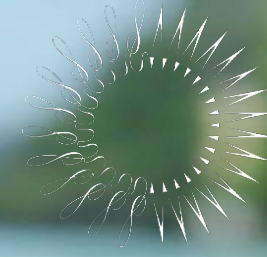


BREAKING THE PLASTIC WAVE

Winnie Lau, Senior Manager
Preventing Ocean Plastics
The Pew Charitable Trusts

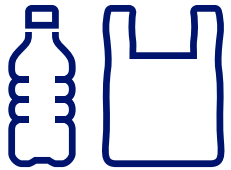
ADB Circular Economy Sprint Series
4 November 2021



THE
PEW
CHARITABLE TRUSTS

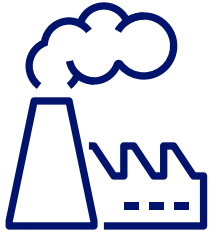
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PROJECTED GROWTH IN PLASTIC INDUSTRY



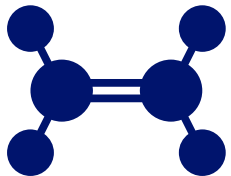
40%

plastic production growth over the next decade



\$400B

investment into new refineries by 2023 in US, China and Middle East



8.7%

expected CAGR for ethylene market between 2019 and 2026

PROPOSED STRATEGIES

1

BAN

2

**BURN OR
BURY**

3

CLEAN UP

4

RECYCLE

5

**BIO-
SOLUTIONS**

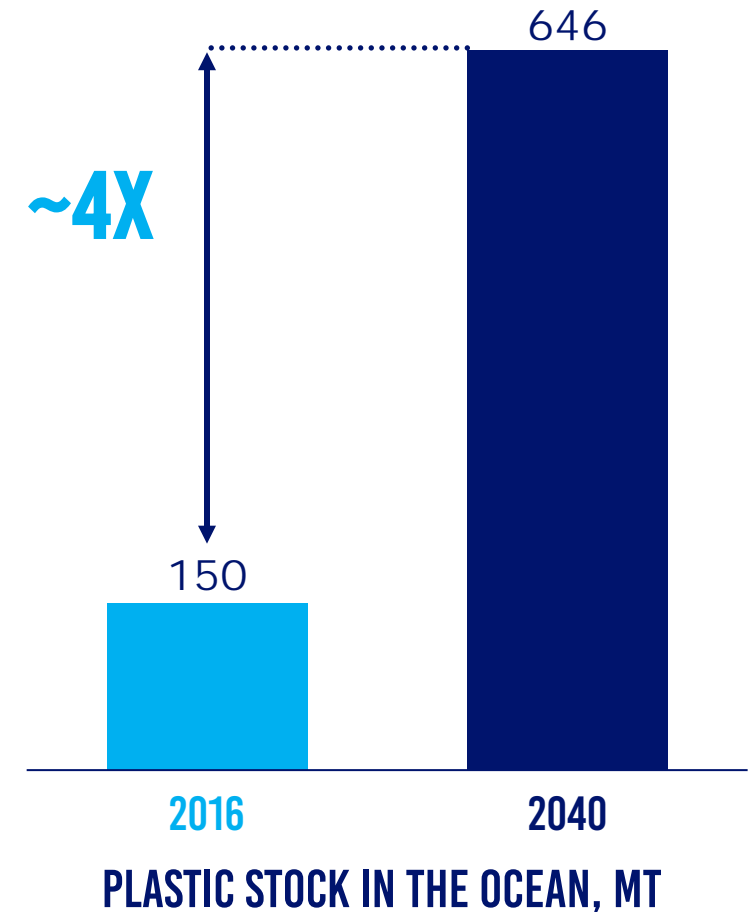
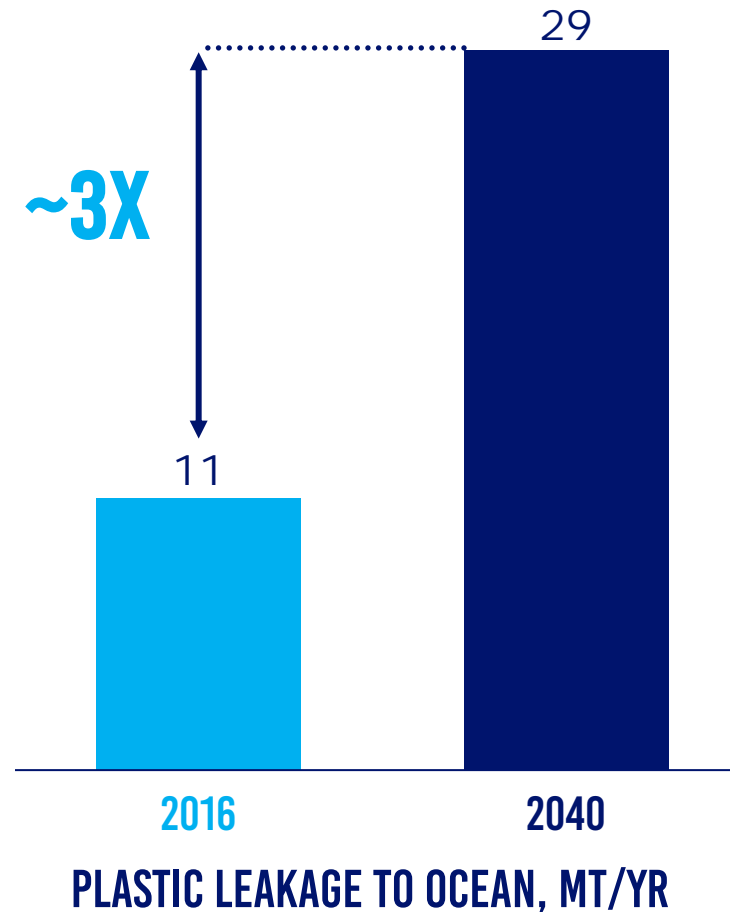
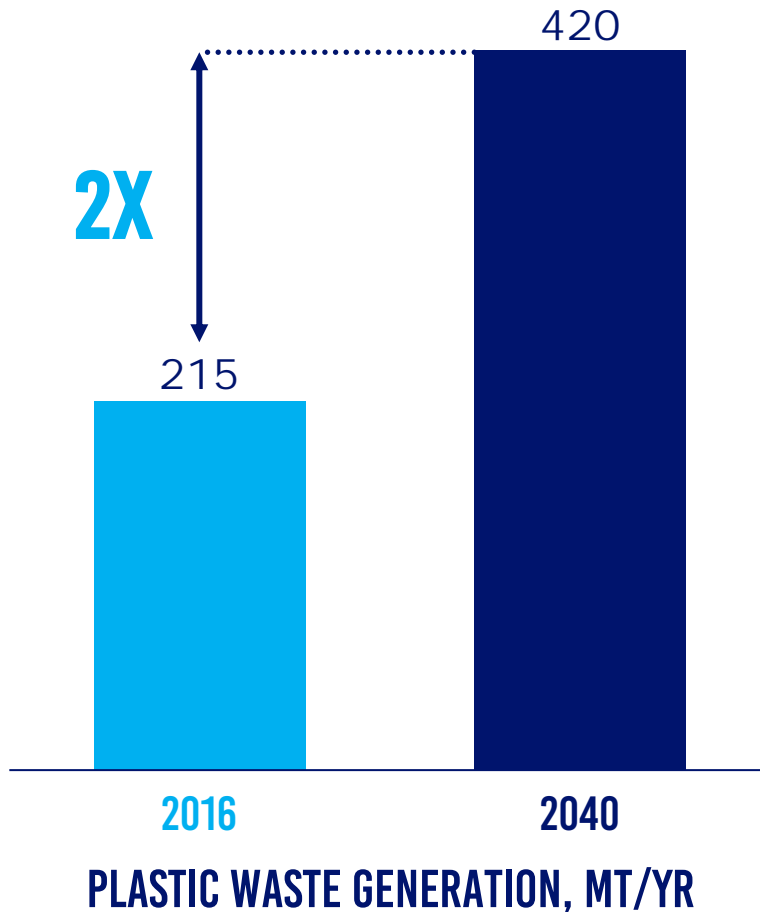
- How do different strategies perform on **environmental**, **economic** and **social indicators**?
- How applicable are they to **materials** and **geographies**?
- What **costs** and **investment** are required?

BREAKING THE PLASTIC WAVE



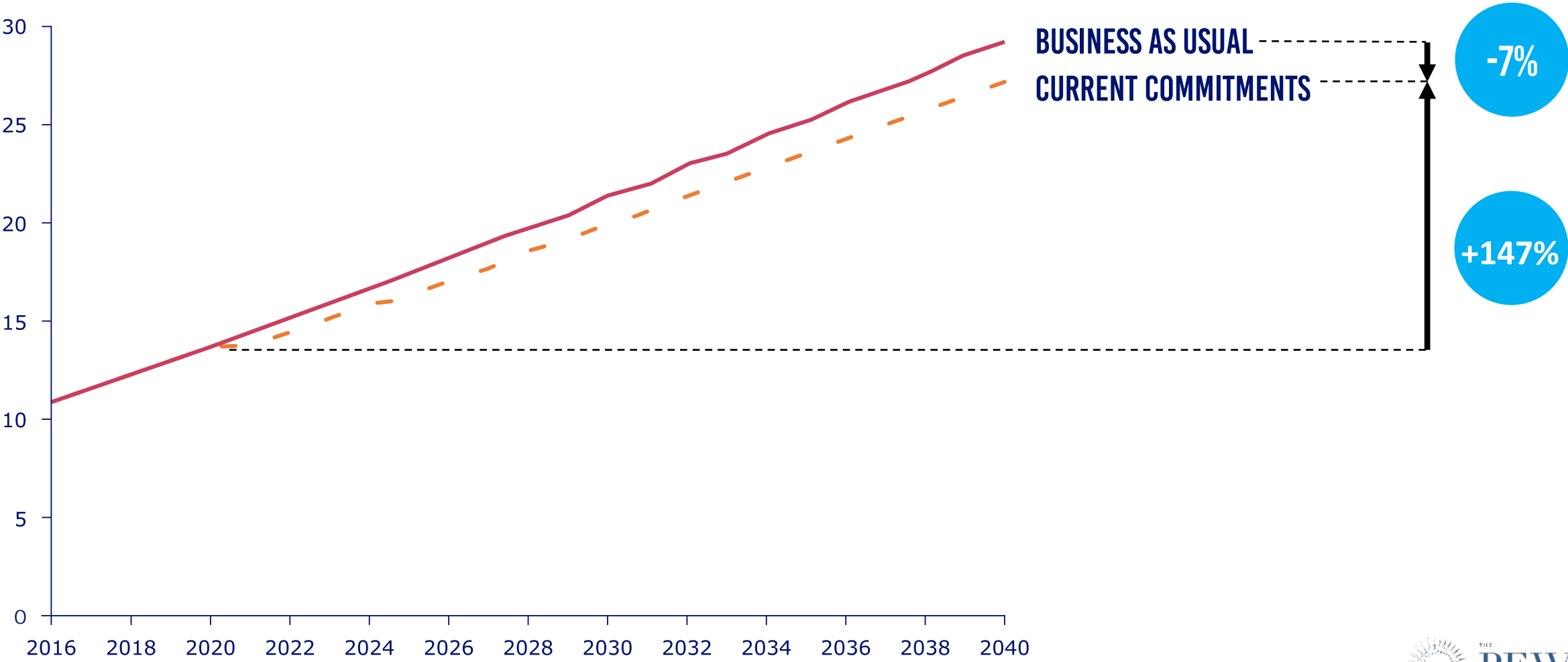
BUSINESS-AS-USUAL

MUNICIPAL SOLID WASTE PLASTIC



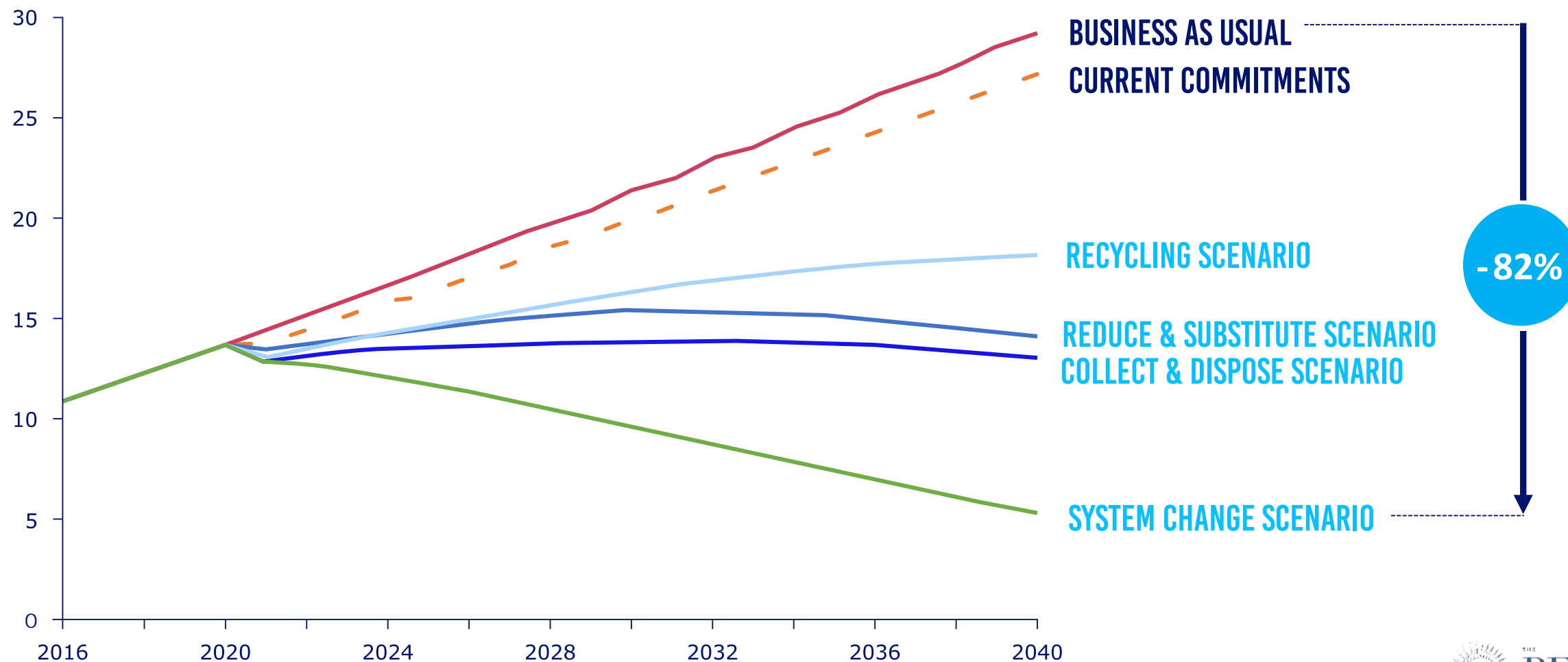
CURRENT COMMITMENTS ONLY REDUCE LEAKAGE BY 7%

LEAKAGE TO THE OCEAN UNDER DIFFERENT SCENARIOS, MT PER YEAR



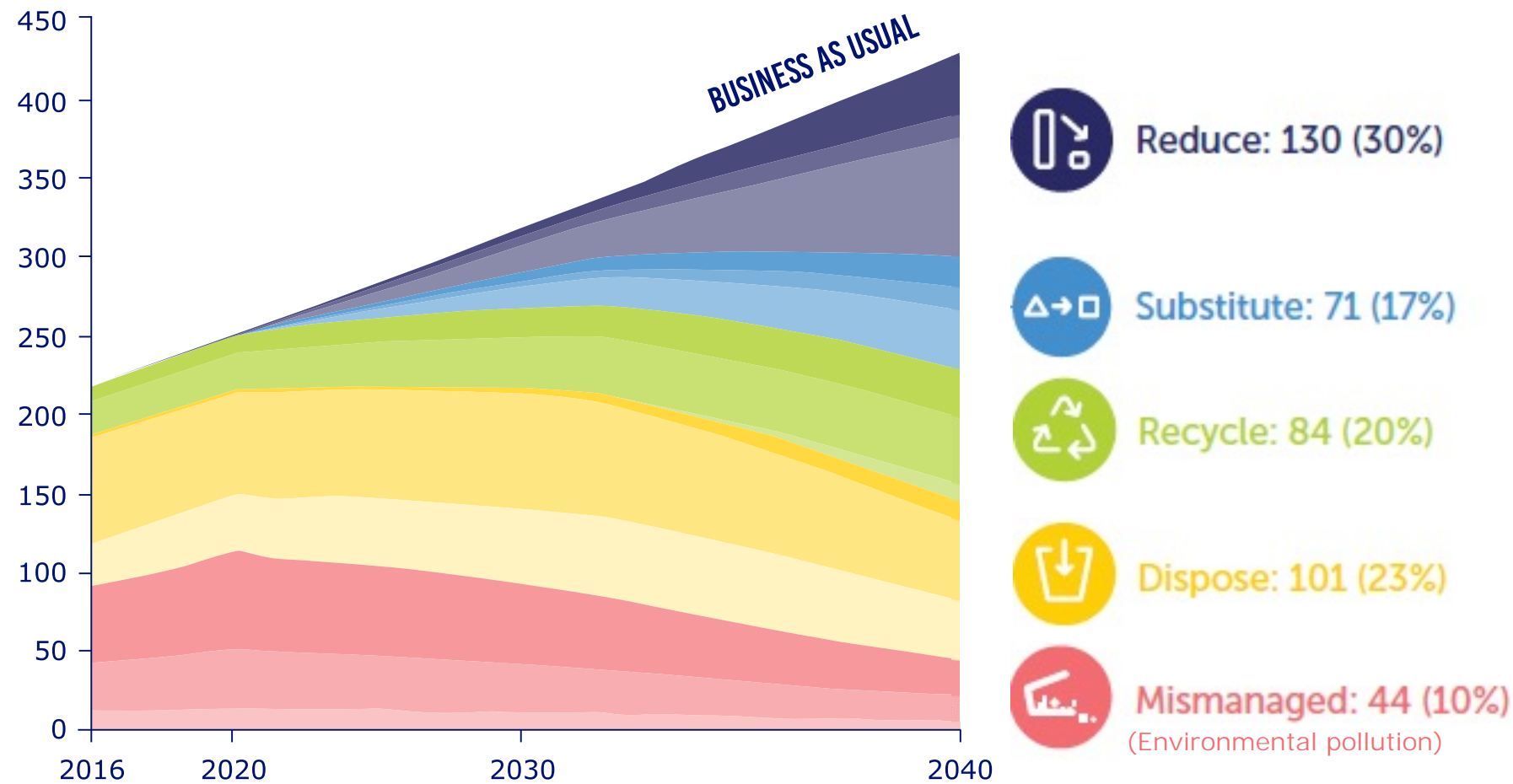
THERE ARE NO “SILVER BULLETS”, BUT THERE IS HOPE

LEAKAGE TO THE OCEAN UNDER DIFFERENT SCENARIOS, MT PER YEAR



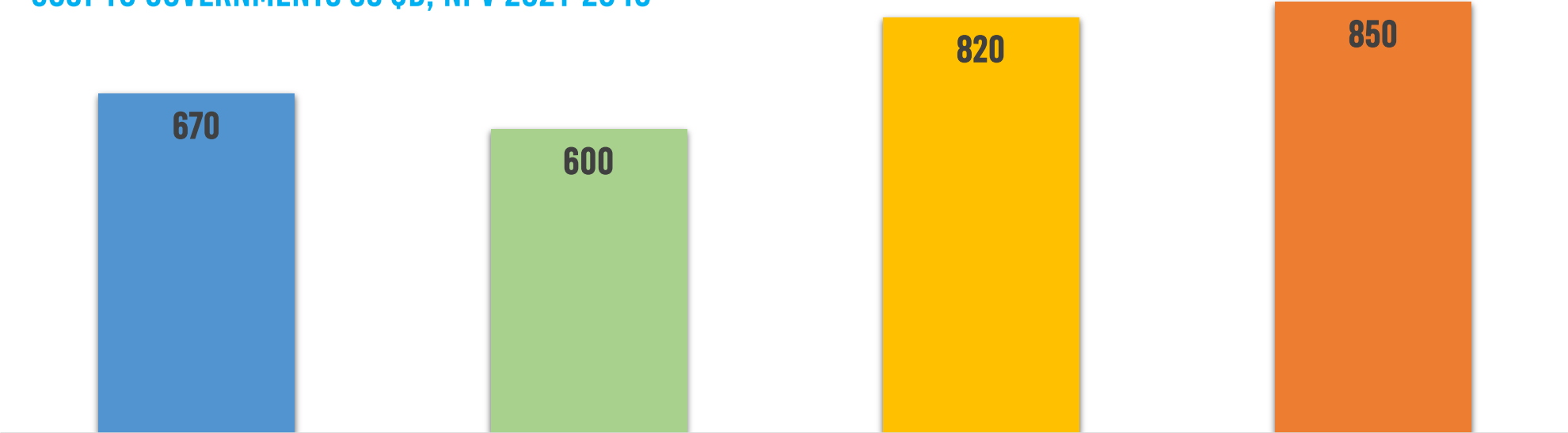
SYSTEM CHANGE: A CREDIBLE PATHWAY

CUMULATIVE PLASTIC MASS, MT PER YEAR



SYSTEM CHANGE IS THE MOST ECONOMICALLY VIABLE

COST TO GOVERNMENTS US \$B, NPV 2021-2040



BUSINESS AS USUAL

SYSTEM CHANGE

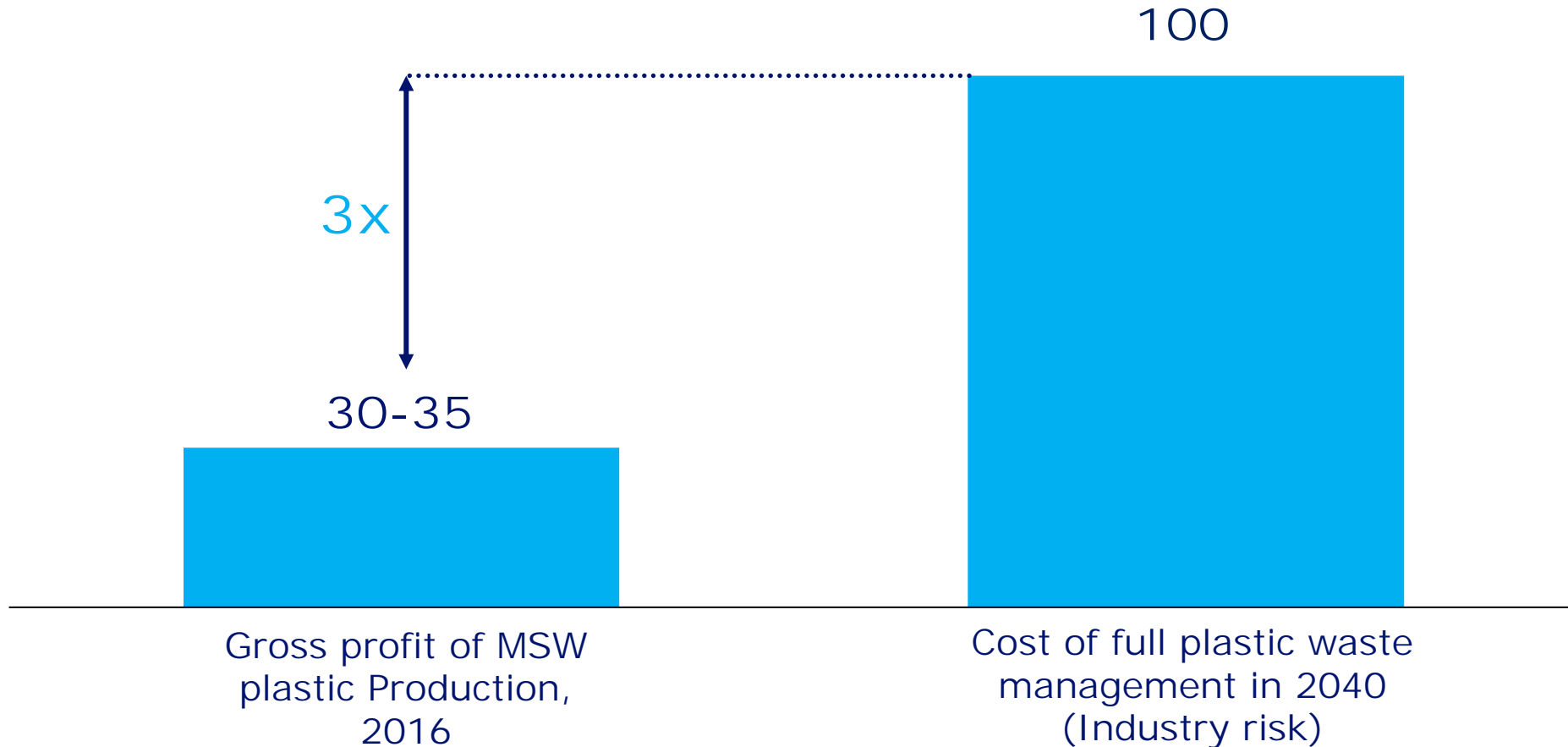
COLLECT & DISPOSE
SCENARIO

RECYCLING SCENARIO

2040 Leakage, MT	29	5	5*	5*
2040 GHG, GTCO ₂ e	2.1	1.6	1.8	1.8
2040 Net Job creation	11.3 million	12 million	11.7 million	11.7 million

INDUSTRY'S FINANCIAL RISK IS 3X ITS PROFIT

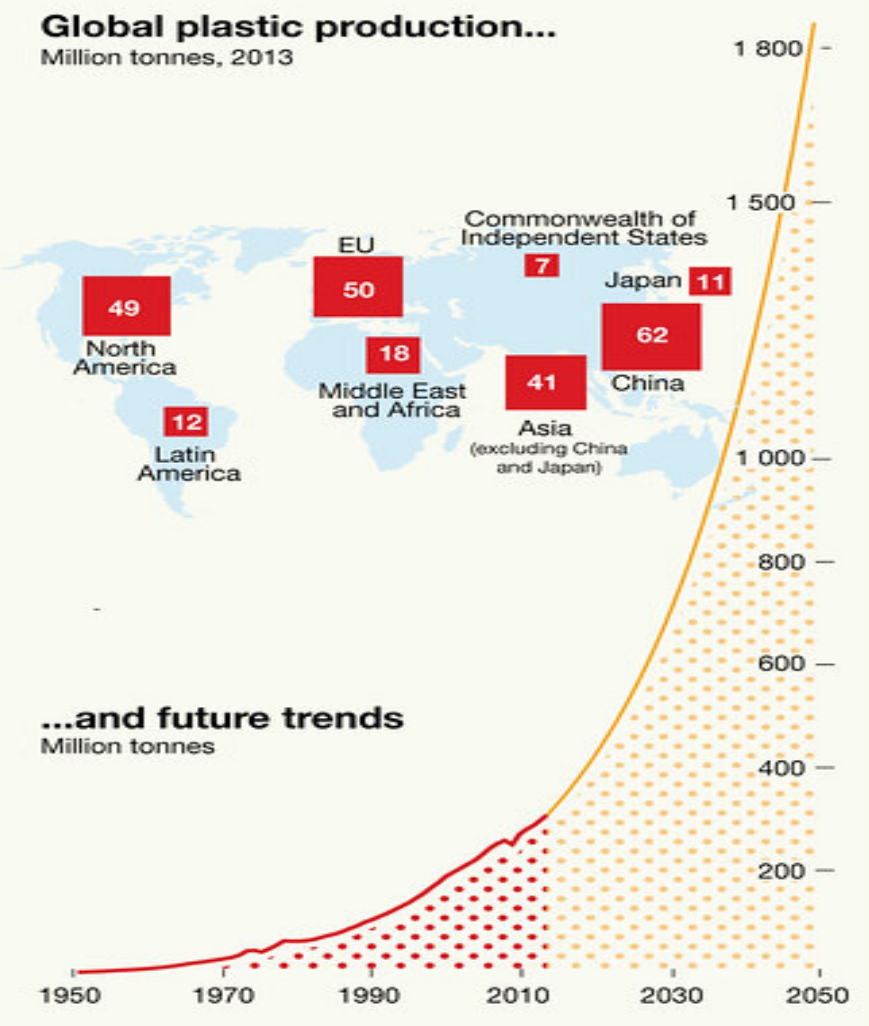
MUNICIPAL SOLID WASTE PLASTIC PROFITABILITY AND EXTERNALITIES, \$B





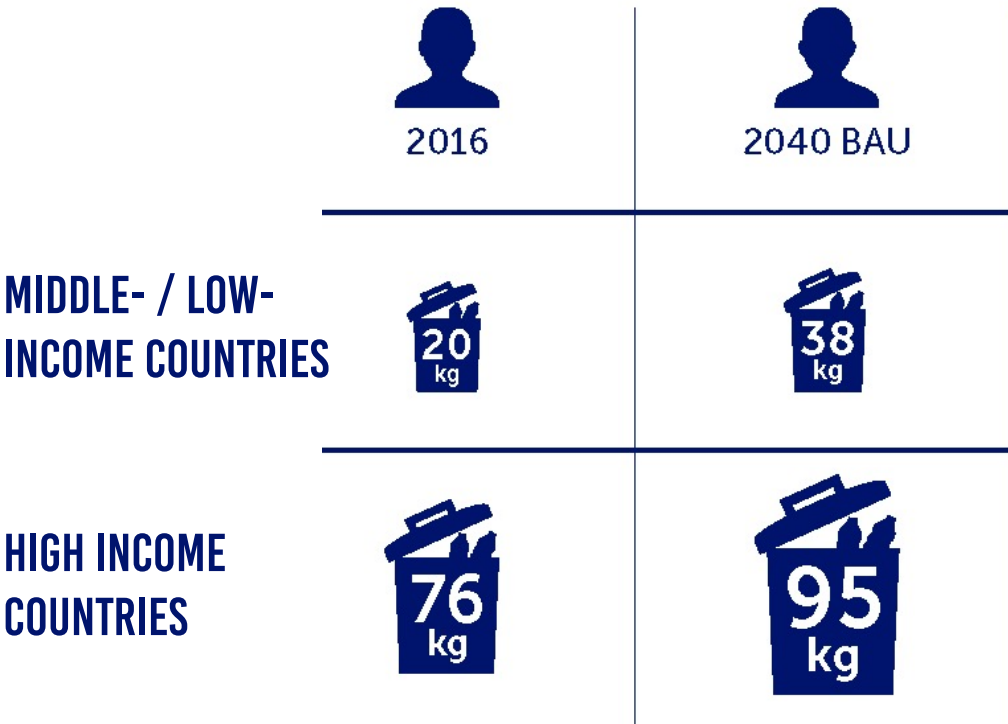
**WHERE DO
WE START?**

REDUCE PLASTIC PRODUCTION AND WASTE GENERATION



GRID Arendal, 2016

PER CAPITA WASTE GENERATION



COST OF SOLUTIONS: REDUCTION MOST ECONOMICAL

FULL VALUE CHAIN COST IN \$/TONNE OF PLASTIC (SYSTEM CHANGE)



FOCUS ON REDUCING FLEXIBLE AND MULTIMATERIAL PLASTIC

2016
(LEAKAGE: 29 MT/Y)

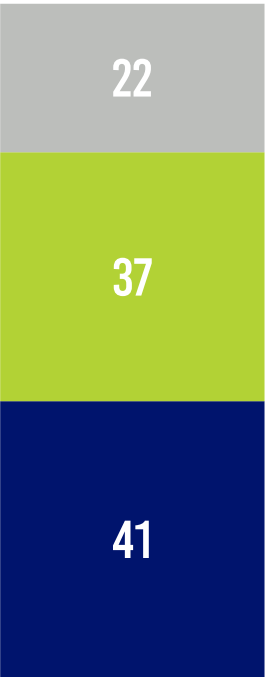
MULTI-LAYER /
MULTI -MATERIAL



FLEXIBLE
MONOMATERIAL



RIGID
MONOMATERIAL



SHARE OF
PRODUCTION

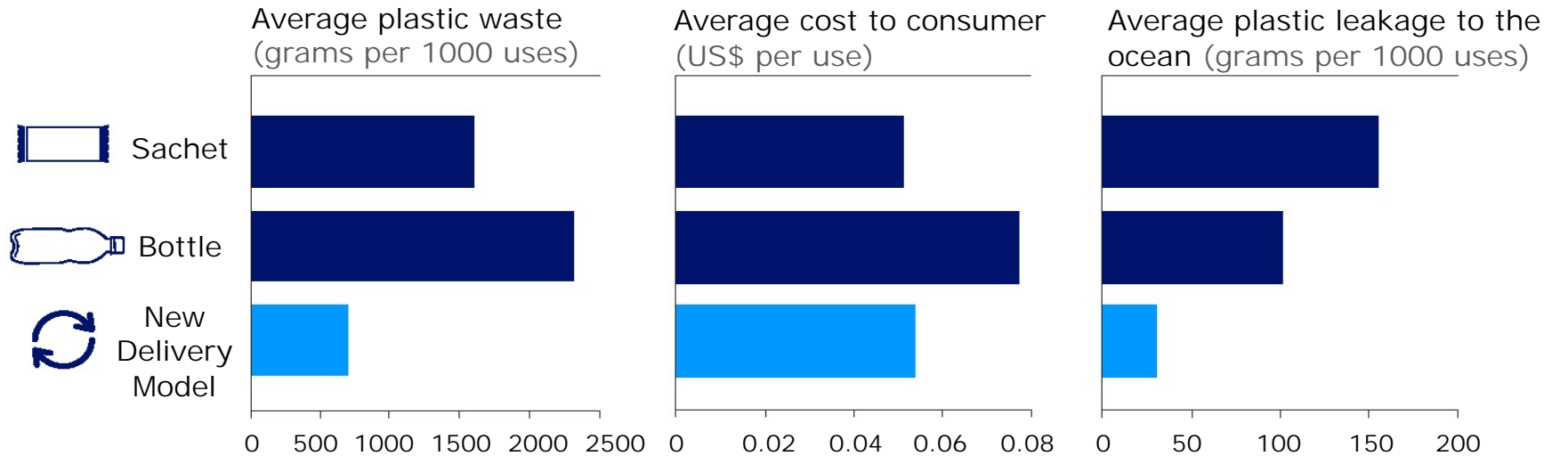


SHARE OF
POLLUTION

SWITCH TO LOW WASTE SOLUTIONS



IN MIDDLE-/LOW-INCOME COUNTRIES



- New refill/reuse business models
- Low packaging design
- Delivery without single-use plastics

CLOSE WASTE COLLECTION GAP IN MIDDLE/LOW-INCOME COUNTRIES

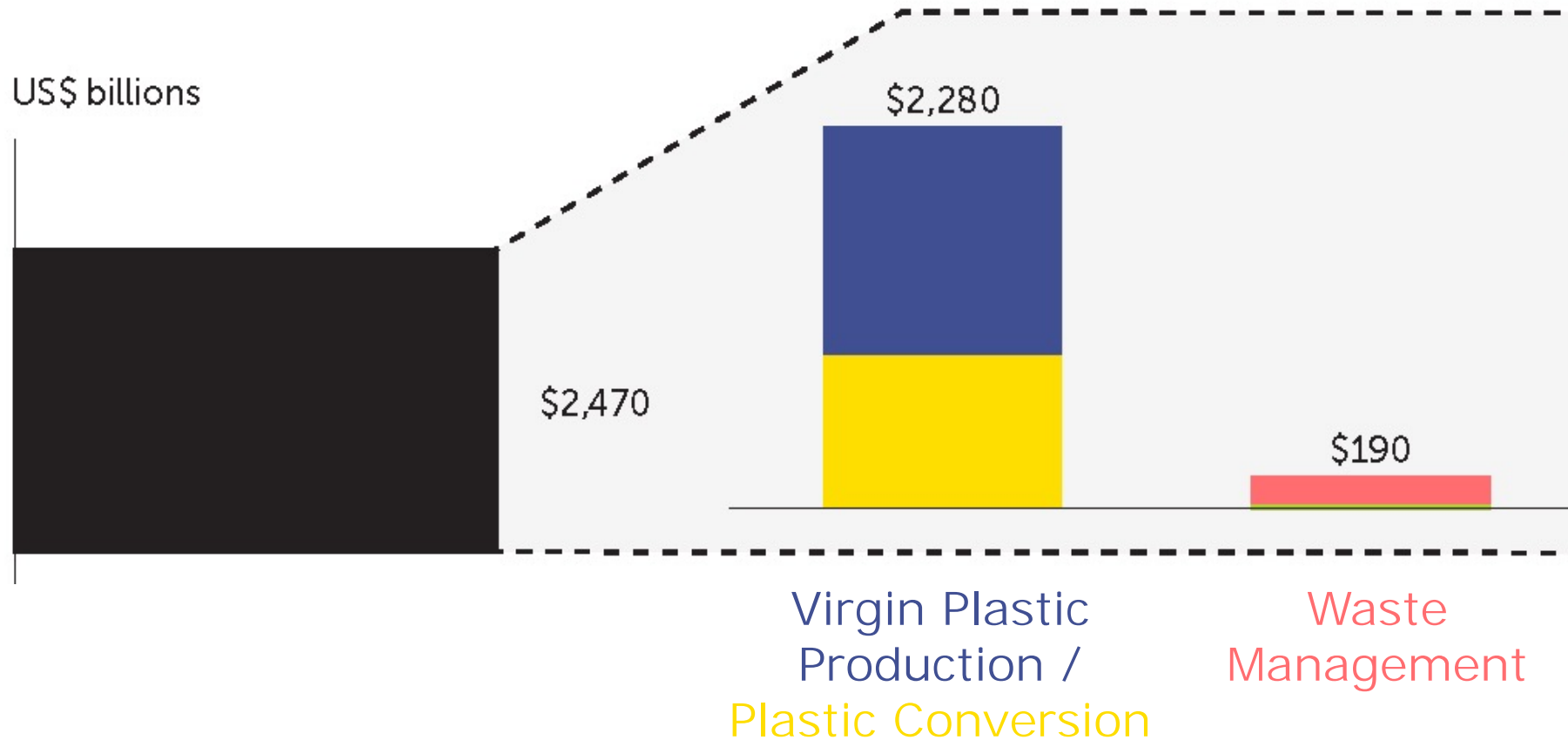
2 billion people in 2016 → 4 billion people in 2040



Photo: Gianluigi Guercia, Getty Images

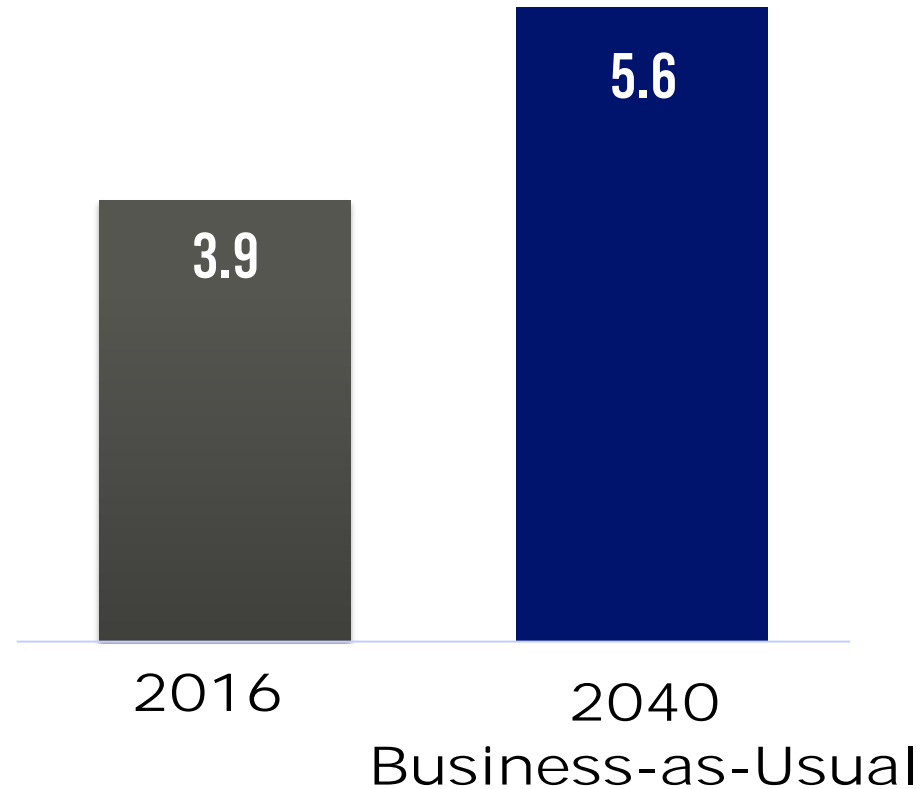
INCREASE CAPITAL INVESTMENTS IN WASTE MANAGEMENT

PRESENT VALUE OF GLOBAL CAPITAL INVESTMENT PROJECTION, BUSINESS-AS-USUAL (2021 – 2040)



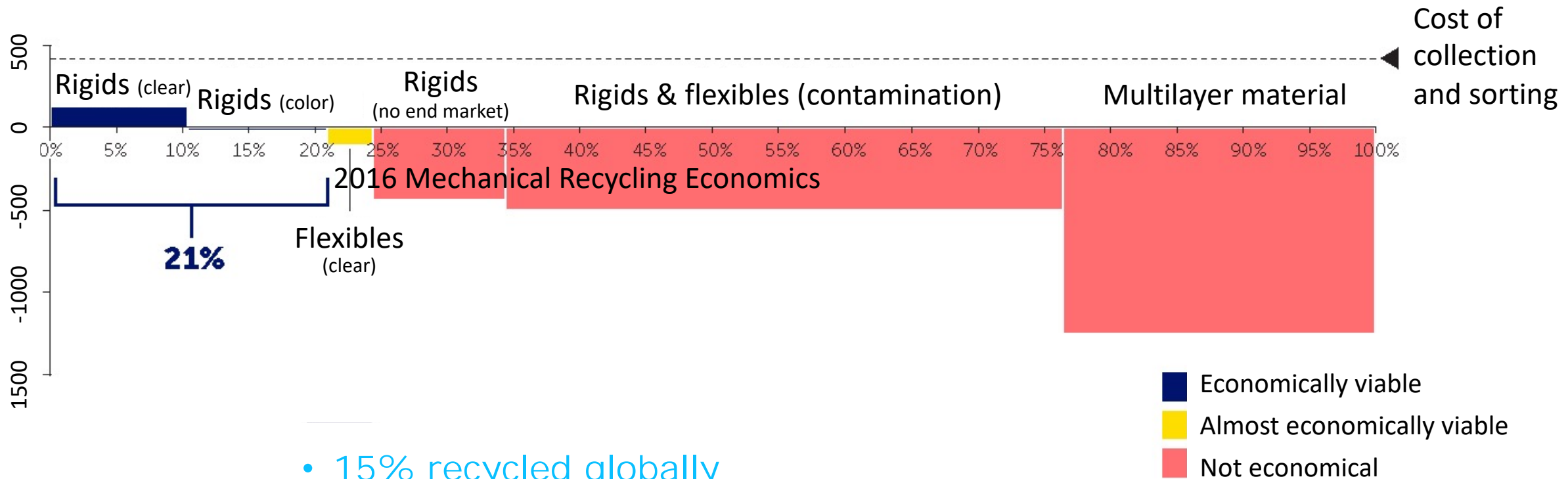
REDUCE PLASTIC WASTE EXPORT-IMPORT

GLOBAL WASTE EXPORT, MT PER YEAR



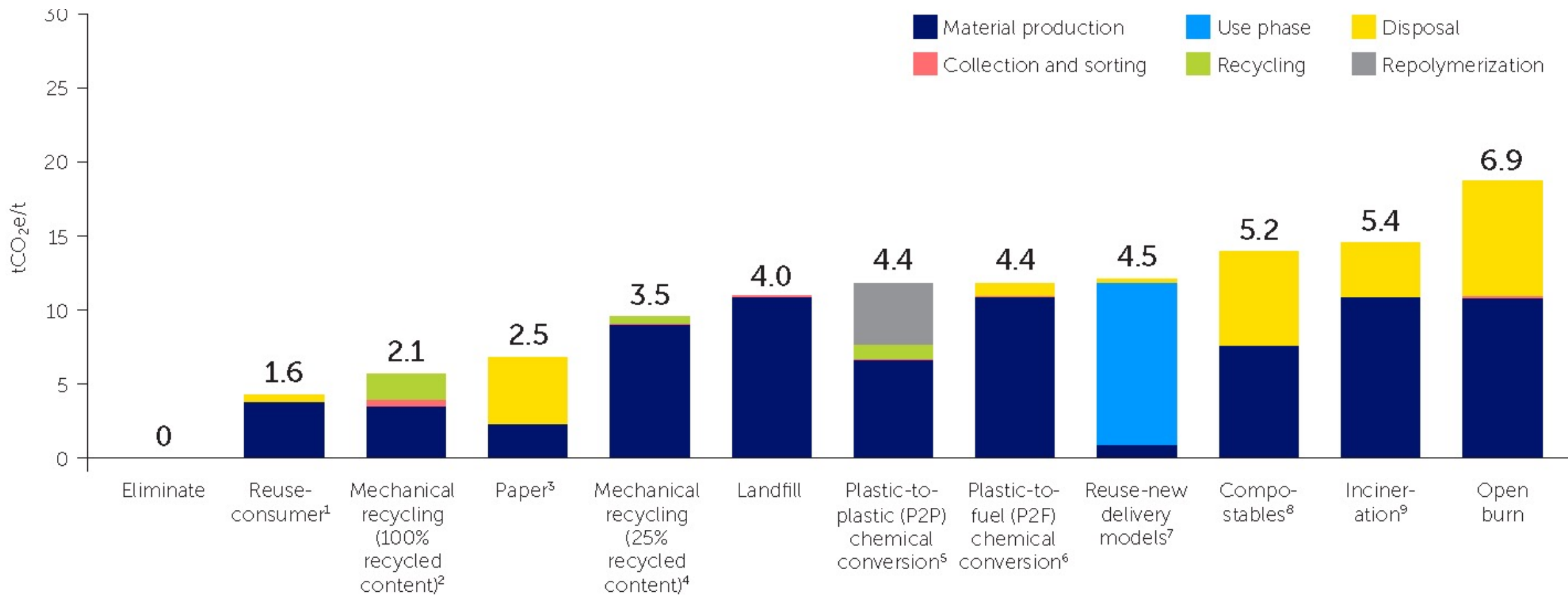
ECONOMICS OF MECHANICAL RECYCLING

2016 NET PROFIT (US\$/METRIC TON), HIGH-INCOME COUNTRIES



- 15% recycled globally
- \$ Recycled plastic > \$ virgin plastic

SOLUTIONS HAVE DIFFERENT GREENHOUSE GAS EMISSIONS



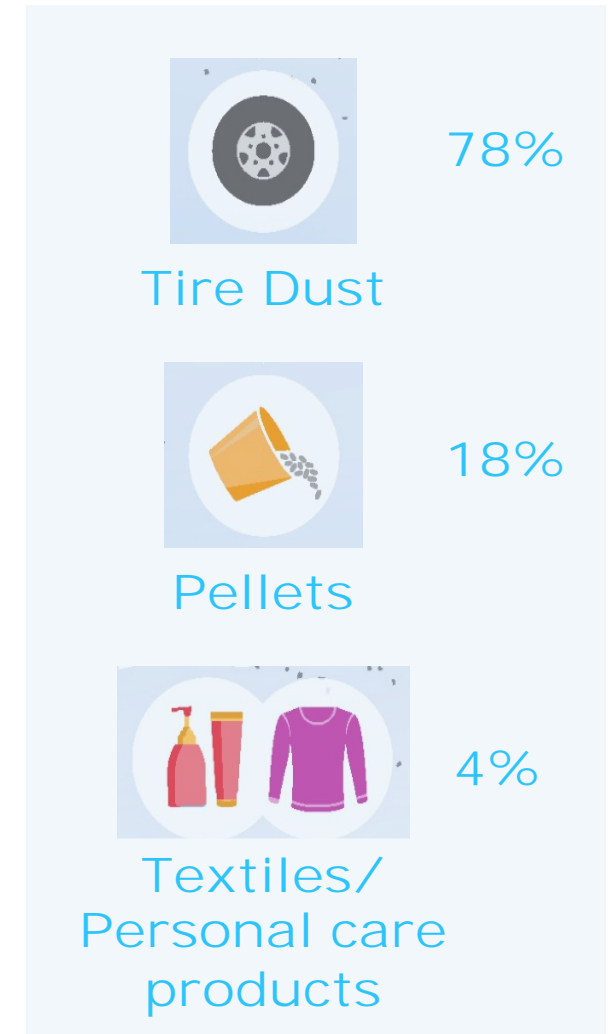
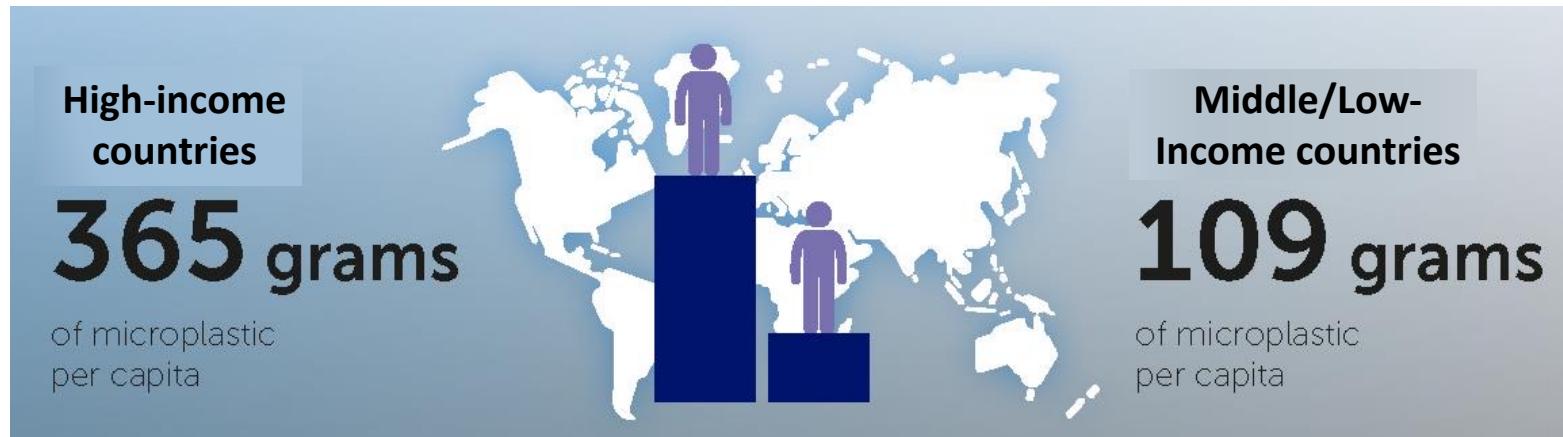
MICROPLASTICS POLLUTION NEEDS ATTENTION

SYSTEM CHANGE SCENARIO

2016
4 MT/Y

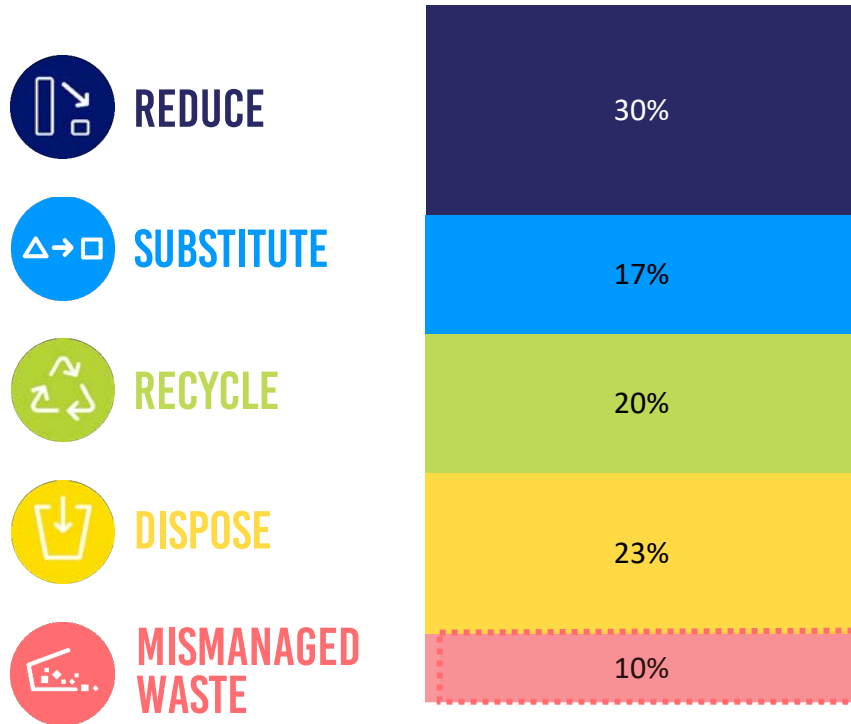
➔

2040
10 MT/Y



NEAR-ZERO LEAKAGE REQUIRES SIGNIFICANT INNOVATION

PLASTIC FATE IN SYSTEM CHANGE SCENARIO, 2040



(Environmental pollution)

EXAMPLE innovation areas:

- Barrier performance for mono-materials
- Product redesign to packaging-free alternatives
- Bio-benign materials
- Distributed collection
- Advanced sorting and recycling



QUESTIONS

Winnie Lau – wlau@pewtrusts.org