



INDUSTRY INITIATIVES IN THE PLASTICS SECTOR FOR THE CIRCULAR ECONOMY

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July 26, 2018

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1. Linear Vs. Circular Economy
2. Key Elements of Circular Economy
3. Initiatives in the Plastics Sector
4. Our contributions
5. Opportunities to unlock the potential of Circular Economy
6. Challenges to be overcome
7. Final thoughts

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LINEAR VS. CIRCULAR ECONOMY

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CURRENT INDUSTRIAL MODEL - "LINEAR ECONOMY"

Take → Make → Dispose

Design → *Produce* → *Discard*

"Planned Obsolecense"

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VISION OF CIRCULAR ECONOMY

1. Redefining growth, focusing on environmental and societal benefits
2. Decoupling Economic Activity from Consumption of Finite Resources

Building and Rebuilding Economic Activity

"Restorative and Regenerative"

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PRINCIPLES OF CIRCULAR ECONOMY CONCEPT

1. Design out waste and pollution
2. Keep products and materials in use
3. Regenerate Natural Systems

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KEY ELEMENTS OF THE CIRCULAR ECONOMY

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KEY ELEMENTS



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Prioritise Regenerative Resources

Ensuring utilization of renewable, reusable, non-toxic resources as materials and energy in an efficient way

Use Waste as a Resource

Utilizing waste streams as a source of secondary resources and recovering waste for reuse and recycling

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Design For the Future *(Design Thinking)*

Using the right materials, to design for appropriate lifetime and to design for extended future use

Preserve and Extend What's Already Made *(Upycling)*

Maintain, repair and upgrade during use, to maximize Product lifetime and creating second life through take back strategies when applicable

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EUROPEAN RESPONSE

1. Pledge by European Union to make all plastics packaging recycleable by 2030
2. Voluntary commitment by Plastics industry to recycle 50% of plastics by 2040
3. Target to recycle and reuse 70% of plastics packaging

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AUSTRALIAN RESPONSE

1. Achieve 100 percent recyclable, reusable or compostable packaging across the nation by 2025
2. Reduce the amount of waste generated and make it easier for products to be recycled
3. Encourage waste reduction strategies through greater consumer awareness, education and industry leadership
4. Increase Australia's recycling capacity
5. Increase demand for recycled products and collaborate on creating new markets for recycled materials

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US PLASTICS PRODUCERS RESPONSE

1. All ACC Plastics division member sites in the United States to participate in the Operation Clean Sweep-Blue program by 2020 and all member sites in North America by 2022
2. Interim goal of having all plastics packaging be recyclable or recoverable by 2030
3. Reusing, recycling or recovering all plastics packaging by 2040 … Stretch Goal

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INITIATIVES IN THE PLASTICS SECTOR

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Plastics Sector Initiatives

Resin Producers

- Bio-based Plastics
- Biocomposites
- Compostable Plastics
- Biodegradable Plastics

- Commercial grades from PCR material

Major Brand owners

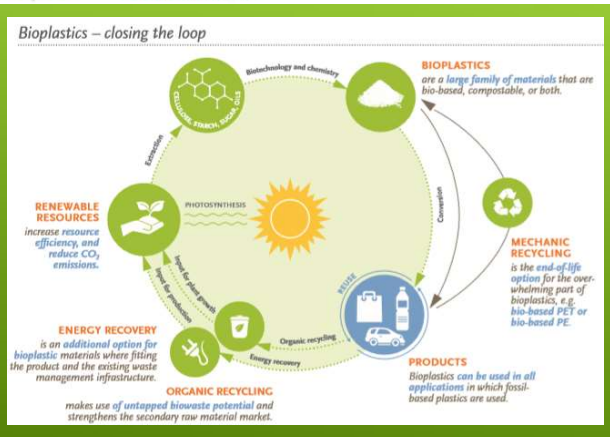
- Recycled content targets
- Products from plastics recovered from marine litter

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PLA	Natureworks LLC Total Corbion
PBS	PTT MCC BIOCHEM
PEF	Synvina C.V. Corbion Purac
PHA	Danomer Bio-On
Modified Starch	Novamont
BioPET	S.K. Chemicals
Cellulosics	Eastman Chemical

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IKEA INITIATIVES



Chairs in Biobased PP
(in collaboration with Neste Corp)

- ✓ Change all of its plastic to recycled and/or renewable materials by 2030

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LEGO INITIATIVES

- ✓ Commitment to use sustainable materials in core products and packaging by 2030



Biobased PE from Braskem

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PRODUCTS FROM 100 % PCR



Borealis AG and Henkel AG
✓100% PCR PE



Backpacks (8Hz)
✓100% recycled PET bottles

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PRODUCTS FROM 100% PCR



Miura Board (Athyron)

✓100% recycled PE or PP + Rice or peanut hulls

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COCA-COLA INITIATIVES IN PLACE



1. Refillable and Returnable bottles in selected markets
   - ✓ 1.5L, 2L, 2.5Land 3L
   - ✓ 25 cycles
2. Lightweighting
3. "Plant Bottles" in selected markets
   - ✓ 600 ml
4. Creation of consortium for development of 100% biobased alternative for PET
5. Coalition with Ford, Nike, P & G to promote use of 100% biobased resins

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COCA COLA GLOBAL GOALS

1. Make its packaging 100% reciclable
2. Scale back plastics used in containers
3. Creating bottles with more recycled content
4. Collect and recycle equivalent of 100% of its packaging globally and using an average 50% recycled content in every bottle produced by 2030 ….. ***"World Without Waste"***

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PEPSICO INITIATIVES

UK Plastics Pact (along with Nestle, Unilever)

- ✓ Promise to eliminate unnecessary single-use plastic and ensure all remaining plastic packaging is reusable, recyclable or compostable by 2025
- ✓ Promise to ensure at least 70 percent of plastic packaging is effectively recycled or composted, and that plastic packaging includes an average of 30 percent recycled content

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PEPSICO INITIATIVES

- ✓ Recycleable BOPP labels



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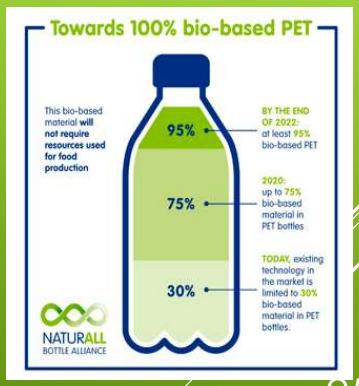
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DANONE INITIATIVES

Danone and Nestle





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PROCTOR & GAMBLE INITIATIVES

- ✓ Ocean Bottle from plastics recovered from PCR & Marine litter (in collaboration with TerraCycle and Suez)



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PROCTOR & GAMBLE GOALS

- ✓ Doubling the amount of recycled materials that are in its packaging by 2020
- ✓ By 2030, the company's 20 "leadership" brands such as Head & Shoulders, Febreze, Pampers, Pantene and Tide will use 100 percent recyclable or reusable packaging. ……*Today, an estimated 86 percent of its packaging is recyclable*

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HENKEL INITIATIVES



- ✓ Detergent Bottle from plastics recovered from Danube river
- ✓ 10% recycled content in flexible package



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UNILEVER INITIATIVES

- ✓ Target to ensure all its packaging to be reusable, recyclable or compostable by 2025
- ✓ Closed loop recycling PET waste into Virgin food grade PET for new packaging (partnership with Indorama Ventures & Ioniga)

We want all of our packaging to be fit for a world that is circular by design, stepping away from the take-make-dispose model that we currently live in.

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GLOBAL INITIATIVES



McDonald´s Corp	✓ Elimination of EPS by 2018 ✓ 100% of its consumer packaging from renewable, reciclable and "certified" materials by 2025
Amcor	✓ 100% of its packaging recycleable or reusable and commitment to significantly increase use of recycled content by 2025

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DELL INITIATIVES

- ✓ Commitment to use recycled ocean-bound plastics in new products
- ✓ Already used 7.25T of plastics collected from the environment
- ✓ Goal to multiply 10X

Packaging tray for XPS 13 Notebook with 25% recycled ocean plastics



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GRAHAM PACKAGING INITIATIVES

1. Development of Lightweight Multilayer Plastic Packaging for Beverages with improved functionality using Polyolefin Nanocomposites
2. Development of lightweight HDPE containers with PE Nanocomposites
3. Establishing the limit of Lightweighting PET Returnable Bottles
4. Development of Returnable PET Bottles with antimicrobial characteristics
5. Optimization of % PCR in PET Returnable Bottles

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"RECICLEX PROJECT"

- ✓ Automotive polymer recycling
- ✓ Respol SA in partnership with Spanish plastics recycler ACTECO and the end-of-life vehicle treatment facility Autodesguaces El Choque
- ✓ Focus on the commercialization of polyolefins that incorporate a percentage of recycled materials



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SCORE CARD

Key Element	Response of Plastics sector
Prioritize Regenerative Resources	Development of 100% biobased Resins Use of bio-based plastics and Biodegradable plastics in products & packaging
Use Waste as a Resource	Recycled content goals Products based on 100% PCR Products utilizing plastics recovered from marine/river pollution
Design For the Future	Less diverse materials
Preserve and Extend What's Already Made	Returnable CSD bottles

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Incorporate Digital Technology

Leveraging Digital technologies and online platforms to track & optimize resource use and strengthen supply chain.

Industry 4.0 Initiatives !

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OUR CONTRIBUTIONS

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OUR CONTRIBUTIONS

1. Mobile Plant for Recycling Plastics in Electronic Waste
2. Development of Ecological Mineral Paper based on recycled PET and natural mineral

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OPPORTUNITIES AND CHALLENGES

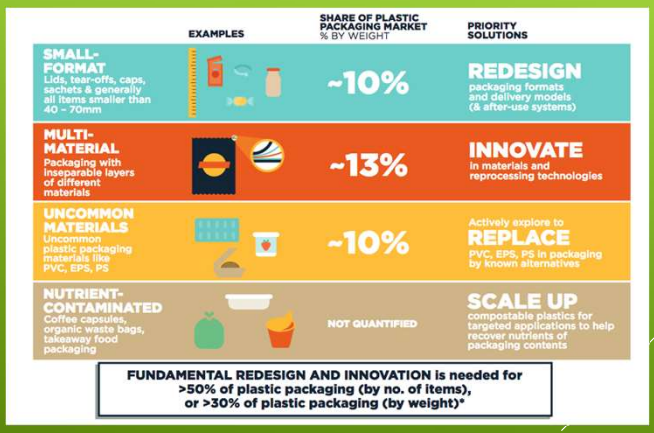
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OPPORTUNITIES



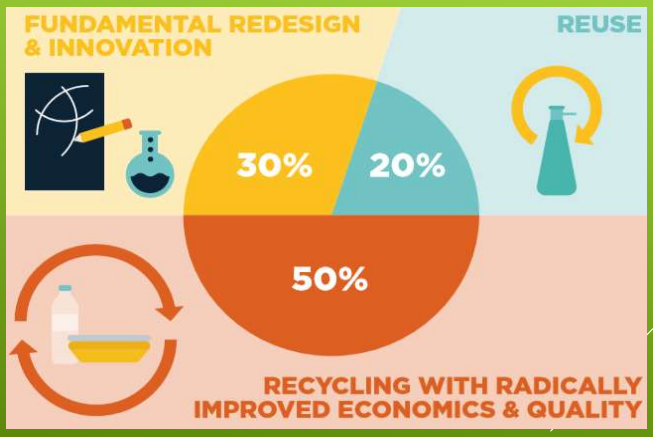
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OPPORTUNITIES



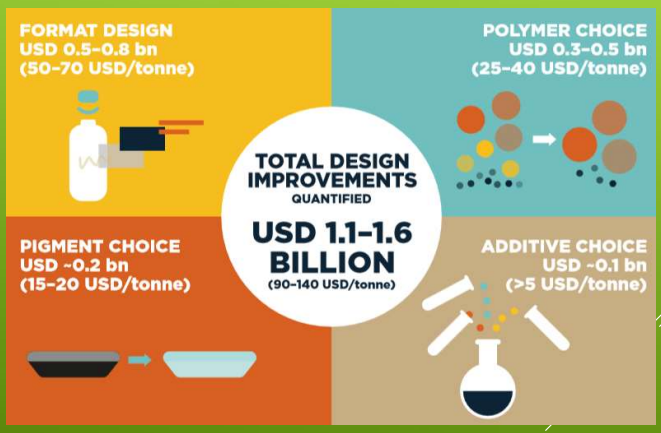
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OPPORTUNITIES



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CHALLENGES TO BE OVERCOME

1. Transition to Circular Economy requires radical shift
2. Who controls the Waste?
3. Shared Responsibility …. *But who and how much?*
4. Commitment throughout the value chain
5. Production Capacity of biobased plastics
6. "Practical" Technology for Recycling of multilayer structures
7. REGULATIONS and Universal Aceptance

"Devil is in the details"

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FINAL THOUGHTS

1. Concept of Circular Economy is here to stay !
2. NOT an EASY Transition !!
3. Requires global acceptance and collaboration !
4. Significant Technical, Social and Business challenges ahead !!
5. PLASTICS WILL BE PART OF THE SOLUTION !!!

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