Technical appendix 4

A prescription for change

North America 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 North America where not shown in the body of the report.

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

FIGURE 13

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

North America, %

1.2 Mt total mass in system (in scope)

Most of associated GHG emissions and costs come from upstream processes

FIGURE 14

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

North America, %

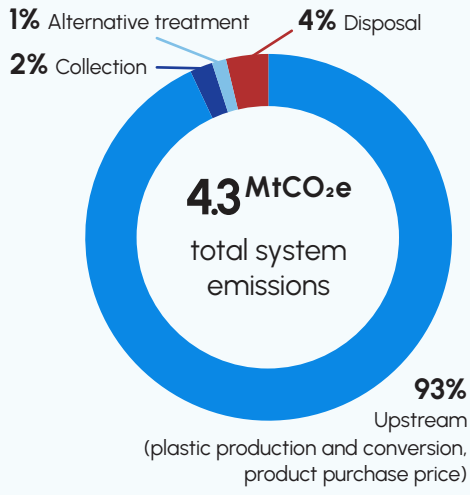
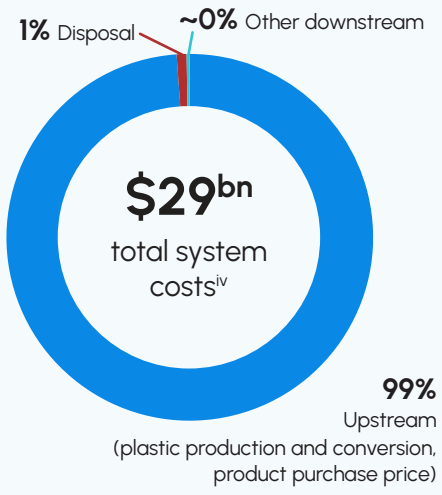


FIGURE 15

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

North America, %

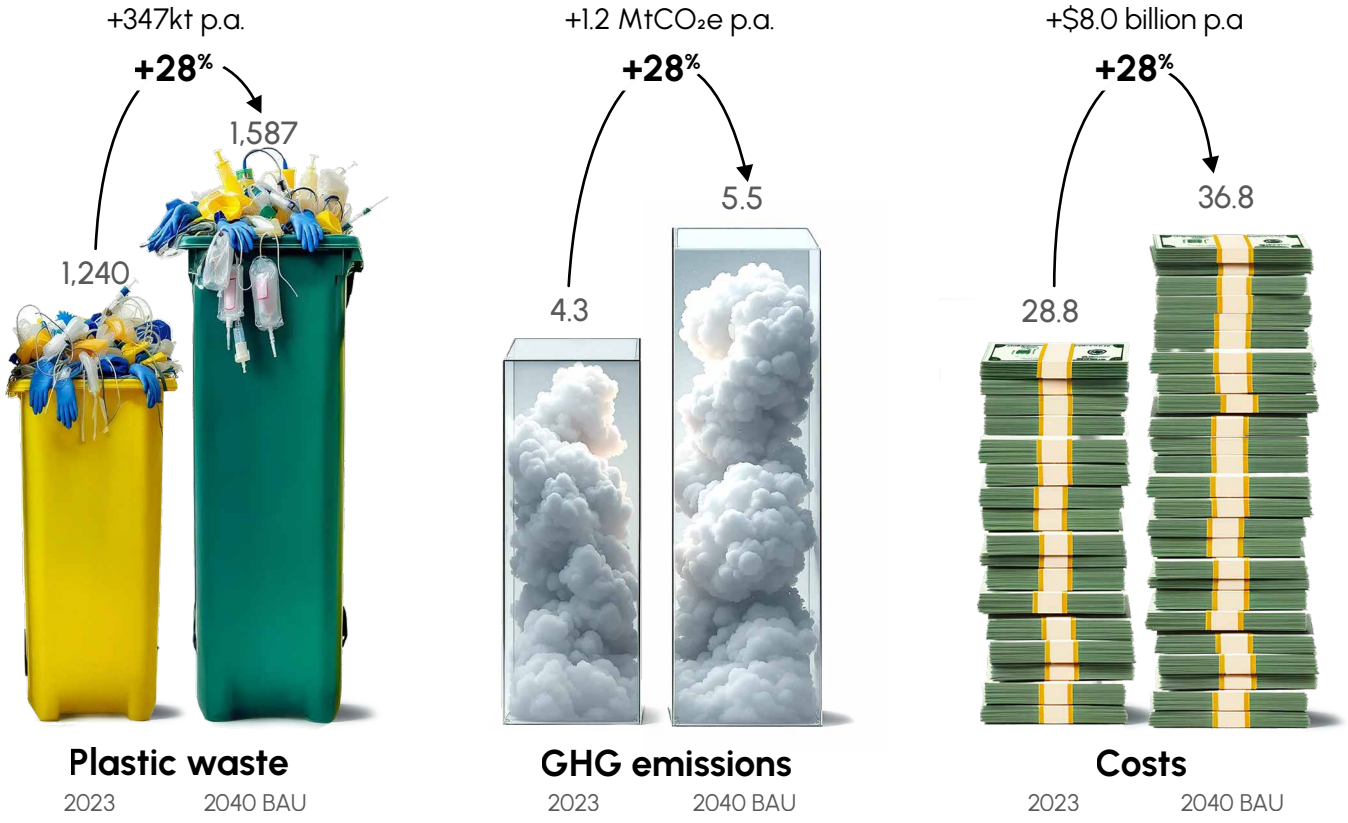


NB: Fluidbags inc. IV bags, blood bags, tubing, and tubing accessories (cannulas and catheters); Rigid devices inc. syringes, blood collection tubes, urine sample pots, and disposable infant bottles; PPE includes gowns, masks, aprons, blue-wrap; Pharma packaging inc. blister packs and pill bottles.

In a Business-as-Usual scenario, plastic waste, GHG emissions and costs could grow by 28% by 2040 in North America

FIGURE 16

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 North America



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

FIGURE 17

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

Single-use healthcare plastic system across North America, kt

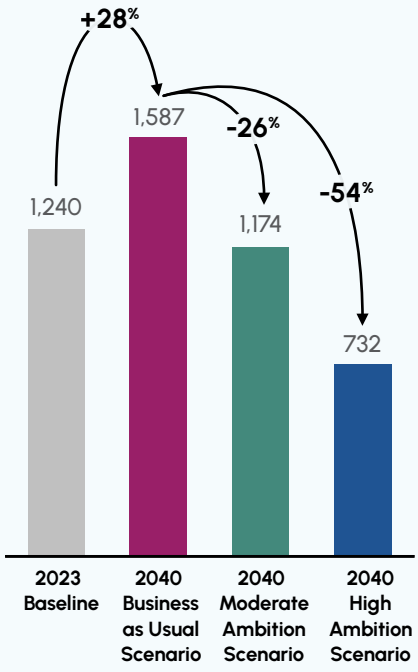


FIGURE 18

Total GHG emissions per scenario in North America

Single-use healthcare plastic system across North America, $MtCO_2e$

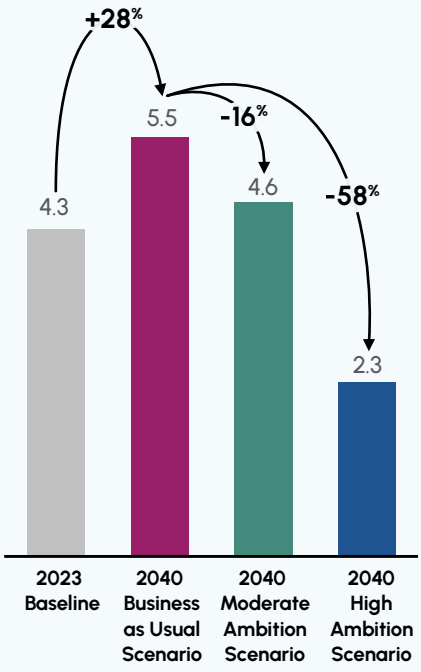
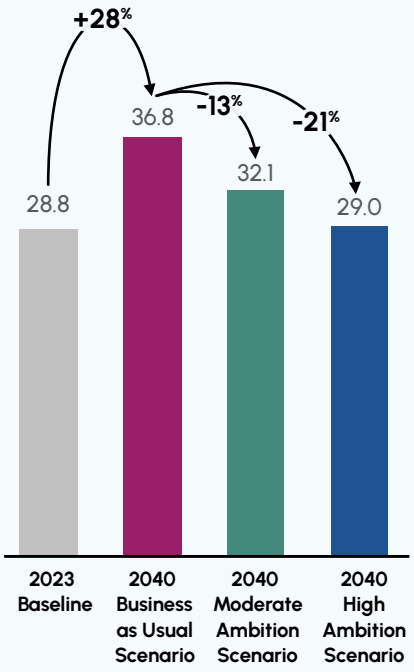


FIGURE 19

Total system cost per scenario in North America

Single-use healthcare plastic system across North America, Billion USD



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.

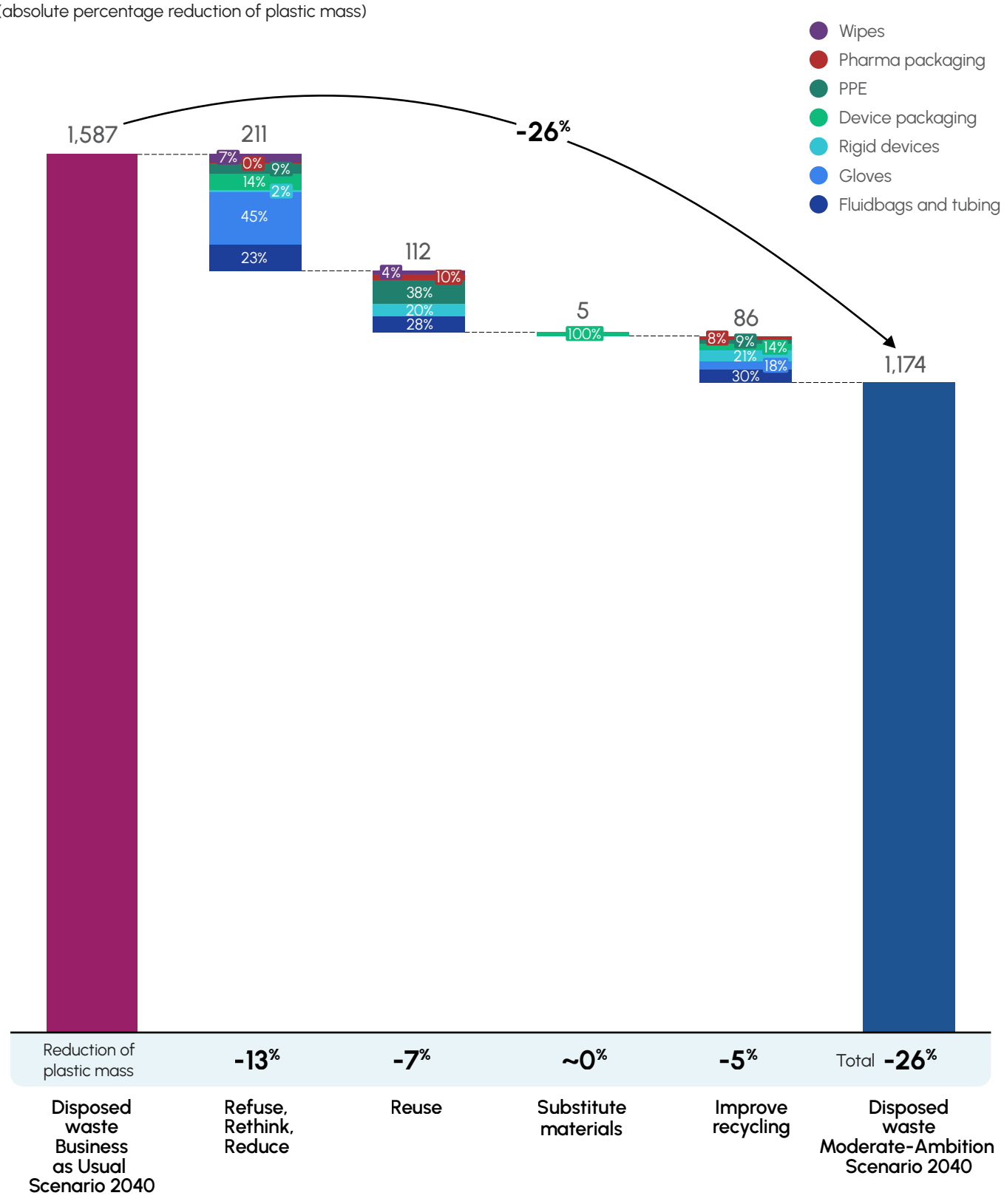
Energy from waste (EfW) A waste treatment process that involves incinerating waste (usually at low temperatures of 700–900 °C) to generate heat or electricity.

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

FIGURE 20

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

kt (absolute percentage reduction of plastic mass)

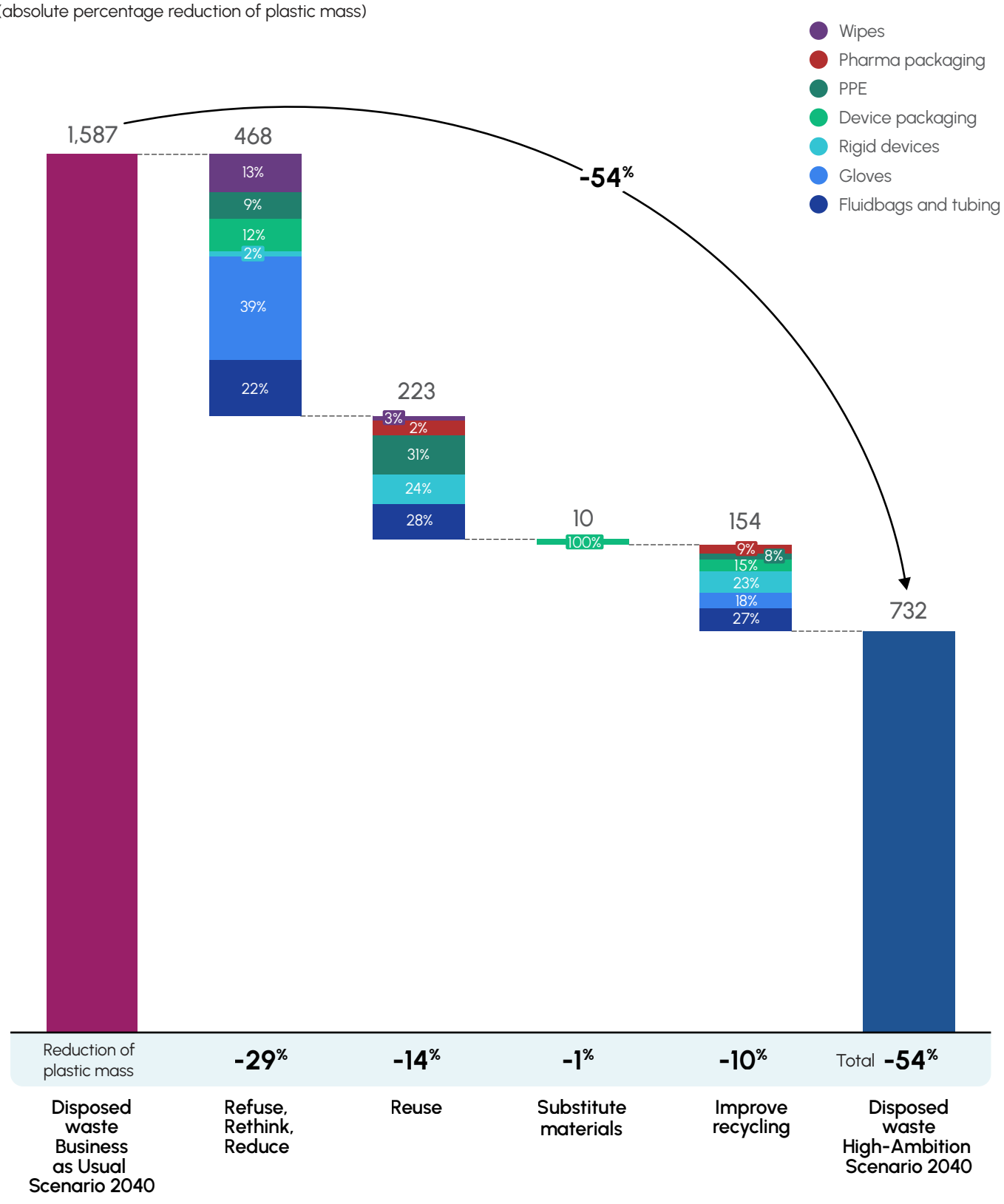


In a High-Ambition Scenario, three quarters of the reduction comes from upstream levers, particularly Refuse, Rethink, Reduce in North America

FIGURE 21

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

kt (absolute percentage reduction of plastic mass)

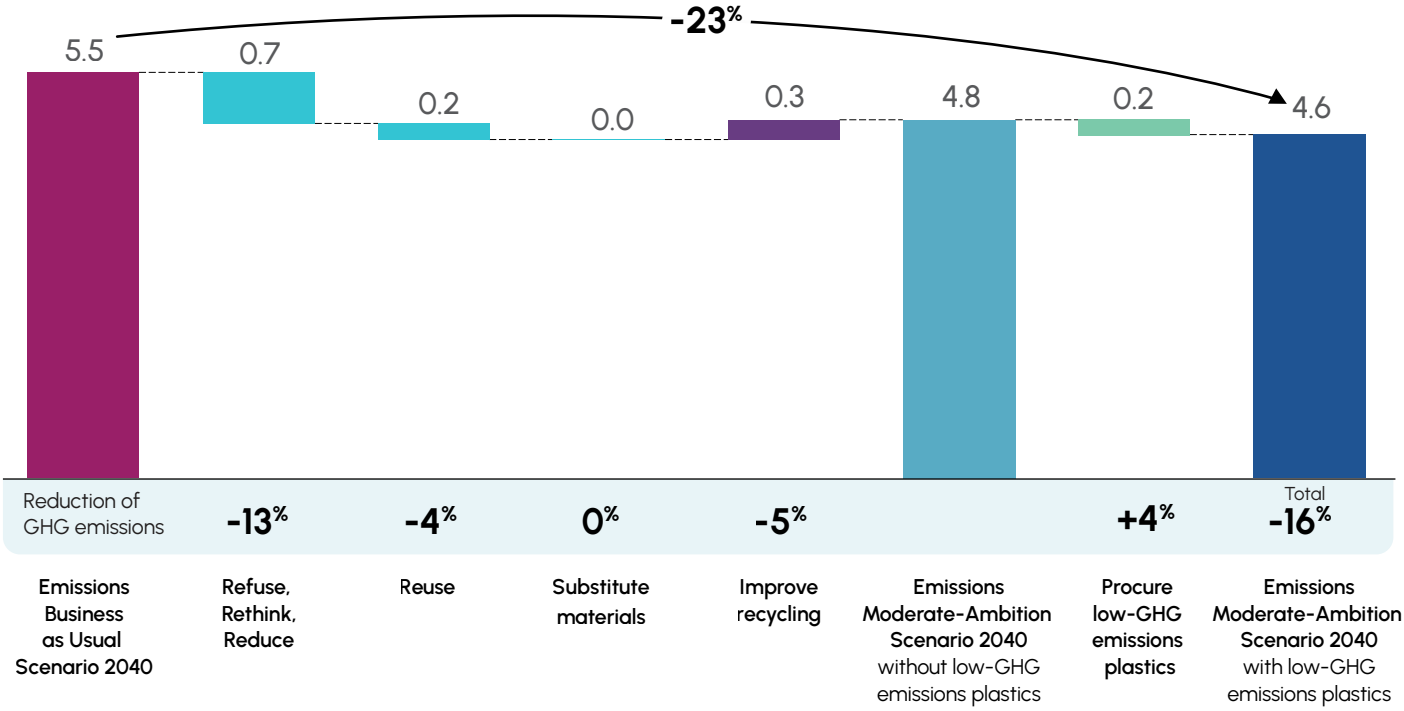


By 2040, in North America, shifting to low-GHG emissions plastic can save an additional 4% of GHG emissions in a Moderate-Ambition Scenario

FIGURE 21

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

FIGURE 22

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

Billion USD (absolute percentage reduction of costs)

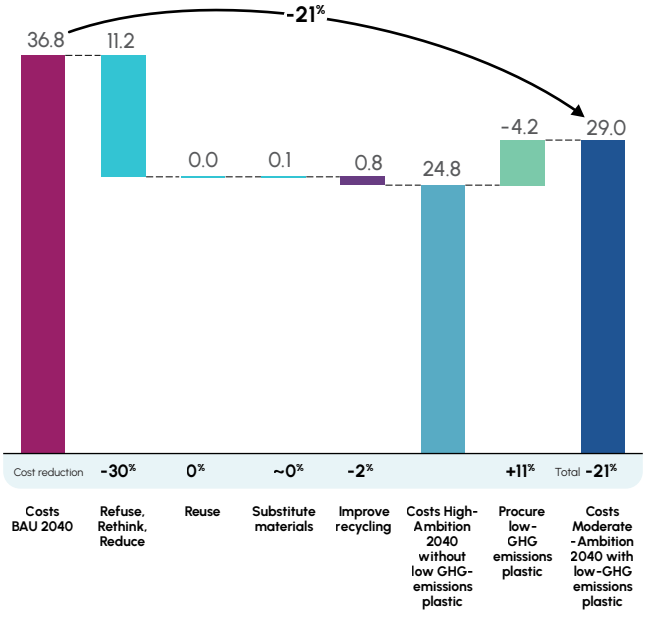


FIGURE 23

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

Billion USD (absolute percentage reduction of costs)