Technical appendix 3

A prescription for change

Europe focus

SYSTEMIQ

eunomia

Below are graphs detailing the specific split across all dimensions (plastic mass, GHG emissions and costs) for both Moderate-Ambition and High-Ambition scenarios in Europe where not shown in the body of the report.

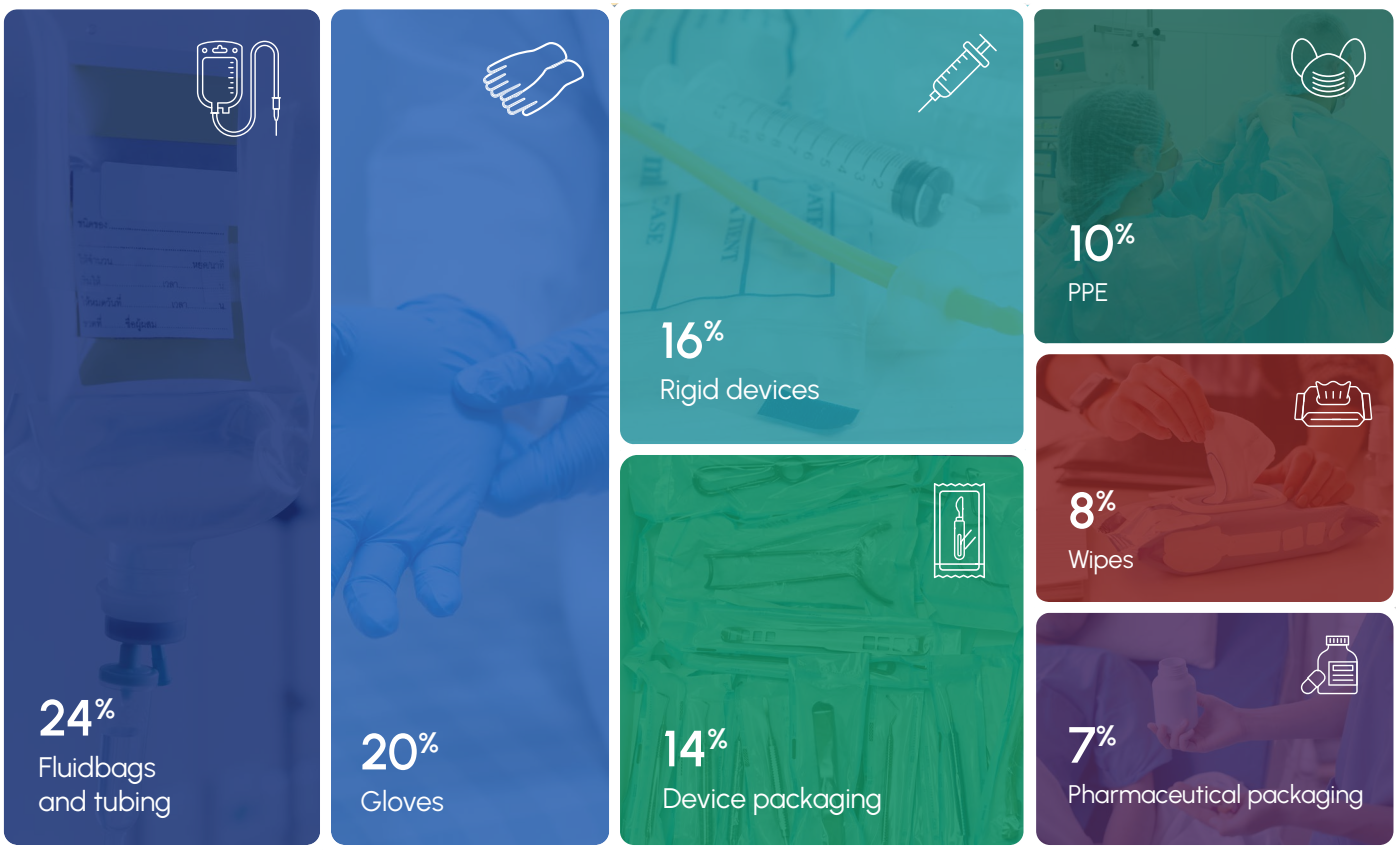
Today, seven product categories make up most single-use plastic consumption

FIGURE 1

Mass of single-use plastic waste of the healthcare single-use plastic system in 2023 in Europe

Europe, %

0.9 Mt total mass in system (in scope)



Most of associated GHG emissions and costs come from upstream processes

FIGURE 2

Total emissions of the healthcare single-use plastic system in 2023

Europe, %

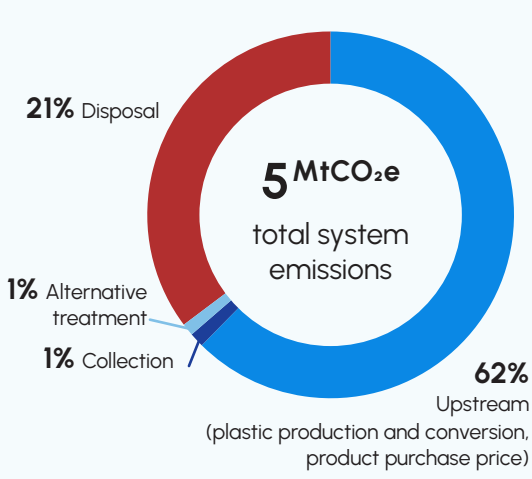
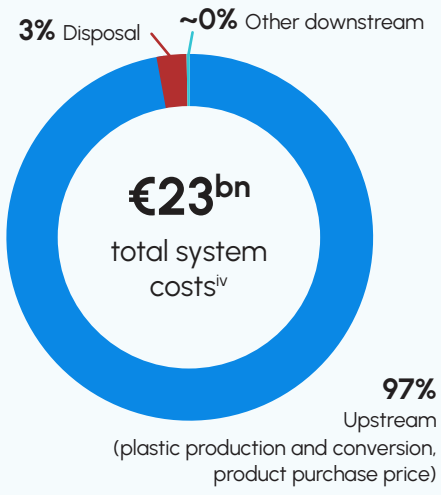


FIGURE 3

Split costs by lifcycle process step of the healthcare single-use plastic system in 2023

Europe, %

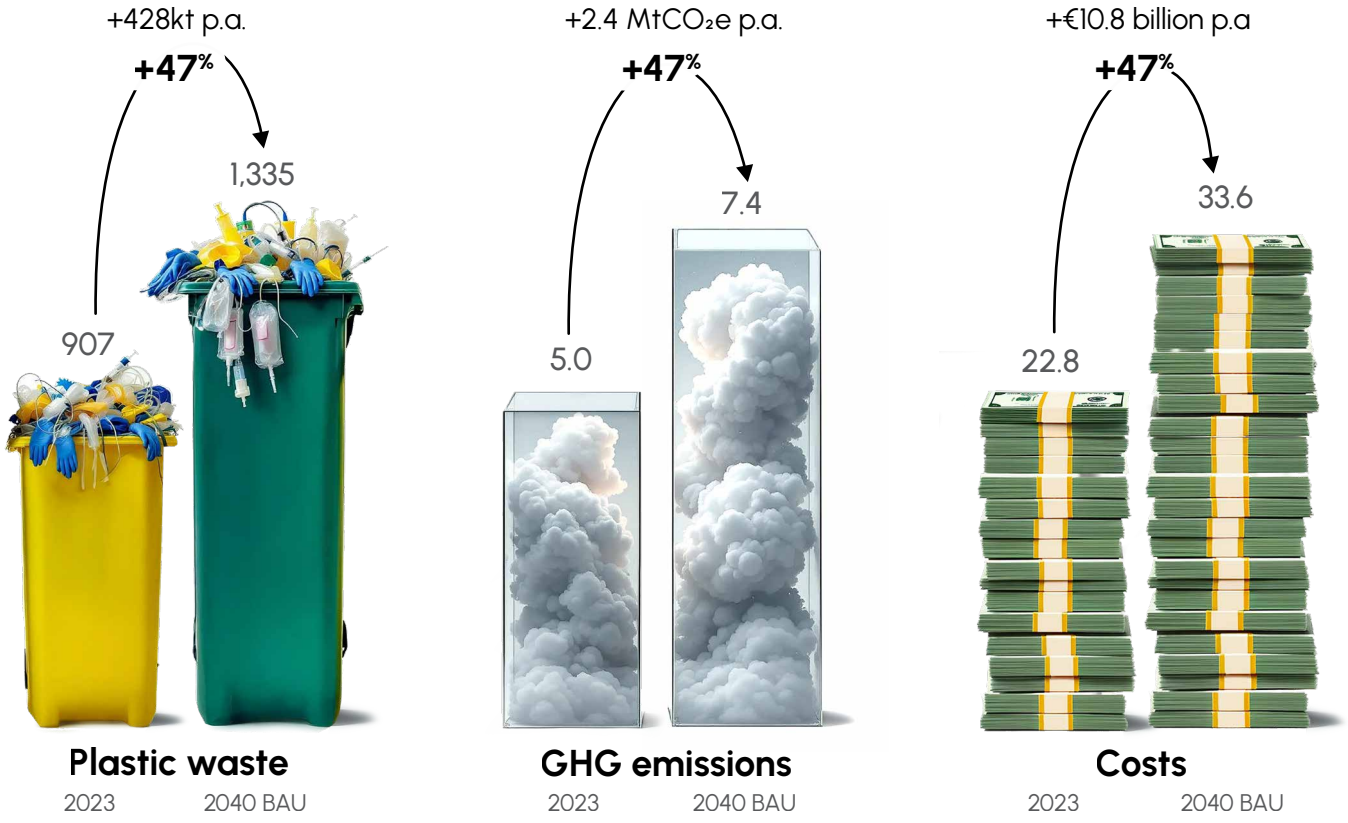


NB: Fluidbags inc. IV bags, blood bags, tubing, and tubing accessories (cannulas and catheters); Rigid devices inc. syringes, blood collection tubes, urine sample pots, and disposable infant bottles; PPE includes gowns, masks, aprons, blue-wrap; Pharma packaging inc. blister packs and pill bottles.

In a Business-as-Usual scenario, plastic waste, GHG emissions and costs could grow by almost 50% by 2040 in Europe

FIGURE 4

Evolution of single-use plastic waste (kt) and related GHG emissions ($MtCO_2e$) and costs (€ billion) in 2023 and in a BAU 2040 scenario in Europe



Moderate-Ambition and High-Ambition scenarios could both generate outsized impact on waste, GHG emissions and costs by 2040 in Europe

FIGURE 5

Mass of disposed waste (Landfill, HTI, LTI+EfW) per scenario in Europe

Single-use healthcare plastic system across Europe, kt

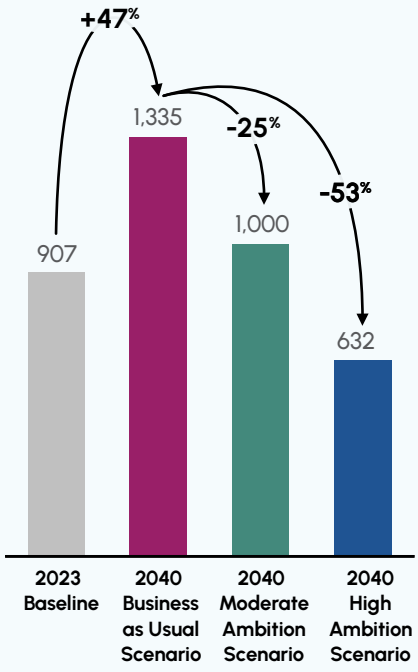


FIGURE 6

Total GHG emissions per scenario in Europe

Single-use healthcare plastic system across Europe, $MtCO_2e$

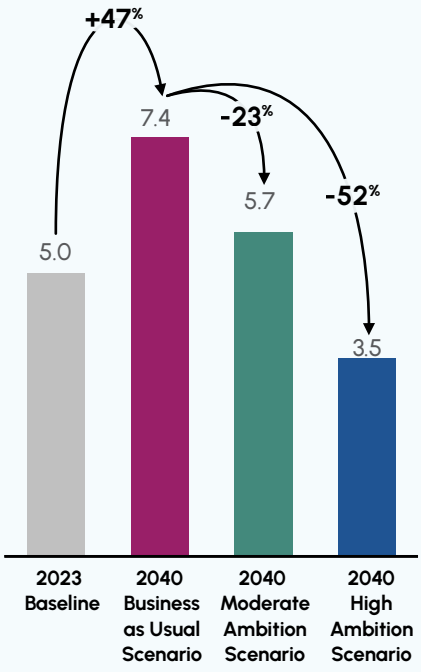
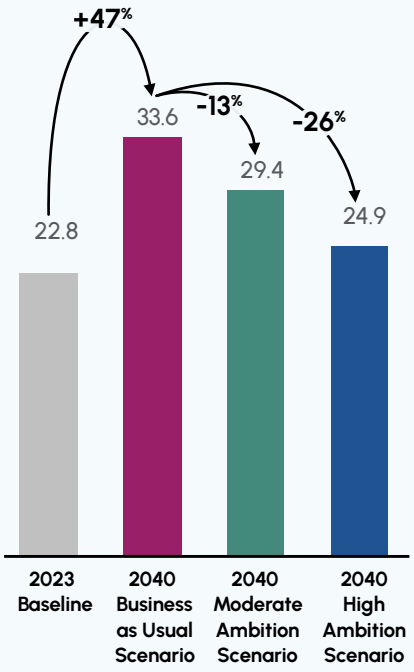


FIGURE 7

Total system cost per scenario in Europe

Single-use healthcare plastic system across Europe, Billion Euros



Note:

Landfill A waste disposal site where waste materials are buried in the ground, often in engineered facilities designed to limit environmental impacts such as groundwater contamination.

High-temperature incineration (HTI) A waste treatment process that involves the combustion of waste materials at very high temperatures.

Low-temperature incineration (LTI) A waste treatment process that involves combustion of waste at temperatures lower than high-temperature incineration.

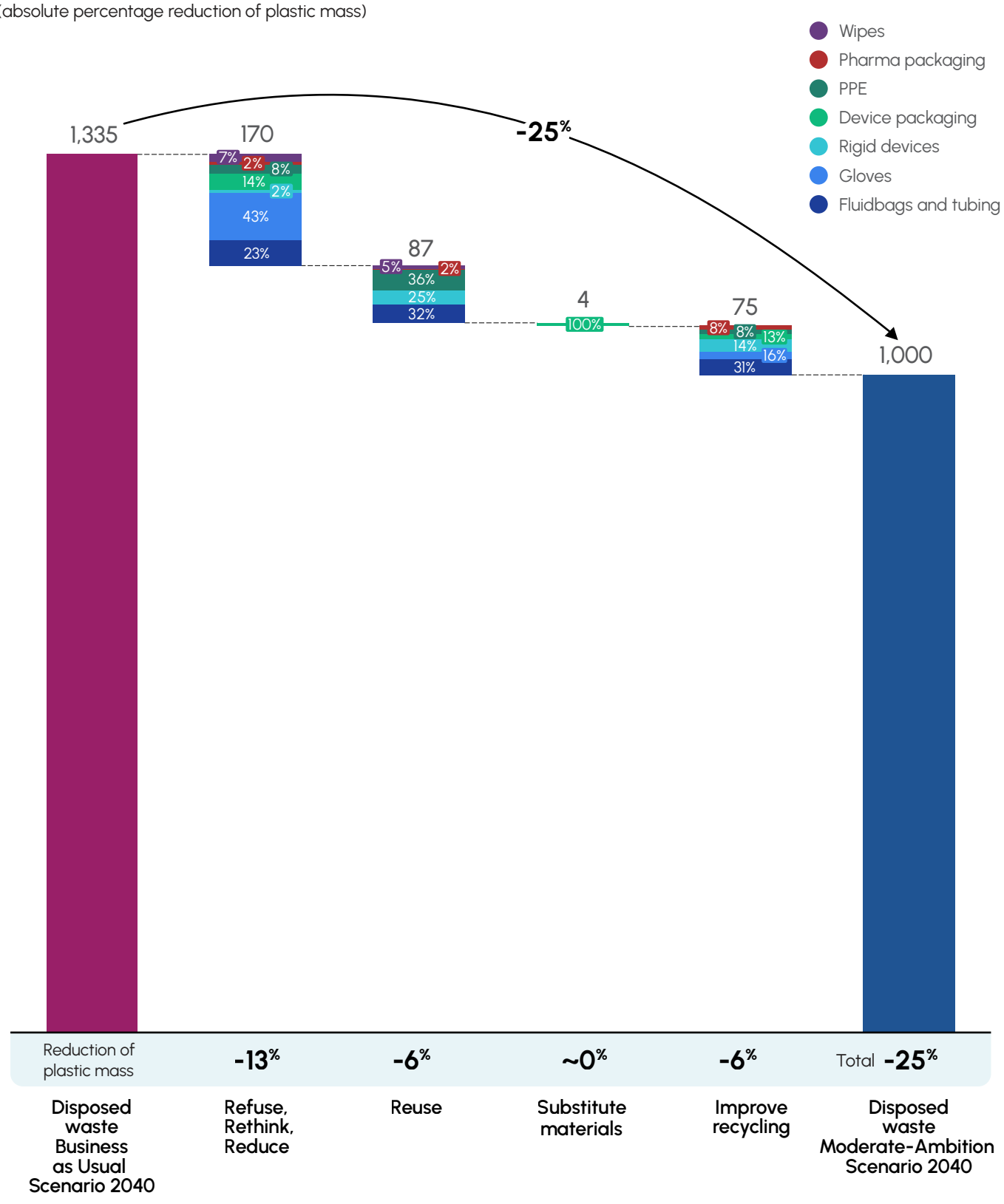
Energy from waste (EfW) A waste treatment process that involves incinerating waste (usually at low temperatures of 700–900 °C) to generate heat or electricity.

In a Moderate-Ambition Scenario, three quarters of the reduction comes from upstream levers, particularly Refuse, Rethink, Reduce in Europe

FIGURE 8

Physical fate of plastic waste from all product categories in a Moderate-Ambition Scenario in 2040 in Europe, including the percentage breakdown of circularity levers by product category

kt (absolute percentage reduction of plastic mass)

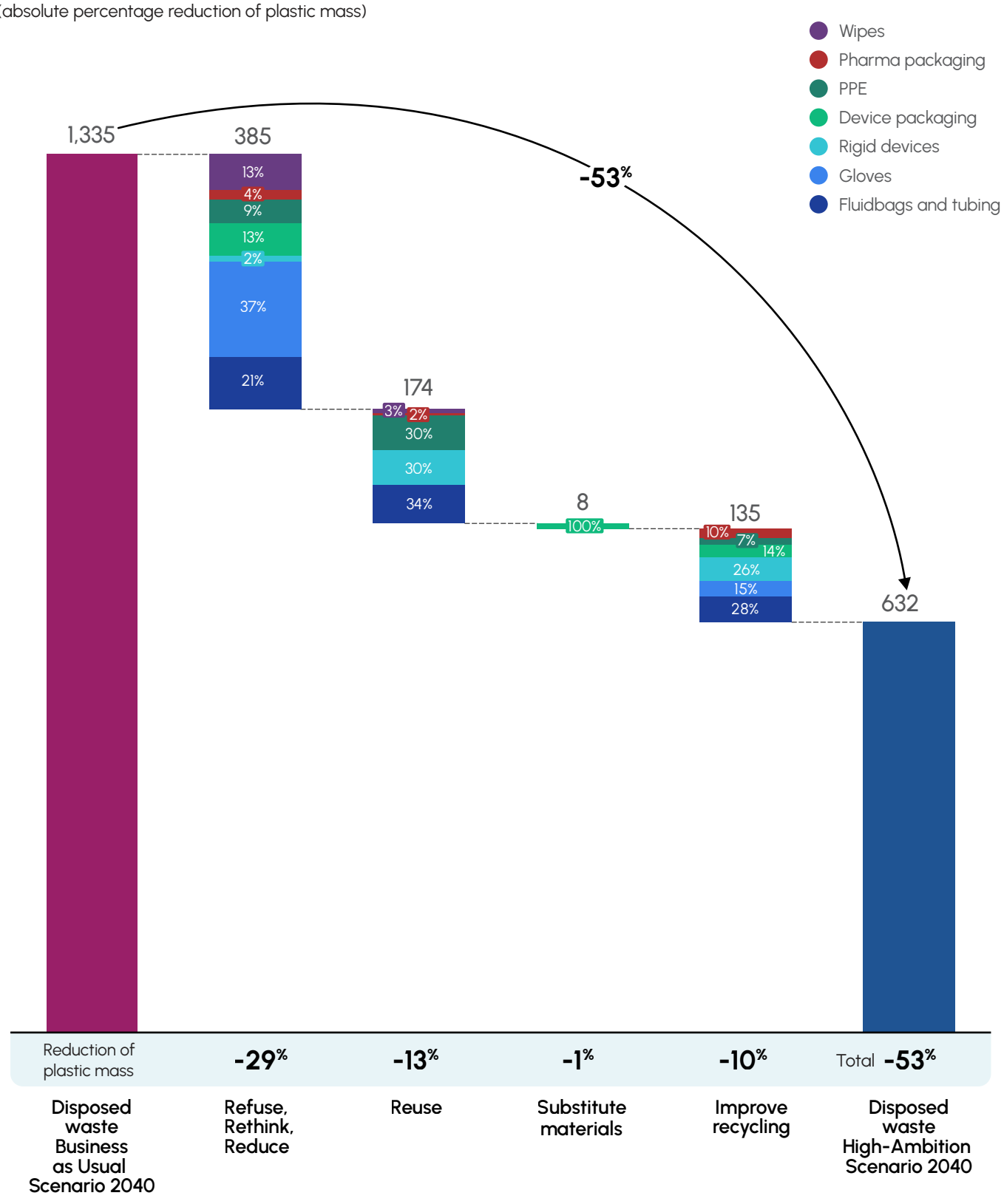


In a High-Ambition Scenario, three quarters of the reduction comes from upstream levers, particularly Refuse, Rethink, Reduce in Europe

FIGURE 9

Physical fate of plastic waste from all product categories in a High-Ambition Scenario in 2040 in Europe, including the percentage breakdown of circularity levers by product category

kt (absolute percentage reduction of plastic mass)

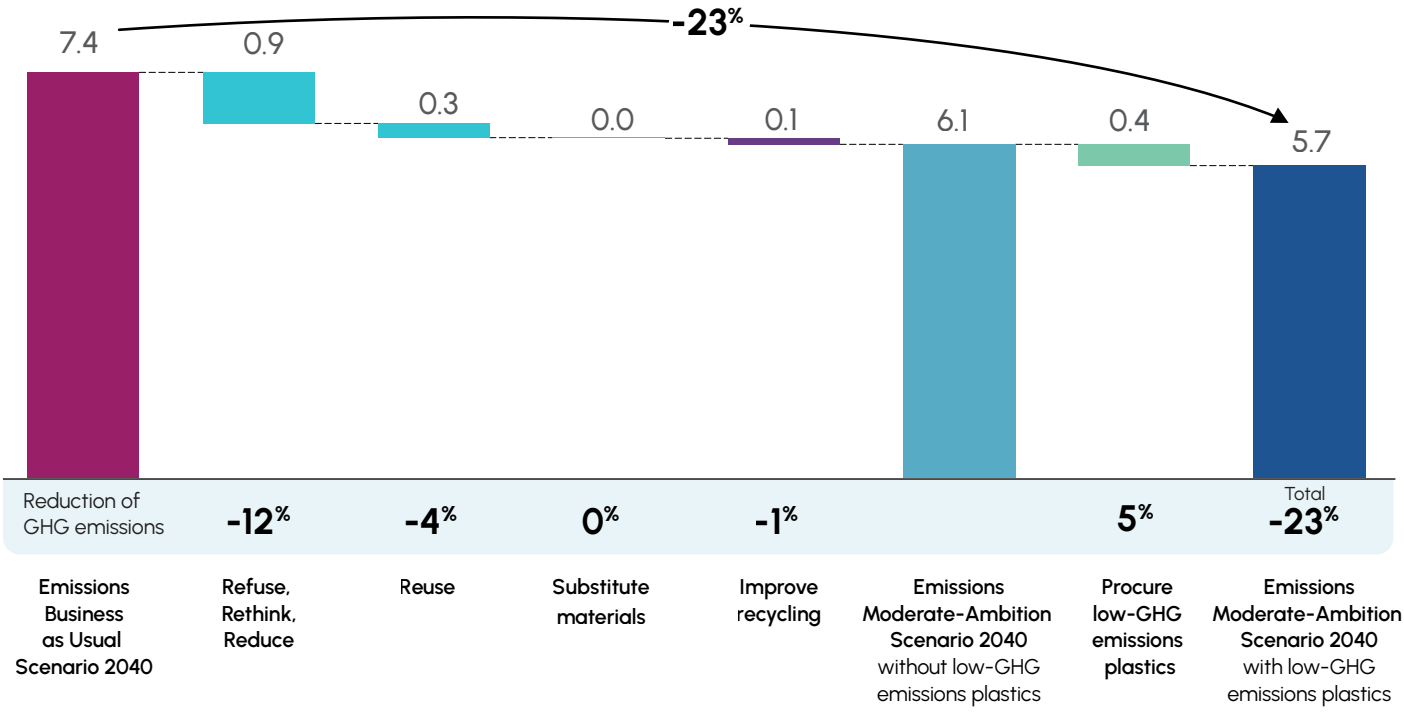


By 2040, in Europe, shifting to low-GHG emissions plastic can save an additional 5% of GHG emissions in a Moderate-Ambition Scenario

FIGURE 10

GHG emissions of the single-use healthcare plastic system in a BAU versus Moderate-Ambition Scenario in Europe 2040

$MtCO_2e$ (absolute percentage reduction of GHG emissions)



In both Moderate-Ambition and High-Ambition Scenarios almost all reduction in costs comes from the Refuse, Rethink, Reduce lever

FIGURE 11

Reduction in total costs of the single use healthcare plastic system in a BAU versus High-Ambition scenario 2040

Billion Euros (absolute percentage reduction of costs)

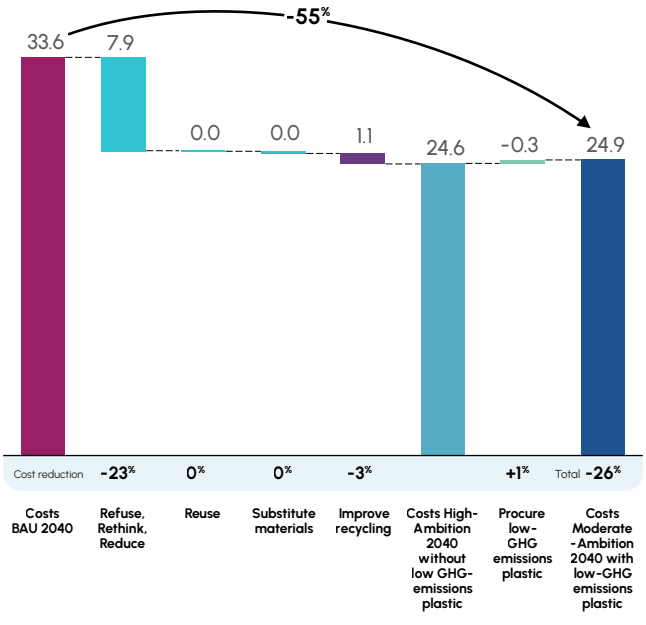


FIGURE 12

Reduction in total costs of the single use healthcare plastic system in a BAU versus Moderate-Ambition Scenario 2040

Billion Euros (absolute percentage reduction of costs)