

Protecting tomorrow

Supporting pharmaceutical
and biotech industries to build
a sustainable future

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Environmental sustainability and the pharma and biotech sectors

Sustainability is a broad policy concept in the global public discourse and is often conceived of in terms of three “dimensions” or “pillars”: environmental, economic, and social.¹ In fact, for many years sustainability has remained an important focus for corporations of all sizes and across many industry sectors, as well as for communities around the world.

A 2021 report² produced by My Green Lab in collaboration with Urgentem outlines the **key role the pharma industry could play** to become a model of environmental sustainability for other sectors to follow.

As a top contract development and manufacturing organization (CDMO), we provide industry-leading pharma services solutions for drug development, clinical trial logistics, and commercial manufacturing to customers worldwide. Together with our customers, we are rapidly turning pharmaceutical possibilities into realities. We believe **we have a responsibility and an opportunity to make a difference**. Our **mission** is to enable our customers to make the world healthier, cleaner, and safer. As part of that mission, we:



Prioritise our focus on reducing waste and striving towards defined corporate environmental sustainability goals



Work in partnership with the pharma and biotech communities on shared environmental sustainability goals, and to help them achieve their own environmental sustainability goals

When it comes to sustainability, **it is important to act now**. We believe that, as a sector, we must continue to work together to reduce our impact on the environment. Whether our customers are accelerating life sciences research, solving complex

analytical challenges, improving patient diagnostics and therapies, or increasing productivity in their laboratories, we are here to support them and help them achieve their sustainability goals, globally.

“ Biotech and pharmaceutical companies have the technical acumen, culture of innovation, and financial resources required to be a global leader in environmental sustainability. Perhaps no other industry has more experience making long-term capital investments to tackle some of the world’s most complex problems for the benefit of society. Just as the industry showed the world the best that science had to offer with the response to COVID-19, the industry must turn now to the greatest threat of our time, climate change, and become a model for other sectors to follow.”

– The Carbon Impact of Biotech & Pharma: A Roadmap to 1.5°C, October 2021

The EU Green Deal aims to make Europe the first climate-neutral continent by 2050

The importance of the EU Green Deal

Climate change and environmental degradation are existential threats to Europe and the world. To overcome these challenges, the EU Green Deal will transform the European Union into a modern, resource-efficient, and competitive economy, ensuring:

- No net emissions of greenhouse gases by 2050
- Economic growth decoupled from resource use
- No person and no place left behind



[Find out more about EU Green Deal priorities.](#)

EU Green Deal topics



Climate



Environment and oceans



Energy



Transport



Agriculture



Finance and regional development



Industry



Research and innovation

EU Green Deal benefits



Fresh air, clean water, healthy soil, and biodiversity



Renovated, energy-efficient buildings



Healthy and affordable food



More public transport



Cleaner energy and cutting-edge clean technological innovation



Longer-lasting products that can be repaired, recycled, and reused



Future-proof jobs and skills training for the transition



Globally competitive and resilient industry

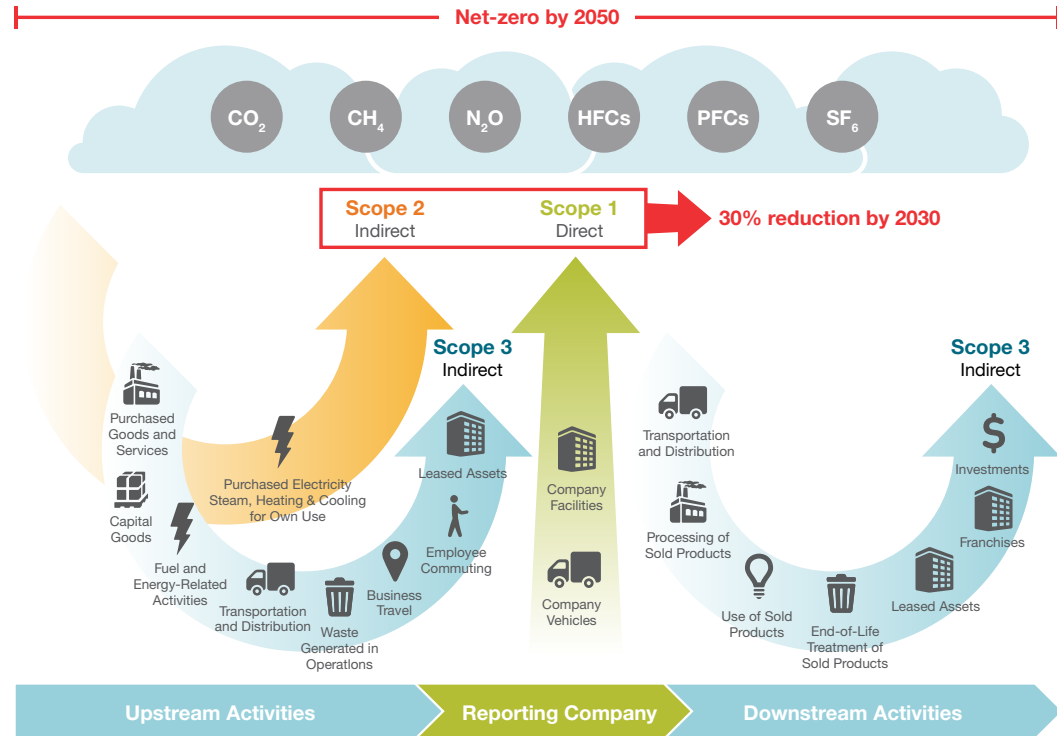
Cutting emissions is crucial for EU Green Deal success

The Carbon Impact of Biotech and Pharma: A Roadmap to 1.5°C revealed several key findings:

- While the largest companies, by revenue, have reduced greenhouse gas emissions year on year since at least 2015, **the majority of companies within the biotechnology and pharmaceutical industries do not have climate commitments aligned with a 1.5°C world.** Companies must establish more ambitious targets, and those commitments must be backed up by measureable actions.
- **The global biotechnology and pharmaceutical industries have a significant carbon footprint** (197 million tCO₂e), more than the forestry and paper industry, more than the semiconductor industry, and equal to nearly half the annual carbon output of the United Kingdom.
- **The carbon footprint of pharma/biotech is currently increasing.** Scope 3 emissions are nearly five times larger than Scope 1 and 2 emissions combined. Therefore, it is critical to consider the entire value chain when evaluating the carbon footprint of biotech and pharma.

Greenhouse emission Scopes and Thermo Fisher targets

Greenhouse gas emissions are categorized as Scope 1, 2, or 3 depending on source



Source: Greenhouse Gas Protocol – Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

Note: Thermo Fisher targets are based on 2018 levels.

Scope 1 emissions	This includes: <ul style="list-style-type: none"> • Fossil fuels used at our facilities and in company vehicles • Unavoidable leakage of refrigerants from cooling equipment
Scope 2 emissions	<ul style="list-style-type: none"> • Electricity, steam, and hot water purchased to power our facilities
Scope 3 emissions	Other activities we do not control but have influence over, such as: <ul style="list-style-type: none"> • Goods purchased • Transportation of goods • Impact from the use of our products

Source: "Working toward net zero," Thermo Fisher Scientific, 2022.

Market research findings

Targets outlined in the EU Green Deal impact the pharma and biotech communities and CDMOs like Thermo Fisher.



As scientists, technicians, and individuals, we are all actively looking for ways to reduce our environmental impact because we like to make a difference. At Thermo Fisher, it is important for us to engage with our customers and to truly understand their position on topics such as sustainability so that we can best partner with them going forward.

In 2021, we conducted market research with 80+ companies from around the world, including large and mid-size pharma and new and emerging companies. The findings were insightful.

98%
of customers
believe requirements for
sustainable products will grow



Voice of the customer

Feedback from 88 UK- and USA-based customers in clinical and food segments*



Environmental sustainability focus

- 42% of labs have environmental sustainability programs/goals
- 92% of customers view incorporating environmental sustainability as a high priority
- Environmental sustainability criteria will **influence >55% of customers' future purchasing decisions**



Potential solutions

- >50% of customers are willing to try sustainable solutions for materials and waste management
- Customers indicated a similar **preference for recycled or compostable material**

*Key Research Group on behalf of Thermo Fisher, July 2021.

Thermo Fisher's environmental sustainability initiatives

Providing innovative solutions that help our customers meet their environmental sustainability goals

Our approach

As the world leader in serving science, we provide our customers products and services to help them tackle some of the world's greatest societal and environmental challenges. Given our industry knowledge, the scale of our operations, the talent of our colleagues, and the depth of our capabilities—all powered by our culture of continuous improvement—Thermo Fisher is particularly qualified to help positively impact the global community.

Every day, our colleagues are motivated knowing we are contributing to a more sustainable world for future generations. For us, this starts with our Mission to enable our customers to make the world healthier, cleaner, and safer. It inspires the way we run our business.

We focus our approach on four key pillars—Operations, Colleagues, Communities, and Environment. Our strategic framework, comprising these pillars, enables us to effectively prioritise and successfully manage the issues fundamental to our business and central to building a sustainable future.

Climate is one of these issues and our goals reflect it. In 2019, Thermo Fisher set a target to reduce Scope 1 and Scope 2 emissions by 30% by 2030 compared to 2018 levels. This includes energy use

for all buildings and company vehicles. Scope 3 calculation methods are in development. In addition, by 2027, 90% of suppliers, by spend, will have set their own science-based targets.

New greenhouse gas goal

In 2021, Thermo Fisher announced its commitment to achieve net-zero emissions by 2050. This aligns with the aims of the Paris Climate Agreement and the United Nations' Race to Zero campaign and will further advance the company's current strategy to mitigate its impact on the environment.³

**Net-zero
emissions**
by 2050

Working toward net-zero

An update on our efforts to reduce
greenhouse gas emissions

[Download factsheet](#)

Reducing emissions

Renewable energy at Thermo Fisher's pharma services sites



In 2021, **27%** of total electricity consumed was sourced from renewable electricity



As of 2022, **19 sites** are currently powered by 100% renewable electricity

Rheinfelden, Germany



Our [Rheinfelden](#) facility specializes in secondary packaging, storage, logistics, and distribution of clinical supplies to investigator sites across Europe.

- Fully equipped with modern LED technology and movement-sensitive and time-controlled lighting

- Greened flat roof = ecological compensation area and rainwater retention
- Various recuperator systems and performance-based and frequency-determining electrical appliances have been installed within HVAC systems
- Highest storage ratio per m² (Autostore)
- No forklift or mechanical units between Autostore bins
- Lowest energy consumption vs. other storage
- No lighting needed; no forklift aisles
- Powered by 100% wind energy
- Three-year CO₂ avoidance: 3,000 tonnes

Cork, Ireland



Our [Cork](#) facility specializes in process development and cGMP manufacturing of APIs and intermediates for clinical and commercial supplies.

A 3 MW turbine at the site provides 22% of the site's electricity.

Reducing waste

Reusable shipper program saves costs and avoids tonnes of waste going to landfills

When it comes to shipping clinical supplies across the globe, we offer a comprehensive suite of passive and active shipping systems that support the joint sustainability goals of Thermo Fisher, our customers, and our suppliers. We provide a high-performance shipper return and reuse program for shipments within Europe, the United States, and China, with strategic plans to expand this program over time.

Our reusable shipper program supports corporate environmental sustainability goals in terms of reducing Scope 3 emissions, while also offering tangible cost savings.



Reusable shipper program



Superior thermal properties



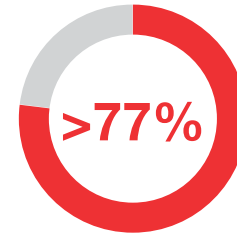
Lighter weight



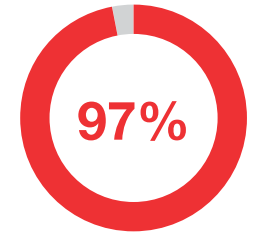
Decrease in freight expense



Less waste removal necessary



reduction
in temperature excursions



return rate
for refurbishing and reuse



We avoid **~18 tonnes (40,000 lbs)** of solid waste per every 1,000 shipments



We shipped 179,000+ reusable shippers in 2021 (+40% YOY), **preventing ~3.9M kg of landfill waste**

“**To better serve** our customers and society overall, we continue to build on our commitment to sustainability. At Thermo Fisher, we have a culture of continuous improvement, which is powered by our Practical Process Improvement (PPI) business system. Our goal to find a better way every day inspires our colleagues to drive innovation and deliver new solutions.”

– Marc N. Casper, Chairman, President, and CEO, Thermo Fisher Scientific



[Download case study](#)

Download this case study to learn more about:

- The benefits of and differences between reusable shippers and traditional shippers
- The systems and processes used by a pharmaceutical company to improve environmental sustainability metrics while reducing its carbon footprint
- How to improve service quality and site experience

CASE STUDY: Cold chain reusable shipper program reduces risk and waste

When a multinational pharmaceutical company found itself face-to-face with an environmental sustainability challenge, a new reusable shipper solution seemed to be the answer to help the company reduce its waste and carbon footprint.

Having never relied on this shipping solution before, the company launched a pilot program.

The company switched from single-use shippers to reusable shippers for all of its clinical supply shipments to investigator sites during a one-year period, in the United States and United Kingdom, resulting in significant waste reduction.

	USA	UK
Total US shipments	3,715 reusable shippers	1,010 reusable shippers
Reusable shipper return rate	100%	98%
Alternative single-use shipper weight	18 kg	15 kg
Estimated annual waste savings*	66 metric tonnes	14.8 metric tonnes

*Single-use shippers are no longer being used, resulting in less landfill waste



Lining up the 3,715 shippers would result in **over eight football fields in length of waste**



Temperature monitor recycling

Recycling today for a better tomorrow

At Thermo Fisher, we monitor processes for environmental impact

Challenge:

For worldwide shipment of clinical supplies, many of which need to be maintained in a cold chain environment, our clinical sites purchase more than 300,000 temperature monitors from a third-party supplier each year.

Decision:

We established a working group to review our shipping processes, including disposal of large volumes of temperature monitors, to support our sustainability goals.

Solution:

We partnered with our third-party supplier as part of a green initiative and agreed that:



All temperature monitors would be **returned** to the third-party site



All monitors would be **wiped clean**



The monitors would be **recycled properly** to reduce our waste footprint



The majority of the components would be **reused** by the third party



The non reusable components would be **disposed of appropriately** as electronic waste

Other environmental sustainability projects across Thermo Fisher

There are numerous other initiatives across Thermo Fisher that support our customers' environmental sustainability programs. Click each box to learn more:

Greener product alternatives:

Our greener product alternatives can help advance sustainability in the lab by minimizing the use of hazardous chemicals, minimizing waste and material consumption, and increasing energy efficiency.



The ACT label database:

By emphasizing Accountability, Consistency, and Transparency (ACT) around manufacturing, energy and water use, packaging, and end of life, ACT makes it easy to choose more sustainable products—the premier Eco-Nutrition label for laboratory products.



Greener choice:

How the Thermo Fisher channel is dedicated to providing sustainable solutions to help you reduce your environmental footprint.



Supply centres:

Our on-site, one-stop shop for all of your lab's inventory needs—grow your science, reduce your footprint.



The paper cooler:

Our 100% paper cooler is an environmentally preferable alternative to expanded polystyrene and styrofoam (EPS) coolers. It meets the thermal requirements necessary to uphold stringent product quality standards.



Top customer questions regarding Thermo Fisher's environmental sustainability efforts

Thermo Fisher provides industry-leading solutions for drug development, clinical trial logistics, and commercial manufacturing to pharma and biotech customers through our Patheon brand. Here we highlight some of their key questions and provide you with links to further information on these topics.

Q Do you invest in renewable energy?

Our approach to renewable energy is centered on the concept of “additionality,” directly supporting the development of new renewable energy sources. This focus will help us add renewable systems at our sites and leverage long-term power purchasing agreements (PPAs) with new wind and solar facilities.

We increased our use of renewable electricity to nearly 250 gigawatt hours in 2021, with over 60 sites fully powered by renewable electricity. We've recently added 3.5 MW of solar power and 3 MW of wind energy across seven sites, with another 15 MW of solar planned.

Learn more from our [2021 CSR report](#).

Q Do you have emissions reduction plans, goals, and targets?

Yes, we have near-term and long-term targets. Our targets are:

- By 2027, 90% of suppliers, by spend, set science-based targets.
- By 2030, reduce greenhouse gas emissions by 30% from our 2018 baseline.
- By 2050, achieve net-zero emissions, meaning at least a 90% absolute reduction across Scopes 1, 2, and 3.

Learn more about our approach in our [Working Towards Net-Zero Plan](#).

Q Do you track greenhouse gas emissions from your operations (Scopes 1 and 2)?

Yes, we report our greenhouse gas emissions annually across all Scopes in our [CSR report](#).



[Access our environmental sustainability program here](#)

Q Describe your programs associated with greenhouse gas emissions management.

- Transition away from fossil fuels and high-impact refrigerants
- Accelerate the adoption of renewable electricity, both on- and off-site
- Engage with our suppliers
- Incorporate sustainability principles into product designs
- Transform with transparency

Q Do you have a water reduction plan/water stewardship program?

Our approach consists of uncoupling water usage from business growth. We leverage our PPI Business System to identify new reduction and reuse opportunities and manage our water use with a context-based perspective to understand how our use relates to the needs of the surrounding water basin. Where new facilities are developed or refurbishments take place, water conservation along with energy efficiency is included in the design (e.g., Rheinfelden, Germany).

Q Do you have a waste reduction plan?

At our sites, we promote zero waste, which means diverting at least 90% of nonhazardous Thermo Fisher waste from landfills and waste-to-energy facilities. Our teams focus on reuse, recycle, and compost

disposal strategies. Our zero-waste playbook guides sites through a process of identifying all waste streams, minimizing waste generation, and improving waste disposal strategies to eliminate landfilling. By the end of 2021, 24 facilities across Thermo Fisher were zero-waste certified.

Q How do you manage the sustainability of your packaging components?

With respect to the materials used within our primary and secondary packaging operations, we maintain the highest possible standards through our network of GMP suppliers. Materials used as primary packaging, by necessity, must be specified by the study sponsor to ensure compatibility with our environmental sustainability program. Within the secondary packaging operation, we can work with suppliers to identify sustainable solutions, including sustainable/

recycled materials, as well as products that are recyclable, provided that this does not compromise quality standards or introduce technical challenges that could impact project cost and/or timelines.

Q Do you have green product alternatives/environmentally preferable goods?

Thermo Fisher has green product options under our internally developed Green Leaf Label. We also have some lab consumable products which have been certified externally via My Green Labs under the [ACT Label](#).

Q Do you report via the CDP framework?

Yes, the company files a CDP report annually and the report is available publicly [here](#).



[Access our environment health and safety \(EHS\) program here](#)

Our commitment

The science is clear. **We are at a climate change tipping point, and there is no time to waste.**

Climate change affects us all, and collaboration is critical to success on our mutual sustainability journey. Thermo Fisher pledges to continue working with you to design new and innovative ways to reduce our sector's impact on the environment, without compromising safety and quality.

References

¹ [Purvis, B., Mao, Y. & Robinson, D. Three pillars of sustainability: in search of conceptual origins. *Sustain Sci* 2019.](#)

² ["The Carbon Impact of Biotech & Pharma: A Roadmap to 1.5°C." Produced by My Green Lab in collaboration with Urgentem, October 2021.](#)

³ [Thermo Fisher Scientific Commits to Achieve Net-Zero Carbon Emissions by 2050](#)

About us

Thermo Fisher Scientific provides industry-leading pharma services solutions for drug development, clinical trial logistics and commercial manufacturing to customers through our Patheon brand. With more than 65 locations around the world, we provide integrated, end-to-end capabilities across all phases of development, including API, biologics, viral vectors, cGMP plasmids, formulation, clinical trials solutions, logistics services and commercial manufacturing and packaging. Built on a reputation for scientific and technical excellence, we provide pharma and biotech companies of all sizes instant access to a global network of facilities and experts across the Americas, Europe, Asia and Australia. We offer integrated drug development and clinical services tailored to fit your drug development journey through our Quick to Care™ program. Our Quick to Clinic™ programs for large and small molecules help you balance speed and risk during early development so you can file your IND quickly and successfully. Digital innovations such as our mysupply Platform and Pharma 4.0 enablement offer real-time data and a streamlined experience. Together with our customers, we're rapidly turning pharmaceutical possibilities into realities.



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