

Pharmaceutical industry and decarbonization: **A difficult equation**

To reach decarbonization goals, the majority of the savings that can be achieved within the pharmaceutical industry lie in the value chain and medicine production. From optimizing transport to artificial intelligence and eco-design, here are some possibilities for how decarbonization can go hand in hand with improvements in health care quality.

Reducing emissions: A major challenge

The pharmaceutical industry faces a challenge on two levels. On the one hand, it must maintain a high standard of care for patients, as the global population is aging – especially in developed countries – and therefore has greater health needs. On the other hand, it must limit its environmental impacts.

The pharmaceutical industry accounts for 4.4% of CO₂ emissions globallyⁱ, and significantly more in developed countries (7.6% in the United States, 6.4% in Japan, 5.4% in the UK and 5.2% in Germanyⁱⁱ).

Of these, 75%ⁱⁱⁱ are indirect, meaning

that they are linked to the value chain: production, transport, medical devices, equipment and technologies, instruments, etc.

If no action is taken and this becomes the status quo, things could deteriorate rapidly – the pharmaceutical industry could see its carbon footprint triple by 2050.ⁱ

To reduce its emissions all while remaining efficient, the pharmaceutical sector has several options, including optimizing its value chain and capitalizing on breakthrough innovations.



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Shipping is one way of reducing greenhouse gas emissions

ⁱ: UPSTREAM SCOPE 3 EMISSIONS ACROSS THE PHARMA INDUSTRY, may 2023v

ⁱⁱ: THE PHARMACEUTICAL INDUSTRY'S CARBON FOOTPRINT AND CURRENT MITIGATION STRATEGIES. A LITERATURE REVIEW, IPSOR annual 2023

ⁱⁱⁱ: Accelerating the transition to net zero in life sciences, McKinsey, August 2023

Options for reducing the sector's emissions

First step: Optimizing the production chain

Most emissions are linked to the value chain, so this is where the first opportunities for decarbonization lie. One avenue to explore would be to relocate manufacturing facilities so that they produce medicines as close as possible to the place of consumption. This would make it possible both to decarbonize and to meet patients' needs more quickly.

Mathis Egnell is an engineer in charge of the health program at The [Shift Project](#), a think-tank working to mitigate climate change and reduce the economy's dependence on fossil fuels and oil in particular. He believes that indicating the carbon content of each medicine would be a good idea.

"In the UK, the National Health Service (NHS) has drawn up a roadmap to bring its suppliers on board and work toward this.

From 2028, it plans to require drug manufacturers to publish their carbon content in order to be able to access the British market. France is also taking

similar steps. However, it would be even more relevant to take action at the European Union level, for greater impact."

Another way of decarbonizing the value chain is to opt for more environmentally responsible means of transport, energies, and buildings. For instance, six of the Servier Group's 16 industrial sites now use 100% renewable electricity, generated by on-site solar panels or sourced externally.



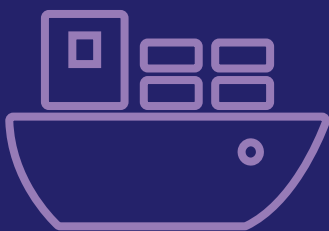
Mathis Egnell

Engineer, in charge of the health program at The Shift Project

After graduating as an engineer from Mines and AgroParisTech, Mathis Egnell began his career as a network environmental footprint consultant for the World Health Organization before joining The Shift Project, where he is now in charge of the health program.



Did you know?



Servier now prioritizes the use of maritime freight to ship its medicines. In 2022–23, 57% of its intercontinental shipments were transported by boat, which represents a 12% increase in maritime transport and a 4% decrease in air transport compared with the previous year.

Second step: Capitalizing on breakthrough innovations like artificial intelligence AI and eco-design to decarbonize health

To decarbonize the health industry, and production of medicines in particular, breakthrough technologies that promise to deliver major gains in terms of efficiency also have a role to play.

As an example, **generative AI** can be used to accelerate the time it takes to develop medicines. This technology can be used to identify the most promising molecules and simulate their interactions on various scales, with approaches based on phenotypes (all of an organism's observable traits) and genomes (all of an organism's genetic material). This makes it possible to increase the number of potential drug candidates and reduce the risks of failure.

For example, a study by [Nvidia and Recursion Pharmaceuticals](#) made it

possible to test — in one week — a quantity of molecules that it would have taken 100,000 years^{iv} to test using traditional methods. Elsewhere, Insilico Medicine used generative AI to develop a medicine to treat a lung disease. It claims that use of this technology [enabled](#) it to develop its product in two and a half years instead of six, while dividing the cost by 10.

What's more, AI can be used to improve diagnostics and therefore limit waste, because a correctly diagnosed patient is treated more quickly, for example, for [endoscopy](#) and [reading x-rays](#). To demonstrate this, a Swedish study proved that using AI to support reading mammograms helped radiologists to detect 20% more breast cancers^v.

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“The sustainable transformation of the pharmaceutical industry represents an unprecedented challenge that calls for unique responses. R&D programs and manufacturing processes are subject to strict regulations. These priorities in terms of safety limit our flexibility and any changes to our practices take time. We are constantly looking to achieve the perfect balance between ecological goals, patient interests and health requirements. To do this, we need to ensure that strategies are aligned and establish collaboration that takes into account the interests and outlook of all stakeholders (patients, suppliers and partners).”



Shuo Wang,
CSR Manager, Servier

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^{iv}: Forbes : <https://www.forbes.com/sites/bernardmarr/2024/06/19/how-generative-ai-is-accelerating-drug-discovery/>

^v: RSNA Artificial Intelligence Evaluation of 122 969 Mammography Examinations from a Population-based Screening Program : <https://www.thema-radiologie.fr/actualites/3239/nouvelles-preuves-de-la-pertinence-de-l-ia-pour-le-depistage-du-cancer-du-sein.html>

The eco-design of medicines is another area worth looking into. This includes the use of [green chemistry](#) for drug synthesis or, at the end of the value chain, [the choice of eco-friendly materials](#) for packaging. This is the principle behind Servier's EcoDesign program, launched in 2020. It has set sights on 100% of its new medicines to incorporate eco-design principles into their packaging by 2025, and 100% of new drugs to be eco-designed by 2030.

By combining the optimization of existing processes with breakthrough innovations, equally good or even better care can be provided, with a significantly lower impact on the environment. But to achieve it,

all industry stakeholders must work together with a view to achieving this. Fortunately, awareness of this challenge is gaining ground and a number of countries are taking action to provide greener health care for their populations. The US Department of Health intends to reduce its emissions by 50% by 2030 and achieve neutrality by 2050. In the UK, the NHS is aiming to be carbon neutral [by 2040](#), while the issue of decarbonization is also being examined at in countries like [India](#), [China](#) and [Japan](#). By continuing to raise efficiency levels and innovate, the pharmaceutical industry is positioned to be a valuable ally to reach these goals.

To meet the challenge of decarbonizing the pharmaceutical industry, Servier has set ambitious goals: reducing its scope 1 and 2 emissions by 42% and scope 3 by 25%.

To achieve this, Servier is building its low-carbon strategy around four core pillars:

Reducing energy consumption, while increasing the percentage of renewables in its energy mix



Rethinking how we travel, while increasing the percentage of hybrid and electric vehicles used



Incorporating a sustainable dimension into the criteria for selecting suppliers of goods and services

Promoting the use of more sustainable means of cargo transport (e.g. maritime transportation)

Scope 1 emissions occur directly from sources that are controlled or owned by the Group.

Scope 2 emissions are associated with the purchase of electricity, steam, heat, or cooling.

Scope 3 emissions include greenhouse gas emissions that are not directly related to producing the product but are caused instead by other stages of the medicine life cycle.