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Facilitating Global Circularity of Plastic Feedstock with Standardised, Verified and Trusted Trade Procedures

Side-event at COP17
by Ocean Recovery Alliance and World Plastics Council

Geneva, 4 May 2025

Ocean Recovery Alliance

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Douglas Woodring Ocean Recovery Alliance

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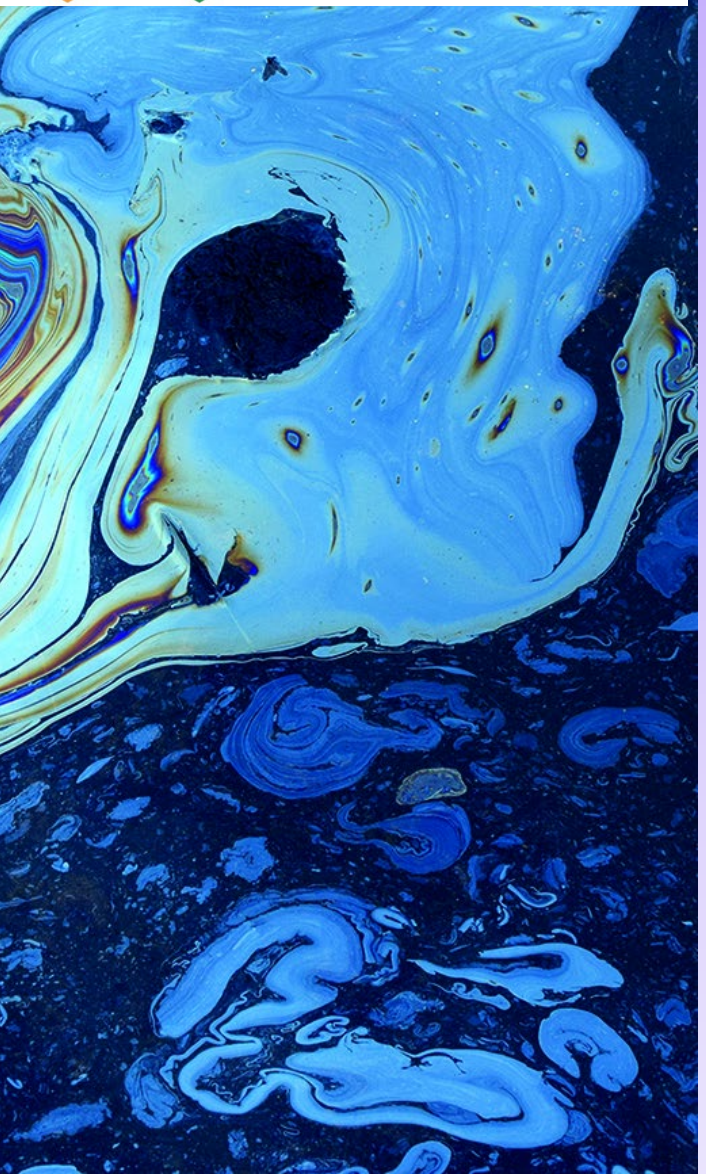


Facilitating Global Circularity of Plastic Feedstock with Standardized, Verified and Trusted Trade Procedures

Make Visible the Invisible: Sound Management of Chemicals and Wastes

COP17 - important opportunity for creating increased alliance and planning with the Plastic Amendments of the Basel Convention, and the UN Plastic Treaty discussions at INC5.2, to facilitate the global circularity for plastics, helping to achieve the goals of reduced plastic pollution.

Douglas Woodring
Founder/Managing Director

Reductions and reuse models may reduce plastic pollution by 30% by 2040
But…..what about the other 70%?

- Much of the UN Plastic Treaty discussions have focused on plans for reductions, reuse and some form of taxes (EPR). In the best case scenario, studies have estimated that by 2040, this would reduce plastic use and potential pollution by **30%.** (Systemiq)

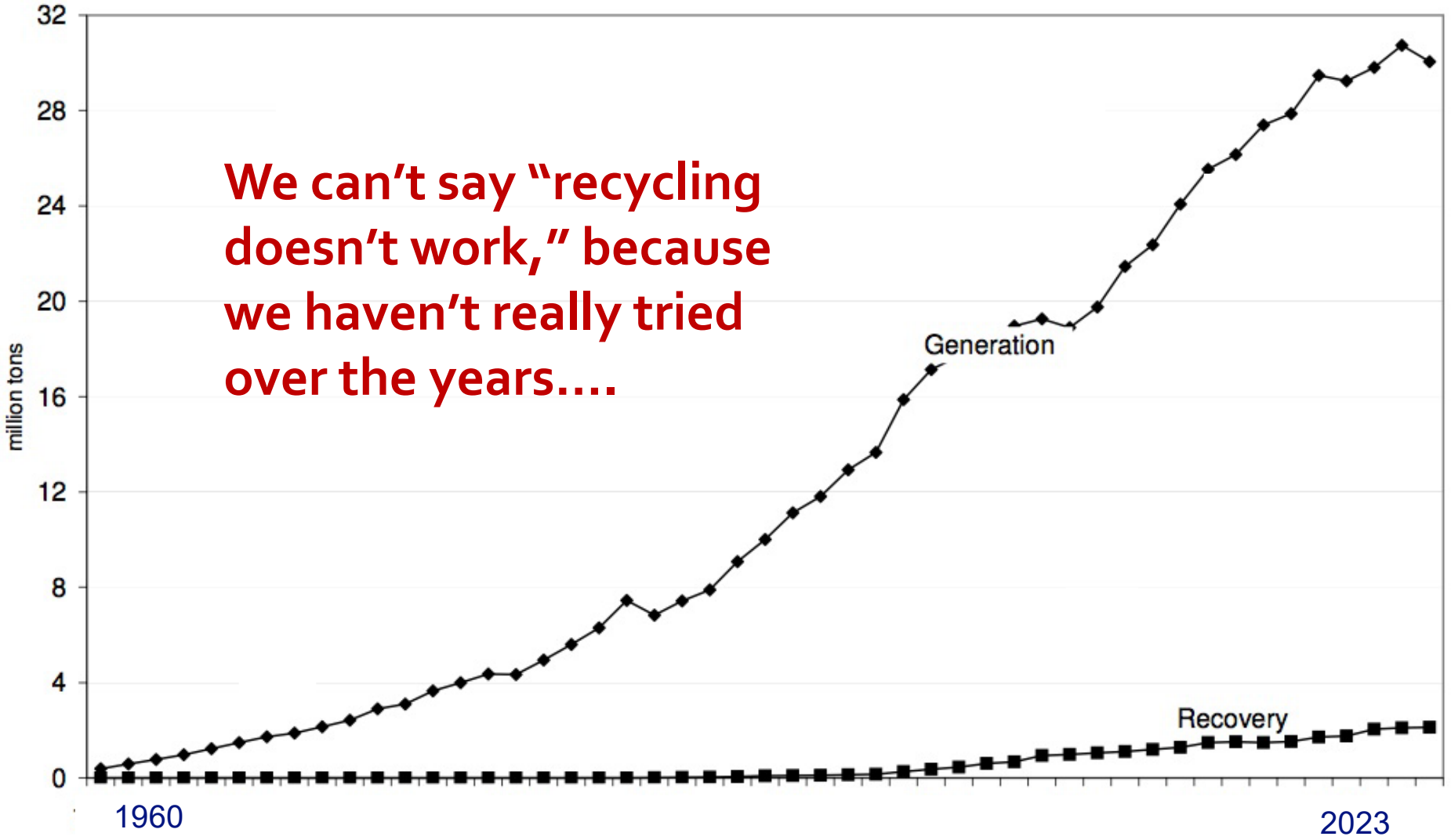
- In the Treaty discussions, and consequent need for alignment with the Basel Convention, we have not collectively focused enough on circularity, recycling, and how to work with the other **70% of plastic waste generated.**

The Convention is not meant to apply to materials which are not "waste"…….

Unfortunately, the word "plastic" has become synonymous with the word "waste," but this should not be the case, much due to generic interpretations from the press and interest groups

The Convention, however, does not apply to trade in materials that are not "waste." Definitions could be simplified and standardized to better facilitate the use of feedstock which is bound for verified recycling and circular systems.

PLASTICS GENERATION AND RECOVERY



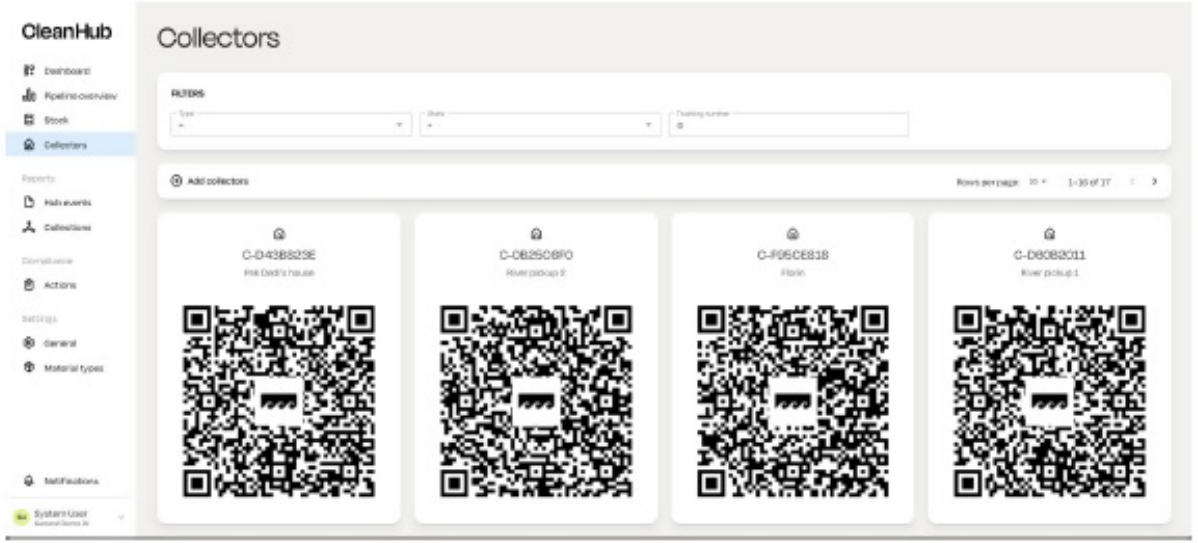
We can't say "recycling doesn't work," because we haven't really tried over the years….

Verification of materials was often overlooked in the past…

Today it is much easier to bring trust and transparency to trade

Key Components 1: QR Code Identification

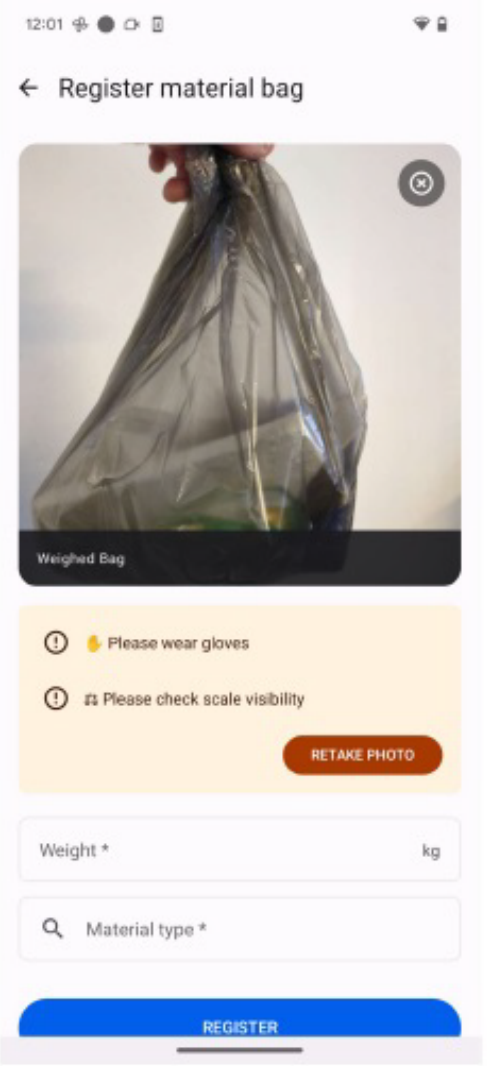
- Each waste provider receives a unique QR code
- Codes can be printed, laminated, and distributed as cards
- Codes identify providers when they bring waste to collection points



QR & Bar Codes, Blockchain, Digital Certificates & Photos World Customs Organization (WCO), HS Codes…

Key Components 2: Collection App

- Android-based app used by collection staff
- Functions:
  - Scans provider QR codes
  - Records waste weight
  - Takes photo evidence
  - Rates waste quality (1-5 star system)
  - Records payments
  - Sends confirmation SMS



Convention and Treaty alignment could facilitate scaled collection of Secondary Plastic Feedstock

- By 2040, over 32m tons/year of mis-managed waste are expected annually, as part of over 75m tons of total plastic waste. Proper scaled recycling (of any technologies, including mechanical and advanced/chemical recycling) could circulate almost 80% of this volume, or over 55m tons/year.

- COP17 and INC5.2 can be focused to streamline and improve the Plastic Amendments of the Basel Convention to facilitate the legitimate and qualified trade of plastic feedstock for recycling, which is not *waste.*

Simplified Definitions and Trusted Standards

- Basel Convention's Plastic Amendments could simplify definitions, with trusted, unified standards which allow for pre-approved sellers and buyers to trade fit-for-purpose materials.

- This is particularly important when countries do not have the capacities or resources to process their own recycling feedstock in environmentally sound, or economically viable manners.

- This valuable plastic feedstock for recycling ("pollution" if not circulated) should not be lost in non-existent waste management system or be unnecessarily restricted.

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Takeaways and Opportunities for Treaty Alignment:
Basel Convention and UN Plastic Treaty

Member state delegations of each treaty can work together the coming months for harmonization, trust and standardization for collaborative participation in a Global Circular Economy, with reduced plastic pollution as the end result.

Ocean Recovery Alliance

Douglas Woodring
Ocean Recovery Alliance
+852-9020-3949
doug@oceanrecov.org
LinkedIn: Doug Woodring

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Benny Mermans
World Plastics Council

Interconnectivity -
Global Plastics Treaty & Basel Convention

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Global Plastics Treaty

Towards an international legally binding instrument to end plastic pollution

Basel Convention

Legally binding global instrument aiming to protect human health and the environment by controlling the transboundary movements of hazardous wastes

Key drivers for system transition to circularity

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- Establishing Clear Legislative Frameworks to Drive Industry Investment
- Facilitating International Trade of Verified Feedstock to Scale Circularity
- Implementing Recycled Content Mandates to Drive Market Demand
- Harmonized waste collection and sorting guidelines as key enabler to increase circularity

Establishing Clear Legislative Frameworks to Drive Industry Investment

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Policy Clarity as an Investment Catalyst:

The plastics industry requires clear and consistent legislative frameworks to make informed, long-term investments in recycling infrastructure.

Current Challenge:

The absence of definitive regulations on recycling processes, trade policies, and recycled content mandates creates uncertainty, deterring substantial industry investment.

Opportunity:

Aligning national policies with international agreements, such as the Basel Convention and the forthcoming UN Plastics Treaty, can provide the necessary regulatory stability to foster industry confidence and investment.

Facilitating International Trade of Verified Feedstock to Scale Circularity

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Necessity of Global Trade:

Achieving circularity at scale requires the facilitation of international trade of verified and approved recycled feedstock to optimise processing efficiencies and economies of scale.

Current Challenge:

Restrictive national policies and fragmented approaches to the trade of secondary raw materials hinder the development of a robust global circular economy.

Policy Solution:

Harmonising definitions, rules and criteria under the Basel Convention and the UN Plastics Treaty to facilitate safe and efficient cross-border movement of recycled materials, thereby enhancing global recycling capabilities.

Implementing Recycled Content Mandates to Drive Market Demand

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Creating Demand Certainty:

Mandating recycled content in products ensures a stable market for recycled materials, encouraging investments in both mechanical and chemical recycling technologies.

Current Challenge:

Inconsistent policies and the exclusion of certain recycling technologies, such as chemical recycling, from mandates limit the industry's ability to meet circularity objectives.

Policy Solution:

Developing comprehensive recycled content mandates within the framework of the UN Plastics Treaty that encompass outputs from all recycling technologies, thereby promoting a holistic approach to circularity..

Interconnectivity - Global Plastics Treaty & Basel Convention

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Policy Asks

Global Plastics Treaty

- Design for circularity
- Create the Right Demand Signals
  - Mandatory recycled content targets at national level
  - Technology neutrality (acceptance of all recycling technologies)
  - Circular feedstock targets per industry sector
- Identify and Prevent High Leakage Plastic Applications
- Establish Finance and Capacity Building Mechanisms
- Enable Circularity Through Trade

Basel Convention

- Facilitate Responsible Trade of Waste and Reduce Regulatory Complexity through Harmonised Definitions, Rules and Criteria
- The establishment of digitalization and more efficient PIC procedures
- Environmentally sound management (EMS) of plastic waste, incl. chemical recycling
- Harmonised end-of-waste status

Basel Convention
COP 17
Geneva, 28/4-9/5 2025

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Carlos Silva
ISWA

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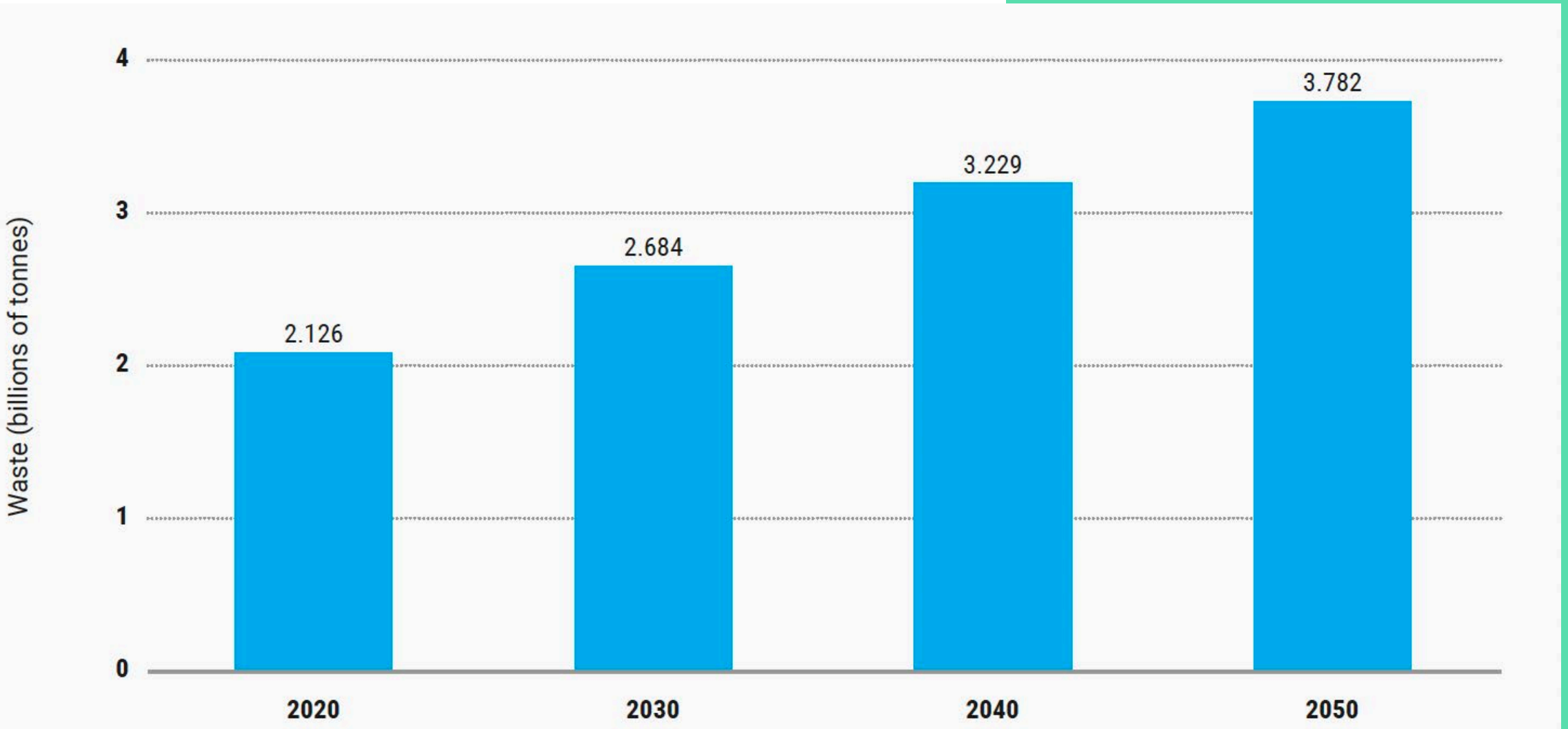
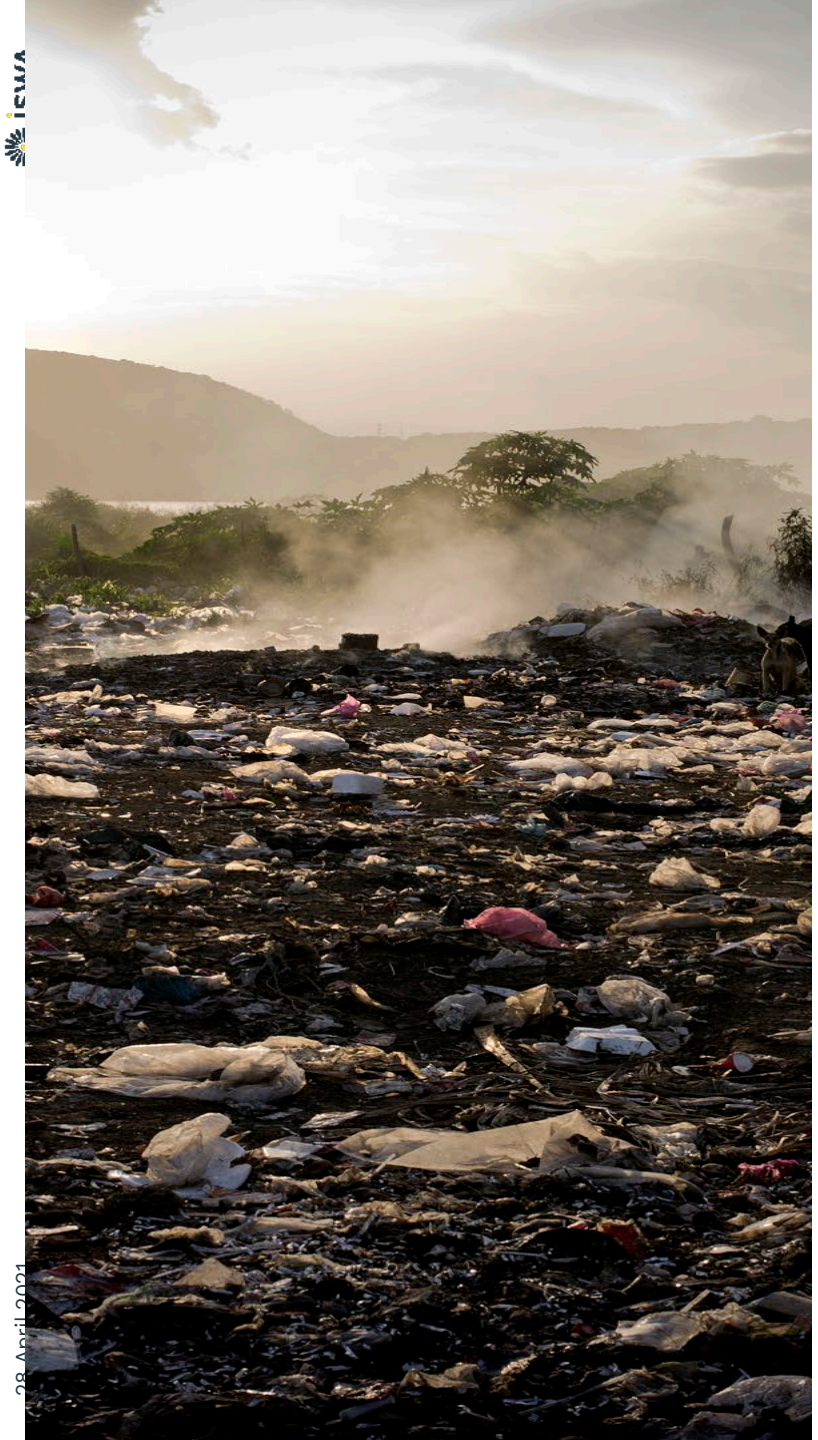
TOWARDS A CIRCULAR ECONOMY

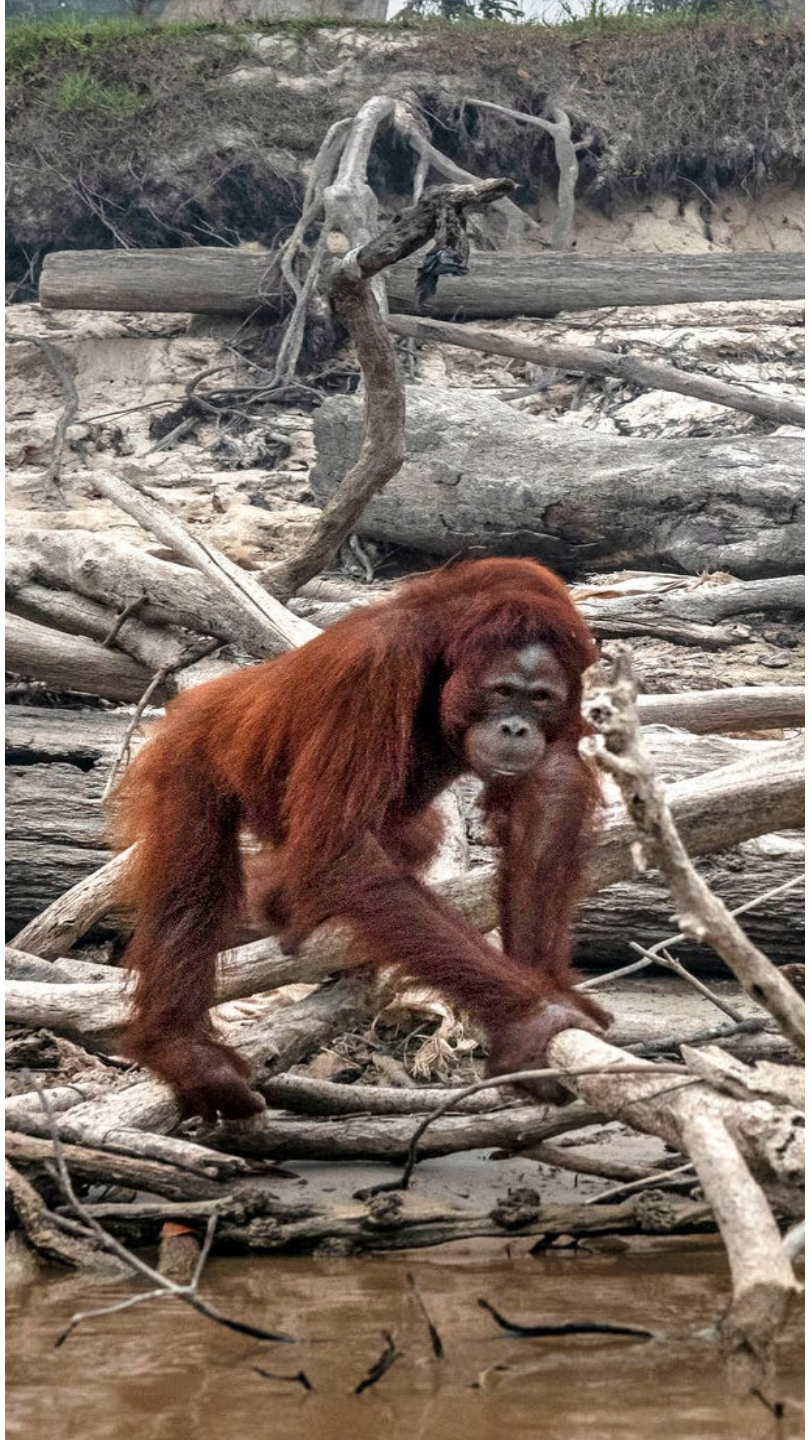
Turning Rubbish Into a Resource

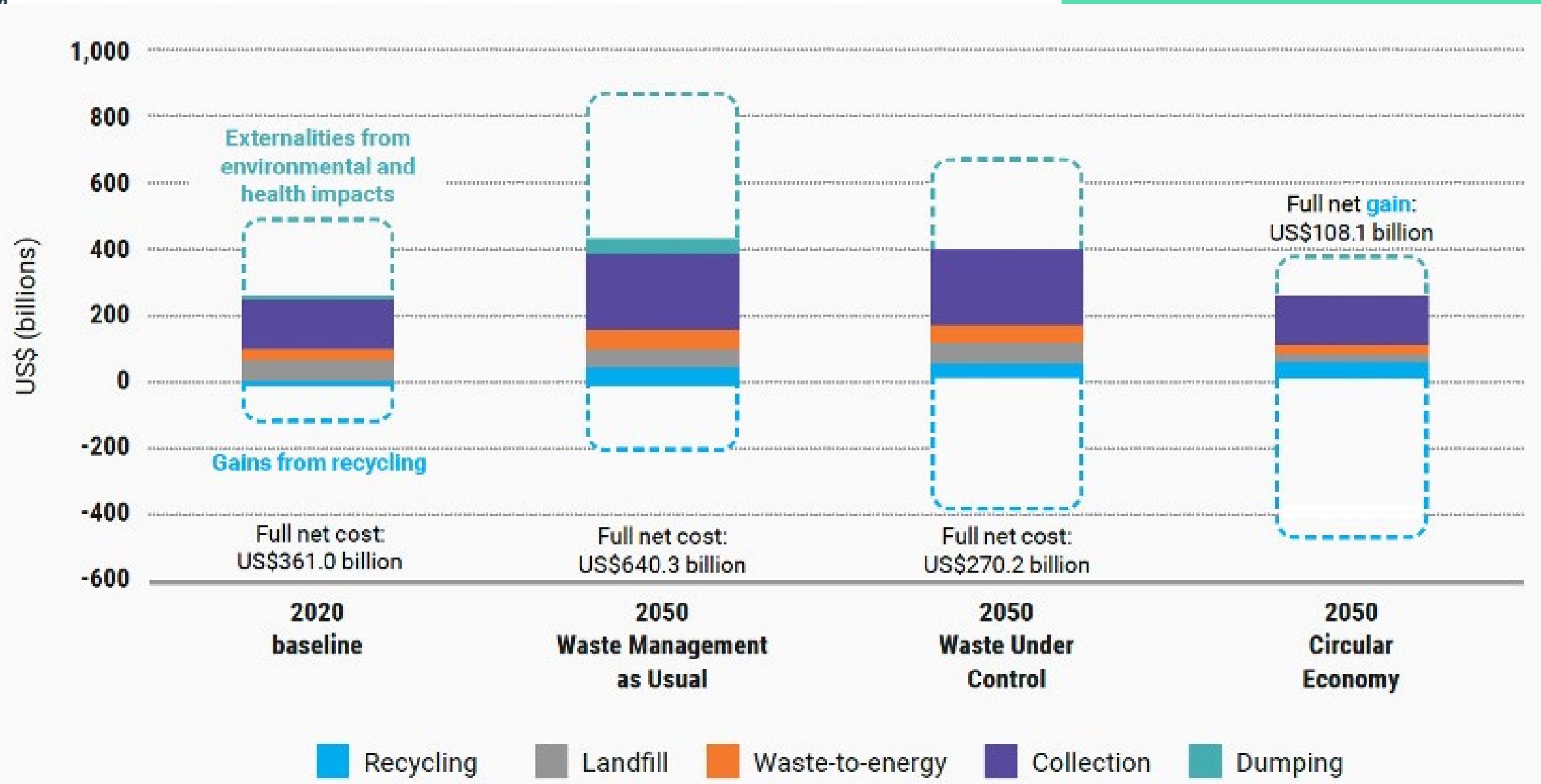
Presenter: Carlos Silva Filho, ISWA Immediate Past President and Member of the UN Secretary General's Advisory Board on Zero Waste

Business-as-usual








1,000
800
600
400
200
0
-200
-400
-600
US$ (billions)
Externalities from environmental and health impacts
Gains from recycling
Full net gain: US$108.1 billion
Full net cost: US$361.0 billion
Full net cost: US$640.3 billion
Full net cost: US$270.2 billion
2020 baseline
2050 Waste Management as Usual
2050 Waste Under Control
2050 Circular Economy
Recycling
Landfill
Waste-to-energy
Collection
Dumping

Solutions to the Future

- A paradigm shift is urgent - from "~~waste as garbage~~" to "waste as a resource"
- Policy and regulation with supportive frameworks, including EPR, circular design and trans shipment standards
- Investment in recycling facilities, material recovery, and eco-industrial parks

- Digital technologies for tracking and monitoring systems to certify the transition from waste to resource. Example of “Recircula Brazil” initiative.
- Mobilizing private and public funds to scale circular business models.
- Global Collaboration is needed!

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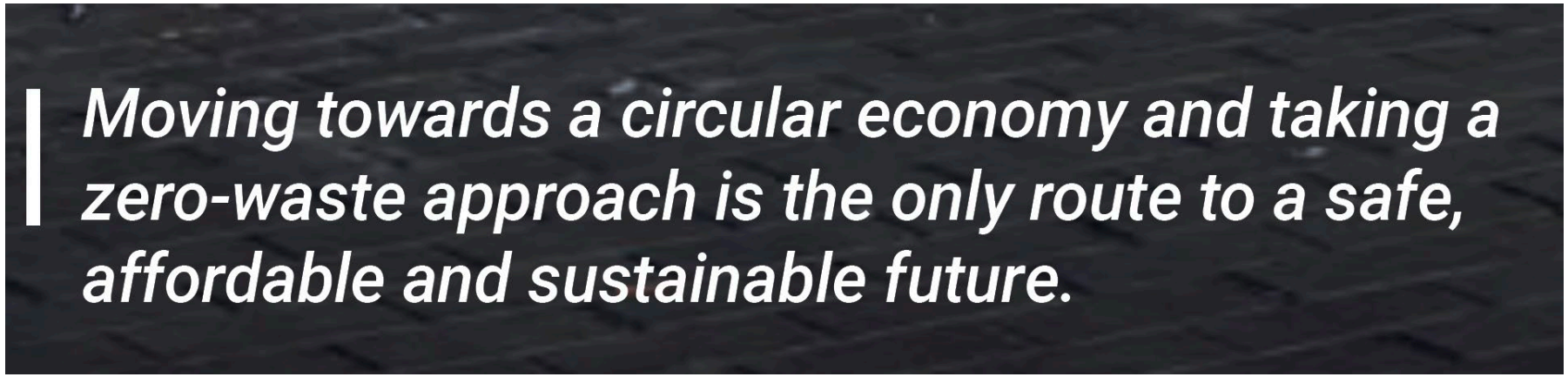

THANK YOU!

Carlos RV Silva Filho

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Make Visible the INVISIBLE
Sound management of chemicals and wastes

Facilitating Global Circularity of Plastic Feedstock with Standardized, Verified and Trusted Trade Procedures

Timo Unger

Senior Manager Sustainability, Hyundai Motor Europe R&D

30 April 2025

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Make Visible the INVISIBLE
Sound management of chemicals and wastes

Mission Impossible - Recycled content targets vs. POPs elimination

Timo Unger

Senior Manager Sustainability, Hyundai Motor Europe R&D

30 April 2025

NOFAS - There is No One Fits All Solution

Achieving a truly and efficient circular economy is not only an environmental objective but a highly strategic goal.

There are already solutions and legislation in place to pave the way…

Some however can lead to even counterproductive effects such as increasing plastic pollution or a reduced circular economy…

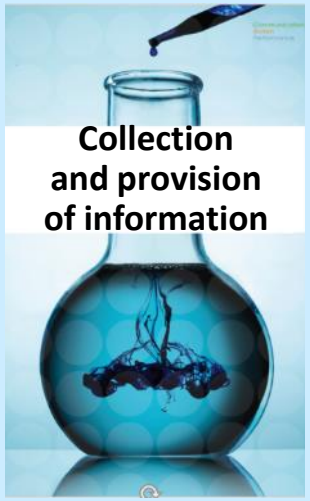
NOFAS - There is No One Fits All Solution

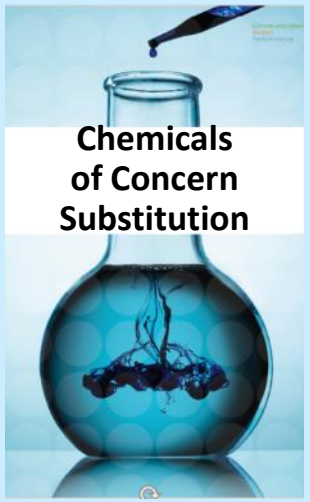
≠

Recycling Quota ~ 55%
in EU

Recycling Quota ~ 85%
in EU, Japan, Korea, China

Where are the differences?





A possible solution (not only) under the UN Plastics Treaty
Priority setting by different product clusters

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Inevitability of Plastic Use /
Durability of Products

Cluster B
Products with a
- Lower potential for plastic replacements
- Higher potential for leakage

Cluster D
Products with a
- Lower potential for plastic replacements
- Lower potential for leakage

Cluster A
Products with a
- Higher potential for plastic replacements
- Higher potential for leakage

Cluster C
Products with a
- Higher potential for plastic replacements
- Lower potential for leakage

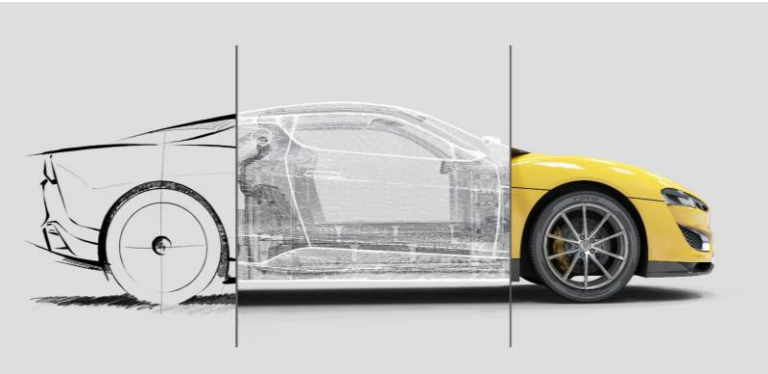
Highest regulatory priority

Lowest regulatory priority

Complexity / Low leaking potential of Products

The major difference: Durability as a major challenge

Two decades from vehicle design to vehicle end of life…



Vehicle Design

3-5 years

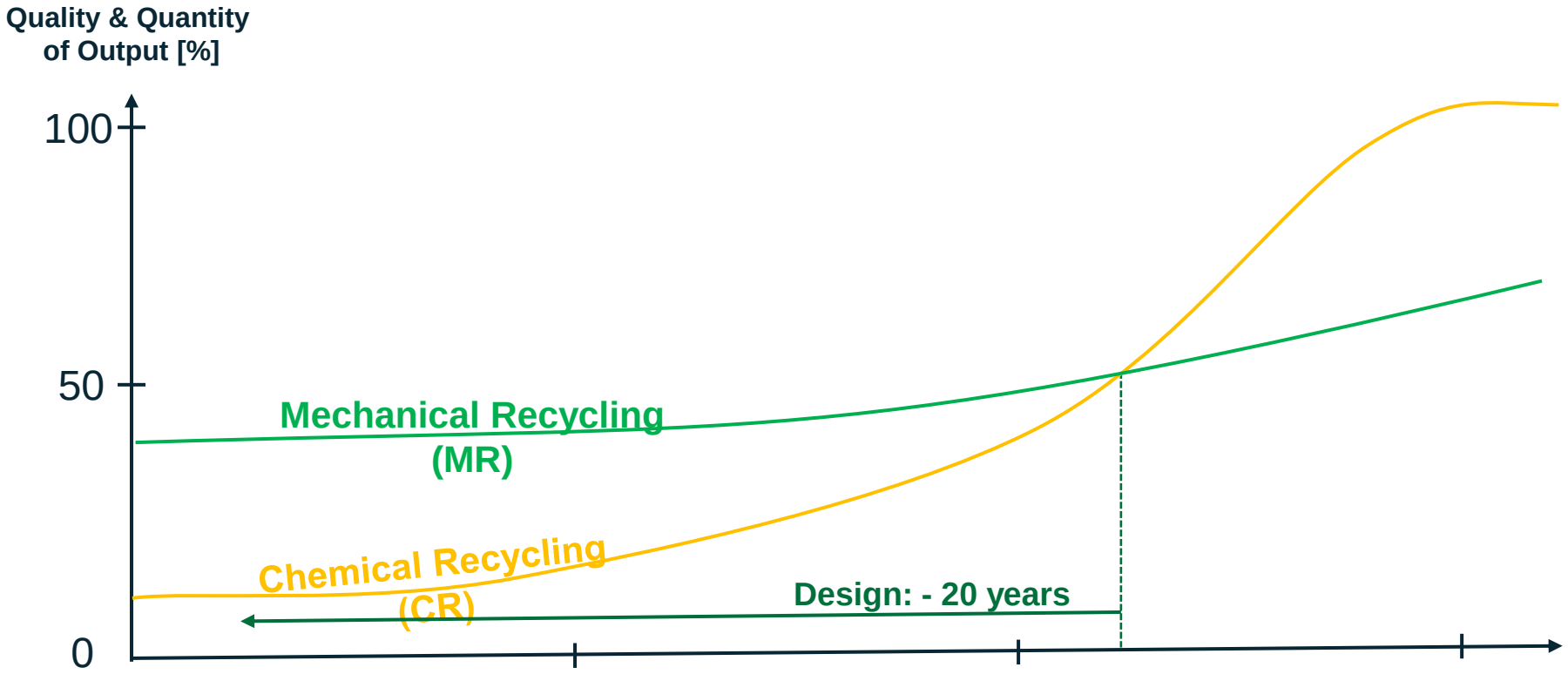
Vehicle Fun

8 - 15 years

Vehicle End of Life

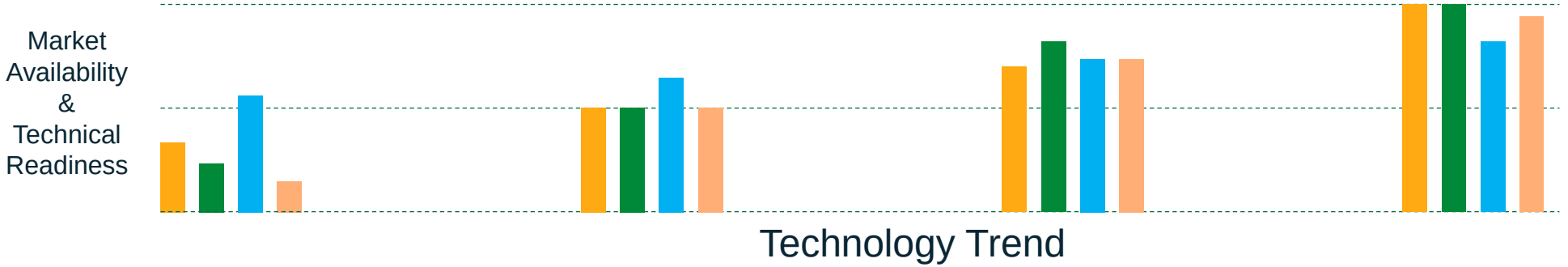
Up to ~20 years!!!

Material vs. Chemical Recycling



Chemical Recycling:
From Waste → Feedstock → Material

Mechanical Recycling:
From Waste → Material

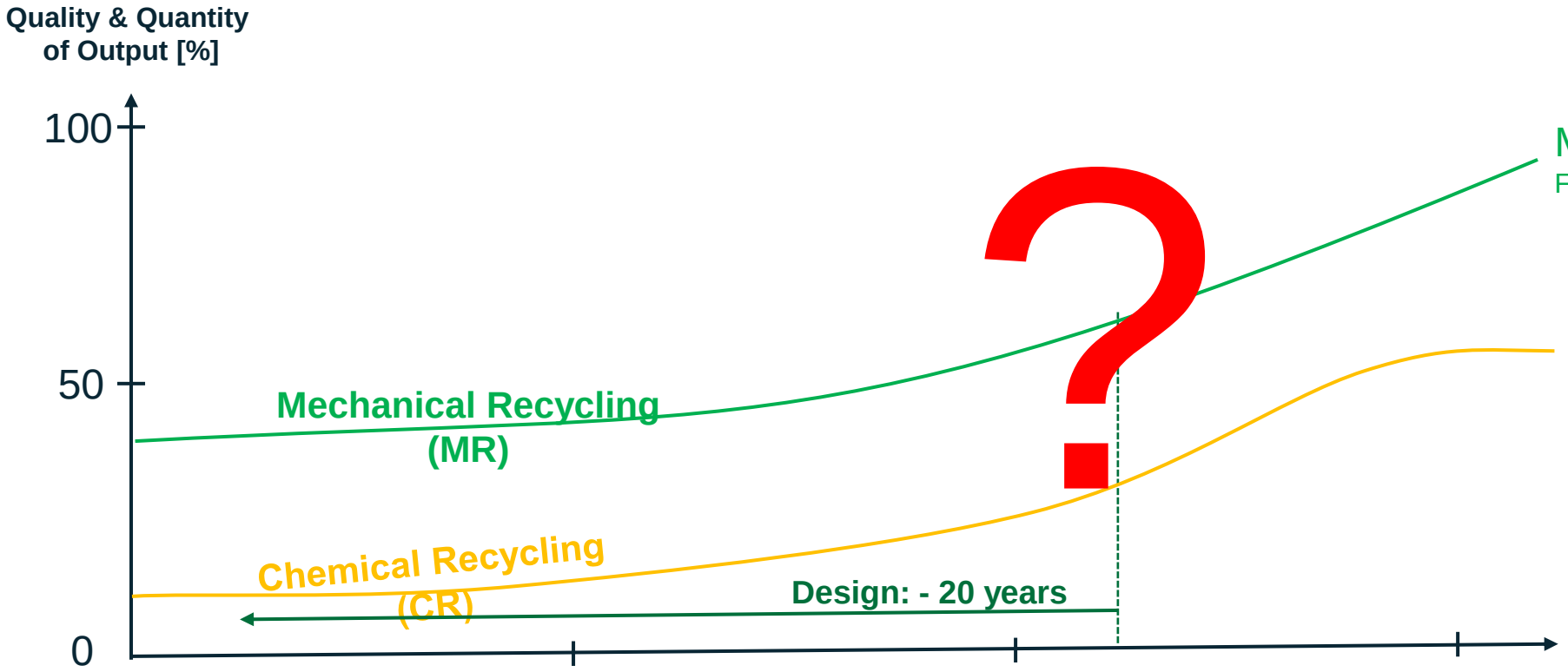


Mega Trends:

- Affordable Renewable Energy
- Digital Twin, AI & Robotics Technology
- Sorting / PST Technology
- Chemical Recycling Technology

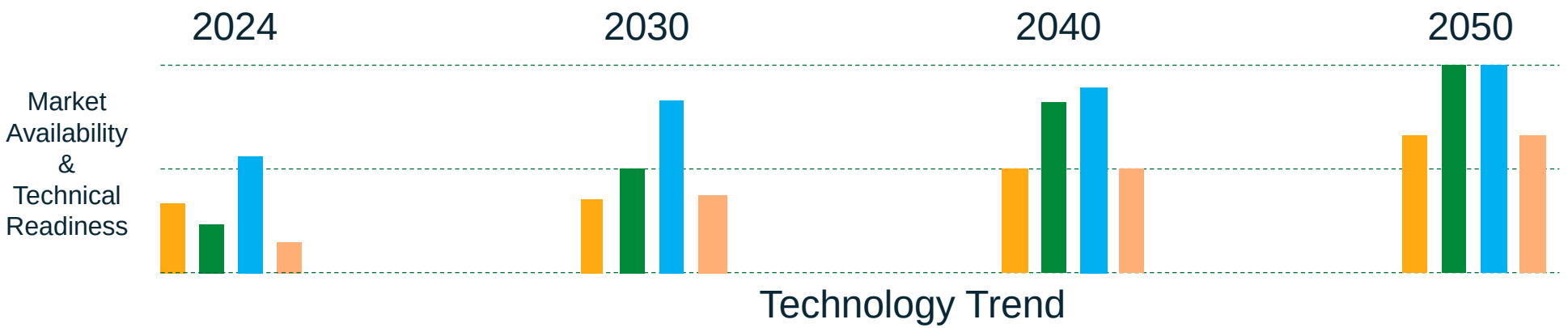
* Other criteria don´t play a significant role e.g. Logistic efforts, scaresity of raw materials, legislative pressure, …

Material vs. Chemical Recycling



Mechanical Recycling:
From Waste → Material

Chemical Recycling:
From Waste → Feedstock → Material



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Design for Post Shredder (Separation) Technologies (PST)

- The design requirements for an efficient **M**aterial **R**ecycling (**MR)** are different to those for an efficient **C**hemical **R**ecycling (**CR**):

Design Requirements	for Material Recycling	for Chemical Recycling
Reduced number of materials	Yes	Yes
Increased use of compatible materials	Yes	Yes
Less composite parts with incompatible materials	Yes	Yes
Less carbon black	Yes	Yes
High separability of (incompatible) materials (e.g. by material properties, tracers, …))	Yes	Yes
Incompatible materials	All materials within a similar physical (e.g. density) range, …	Example for Pyrolysis: PET / PLA, PVC, PS, ABS, PC
Mono Material Concepts	No	Yes (only with compatible materials)

Upcoming End of Life Vehicle Regulation – Uptake of recycled content in vehicles

According to the current draft End of Life Vehicle Regulation (ELVR), very ambitioned mandatory recycled content quota will have to be fulfilled:

- → 25% (~52 kg*) of Post-CR** plastics compared to the total mass of plastics (=208 kg*)
- → Including at least 25% of closed loop recycled plastics (=13 kg*)

* Numbers from JRC Study: A*verage representative vehicle weight: 1300 kg containing 208 kg (16%) of plastics*
** Post-CR: Post Consumer Recyclat

- → ~608,400t PCR (152,100t Closed Loop) per year of high quality recyclates
  - → A lot will (have to) come from other sources (bottles, ..)
  - → But some of the other sectors already have their own recycling targets (e.g. packaging).

Closed Loop

Open Loop

The challenge of a closed loop approach for vehicle waste

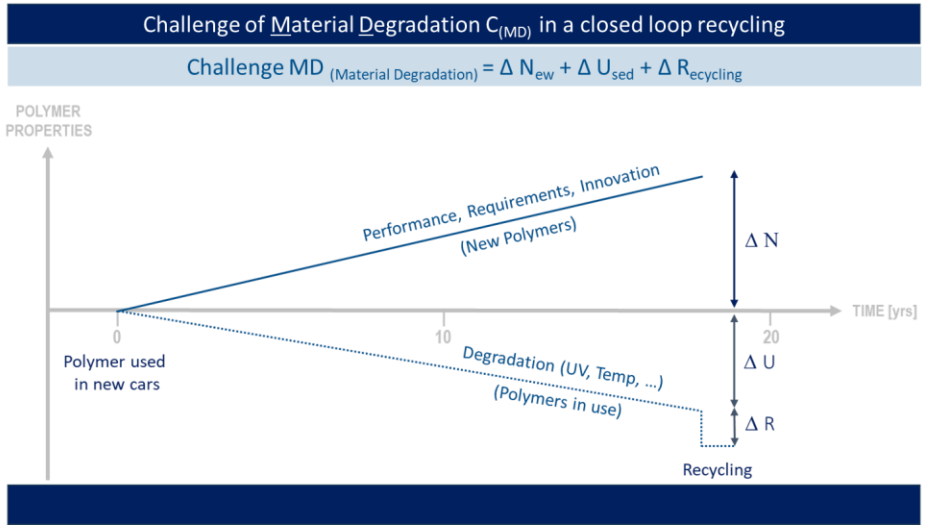
A closed loop approach for durable products is difficult because of the challenges of…

- Material Degradation
  - Polymer degradation during 15+ years of vehicle lifetime
  - Continuous improvements of virgin material properties

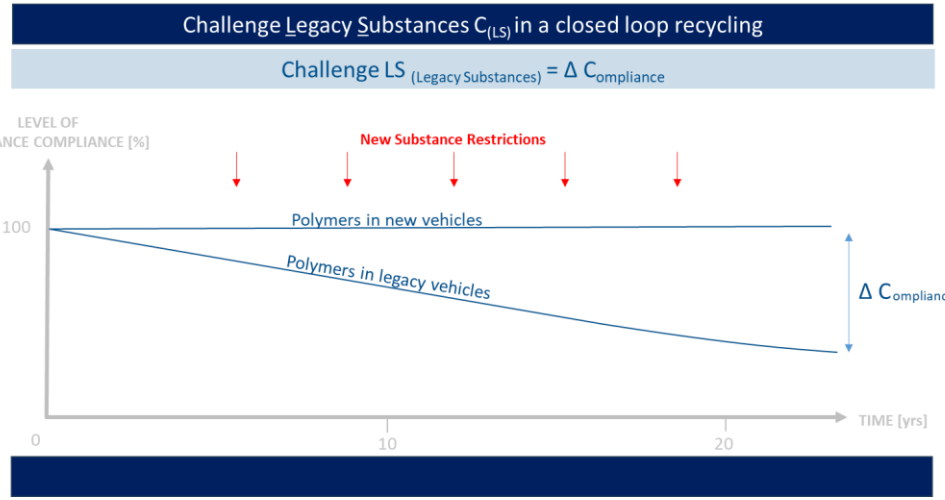
and

- Legacy Substances of Concern
  - Are contained in closed loop PCR,
  - Addition of more SoCs due to REACH…

Recycled Materials from durable goods will always contain (newly) prohibited chemicals

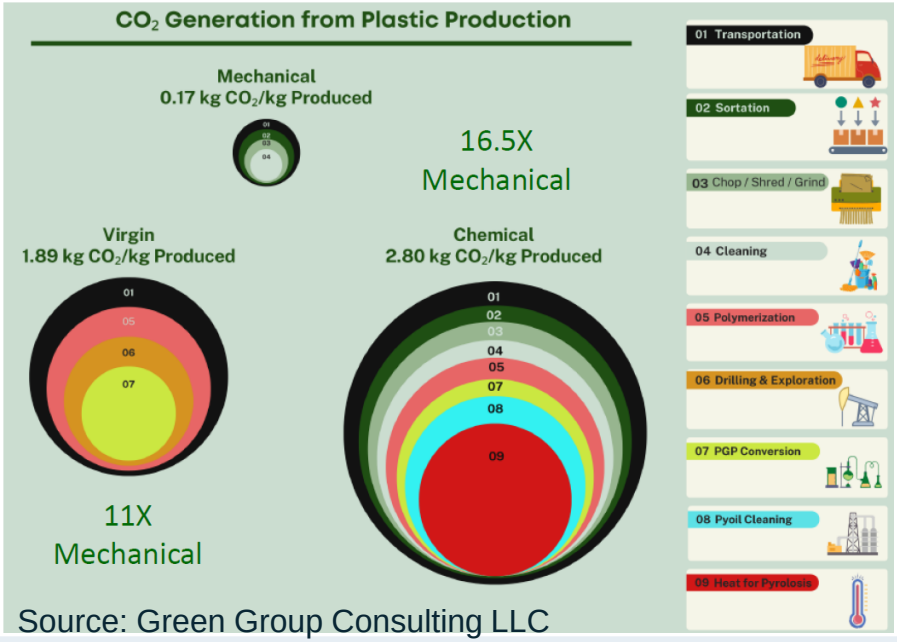


Challenge CL (Closed Loop) = Challenge MD + Challenge LS



Potential Solutions for a closed loop recycling

Chemical Recycling / Pyrolysis?



Source: Green Group Consulting LLC

Legal Exemptions / Higher Thresholds

Challenge		
Material Degradation	✓	✗
Legacy Substances	✓ ?	✓
Process Efficiencies	✗	-

Less Collection & Recycling = More Microplastics

We take our responsibility very serious to reduce POPs while being committed to an efficient circular economy, to the objectives of the plastics treaty and other sustainability goals.

- To avoid plastics pollution / microplastics, **recycling is an important tool but only one part of a bigger** picture as we also must comply with other sustainability requirements.
- Very ambitioned recycled content targets **cannot be met without risking serious trade-offs** with other sustainability objectives / requirements (i.e. **Net zero, worker protection, non-toxic, …).**
  - **i.e. for vehicles and other durable goods: circular economy and non-toxic strategies are incompatible.**
- Fully achieving our ambitioned goals is **not feasible because** of
  - NOFAS / Durability Principles
  - Sustainability trade-offs (conflicting legislation)
  - Competition Law!

→ For complex and durable products: **Realistic thresholds for hazardous substances in recycled materials** are required to **promote recycling and reduce Microplastics**.

⇒ Without such thresholds, to amount of plastics pollution may further increase
⇒ Important: Thresholds must always guarantee no risk to health or environment

→ Because is the future is not predictable, legislation must be (recycling)technology agnostic and not exclude any possible technical solution (i.e. advanced recycling)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Q&A

Thank you

www.oceanrecov.org
doug@oceanrecov.org

worldplasticscouncil.org

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