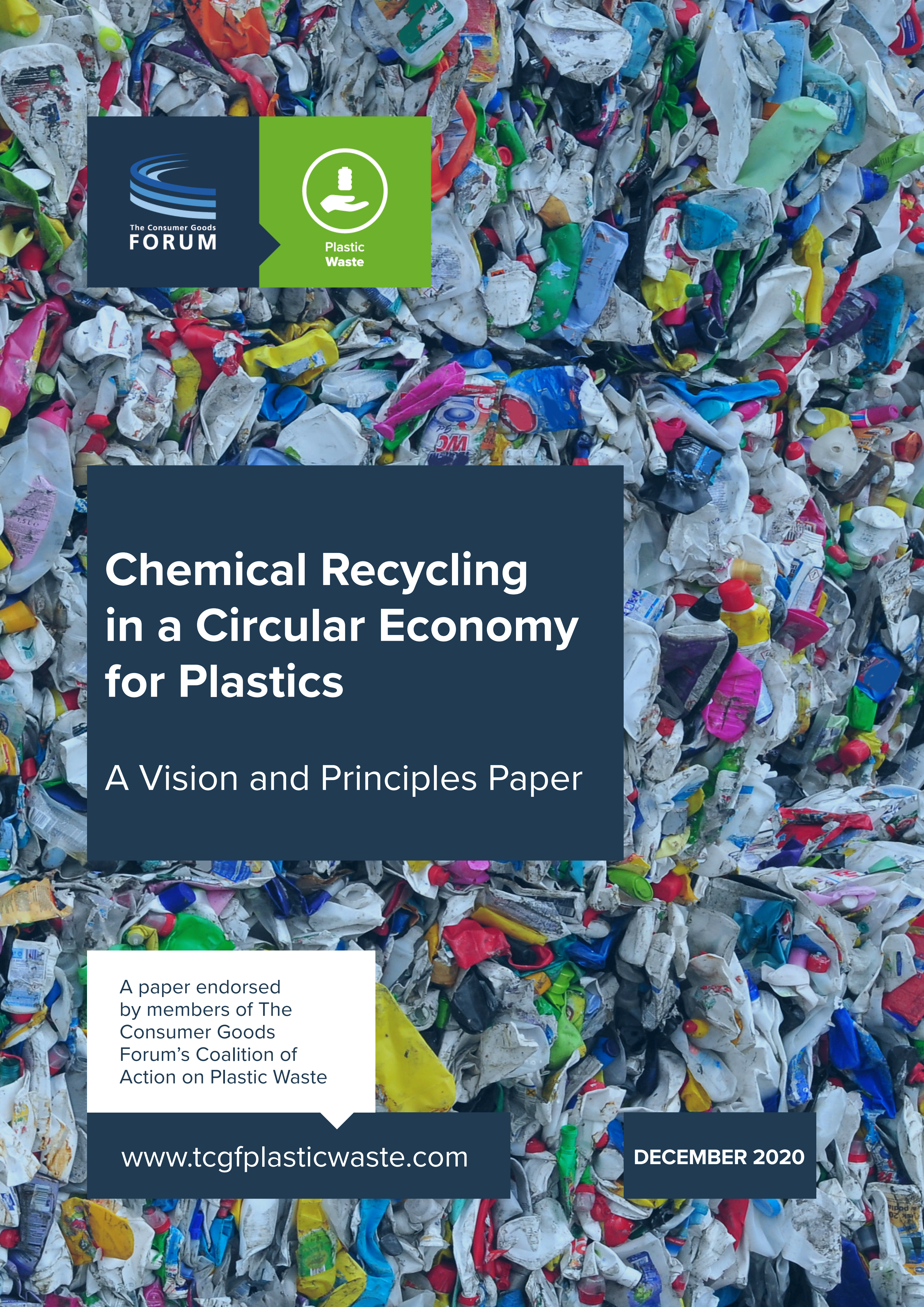

The Consumer Goods FORUM

Plastic Waste

Chemical Recycling in a Circular Economy for Plastics

A Vision and Principles Paper

A paper endorsed by members of The Consumer Goods Forum's Coalition of Action on Plastic Waste

www.tcgfplasticwaste.com

DECEMBER 2020

About The Consumer Goods Forum's Coalition of Action on Plastic Waste

The Consumer Goods Forum ("CGF") Coalition of Action on Plastic Waste was founded in 2020 with the aim of developing a more circular approach to the development and processing of plastic packaging in the consumer goods industry. The development of the Coalition builds of the CGF's 2018 endorsement of the Ellen MacArthur Foundation's New Plastics Economy. As a CEO-led group of 36 committed and innovative retailers and manufacturers, the Coalition's vision of accelerating progress towards the New Plastics Economy is embodied by its central aims for members to work towards implementing impactful measures through multi-stakeholder collaborations that will help make circularity the norm in the industry.

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Executive Summary

What Is This Paper?

15 companies under the umbrella of The Consumer Goods Forum Plastic Waste Coalition of Action (PWCoA) have co-authored this paper to provide a shared view of the role of Chemical Recycling[1] (CR) in a circular economy for plastics, and to outline a shared vision and principles for their potential development and deployment for plastic-to-plastic recycling.

This paper focuses on pyrolysis-based chemical recycling, which breaks down plastics into simpler building blocks for plastics manufacturing. This contrasts with mechanical reprocessing, which only uses physical methods (but doesn't alter the chemistry) to recycle different types of plastics.[2]

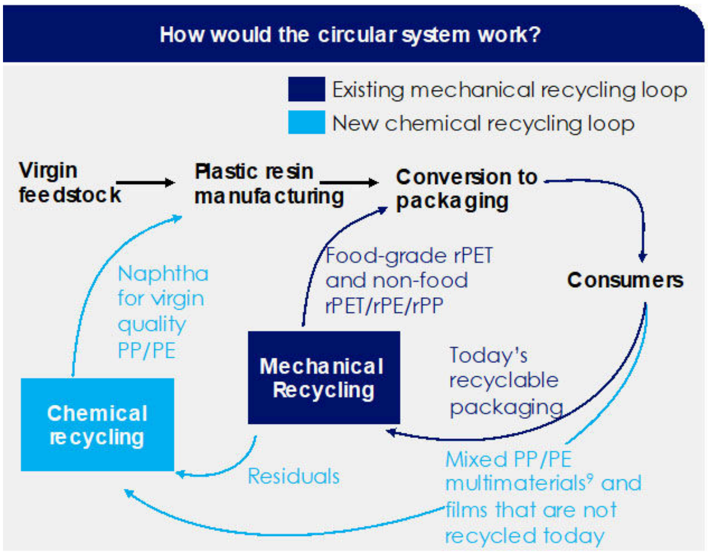
Why Is It Important?

CR is the only way to recycle large volumes of flexible plastics packaging and other mixed polyethylene/polypropylene (PE/PP) into food grade PE/PP recycled content (under current European regulations). Once operating at industrial scale, CR has the potential to recycle post-consumer flexible plastics "in practice and at scale". This could increase packaging recycling rates which could enable recyclability targets to be met,[3] and allow the reprocessing of flexible plastics into pure PP or PE suitable for use in new food-grade plastic applications.

PWCoA member companies were asked to estimate their potential European demand for chemically recycled PE/PP, if it meets their quality and safety standards and is "reasonably priced". The aggregated volume demand for 900,000 tonnes per year of chemically recycled PE/PP (of which 700,000 tonnes per year is food grade) from 20 member companies responding to this survey demonstrates the potential market demand for chemically recycled plastics. Meeting just this volume of demand would require 60-70 new medium-sized chemical recycling plants.[4]

How Will Chemical Recycling Work?

EXHIBIT 1: Plastics loops within a circular economy



The vision is for CR to increase recycling rates, by providing a complementary recycling "loop" for plastics that are not recycled in practice and at scale in today's system (Exhibit 1). This new loop will involve a broader set of infrastructure and players than today's mechanical recycling system, as CR interacts with the petrochemicals value chain.

What Shared Principles Should It Adhere To?

We believe that CR can play an important role in a circular economy for plastics if it is developed and operated under credible, ethical, safe and environmentally sound conditions. To help encourage this we have outlined four key principles specific to CR, that complement existing principles and standards guiding all recycling (mechanical or chemical).

1. CR increases overall recycling volumes. Input material for CR does not include material that can be economically recycled by mechanical recycling in practice and at scale
2. Recycled content from CR is accurately traced from plastic waste inputs to recycled plastic through a mass balance protocol that is widely accepted and applied
3. Plastic production from CR is maximised, other recycled outputs (e.g. bitumen/asphalt, waxes) are de-prioritised, and non-recycled outputs such as fuels are minimised.
4. Life cycle environmental impacts (with a focus on climate) of chemically recycled plastics are credibly demonstrated as equivalent or lower than fossil fuel-based virgin plastics in a comparable system.

What Is Our Vision?

Our vision is for CR to develop in line with the above key principles so that by 2025 it reaches industrial scale. By 2030 we aim for it to be scaled sufficiently to:

- Enable recycling of flexible and hard to recycle plastics at scale, to hit targets for recycling rates and recyclability.
- Help meet recycled content targets set by many companies and governments, by producing food-grade recycled plastics at scale.

The Role of The Consumer Goods Forum Plastic Waste Coalition of Action in Delivering This Vision

The PWCoA has a unique role to play in further advancing the scale-up of CR. Opportunities include:

- Providing a clear vision for CR and consistent message on key topics such as mass balancing
- Engaging with stakeholders on the topic
- Building the evidence-base to help ensure CR scales in line with the principles (for example through a peer reviewed, credible life-cycle assessment)
- Highlighting the demand for chemically recycled plastics by sharing collective demand for recycled content and thus encouraging investment

Introduction and Focus of This Paper

Achieving a circular economy for plastics requires committed work to eliminate all problematic and unnecessary plastic items, innovate to ensure that the plastics we do need are reusable, recyclable, or compostable and circulate all the plastic items we use to keep them in the economy and out of the environment.

Under current European regulations, chemical recycling (CR)[5] is the only route capable of "at-scale"[6] processing of flexible plastic packaging and other mixed, degraded or contaminated PE/PP streams into pure PP or PE suitable for use in new food-grade plastic – a circular system for high-quality materials. Current (mechanical) recycling systems can recycle some post-consumer flexible plastic packaging, but their recycled material outputs generally have fewer applications, lower value, and cannot be used in food-grade packaging.

This paper provides a shared vision for pyrolysis-based CR in a circular economy, and a shared set of principles that we believe provide guidance for the positive development of CR. It is intended to aid alignment between diverse stakeholders, from policy makers to technology providers, petrochemical players and NGOs. The paper does not provide an in-depth review of technologies, or offer an evidence assessment of CR's feasibility, although brief technical background and definitions can be found in the Appendix. The vision is based on our current knowledge, and we are continuing our work to verify the feasibility of the technology and system adhering to our principles. The positions stated in this paper are subject to change as new information about the technology emerges over time.

Although none of the underlying technologies used for CR are new, there is increasing interest in their application as potential solutions to complement mechanical recycling and build a circular economy for plastics.

Technological Focus of This Paper

The different CR technologies could each play an important role in achieving a circular economy (see Appendix 2). Pyrolysis technologies are furthest advanced as a source of food-grade recycled PE and PP and are the focus of this paper. Future versions of the paper could expand this scope, for example to include gasification and depolymerisation technologies, which could play a role in the future vision, but have significant differences to pyrolysis.

Pyrolysis technologies for CR have gathered significant tailwind in recent years, particularly in Europe,[7] with involvement of petrochemical companies aiming to integrate these technologies into their value chains and announcements from major consumer brands aiming to meet ambitious recycled content commitments.

A Vision for Chemical Recycling in a Circular Economy for Plastics

Our vision is for CR to develop in line with the key principles outlined below so that by 2025 it reaches industrial scale. By 2030 we aim for it to be scaled sufficiently to:

- **Enable recycling of flexible and hard to recycle plastics** at scale, to hit targets for recycling rates and recyclability.
- **Help meet recycled content targets set by many companies and governments, by producing food-grade recycled plastics at scale.**

A circular economy for plastics is built on the principles of resource efficiency, the prevention of waste and pollution, and a low-carbon footprint. We start with the reduction of packaging material and reusable packaging wherever possible. For essential packaging that cannot be reused, recycling is preferable to disposal, incineration or littering.

Accordingly, mechanical recycling of plastics is preferred to CR (for suitable materials) due to its lower energy demand (and therefore climate impact) and lower costs when compared to CR, but it has several limitations:

- Challenges in producing food grade PP and PE[8] and other higher quality recycled content grades (e.g. natural/ivory) to meet growing market demand;
- Losses in material properties and a build-up of additives and other (potentially hazardous) contaminants, limiting recycling loops before quality deteriorates;
- Limited yield arising from the mixed, degraded or contaminated nature of plastic waste streams, which causes high sorting and processing losses; and
- Challenges in handling, sorting, and processing post-consumer flexible plastic packaging materials, combined with lower value end markets for the recycled plastics that are typically produced from these materials.

In the face of these challenges, we view pyrolysis as a complementary technology to produce food-grade recycled PE/PP packaging from materials that are not processed through mechanical recycling today (see Exhibit 1 and Appendix 3). It currently offers the most advanced method of recycling mixed, degraded or contaminated PE/PP streams into high-value end applications in Europe and is the only technically viable option today for large-scale production of food-grade recycled PE and PP (outside of some regions' ability to make food-grade recycled PE from bottles). As these polymers make up the largest component of consumer plastic packaging (~60%[9]), advancing an at-scale solution for PE and PP would bring an immediate impact to the plastic waste challenge.

Demand for recycled food-grade PE and PP is currently greater than the supply, and CR of flexible packaging could reduce the use of virgin plastic and provide large volumes of food-grade recycled materials to meet companies' recycled content commitments.

Our vision therefore requires change to the end-to-end system, including packaging design, waste collection and sortation, accelerated technology development and deployment, and acceptance of CR as a positive solution by regulators and other key stakeholders. The plastic-to-plastic recycling pathway is yet to reach scale. The industrial development of pyrolysis is at an inflection point where potential challenges and unknowns must be addressed and tested as it scales in order to offer confidence to regulators, investors, industry players and consumers. The priorities are:

- Ensuring the system economics work, including investments needed, operational costs, collection, and sorting
- Proving sufficient quantity and quality of PP/PE feedstock can be secured to enable acceptable process yields into recycled plastic, without diverting feedstock from mechanical recycling
- Measuring environmental impact, including climate impact, chemical toxicity and resource depletion
- Achieving acceptance from regulators and other stakeholders, and alignment on terms and definitions such as mass balance.

Principles for Chemical Recycling

We believe that CR can play an important role in a circular economy for plastics if it is developed and operated under credible, ethical, safe and environmentally sound conditions. To help encourage this we have outlined four key principles to guide the development of pyrolysis CR technologies in line with the vision for CR in a circular economy for plastics. They should be complementary to existing principles and standards guiding all recycling (mechanical or chemical).[10]

1. **Source of Input Materials**
   CR increases overall recycling volumes. Input material for CR does not include material that can be economically recycled by mechanical recycling in practice and at scale.[11]

2. **Material Traceability**
   Recycled content from CR is accurately traced from plastic waste inputs through to recycled plastic using a mass balance protocol that is widely accepted and applied. This enables CR to contribute towards both recycling and recyclability targets and recycled content targets.

3. **Process Yields**
   Suppliers demonstrate they have maximised the plastic-to-plastic portion of outputs from CR processes, de-prioritised the portion being used for other recycled outputs (e.g. bitumen/asphalt, waxes), and minimised non-recycled outputs such as fuels.

4. **Environmental Impact**
   The life cycle impact (with a focus on climate[12]) of chemically recycled plastics is credibly demonstrated as equivalent or lower than fossil fuel-based virgin plastics in a comparable system.[13]

For further description of plastic-to-plastic and plastic-to-fuel technologies, and mass balancing protocols, see Appendix 4.

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- Bel Group
- Colgate-Palmolive
- Danone
- Essity
- Henkel
- Mars, Incorporated
- Mondelēz International
- PepsiCo
- Procter & Gamble
- Reckitt Benckiser
- SC Johnson
- Tetra Pak
- Unilever

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Appendix

Appendix 1: The Work of the Chemical Recycling Workstream of the Plastic Waste Coalition of Action

The 2020 ambition for the CR workstream of the PWCoA is to guide the development of pyrolysis technologies as a source of food-grade recycled content and a positive recycling option for hard-to-recycle plastic packaging, in line with the principles laid out in this document. The (initial) material focus is post-consumer[14] PE or PP-based plastic films (mono-material or multi-material), and mixed, degraded or contaminated PE/PP streams as they are the most challenging common packaging types to recycle mechanically in the current system.

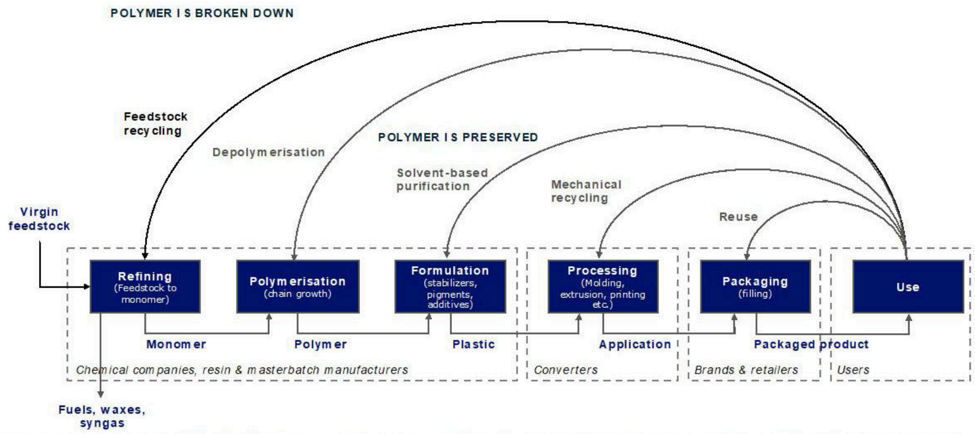
Manufacturers of packaged goods and retailers have a unique position in the value chain with the ability to shape standards, drive end-to-end system changes and work towards acceptance by regulators and stakeholders. This is amplified when they come together in a coalition such as the PWCoA.

Specifically, through the PWCoA, manufacturers and retailers can help catalyse the indus trial scale development of plastic-to-plastic CR by addressing the questions listed above and building confidence across the stakeholder landscape through activities such as:

1. **Creating and communicating a clear vision and narrative:** Develop a clear and aligned narrative and messaging on topics including our vision for CR, terminology, definitions, principles for a safe, ethical and credible CR system, mass balance etc.
2. **Engaging with stakeholders:** Engage critical stakeholders to understand any concerns and ensure they are addressed.
3. **Strengthening credibility:** Build the evidence base to help ensure CR scales in line with principles, for example through life-cycle assessment of environmental impacts of CR, by building design of protocols, aligning on on-pack claims etc
4. **Signalling demand:** Provide a clear signal of long-term demand for PE and PP from CR to offer confidence to the petrochemical players, technology developers and investors who need to mobilise significant capital to scale collection and infrastructural technology for CR.

Appendix 2: What Are the Different Chemical Recycling Technologies?

A number of CR technologies exist, differing by which types of polymers they can process and how much they break down the plastics.[15] Exhibit 2 outlines the different loops for plastics within a circular economy, including the three main types of new technologies described below:



Source: Adapted from De Smet, M. & Linder, M. (Eds.), *A circular economy for plastics – Insights from research and innovation to inform policy and funding decisions*, European Commission, Brussels, Belgium (2019)

EXHIBIT 2: Plastics loops of different technologies

Solvent-based purification (not classified as chemical recycling by some definitions; also referred to as *dissolution recycling, physical recycling, and solvolysis*) is a process that creates pure streams of polymer by dissolving plastic in solvent(s) and using a series of purification steps (removing additives and contaminants that are not removed in mechanical recycling for example). The resulting polymer remains unaffected by the process and can be reformulated into plastic.[16]

Depolymerisation can be conducted through a biological method (using enzymes) or through chemical catalysis and creates an "unzipping" of polymers that is the reverse of polymerisation. It yields either shorter fragments called oligomers or single monomer molecules. The fragments can be used to make virgin-grade polymers again. These technologies have been demonstrated for certain polymers such as PET and polyamide,[17] but not yet for polyolefins (polyethylene and polypropylene).

Feedstock recycling (e.g. pyrolysis or gasification technologies) converts polymers into multiple simpler molecules, and it requires thermal processes with significant heat inputs. It processes mixed streams of polyolefin polymers, notably PP and PE which make up ~60% of consumer packaging.[18] The two main technology groups are pyrolysis and gasification.[19] Pyrolysis uses an oxygen-deprived environment and produces ash (for disposal), a light gas portion (which can be used to power the thermal processing), and "pyrolysis oil" which contains many different hydrocarbons that can be fed to a refinery and eventually converted to monomers for plastics manufacturing (using a catalytic cracker) or other petrochemical products. Plastics with heteroatoms (e.g. PET, PAs, PVC) are not target materials for pyrolysis as they negatively impact yield and could lead to unwanted (potentially hazardous) by-products. Gasification is conducted with a limited oxygen supply and can generate a mix of carbon monoxide and hydrogen called syngas. Syngas is a versatile feedstock that is used in countless chemical processes. Its relevance for the plastics value chain comes from the possibility to convert it to methanol, which can be further processed into ethanol and propanol which are precursors for ethylene and propylene. As with pyrolysis, these outputs could also be used as fuels. The feedstock to gasification can be any plastic, including PET, PVC (to some extent), Nylon, etc.

Appendix 3: Differences Between Mechanical Recycling Today and Pyrolysis Recycling

	Mechanical Recycling (MR)	Pyrolysis recycling (CR)
Complementarity	Suitable for clean streams, sorted by polymer (rigids, semi-rigids, mono-material films)	Suitable for a wide range of clean mixed PE and PP plastic streams without a viable MR pathway (e.g. multi-material films)
Energy demand	Lower; a PET bottle from mechanically recycled PET takes as little as 20% of the energy of a virgin PET bottle to make	Significant energy demand, higher than MR
Feedstock tolerance	Relies on homogenous, well-sorted streams, with plastics of different grades and pigments harming output quality	Can process mixed grades of PE and PP. Tolerance for contamination depends on what the final output is going to be and specific processing capabilities. Generally, PVC is corrosive and needs to be avoided. Contaminants such as PET, polyamides and aluminium can generally only be tolerated at low levels of contamination. It is likely that pre-sorting would be required to provide an acceptable PE/PP stream
Process yields	Highly dependent on purity of input materials, but 1 tonne of sorted plastics entering a recycling facility creates approximately 0.7 tonnes of recycled plastics after processing losses	Variable and not proven at scale, in general plastic-to-plastic yields are expected to be lower than mechanical recycling
Contamination	Sensitive to contamination from product residue (e.g. food), mixing additives and external contaminants	Since the plastics are broken down to simpler chemicals that get refined to virgin-grade polymer, the process is less sensitive to contamination (though some e.g. metals and minerals can be problematic)
Quality retention	Recyclate quality is diminished by mixing of grades. In addition, heat and mechanical stress degrades the polymer each time it is re-extruded, mainly by shortening the average chain length	

Appendix 4: Explanatory Notes on Plastic-to-Plastic and Mass Balancing

Plastic-to-Plastic vs. Plastic-to-Fuel

The petrochemical compounds that pyrolysis produces can either be:

a) Reintroduced into the petrochemical value chain to produce virgin-grade plastics[21] – a route recognised as plastic-to-plastic CR and considered a type of **recycling**[22]

b) Refined into hydrocarbon fuels, such as diesel – a route known as plastic-to-fuel and considered to be a type of **energy recovery** by the European Commission[23] (not recycling) as it does not allow carbon to be utilized for additional anthropogenic loops (ISO15270:2008). Therefore, in many jurisdictions and voluntary reporting frameworks plastic-to-fuel processes cannot be counted towards fulfilling companies' recyclability and recycling targets.

Our vision is to advance the establishment of plastic-to-plastic CR, maximising the yield of plastic waste into new plastics as laid out in the Principles of this paper

How Is the Recycled Content Tracked Through the Supply Chain?

The pyrolysis process outputs a synthetic oil with fractions that are suitable for plastic resin manufacturing (naphtha) and others that can be converted to fuels or other chemical applications.[24] In at-scale plastic-to-plastic recycling, naphtha is inputted into industrial-scale petrochemical crackers where recycled feedstock is blended with virgin feedstock and the outputs can be used as feedstock to produce virgin quality PP and PE. Users of this recycled PP/PE can claim recycled content based on a robust mass balance certification which accounts for blending of virgin and recycled feedstocks in the plastic manufacturing process.[25] In mass balancing, recycled content then allocated to certain products using a chain-of-custody protocol[26], resembling how renewable electricity (or Fairtrade cocoa or FSC forestry) is allocated to different buyers. There is an ongoing, industry-wide discussion on how to standardise mass balancing to ensure stringent allocation rules, physical tracing, transparency, and a level playing field to build confidence in the approach.[27]

End Notes

[1] The terms 'chemical recycling', 'advanced recycling', 'advanced chemical recycling' and 'enhanced recycling' are interchangeable. All of these terms help differentiate chemical recycling from the more widely known recycling processes that use mechanical technologies to recycle used plastics.

[2] A Circular Economy for Plastics, European Commission, 2019. Other technologies than pyrolysis are commonly described under the umbrella term 'chemical recycling', as laid out in Appendix 2.

[3] For this to be the case, regulators would need to consider chemical recycling as recycling. Current assessment is that this is likely in many European countries, but the situation beyond Europe is still developing.

[4] In March 2020, PWCoA companies were asked to share what volume chemically recycled polypropylene (PP) and polyethylene (PE) they would need to purchase from EU markets to meet their commitments, to be used for either conversion to packaging within the EU or exported to non-EU markets for conversion, assuming it could be attained at a reasonable price, the same quality and food safety as virgin plastic, and the certified material would count towards targets. 'Medium-sized' corresponds to a 25,000 tonnes per year input capacity.

[5] The term 'chemical recycling' is an umbrella term currently used to describe reprocessing technologies other than mechanical reprocessing, which only uses physical methods to recycle different types of plastics but does not alter their chemistry. See Appendix 2 for an overview of technologies commonly referred to as CR. While this Appendix uses the definition of the EU Commission for consistency, the PWCoA does not take a position for any given terminology.

[6] The Global Commitment, signed by many of the PWCoA member, sets as threshold for proving recycling works 'in practice and at scale' (for a representative packaging category) is a 30% post-consumer recycling rate achieved across multiple regions, collectively representing at least 400 million inhabitants.

[7] Pyrolysis has a stronger presence in Europe (and Asia) than the USA as it is compatible with existing petrochemical infrastructure in these regions tailored to naphtha.

[8] Apart from mechanical recycling of rigid HDPE (e.g. milk jugs) into food-grade rHDPE in some markets.

[9] UK data, WRAP 2018, "PlasticFlow 2025"

[10] Such principles include for example: A) Recycled content claims should be standardised,

clear and credible, such as ensuring it is derived from pre-consumer and post-consumer waste. B) Input material to recycling processes must be sourced in alignment with the principles of ethical sourcing. C) Recycled content must meet equivalent quality and safety standards (including food safety) as virgin-grade plastic for the corresponding application. D)The recycling process must not produce unmanaged emissions or pollution that contravenes international accepted levels for impact on human or wider ecosystem health.

[11] Beyond this principle, this paper does not specify which sources of plastics are preferred although it recognises that polyolefins of good enough quality are preferred in pyrolysis (see Appendix 2). The paper's vision is CR is used to recycle post-consumer packaging plastics back into plastics.

[12] Including GWP (CO2e) and other indicators e.g., resource depletion, energy use and toxicity such as local air pollution.

[13] Taking into account both the manufacturing emissions and the potential for lower end-of-life emissions in a system that has chemical recycling operating at scale. 'Equivalent or lower' is taken to mean the same overall impact (within reasonable boundaries), recognising that CR and virgin production will impact different LCA indicators differently.

[14] As defined in the Ellen MacArthur Foundation's Global Commitment, from ISO14021: "material generated by households or by commercial, industrial and institutional facilities in their role as end users of the product which can no longer be used for its intended purpose".

[15] For a more detailed overview, see Zero Waste Europe, *El Dorado of Chemical Recycling* (2019)

[16] Since solvent-based purification does not change the constitution of the polymer itself, it has been argued that it should be seen as mechanical rather than chemical recycling, or as a separate class (see also ISO 15270:2008). For practical purposes, the Appendix follows the European Commission 2019 report's terminology, which uses the logic that since chemicals are used in solvent-based purification to change the formulation of the plastic (by removing additives and extracting the base polymer(s)), it can be described as one of several chemical recycling technologies. Note that the inclusion of solvent-based purification in this overview does not reflect the position of individual PWCoA members.

[17] In principle, any so-called *polycondensate* can be depolymerised, which includes polymers like PET, PU, PA, PLA, PC, PHA & PEF. The exceptions to the rule are polystyrene and PVC, which can be depolymerised into styrene or vinyl chloride using processes that differ from polycondensate depolymerisation.

[18] UK data, WRAP 2018, "PlasticFlow 2025"

[19] European Commission, A Circular Economy for Plastics (2019). 'Pyrolysis' as a term is often used to describe several methods (new and existing methods can differ significantly in their approach) to thermally break down plastic polymers in the absence of oxygen.

[20] Pew Charitable Trusts and SYSTEMIQ 2020, "Breaking the Plastic Wave"

[21] Plastic-to-plastic recycling processes also create fuels as an unavoidable output (which can be used to power the recycling process or not); these are not considered recycling by the Ellen MacArthur Foundation. Other non-fuel, non-plastic outputs that are created such as waxes and asphalt are somewhat a grey area.

[22] By, for example the Ellen MacArthur Foundation, ISO15270:2008, some European countries such as the Netherlands, and possibly in future legislation by the European Commission. However, it is not necessarily accepted in all countries (cf. Germany) that plastic-to-plastic recycling destinations will count towards recycling targets which may be specific to mechanical recycling.

[23] European Commission, *The role of waste-to-energy in the circular economy* (2017)

[24] According to ISO definitions (ISO15270:2008), only the fractions that are effectively turned into new materials can be considered recycled; fractions going into fuel or losses cannot.

[25] Requires acceptance by regulators.

[26] Ellen MacArthur Foundation CE100 collaborative project white paper: Enabling a circular economy for chemicals with the mass balance approach (2019)

[27]https://blog.americanchemistry.com/2020/03/how-do-we-measure-sustainability-just-one-word-standards/. Several certification providers have started to offer standard certificates for recycled content, e.g. RSB, ISCC+ and RedCert.

About the Consumer Goods Forum

The Consumer Goods Forum ("CGF") is a global, parity-based industry network that is driven by its members to encourage the global adoption of practices and standards that serves the consumer goods industry worldwide. It brings together the CEOs and senior management of some 400 retailers, manufacturers, service providers, and other stakeholders across 70 countries, and it reflects the diversity of the industry in geography, size, product category and format. Its member companies have combined sales of EUR 3.5 trillion and directly employ nearly 10 million people, with a further 90 million related jobs estimated along the value chain. It is governed by its Board of Directors, which comprises more than 50 manufacturer and retailer CEOs. For more information, please visit: www.theconsumergoodsforum.com.

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