CAN EXTENDED PRODUCER RESPONSIBILITY (EPR) GET SOUTH AFRICA TO A CIRCULAR PLASTICS ECONOMY?

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(Presented by **William Stafford** on behalf of the Team)

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science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

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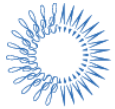

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Thought partners:

Plastics | SA

The SA Plastics Pact

Plastic pollution problem in South Africa

- **Growing plastic consumption** and a **backlog in waste collection services** ~ 37% of households do not have a weekly waste collection service - **”uncollected waste” >”open-dumps”**
- Collected waste disposed to “**landfills**” – many are non-compliant with legislation and **do not effectively contain plastic waste**
- South Africa has a **rich policy landscape** to facilitate the management of waste, basic city cleansing and waste collection, adoption of the waste hierarchy (since 1999)
- **Existing measures have been ineffective** in curbing growing plastic pollution, with increasing mismanaged waste > **“plastic pollution”**

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Application of the Global study to South Africa

- The CSIR approached PEW and Oxford University to **test the application of the global model to the country-level scale**
- Research objectives:
  1. Can the Pathways tool be successfully **applied to the local scale**, and to a **developing country-** South Africa?
  2. Provide scientific evidence to inform decisions- **what should South Africa's response be to address plastic pollution**?

1 FOCUS ON SOLUTIONS

2 SCIENTIFIC RIGOR

3 SYSTEM-WIDE MODEL

4 DATA DRIVEN

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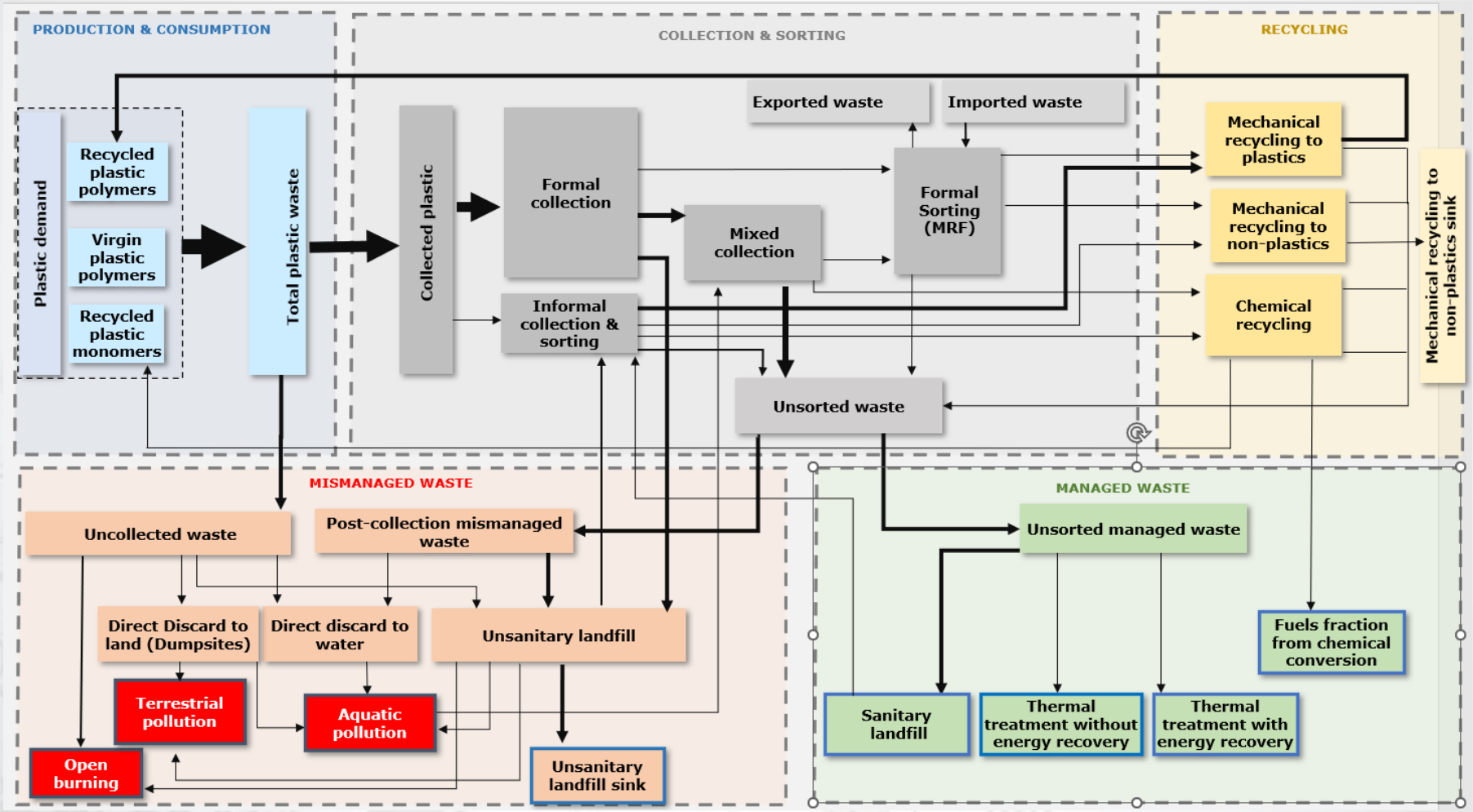
Plastic mass flows – South Africa System Map



Adapted from "Breaking the Plastic Wave" (2020) Global Model available at *pew.org/32JK0dp*

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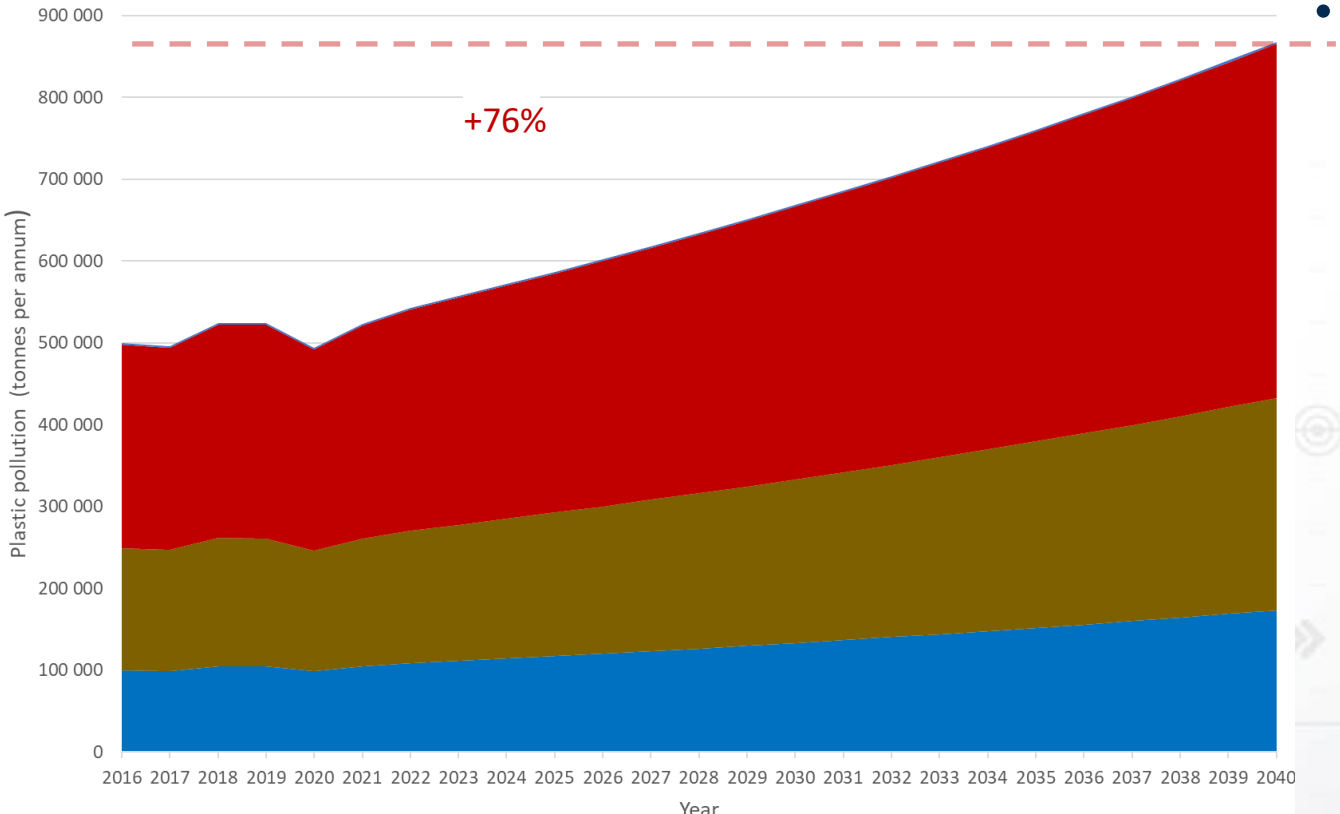
Scenarios for modeling plastics pathways

- The team modelled three different future scenarios –
  1. **Business-as-Usual (BAU) Scenario** with plastics production and consumption set to grow and no policies or measures to address plastic pollution (prior to EPR)
  2. **Extended Producer Responsibility (EPR) Scenario** – a strategy of increasing collection and recycling**,** aimed at achieving South Africa's five-year EPR targets (2023-2027) for plastic packaging
  3. **Optimal System Change Scenario** – a scenario that trade's off between economic and environmental considerations, i.e., minimising plastic pollution and reducing GHG emissions, while minimising costs and maximising employmemt

Business As Usual (BAU) Scenario- Plastic pollution

Under the BAU Scenario plastic pollution will near double (+76% increase from 2020 levels)



- **Plastic pollution** consists of air pollution from open-burning (275kt), land pollution (145kt) and 68kt aquatic pollution (freshwater and marine)

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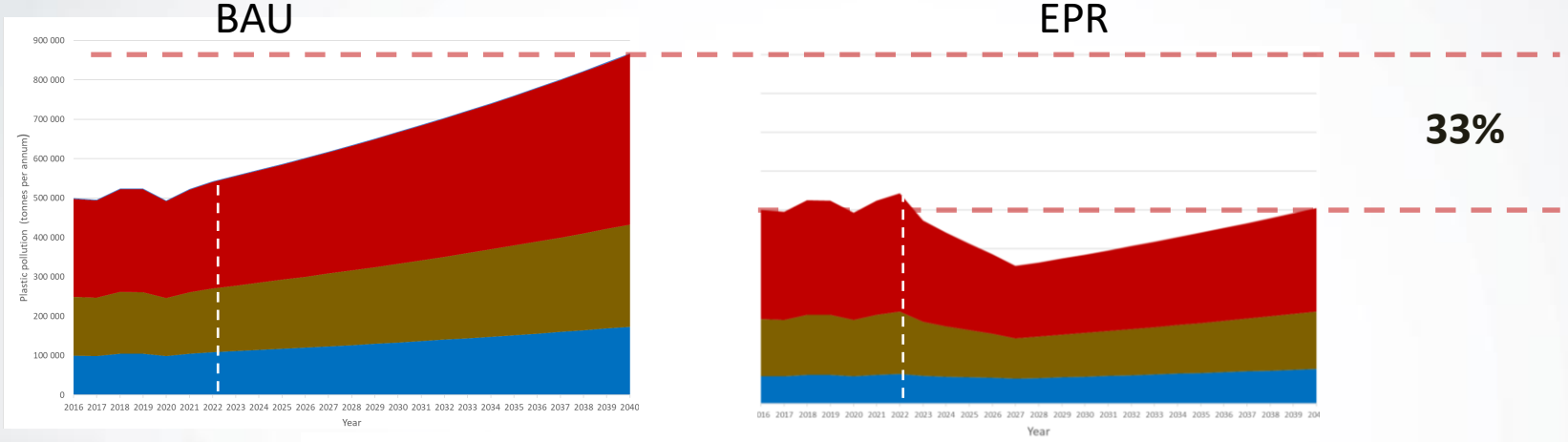
EPR compared to BAU 2023-2040
Plastic pollution

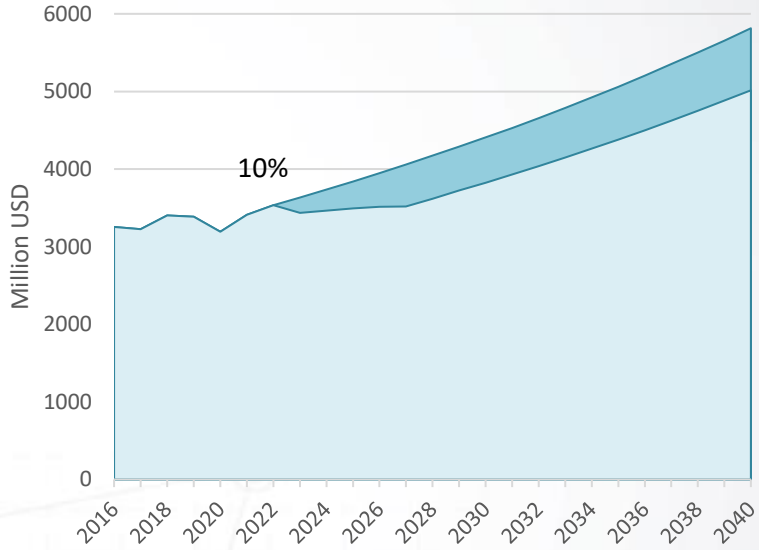


Historical data (2016-2020) and Projections (2021-2040)

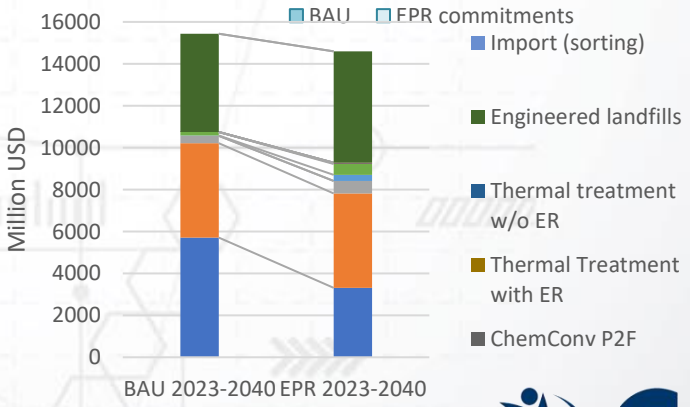
- Meeting the 5-year EPR targets (to 2027) is predicted to **reduce the total plastic pollution by 33%** over the period 2023-2040
- In real terms these pollution flows would in 2040 be the same or slightly higher than in 2020. The **EPR stablilises plastic pollution**
- **EPR only partially effective in reducing plastics pollution – other strategies are needed**

Net costs and Required capital investment

- **EPR reduces Net costs by 10%,** despite additional required investment in recycling infrastructure



- **Cost savings** from **Recycle displacing the need for virgin polymer production**



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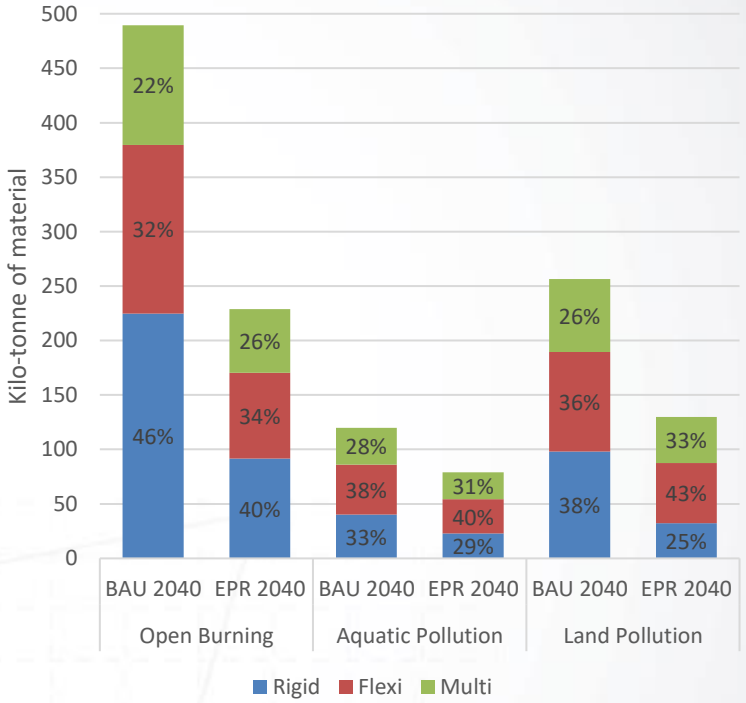
Plastic pollution- plastic type composition

Recycling favours mainly rigid mono-materials (PP, PET), some flexi mono-materials (HDPE/LDPE)

and not multi-materials/multi-layer (“problematic”)



Enrichment of multi-materials/multi-layer plastic types **in disposed waste** from recycling under EPR

EPR Scenarios – Main findings

Need to improve collection and sorting pattern (S@S and Dirty MRFs) to achieve EPR recycling targets

EPR overall benefits:

- Pollution reduction of 33% compared to BAU 2023-2040, but is a stabilisation of current levels

- Also GHG emission reduction of 14%, net costs reduced 10%, Job creation up 18%,

EPR only addresses plastic pollution reductions through a one strategy- increase recycling

….other interventions required!

Other strategies to reduce Plastic pollution?
5 UNRECONCILED options

1 Ban

2 Bio-solutions

3 Recycle

4 Burn or Bury

5 Clean-up

- How do strategies perform on environmental, economic and social indicators?
- How applicable are they to materials AND geographies?
- How do these strategies interact?
- What costs and investments are required?
- How quickly can they be implemented?

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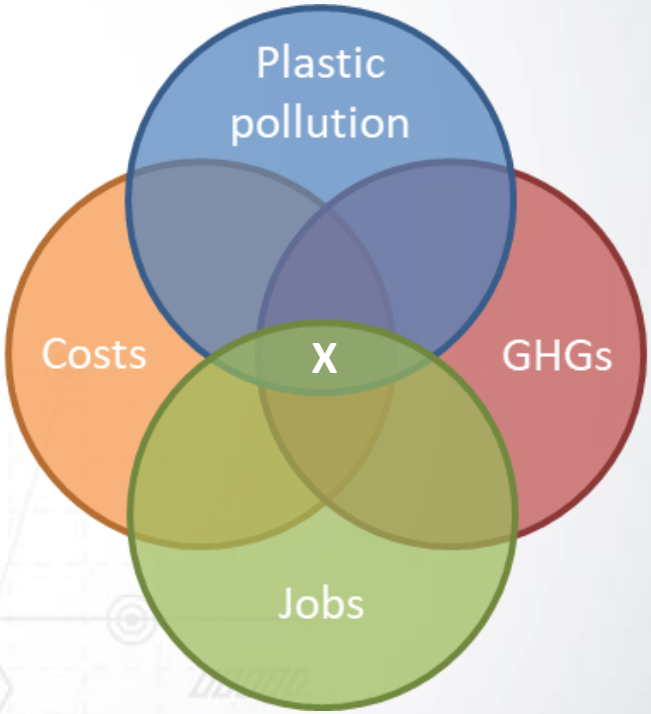
Optimal System Change Scenario

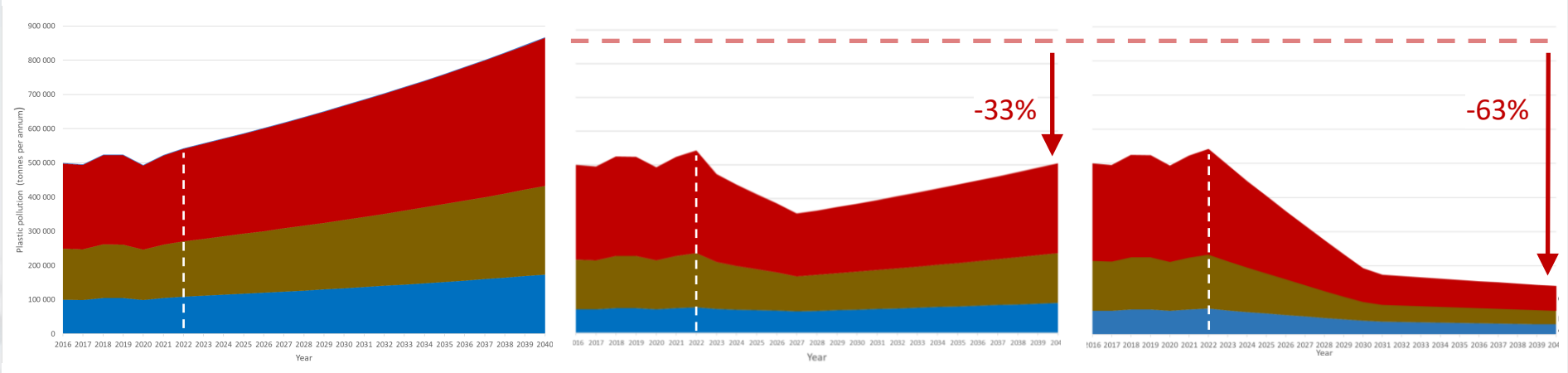
- We often hear statements like –
  - "*Addressing plastic pollution will come at a significant cost*"
  - "*Reducing plastic production and consumption will result in job losses*"
- For this reason, we modelled a scenario that sought to find a "sweet-spot" between least plastic pollution, lowest GHG emissions, at lowest cost, with highest jobs – a trade-off between reducing pollution with infrastructure costs and jobs



Optimal system change scenario

There is no single solution to address the plastic pollution problem

BAU Scenario | **EPR Scenario** | **System Change Scenario**



- An Optimal System Change scenario with **combined strategies** of **reducing plastic demand, increasing plastics waste collection and recycling, and increasing the safe disposal of plastics to sanitary landfill**, canachieve a **63% reduction in plastics pollution, compared to the BAU scenario**

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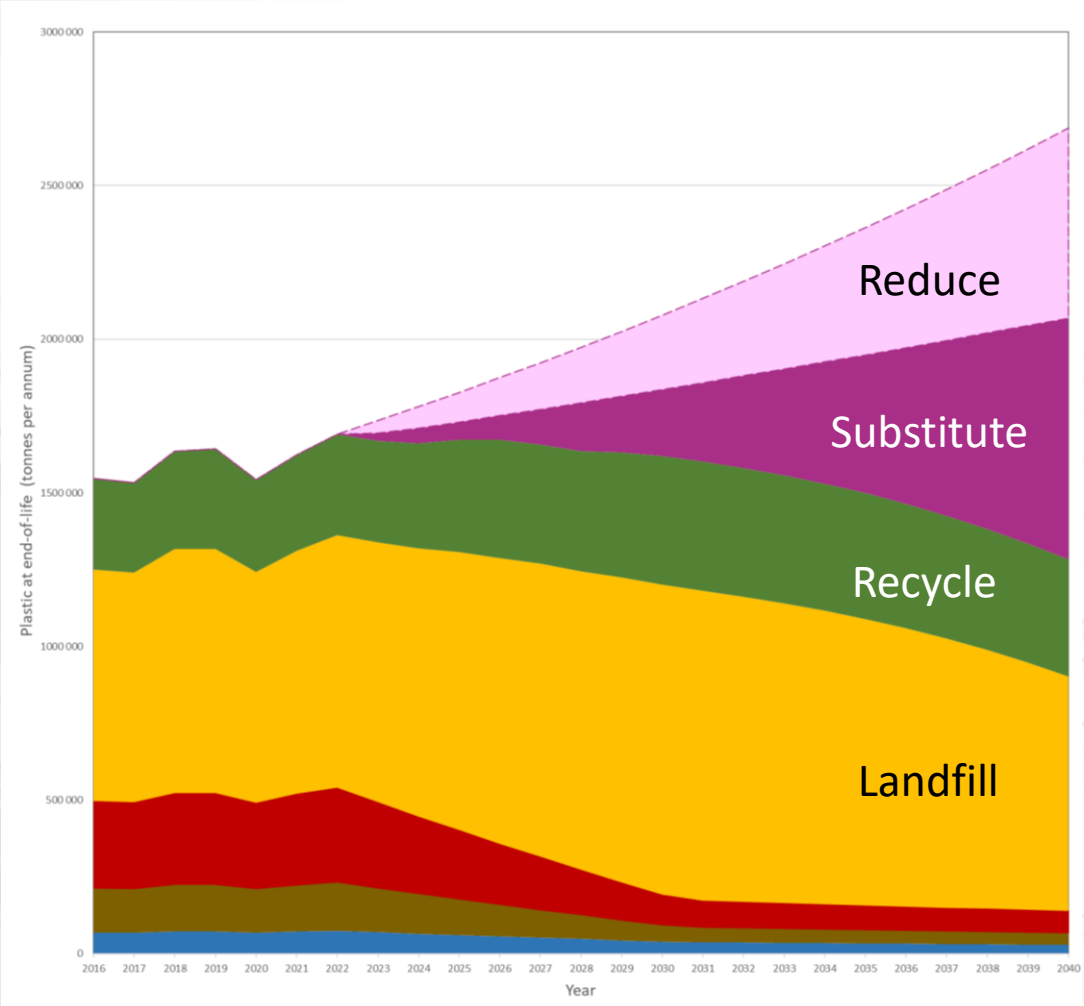
Optimal system change scenario

The Optimal System Change requires combined "upstream" and "downstream" Interventions to achieve 63% reduction in plastic pollution, compared to BAU:



- Plastic demand decreases by 2.57% per annum
- Collection increases by 4.85% per annum
- Recycling increases by 4.87% per annum
- Disposal to sanitary landfill increases by 3.36% per annum

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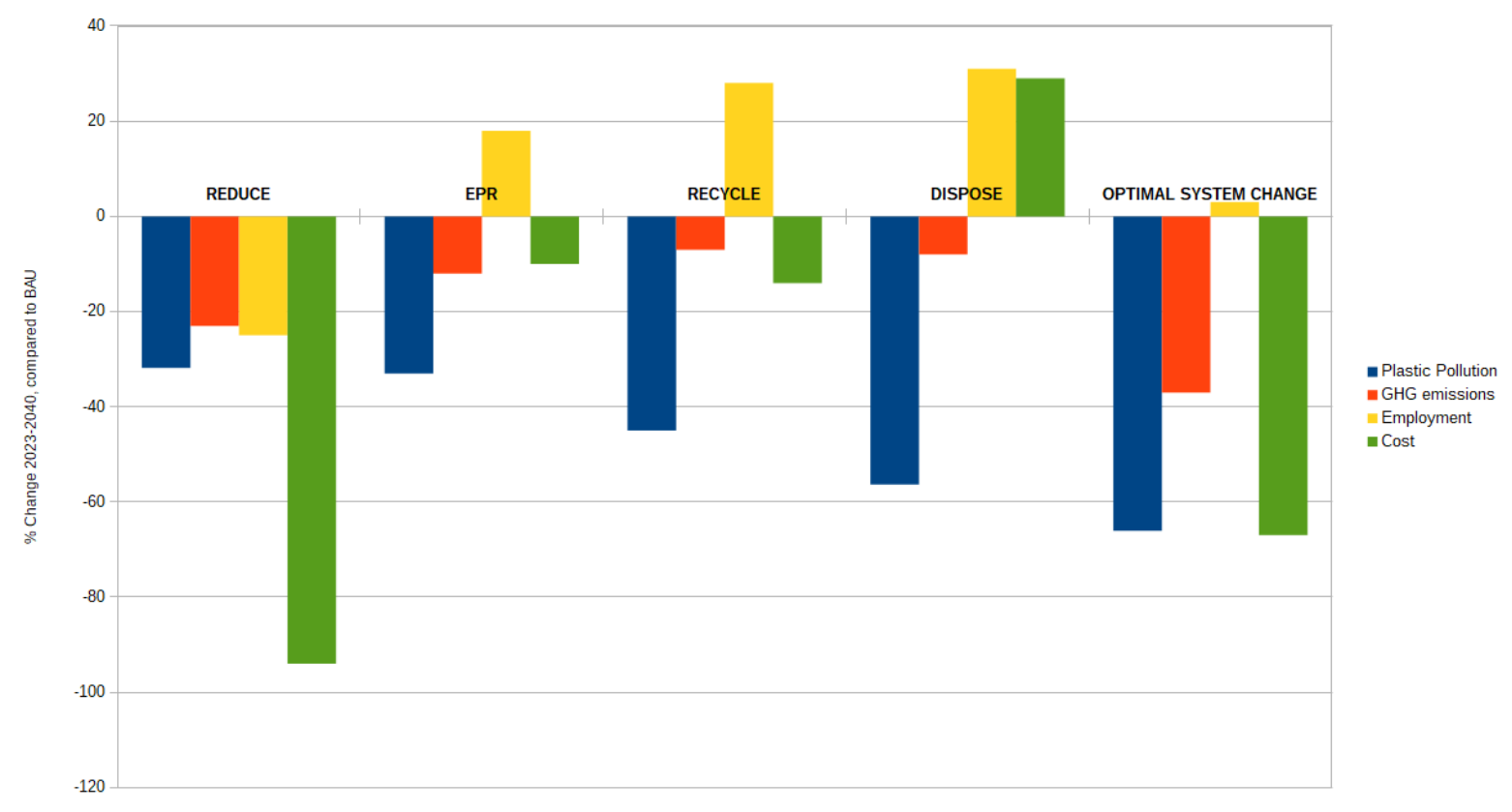
Summary of strategies:



- Compared to BAU over the period 2023-2040, EPR avoids 33% **plastic pollution** while Optimal System Change avoids **63% plastic pollution**
- **Optimal System Change also reduces GHG emissions by 37%, reduce the total cost by 67%** from avoided capital investment plastic production, conversion and disposal, and **increase employment by 3%**

Key recommendations

- A **combined strategy to reduce plastic pollution**: **reduce** plastics consumption, increase **collection** and **recycling** of all recyclable plastic materials and **properly dispose** of plastics in sanitary landfills
  - **Strategic interventions** are required to **reduce plastic demand** (re-use, new delivery models, eliminate and substitute with alternative materials)
  - **Management interventions** to **reduce waste collection backlogs and improve waste collection services with** introduction of **waste separation at source** to ensure quality material for recycling
  - Improve landfills so that they are **compliant with legislation** and effectively **contain plastics *in situ***
- Requires a **collaborative approach** between all stakeholders, and a commitment to support the necessary changes across the entire plastics value chain, with **immediate action**

Next steps

- **Technical report on Waste RDI** : REDUCING PLASTIC POLLUTION: A comprehensive, evidence-based strategy for South Africa
- Release full report with **launch** #SolvePlasticsAfrica
- **Engage public and private sectors** on the details of the report, and the implications in terms of specific actions to be taken
  - **Guide South Africa's input to** an international legally binding instrument on plastic pollution
  - **Guide business to assess value chain** of plastics and packaging to comply with EPR
  - **Work with other African countries** in applying the Pathways Model to understand plastic flows and plastic pollution interventions in-country

Thank you

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