proven to contribute significantly to climate change.

Even today, the power generation industry has a reason for concern - Many insurers, part of the Net Zero Alliance, announced a plan to [phase out coverage](#) for their clients in coal. Swiss Re and Zurich Insurance (two of the world's largest reinsurers and SOSA's clients) [also announced](#) plans to deny coverage to "bad actors" who do not decarbonize fast enough. And this is only the beginning; Lloyd's, the world's biggest insurance market, [has a new strategy](#) to halt coverage for specific carbon-intensive industries by 2030.





Industry Update

→ To date, *hundreds of companies* pledged to cut carbon emissions.

→ The insurance industry took a significant step towards decarbonization by launching the *Net-Zero Insurance Alliance (NZIA)* in July 2021, a group of *over 20 leading insurers representing more than 11% of the world premium volume globally*.

→ NZIA members have committed to transition their **insurance and reinsurance underwriting portfolios to net-zero greenhouse gas (GHG) emissions** by 2050 to align with the Paris Agreement on Climate Change.

→ The NZIA arguably has the potential to be more influential than its investor counterparts in encouraging action and change among high-emitting companies. Otherwise, they will not be insured and hence cannot operate.

Fossil fuels restrictions

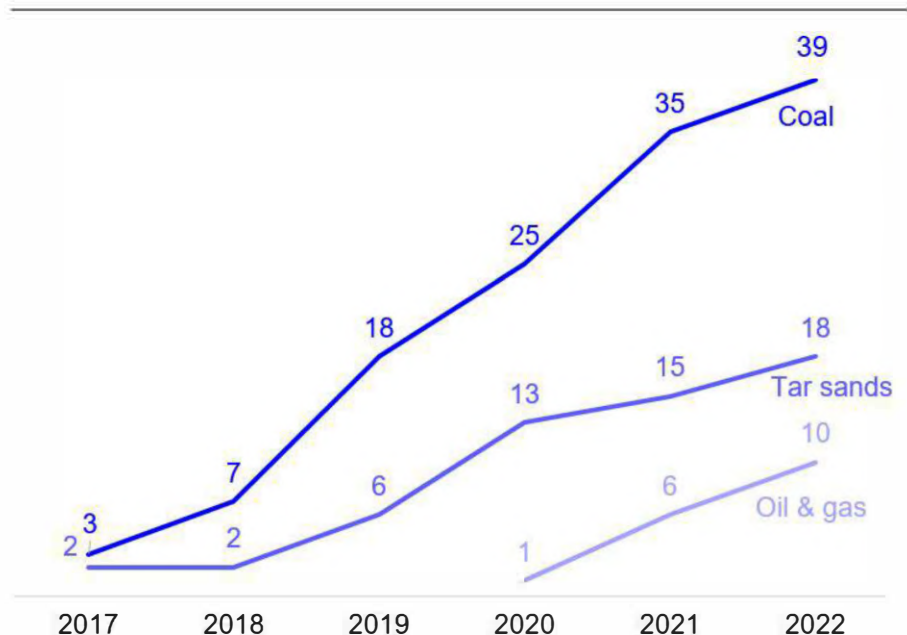
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*The world's largest oil and gas insurers **AIG, Travelers, Zurich, Allianz, Chubb, and Liberty Mutual**, covering more than half the industry's underwriting, have restricted oil and gas coverage.*

With the exception of a few laggards in the U.S., Bermuda, and East Asia, most insurers no longer support [new coal projects](#). The world's largest oil and gas insurers AIG, Travelers, Zurich, Allianz, Chubb, and Liberty Mutual, covering more than half the industry's underwriting, have restricted oil and gas coverage. The insurance provider's limitations prevent fossil fuel corporations from digging new coal mines, building pipelines, and expanding oil and gas production.

Another approach to holding the insurance industry accountable is the [Campaign Insure Our Future](#) - A global campaign of NGOs and social movements calling insurers to immediately stop insuring new fossil fuels and phase out support for existing coal, oil, and gas projects.

The number of companies committed to end or restrict underwriting for fossil fuel projects, 2017-2022.



Source: SOSA based on [Insure our future campaign](#), 2022.

The banking sector intervenes



The first step to a low-carbon, climate-resilient future is for every company, bank, insurer, and investor to adjust their business models and develop and implement credible plans.

Banks are [not oblivious to the pressure](#) to divest from underwriting carbon-intensive initiatives and companies. Some, like Morgan Stanley, report the carbon impact of its lending and investment activities. It is the first U.S. bank to join the [Partnership for Carbon Accounting Financials](#) to assist a more accurate carbon impact through a global accounting standard.

The expectation is for global financial institutions to raise costs for emitters or even ultimately phase all products and services for emitters.

Banks are especially well suited to impact corporate behavior. Apart from corporate loans, they also underwrite corporate stock and bond offerings and manage investment portfolios. Using their organizational expertise, banks can assist clients in transitioning and communicating with stakeholders, whether they be regulators, shareholders, or communities.

Further, financial institutions have a significant influence on their clients' and portfolio companies' business decisions, thereby influencing their approach to the net-zero transition.

The first step to a low-carbon, climate-resilient future is for every company, bank, insurer, and investor to adjust their business models and develop and implement credible plans. - [Glasgow Financial Alliance for Net Zero](#)

The Banking industry pledge



To mitigate the long-term risk, manufacturers should begin decarbonizing as much as they can – despite short-term financial loss.

Banks can achieve net-zero pledge by 2050.

01 The new UN-convened group known as the [Net-Zero Banking Alliance](#), consisting of 53 banks from 27 countries with \$37 trillion in assets, representing about 40% of global banking assets, pledged to their lending and investment portfolios with net-zero emissions by 2050.

02 The Net-Zero Banking Alliance is part of the broader [Glasgow Financial Alliance for Net Zero](#), including asset managers shepherding more than \$70 trillion of the world's assets.

[World Economic Forum](#), Shifting capital toward companies making the net-zero transition.

What needs to be done now?



→ *Manufacturers striving for net-zero emissions should reassess areas of their manufacturing facilities most prone to the contribution to carbon emissions. To alleviate the long-term risk, they should also begin the process of decarbonizing despite the short-term financial strain.*

→ *Lastly, a number of enterprise-ready-to-implement cutting-edge technologies can aid manufacturers in reducing their carbon emissions to help them achieve net-zero, thereby reducing their direct and indirect costs.*

03

Consumer perception

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Today's consumers are very aware and concerned about climate change, altering their consumption habits because of environmental concerns.

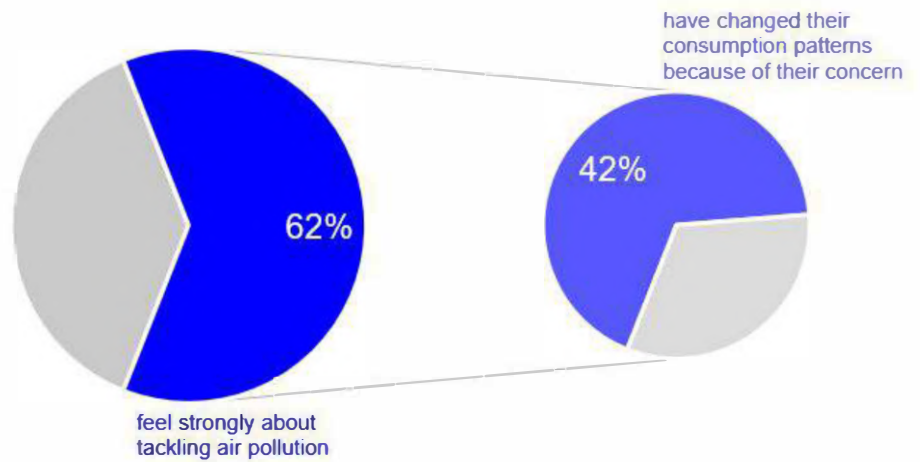
Aside from penalties from financial institutions and service providers, negative consumer perception can significantly impact carbon-intensive products. Today's consumers are the most informed they have ever been. Generation-Zers, primarily digital natives prioritizing sustainability, comprise 40% of the U.S. market, pushing corporations to reduce their carbon footprint to stay on their good side.

[Today's consumers](#) are very aware and concerned about climate change, altering their consumption habits because of environmental concerns.



For manufacturers working with both B2C and B2B companies, this should be a concern. A negative brand perception decreases order quantities over time, as the supply chain adjusts accordingly. Concurrently, the expected growth of climate-conscious products will generate stiff competition to satisfy consumer demand, driving prices (and profits) down further.

Consumers expect brands to address climate change.



Source: SOSA based on [Deloitte](#), [The Wall Street Journal](#)

Current consumer trends in sustainability

01

More than half of Europe-7 adults have agreed they will pay more for sustainable and environmentally friendly products. They will also seek packaging recyclability and environmentally friendly shipping in their purchase journey.

02

In a sustainable behavior research, results show 32% of UK consumers are highly engaged in adopting a more sustainable lifestyle, and 28% stopped buying specific products due to environmental concerns.

03

50% of Gen Z reduced how much they buy, and 45% stopped purchasing certain brands due to ethical or sustainability concerns.

Brands must start integrating and activating sustainability in customer journeys.



64%

of European online adults agree that **companies are responsible for protecting the environment.**

VS.



34%

of European online adults **trust companies when they say they will commit to reducing climate change.**



69%

of European online adults **wish more companies were transparent about their business practices.**

Source: [Forrester](#), 2022

Taking action



Manufacturers should prioritize decarbonization and strive toward net-zero emissions.

Despite manufacturers' upcoming challenges of tighter carbon regulations on the horizon, consumer concern and pressures, and financial constraints of financial backers, they can take immediate action to thrive in the volatile climate. Any action taken now will affect any or all pieces in the supply chain, from raw products to product delivery and overhead costs.

Manufacturers should prioritize decarbonization and strive toward net-zero emissions. Through a fluid and adaptive mindset for innovation, manufacturers have an opportunity to become innovation leaders in their field, ultimately paving the way for a green future.





Open innovation can assist manufacturers to initially innovate, adapt, and finally save in the long run.

Today's innovative technologies span all angles of the manufacturing process:

- IoT-based solutions and machine learning software.
- Digital twin factories, [digital supply chain](#).
- Predictive maintenance, energy management technology.
- Industrial product management software.
- Water treatment machinery.
- Innovative recycled packaging.
- Tech-driven raw materials.
- Infrastructure for fossil-fuel-free equipment. And more.

[Open innovation](#) can assist manufacturers to initially innovate, adapt, and finally save in the long run.

With these options at the manufacturer's stoop, a [net-zero](#) factory is a feasible coveted achievement in the race for sustainable manufacturing.

Ready to discover best-fit technologies to reduce your factory's carbon footprint?

Book a consultation with an expert

SOSA

About SOSA

SOSA is an open innovation company. We work with innovation teams and business units in corporations (like HP, Schneider Electric, RBC, Swiss Re, LG), and governments (like Australia, Brazil, Canada and Taiwan).

We scout and validate startups and technologies in order to bring our clients the solutions they need to solve use cases, identify opportunities, or build new products.

Think noise-canceling headphones for the endless supply of startups.

Since 2014, we've literally been in the room facilitating discussions between large organizations and tech companies. From the first touchpoint all the way to pilots, implementations, and investments, we bring our clients precisely the technologies they need to advance innovation.