6 WASTE MANAGEMENT

6.1 Annual food waste (ENV–13) and annual primary waste (ENV–14) in the healthcare sector in the Flemish region

6.1.1 Documentation sheet

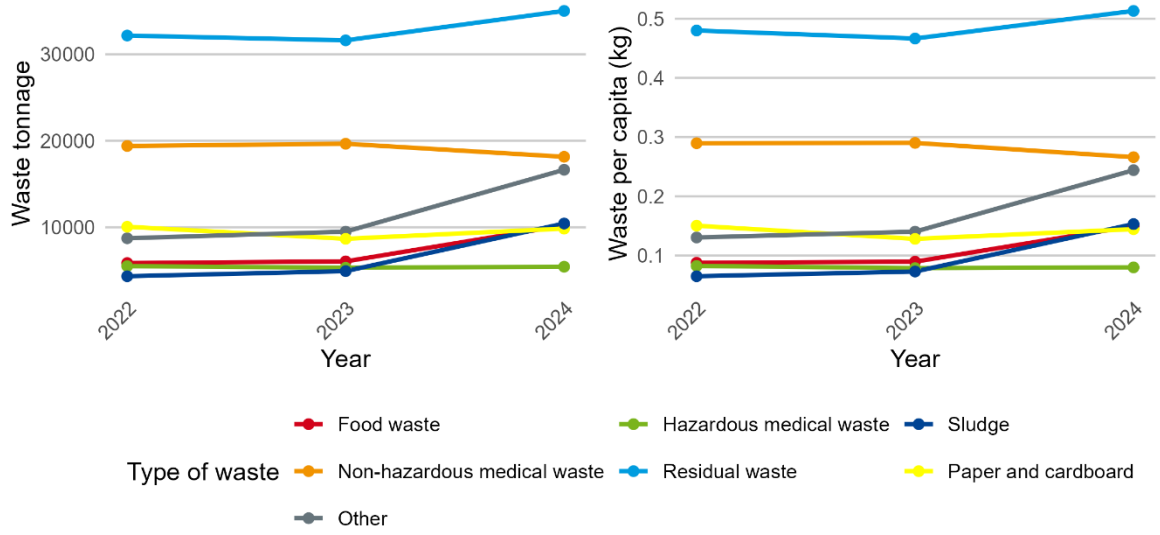
Description	**Primary indicator**: A. Annual amount of primary waste in the healthcare sector in the Flemish region (absolute tonnage + kilograms per capita) **Secondary indicators:** B. Annual amount of food waste in hospitals and nursing homes in the Flemish region (absolute tonnage + kilograms per capita) C. Amount of waste per type (absolute tonnage + kilograms per capita) in the full healthcare sector (in the Flemish region) D. Amount of waste tonnage per type of healthcare facility (absolute tonnage + kilograms per capita) in the full healthcare sector (in the Flemish region) E. Amount of waste tonnage per processing method (absolute tonnage + kilograms per capita) in the full healthcare sector (in the Flemish region)
Rationale	Waste generation contributes to the environmental footprint of healthcare systems. Hospitals and residential care facilities produce large volumes of waste, including packaging, disposables, and clinical materials, which require energy-intensive treatment and disposal. Research shows that healthcare waste management is closely linked to greenhouse gas emissions, resource depletion and pollution, making it a critical area for sustainability monitoring.[1] According to the World Health Organization, 15% of healthcare waste is classified as hazardous, meaning it can be infectious, toxic, carcinogenic, flammable, corrosive, reactive, explosive, or even radioactive.[2] Food waste is particularly climate-intensive: when sent to landfill, decomposing organic matter produces methane, a greenhouse gas up to 72 times more potent than CO_2 over a 20-year timespan. Moreover, food production is highly resource-intensive. Globally, food loss and waste are responsible for approximately 8-10% of annual greenhouse gas emissions and drive significant biodiversity loss by occupying almost one-third of agricultural land.[3]
Calculation	**Primary indicator (A):** • Numerator: Absolute tonnage of waste • Denominator: Population of the corresponding year (calculated as mean of population at beginning and end of year) **Indicator B:** • Numerator: Absolute tonnage of food waste • Denominator: Population of the corresponding year (calculated as mean of population at beginning and end of year) **Indicator C:** • Numerator: Absolute tonnage of waste by type • Denominator: Population of the corresponding year (calculated as mean of population at beginning and end of year) **Indicator D:** • Numerator: Absolute tonnage of waste by type of health facility

	• Denominator: Population of the corresponding year (calculated as mean of population at beginning and end of year) **Indicator E:** • Numerator: Absolute tonnage of waste by procesing method • Denominator: Population of the corresponding year (calculated as mean of population at beginning and end of year)
Data source	The data used in this report were provided by OVAM (Public Waste Agency of Flanders) in November 2025. Since production year 2022, OVAM has relied on MATIS, its materials information system, to compile waste statistics for the Flemish Region. In MATIS, all registered waste collectors, traders, brokers (IHM), and licensed waste processors must report their activities.[4] Data on primary waste generation are based on declarations from waste collectors, supplemented by reports from waste processors and a few external sources. Waste collected from companies is considered primary waste, while waste originating from other processors is excluded as secondary waste. To ensure completeness, incoming waste streams at processors are also included when they were not reported by collectors, excluding any flows originating from other processors.
Technical definitions	Waste streams were classified using the EURAL classification, a European standardized system for identifying and categorizing waste based on its origin and composition. The six-digit codes were grouped into global categories. The precise codes per group are available on request. Categories containing less than 5% of annual waste were pooled under 'other'. The remaining categories were: food waste, non-hazardous medical waste, hazardous medical waste, residual waste, sludge, paper and cardboard, other. As for waste processing methods, among the categories used by OVAM, several were merged to 'other' (other pre-treatment, drying/separating, loading and transfer and sorting), indicating they undergo secondary processing (for which data were not available). The health sector was determined using the NACEBEL2025 classification, more specifically using the following codes: 86; 87.1; 87.301; 47.730; 47.740. Data on number of hospital beds were taken from the FPS Public Health [5], and those for nursing homes from our own past work [6].
International comparability	[7]
Limitations	Data were only available for the Flemish region. Data are only available from 2022 and no trends can be analysed. For the years 2022 and 2023, reporting of waste data was not compulsory, potentially leading to an underestimation. Data of 2024 were received for analysis before thorough validation, thus potentially resulting in an overestimation. For waste processing methods, data were only available on primary processing. Potential sorting errors in medical waste could not be accounted for with the available data and might have led to overestimation of the quantity of hazardous medical waste.
Dimension	Environmental sustainability
Related indicators	/
Supervisor	Helena Van Deynse
Reviewers	Anne Berquin

6.1.2 Results

The healthcare sector in the Flemish region produced a total of 106 kilotonnes of waste in 2024, which is equivalent to 15.5 kg per capita. As can be seen in Figure 1, this predominantly consists of residual waste (35 006 tonnes, corresponding to 33%) and non-hazardous medical waste (18 149 tonnes, corresponding to 17%).

Figure 1 – Absolute and per capita waste per year and per type of waste



Source: MATIS (OVAM) 2025

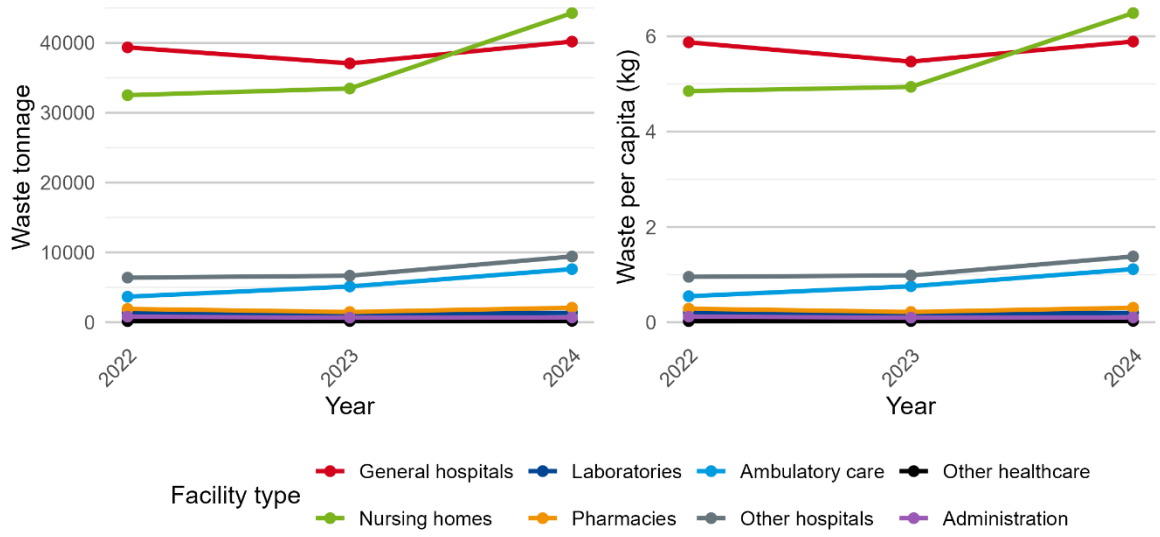
ANALYSIS BY TYPE OF HEALTHCARE FACILITY

Figure 2 breaks the waste down by sector, showing that nursing homes (44 273 tonnes, corresponding to 42%) and hospitals (40 189 tonnes, corresponding to 38%) account for the majority of the waste. While the numbers of these sectors may seem relatively close, this changes when calculating waste relative to the number of beds. Calculated for the year 2022, hospitals produced 4.64 kg/bed/day, while this was merely 1.08 kg/bed/day in nursing homes. With 40% of the waste, non-hazardous medical waste is the largest category in general hospitals, while residual waste accounts for no less than 63% in nursing homes (see Figure 3).

The ‘other’ category in Figure 2 consists of waste types that represented less than 5% of total generated waste. This included plastic and PMD (plastic, metal and drink carton packaging and electronic waste (including batteries and accus), accounting for 3960 tons (3.7% of waste) and 4383 tons (4.1%) respectively in 2024.

ANALYSIS BY TYPE OF HEALTHCARE FACILITY

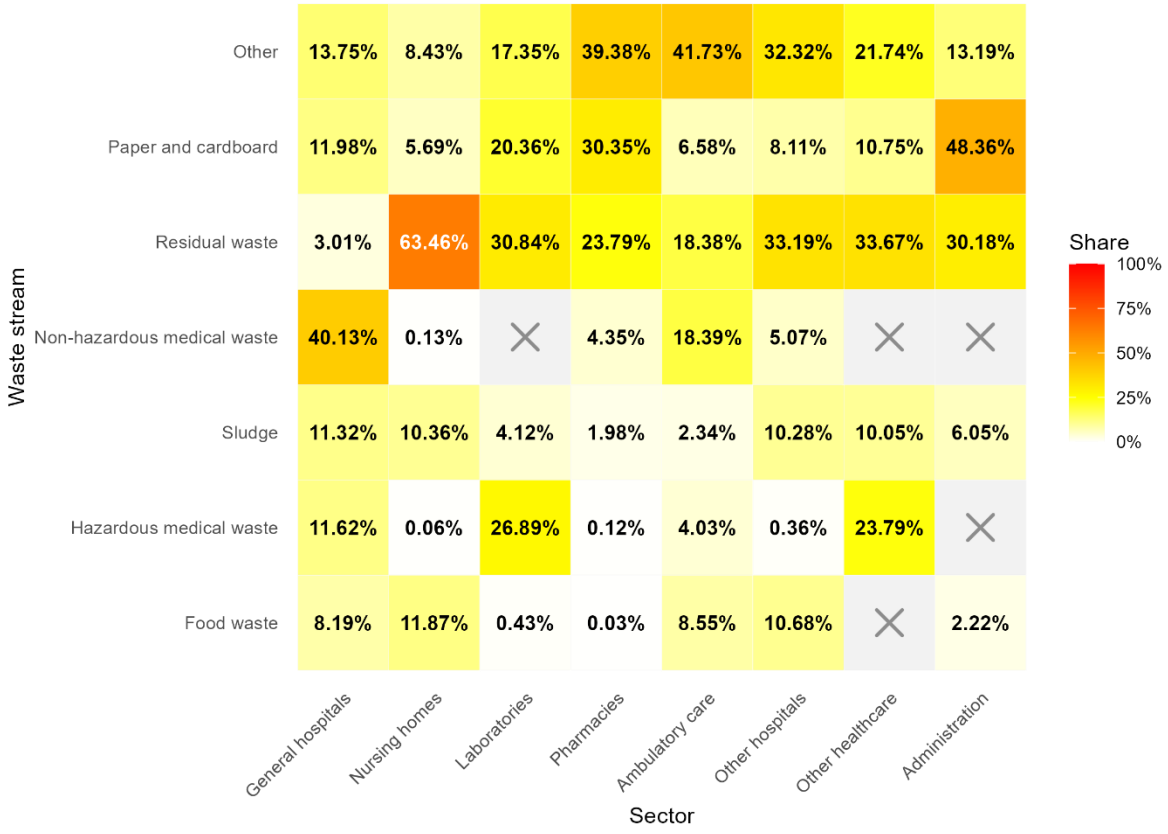
Figure 2 – Absolute and per capita waste per year and per type of healthcare facility



Source: MATIS (OVAM) 2025

Figure 3 – Relative distribution of type of waste per type of healthcare facility

NOTE: percentages represent column-percentages

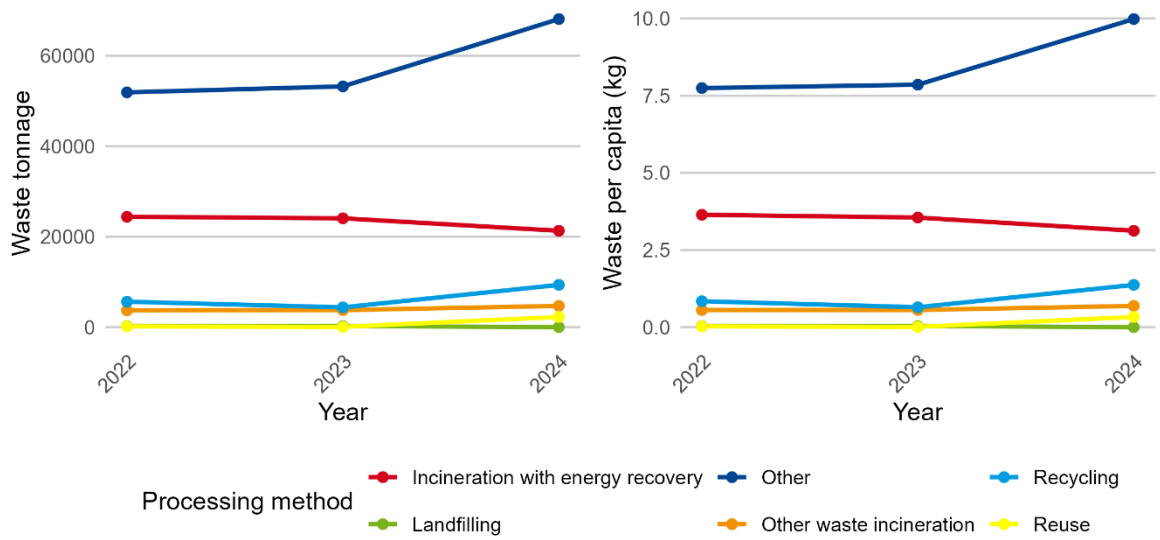


Source: MATIS (OVAM) 2025

ANALYSIS BY WASTE PROCESSING METHOD

As shown in Figure 4, the category of 'other' waste processing is the most common with 64% of waste. This indicates that the majority of waste from the healthcare sector undergoes secondary processing. Figure 5 shows that this is the case for all waste types except medical waste, where incineration is by far the most common method. The high percentage of hazardous medical waste being incinerated is consistent with the guidelines.

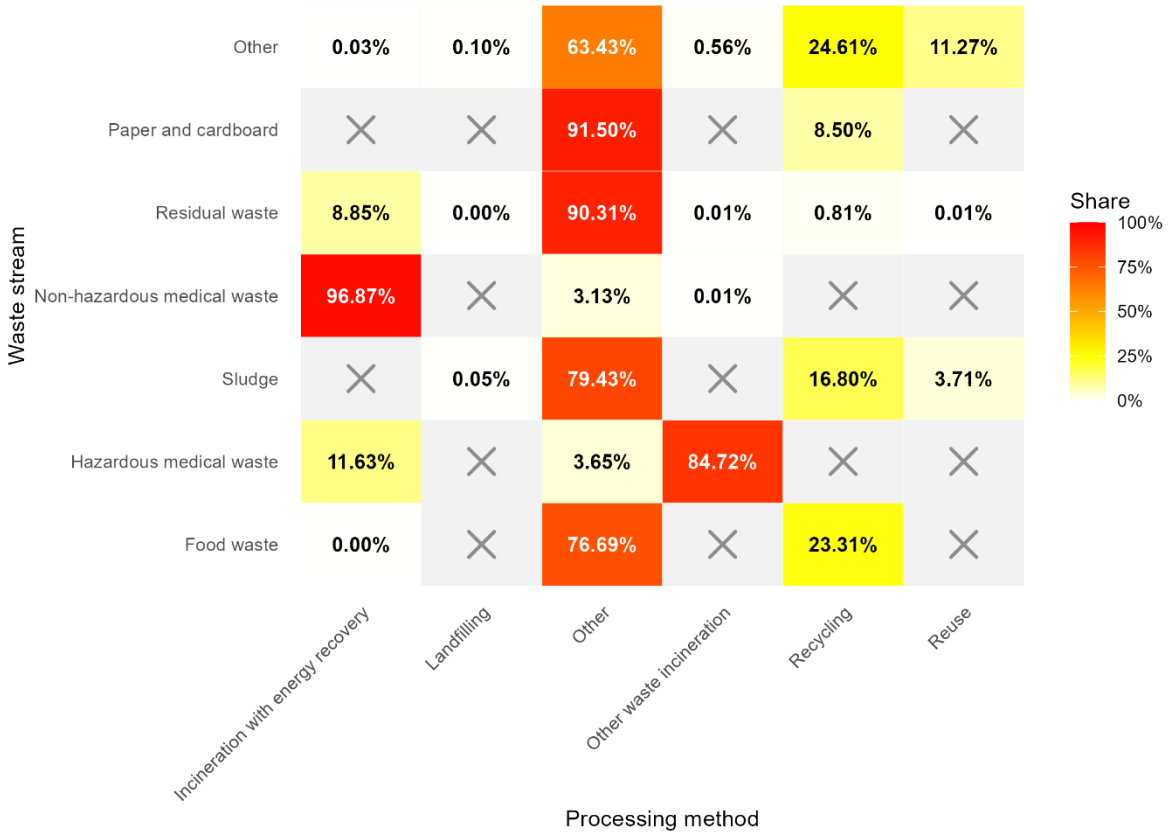
Figure 4 – Absolute and per capita waste per year and per processing method



Source: MATIS (OVAM)

Figure 5 – Distribution of waste processing method per facility type

NOTE: percentages represent row-percentages



Source: MATIS (OVAM) 2025

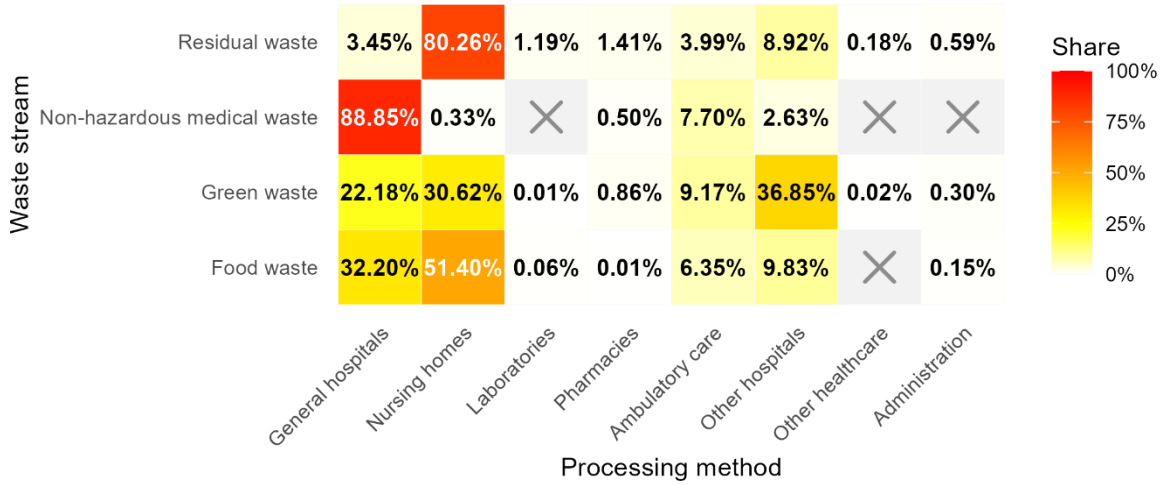
FOOD WASTE

In 2024, 10.2 kilotonnes of food waste were generated in human health activities. Respectively 3.2 and 5.3 kilotonnes of food waste were registered in general hospitals and nursing homes. However, this is likely and underestimation as food waste can, to a larger or lesser extent, also have ended up in residual waste, non-hazardous medical waste or green waste.

Figure 6 shows that 51% of the food waste in the total healthcare sector is produced in nursing homes, while another 32% can be attributed to general hospitals. Figure 7 shows almost none of the (potential) food waste going directly to landfill. However, the large prevalence of 'other' processing likely indicates that a considerable percentage will go to secondary processing, for which we did not have data available.

Figure 6 – Waste streams potentially containing food waste distributed by healthcare facility types

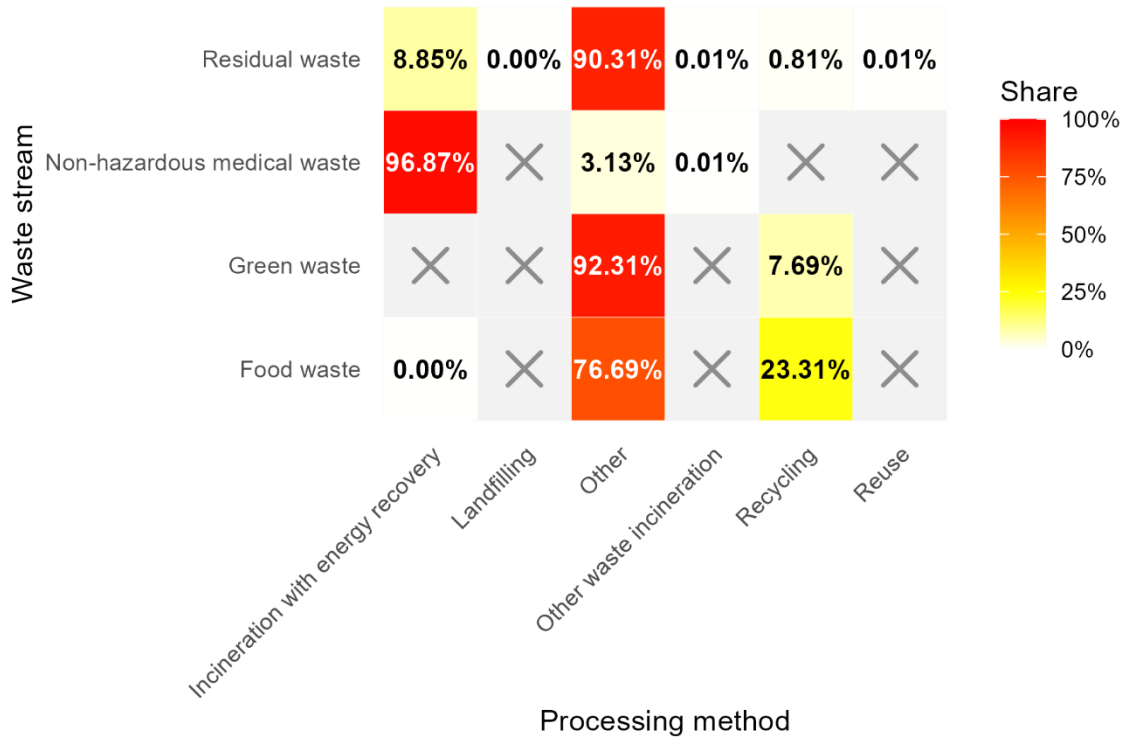
NOTE: percentages are row percentages



Source: MATIS (OVAM) 2025

Figure 7 – Waste streams potentially containing food waste distributed by processing method

NOTE: percentages are row percentages



Source: MATIS (OVAM) 2025

INTERNATIONAL COMPARISON

A systematic review by Mol et al. [7] on medical waste in hospitals estimated an average of 0.97 kg/bed/day in Europe, while 2.63 kg/bed/day hazardous and non-hazardous medical waste was produced in Belgium during the year 2023. For hazardous medical waste specifically, the estimation in the aforementioned systematic review was 0.45 kg/bed/day, which was 0.56 kg/bed/day in Belgium. It is important to note, however, that the majority or the original studies used by Mol et al. [7] are at least 15 years old. Thus, a comparison of [7] disregards longitudinal trends, such as the increase in single-use materials since the COVID-19 pandemic [8].

KEY POINTS

- The healthcare sector in the Flemish region produced a total of 105 769 tonnes of waste in 2024, corresponding to 15.5 kg per capita. Estimation of the trends is currently not possible.
- Among these, 10.22 kilotonnes of food waste were registered in the healthcare sector (5.3 kilotonnes in nursing homes and 3.2 kilotonnes in hospitals), though this is likely an underestimation because food waste may have been mixed with other waste streams.
- Nursing homes produced the largest share of waste (42%), followed closely by hospitals (38%). However, in relative terms this corresponds to hospitals generating 4.64 kg/bed/day and nursing homes 1.08 kg/bed/day in the year 2022.
- Within hospitals, non-hazardous medical waste was the largest category of waste (40%), while in nursing homes, residual waste represented 63% of waste.
- Most of the waste (64%) goes to secondary processing, for which data were not available. (Hazardous) Medical waste was primarily incinerated (97%), as recommended in the guidelines (but non-hazardous medical waste were also mainly incinerated (97%), while there is also the option to recycle.
- Almost none of the potential food waste went directly to landfill, which is positive but the high share of “other” processing (77%) suggests that a significant portion was sent for secondary treatment, for which no detailed data were available. More data are therefore needed to determine if food waste was correctly processed.

1. Eckelman MJ, Sherman J. Environmental Impacts of the U.S. Health Care System and Effects on Public Health. PLoS One. 2016;11(6):e0157014.
2. World Health Organization. Health-care waste. 2024.
3. United Nations Climate Change. Food loss and waste account for 8-10% of annual global greenhouse gas emissions; cost USD 1 trillion annually [Web page].2024 [cited 12/01/2026]. Available from: https://unfccc.int/news/food-loss-and-waste-account-for-8-10-of-annual-global-greenhouse-gas-emissions-cost-usd-1-trillion
4. Openbare Vlaamse Afvalstoffenmaatschappij. Bedrijfsafval en secundaire grondstoffen productiejaar 2012-2022. 2024. Available from: https://www.vlaanderen.be/publicaties/bedrijfsafval-en-secundaire-grondstoffen-productiejaar-2012-2022
5. FPS Public Health. Evolutie van het aantal verantwoorde bedden en erkende bedden per regio en index (België) Brussels: Federal Public Service (FPS) Health, Food Chain Safety and Environment.; 2024. Available from: https://www.health.belgium.be/sites/default/files/media/files/2025-11/evolutie_van_het_aantal_verantwoorde_bedden_en_erkende_bedden_per_regio_en_index.pdf
6. Gerkens S, Lefèvre M, Bouckaert N, Levy M, Maertens de Noordhout C, Obyn C, et al. Performance of the Belgian health system - report 2024: Number of beds in homes for older people (per 1 000 population aged 65 years and over). 2024. Available from: https://www.healthybelgium.be/metadata/hspa/2024/OLD4.pdf
7. Mol MPG, Zolnikov TR, Neves AC, dos Santos GR, Tolentino JLL, de Vasconcelos Barros RT, et al. Healthcare waste generation in hospitals per continent: a systematic review. Environmental Science and Pollution Research. 2022;29(28):42466-75.
8. Eraslan FN, Bhat MA, Gedik K, Gaga EO. The single-use plastic pandemic in the COVID-19 era. Microplastics in the ecosphere: air, water, soil, and food. 2023:65-75.