PHILIPS

Case study

Halving the carbon footprint of diagnostic imaging at the Champalimaud Foundation

One year into a five-year partnership with Philips, the Champalimaud Foundation has reduced the emissions in its radiology and nuclear medicine department by 24% per exam.

October 2024

Executive summary

Human health and environmental health go hand in hand. Climate change poses a serious threat to health and creates a pressing need for resilient and sustainable healthcare models. Recognizing this, the Champalimaud Foundation aims to be the first carbon neutral clinic in Portugal. Together with Philips, Champalimaud is working to cut the carbon footprint of its diagnostic and interventional imaging departments in half by 2028. The key strategies include replacing older equipment with EcoDesign and AI-enabled equipment, incorporating circular practices, transitioning to renewable energy, and improving workflows. As of July 2024, emissions had already been reduced by 24% per exam. External auditors at Deloitte are validating the results throughout the project.

24%

Estimated reduction in emissions per exam, after adoption of EcoDesign and circular practices.

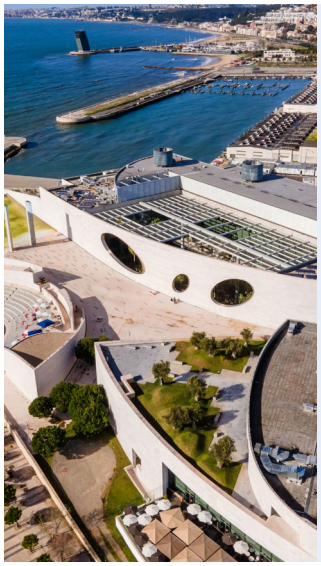
2,175 tons CO_2

The carbon footprint of the original imaging equipment.

2.93 kg CO_2

The average emissions per exam.

*Statistics from Life Cycle Assessment data



Our customer

The Champalimaud Foundation and Clinical Centre aspires to be a worldwide leader in scientific and technological innovation, with the ultimate purpose to prevent, diagnose and treat disease. Its mission is to translate scientific discoveries into solutions to improve the quality of life for people and societies. Based in Lisbon, Portugal, the private foundation takes a two-fold approach: it leads advanced biomedical research, and it offers clinical services for neuroscience and cancer. Founded in 2005 thanks to the generosity of a Portuguese entrepreneur, the foundation today has upwards of 500 clinicians, scientists and staff.

The challenge

The healthcare sector significantly impacts the environment: it accounts for 4.4% of global CO_2 emissions and 10% of global materials used each year, and the supply chain is responsible for 71% of CO_2 emissions.[1,2] The threat of climate change has created a pressing need to build resilient and sustainable healthcare models.

The Champalimaud Foundation understands the link between environmental impact and patient health. Building off a previous partnership focused on equipment, in March 2023 a strategic partnership was signed that aimed to halve the carbon footprint of Champalimaud's use of diagnostic and interventional imaging equipment in the radiology and nuclear medicine department by 2028.

"The 24% reduction in our carbon footprint within the first year is a significant achievement, but it's just the beginning. We are on a clear path to halving our emissions by 2028, demonstrating that sustainable healthcare can be achieved and extending patient care to environmental governance."

Teresa Cotta-Dias, General Secretary of the Champalimaud Foundation

"Acting on knowledge that the healthcare industry contributes significantly to global emissions, at the Champalimaud Centre, we are committed to pioneering in world-class healthcare treatment, ensuring a sustainable impact," said João Silveira Botelho, Vice President of the Champalimaud Foundation. "Our partnership with Philips is a demonstration of our strong commitment."

Added André Cabral, Country Manager at Philips Portugal: "We are heavily committed to decarbonizing healthcare, which aligns well with Champalimaud's mission to lead in both scientific innovation and environmental responsibility. Philips Portugal is honored to be part of this initiative."

Champalimaud aims to be a world leader in oncology, recognized for its efforts in driving sustainable healthcare research and treatment. This partnership will help to reduce the shared carbon footprint through Philips' energy efficient equipment portfolio; ensure the latest technologies for research, diagnosis and patient treatment; and enable collaboration on research and innovation activities.

Philips has been carbon neutral in its operations since 2020, and works closely with suppliers and customers towards ambitious targets to reduce the environmental impact of the supply chain. This partnership with the Champalimaud Foundation is an example of how Philips is well-positioned to bring expertise in innovation and in-depth experience in driving and embedding sustainability as part of day-to-day business operations, to help decarbonize the industry and deliver better care to more people.

Approach

During the first year of the five-year partnership, Philips and Champalimaud focused on assessing the environmental impact of equipment and developing a decarbonization roadmap with Deloitte that included workflow efficiency improvements and circular strategies.

Understanding a starting point is important for any sustainability journey, so the baseline of the current emissions was measured. This was done with a thorough Life Cycle Assessment (LCA), which is a standardized science-based methodology to evaluate the environmental and social impacts associated with a product or service through the various phases of its life cycle. The analysis included specific measurements of the imaging departments, such as energy and patient volumes, and covered a range of equipment from MR, CT and PET-CTs, to ultrasounds and X-rays.

After collecting data and assessing the baseline, the reduction of CO_2e was calculated based on the adoption of four key sustainability levers: EcoDesign, circular practices ensuring sustainable end of life, workflow efficiency, and renewable energy.

Outcomes and results

Based on the LCA, the baseline carbon footprint of the imaging equipment was 2,175 tons CO_2e. This is equivalent to 59,264 chestnut oak trees. The assessment also showed that in 2023, the average emissions per exam was 2.93 kg of CO_2e.

The emissions per exam have now been reduced by approximately 24%, thanks to the systemic approach taken during the first year of the partnership. This result has been achieved through just two of the four potential sustainability levers – EcoDesign equipment replacement and incorporating circular practices – highlighting the potential for further reduction over the course of the partnership.

In EcoDesign products, Philips embeds sustainability into the innovation processes, so the equipment generally uses fewer materials, weighs less, is more energy efficient, and avoids the use of hazardous substances. The software and technology solutions in EcoDesign products can enable faster scanning and improve workflow efficiency. For example, SmartSpeed reduces power consumption by up to 53% per patient scan.[3]

Partnering with Philips to drive sustainable healthcare:

- Since 2020, we have been carbon neutral in our operations (scope 1 and 2).
- We have ambitious targets to decarbonize the value chain. Teaming up with suppliers and customers has a potential sevenfold impact compared with only reducing CO_2 emissions from our own operations.
- As an advocate for globally aligned green purchasing criteria, we consider sustainable procurement one of the critical strategies that care providers and governments can adopt.
- Circularity can drive a lower material footprint per patient, creating the opportunity to reduce costs, emissions and waste, while improving healthcare efficiency. By 2025, we aim to design all new product introductions in line with our EcoDesign requirements.

"By reconfiguring the ultrasound equipment, we not only reduced the centre's energy bill, but we increased the availability (uptime) and lifetime of the equipment," said Juan Carmona, Solutions Leader for Philips Iberia. "This outcome means that more patients can be scanned with the same equipment."

Philips is also ensuring responsible end-of-use management of the original equipment to prevent waste from going to the landfill. Some pieces of equipment from Champalimaud are being used for parts recovery, others refurbished, and some are recycled. The equipment that has been traded back to Philips so far has saved 94 tons CO_2e, equivalent to 2,868 chestnut oak trees. There is still the potential to save up to 298 tons CO_2e total.

The Philips consulting work for the imaging department is ongoing, focused on reducing energy consumption and improving efficiency. Due to this initial success, the project is scheduled to be expanded to other departments of the hospital.

Next steps

Over the remainder of the partnership, Philips and Champalimaud will continue to reduce the environmental impact through both enabling workflow improvements with software solutions and transitioning to renewable energy. Notably, there is the potential to reduce emissions by up to a total of 96% if all sustainability levers are adopted.

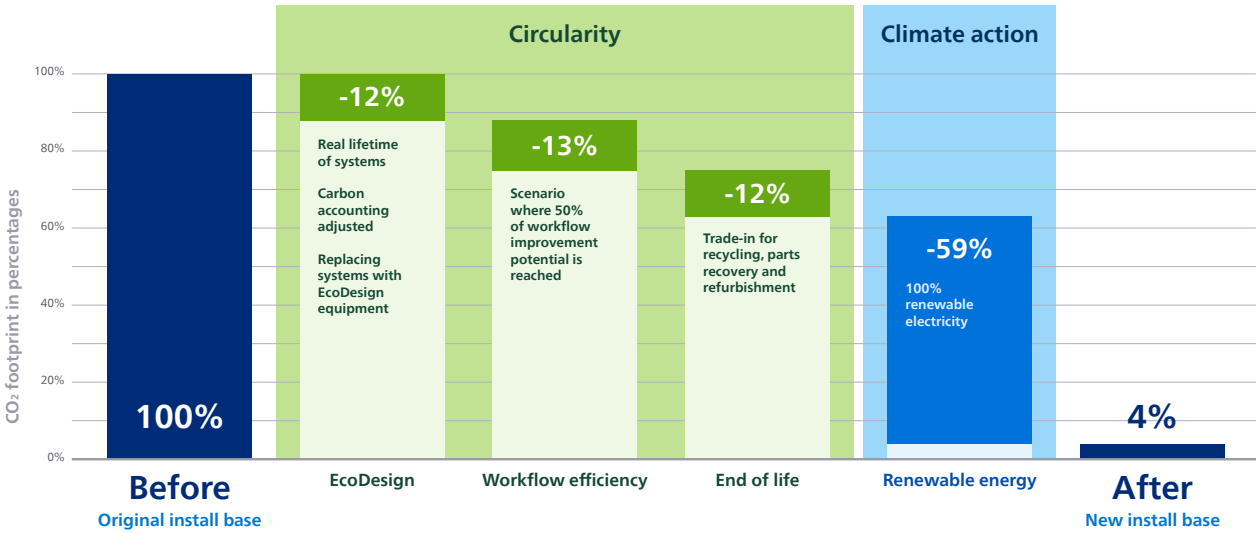
The next phase of the project is to improve workflow. Based on nearly 20 interviews, including with physicians and clinical staff from the radiology and nuclear medicine department, Philips has learned about their experiences and pain points. Together, Philips and Champalimaud have identified potential improvements and will begin to implement changes.

The collaboration will directly benefit patients through faster and more accurate diagnostics, ultimately enhancing the quality of patient care. These advancements ensure that patients receive the best medical treatment in a facility committed to sustainability, fostering a healthier environment both in and out of the clinic walls.

During the third and fifth years of the partnership, Philips will measure the overall reduction of the carbon footprint.

"The 24% reduction in our carbon footprint within the first year is a significant achievement, but it's just the beginning," said Teresa Cotta-Dias, General Secretary of the Champalimaud Foundation. "We are on a clear path to halving our emissions by 2028, demonstrating that sustainable healthcare can be achieved and extending patient care to environmental governance."

Sustainability levers could reduce CO_2e by 96%



*Based on the Life Cycle Assessment.

[1] Health Care Without Harm. Health care climate footprint report (2019).
[2] Circle Economy. The Circularity Gap Report 2020.
[3] Applicable to MR 5300 and Ambition S. Philips SmartSpeed power consumption versus Philips SENSE based scanning. Based on COCIR and in-house simulated environment. Results can vary based on site conditions.

*Results from case studies are not predictive of results in other cases. Results in other cases may vary.

*The LCA results are obtained using Philips Environmental Profit & Loss (EP&L), proxy data, literature and customer obtained data including energy measurements. The LCA is validated externally by 3rd party.

*Carbon accounted according to experts in the field of circularity, carbon reporting and Life Cycle Assessments, given that no Global Circularity Protocol is available yet.

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