CARING NATURE
Sustainable solutions for healthcare

FACTSHEET #1

# REDUCE AND VALORISE WASTE IN THE HEALTHCARE SECTOR

## Healthcare waste mismanagement

WHO estimates that each day, **0,5 kg of hazardious waste are produced per hospital bed in high-income countries** and **0,2 kg in less developed countries**. Each year, this results with **millions of tons of waste** often being landfilled or incinerated for economic reasons or because of a lack of training in disposal methods.

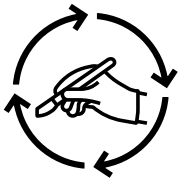
Thus, medical waste cause critical **hazardous threats**, damage **soils** and thus fragilise **food security** and complicate **access to clean water**, particularly for **vulnerable communities**.

Healthcare facilities must take **urgent action** to reduce and valorise waste, while keeping the **priority to patient care** and **worker's safety.**

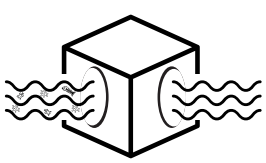
## CARING NATURE's solutions to healthcare waste

Aware of this key challenge, the **CARING NATURE** team is committed to develop, test and validate **4 solutions** to reduce, manage and valorise **medical waste**, **food waste** and **wastewater**.

**Waste-OR**

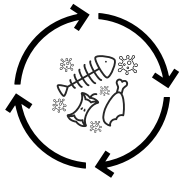


**CleanFlow**



**Med-waste Pyrolysis**

**FoodToBiogas**



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# WASTE-OR

**Operating rooms** have the **highest carbon footprint** of all hospitals departments, because of a critical energy consumption and a massive production of medical waste. WASTE-OR is a set of **guidelines** to optimise the **management**, **reduction**, and **reuse of waste** produced in operating theatres. It encompasses models for waste management, a tool to label products and devices according to their recyclability, a knowledge base and training packages. It is a cost-effective solution, meant to encourage positive behaviors for a greener healthcare.

WASTE-OR is developed in Italy (FPG), tested and validated in Spain (FPHAG) and Germany (UKHD)

# MED WASTE PYROLYSIS

Medical waste management is a critical issue for healthcare facilities, with constantly **increasing volumes of waste** produced and **carbon emissions for waste transportation and landfilling**. MED-WASTE PYROLYSIS is a **pyrolysis-based solution** that will convert onsite 75% of the medical waste mass into valuable goods such as syngas. On the one hand, it allows to save carbon emissions from transportation by processing waste onsite. On the other hand, it feeds healthcare facilities with clean energy, reducing the reliance on fossil fuels.

The solution is developed by ERCS in Italy (FPG) and is tested and validated in Germany (UKHD) and Finland (Wellbeing services county of Päijät-Häme).

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# CleanFlow

To ensure an optimal quality of care, an important **water consumption** is required in healthcare facilities. Improper handling and disposal of hazardous wastewater can lead to contamination of surface and groundwater. CleanFlow is a solution **assessing several affordable and sustainable processes** for hospital **wastewater treatment**, capable of reducing water pollution.

CleanFlow is developped by the Cyprus University of Technology in Greece (7HRC) and tested and validated in Germany (UKHD) and Finland (Wellbeing services county of Päijät-Häme)

# FoodToBiogas

Hospital waste are essentially composed of **food waste**, most of the time ending up in landfills, and contributing to massive **methane and CO2 emissions**. FootToBiogas is a **feasibility study of two economically and environementally sustainable plants for on-site processing of food waste** : 1) anaerobic digestion and 2) food waste drying. Both processes are expected to generate **CO2 savings**, thanks to transport reduction, local generation of energy and reduction of the concentration of antimicrobial genes.

FoodToBiogas is developped by the Cyprus University of Technology in Spain (FPHAG) and tested and validated in Italy (FPG) and FInland (Wellbeing services county of Päijät-Häme)

# CARING NATURE's vision

CARING NATURE's solutions address various aspects of waste mismanagement in the sector. They aim to produce **CO2 savings, transform the life-cycle of waste in operating rooms, convert medical waste into clean energy sources, and decrease reliance on fossil fuels**. These actions are not only cost-effective but also significantly reduce the healthcare sector's carbon footprint.

## Learning corner !

- **Pyrolysis:** A process where organic materials are decomposed at high temperatures in the absence of oxygen. This process breaks down the material into simpler molecules, producing gases, liquids, and solid residues. It's often used to convert biomass or waste into valuable products like biochar, bio-oil, and syngas.

- **Anaerobic digestion:** Anaerobic digestion is a biological process in which micro-organisms break down organic matter in the absence of oxygen. This process is used to treat organic waste, generate biogas, and produce organic fertilizers. It is considered a sustainable waste management and energy production technology.

- **Food drying:** A preservation method that involves removing moisture from food through various techniques to inhibit the growth of micro-organisms. By reducing the moisture content, food becomes lightweight, compact, and less susceptible to spoilage, making it suitable for long-term storage and transportation.

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