POST-CONSUMER RECYCLED PLASTIC: AN ANALYSIS

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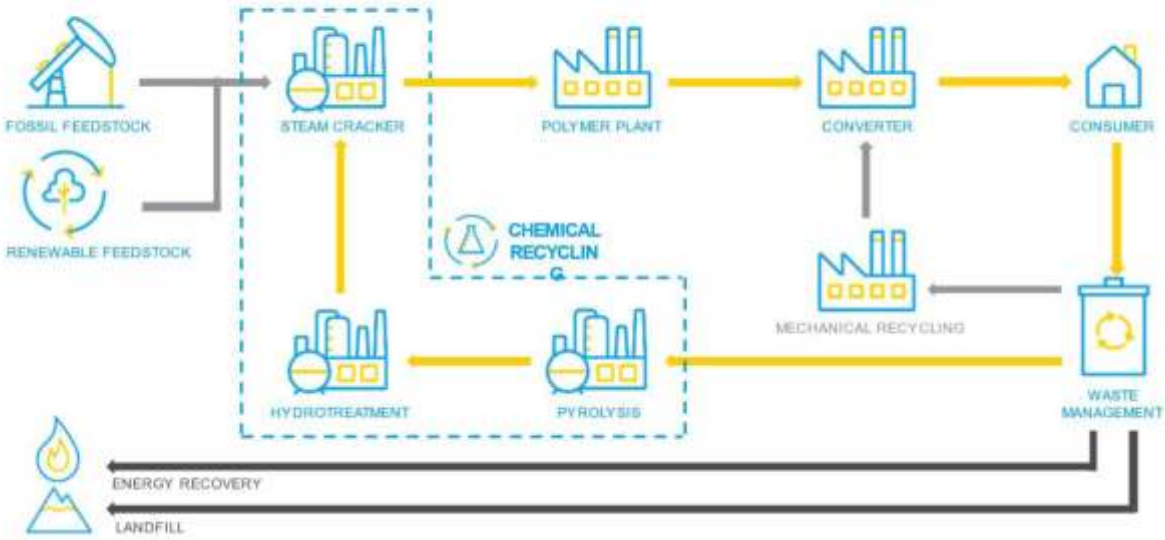
• Post-consumer recycled plastic often referred to as PCR, is plastic made from consumer waste after collection, sorting, cleaning, and reprocessing. When recycling is efficient, it can be a safe and effective way of maximising the resource value of the plastic and reducing waste and the hazardous effects of litter.

• The Authority in 2018, very rightly, unpacked the Packaging and Labelling regulation [FSS(PL)2011] and notified three separate regulations dealing with packaging, labelling and claims. There is now much more attention and focus given to packaging materials, their safety when in contact with food and more recently to concerns on reducing post-consumer waste. Since then, several other initiatives have come into effect, signalling the coming together of an urgent need to put in place a "ways and means" mechanism to address these concerns.

• For example, the remit of the Ministry of Environment and Forests is now expanded to include Climate Change (MoEFCC), the ultimate goal for all measures of containing, if not eliminating wasteful practice. The Plastics Waste Management Rules 2016 and the Extended Producer Responsibility (EPR) notifications followed, fairly quickly. Taken together, these rules place obligations and responsibilities with regard to waste generation, collection, segregation, and recycle processes, to create a sustainable ecosystem. Meanwhile, packaging producers and users in particular from the food industry are now in a position to play their part in addressing concerns on post-consumer plastic waste, and this perhaps is the most critical step to a circular economy. This means materials are constantly in flow around a 'closed loop' system, which ends the 'one use and discard' concept of plastic use. It signals the new way of designing ecosystems

• At a webinar organized by PFNDAI on "Food safety and efficacy of recycled plastics for food contact packaging" Mr Maurice Simenon and Mr Gert Coun from SABIC specialists in producer technologies, explained the processing routes (Fig.1) for converting post-consumer plastics into food grade reusable material.

Figure 1 Overview of processing routes for mechanical and chemical (pyrolysis) recycling



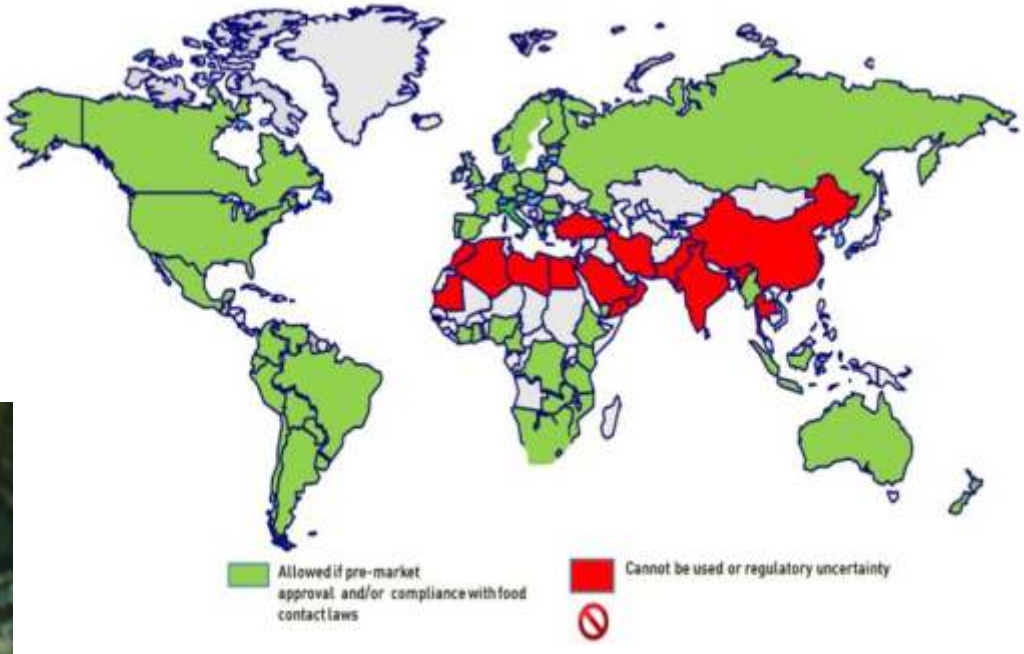
• While several technologies exist by which plastic packaging can be recycled, each has its own benefits and challenges with the presence and/or removal of contaminant residues in post-consumer material being a key consideration. Plastic waste can be processed mechanically (sorting, cutting, washing/cleaning, melting) to produce recycled material or it can be broken down to monomers and oligomers by a chemical process, purified and then used to make new plastic (advanced or chemical recycling). The critical criteria here is that either process must demonstrate its capability to remove potential contaminants to a level not likely to pose a risk to human health.

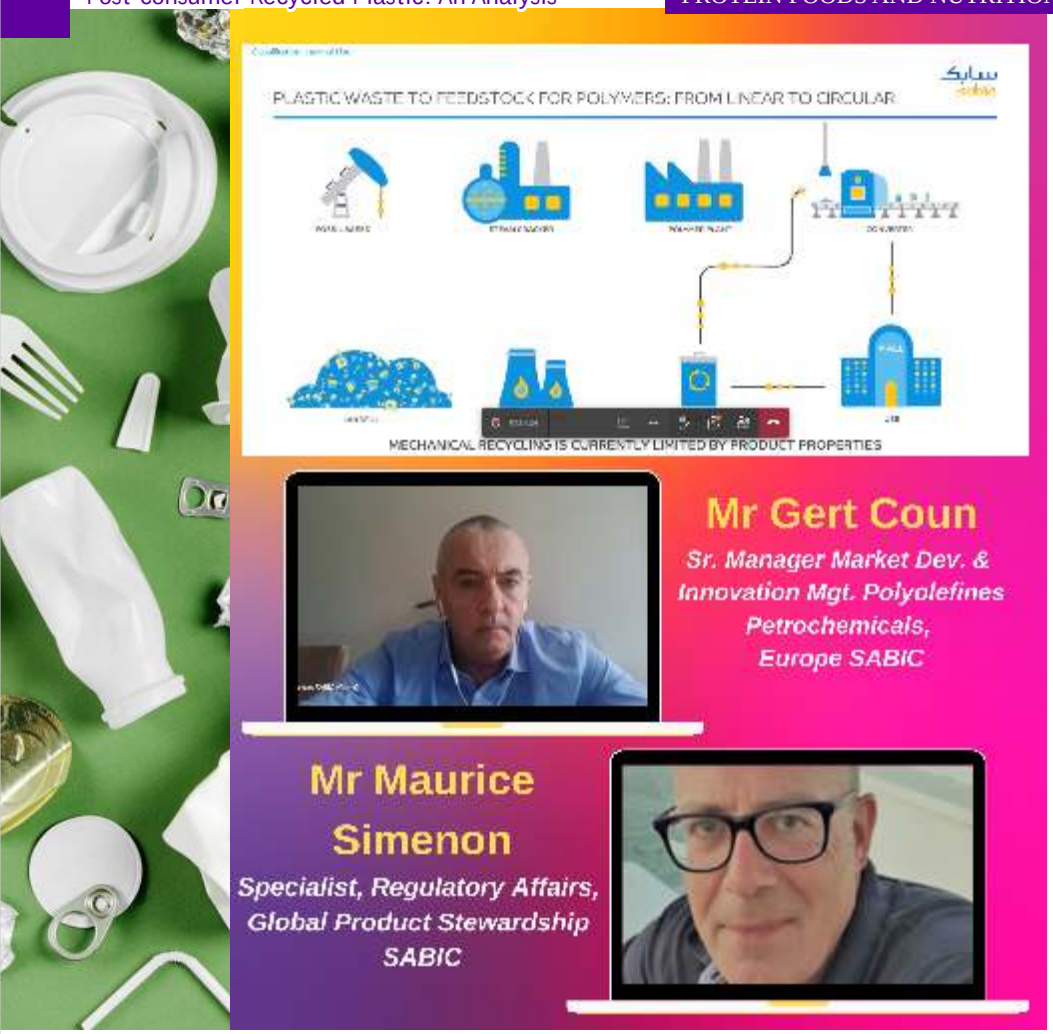
• Manufacturers and packers of food and beverage products, being immediate users of recycled plastic are primarily concerned with safety of materials in contact with food and ensure that they meet the strict regulatory requirements of food grade plastic notified by regulators in different countries. Dr. Srivats Mohan, Packaging Materials Specialist Unilever, and Mr Ashok Pralhad, Sustainability Director,

Coca Cola gave examples of recycled plastic safely used in food contact application from different markets and explained that in the production process, chemical and/or mechanical, feedstock composition is to be carefully managed to ensure safety for food-contact use. Dr Tony Taylor, Unilever Global Regulatory Affairs, provided an overview of regulatory authorities worldwide [Fig.2] approving use of recycled plastics in contact with food on the basis of reliable technology processes, risk assessments and compliance with prescribed requirements. India too uses these regulatory principles and procedures.

• Manufacturers of food packages made from recycled plastic hold responsibility for ensuring that, like virgin material, recycled material is of suitable purity for its intended

Figure 2: Regulatory overview of markets where PCR plastic in contact with food can be used when safety requirements are met (estimate circa 2021)



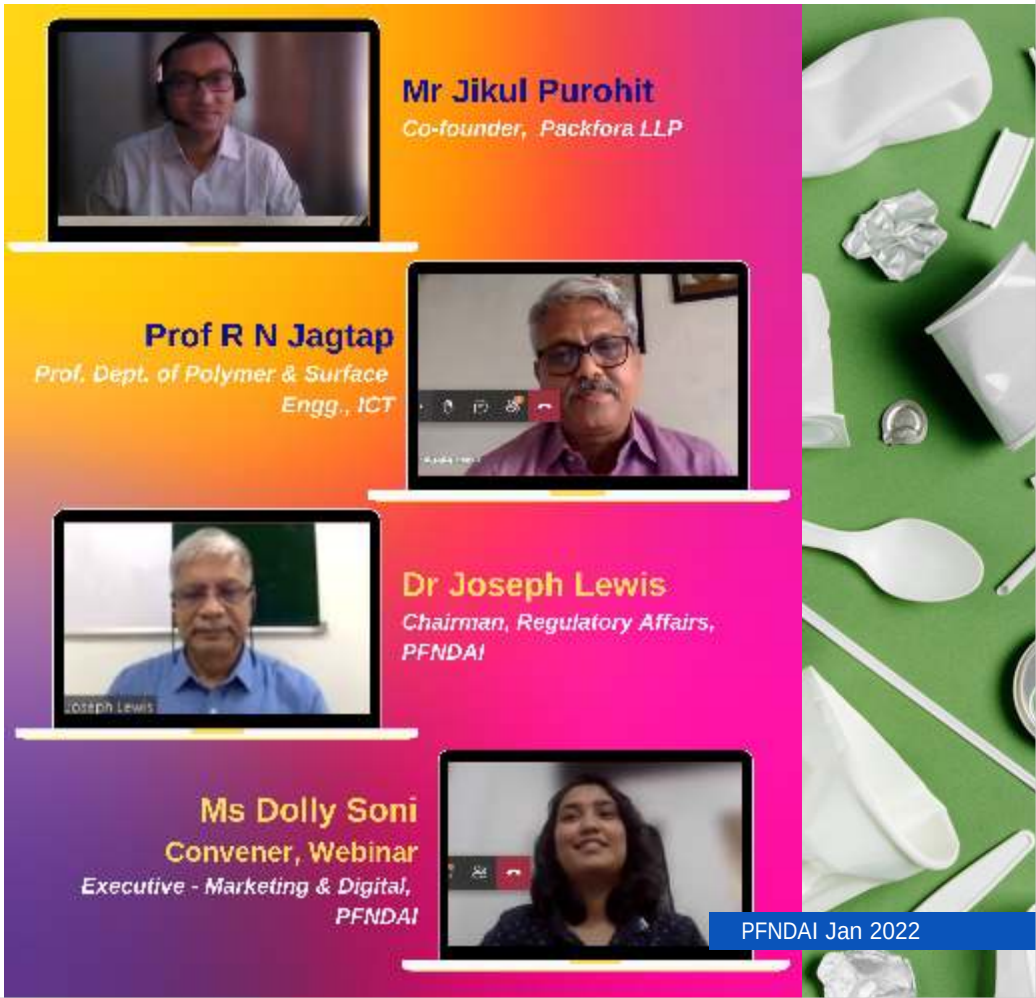


Prof R N Jagtap, Professor – Dept. of Polymer & Surface Engineering, Institute of Chemical Technology; Ms Himanshi Mahajan, Packaging Development Lead- R&D Mother Dairy and Mr Jikul Purohit, Co-Founder Packfora LLP. Several issues were raised and discussed on safety, alternate recycling technologies, regulatory aspects, including motivating consumers to contribute their share in sustaining the environment.

• This article by the author is about a summing up what we heard, discussed and understood. The webinar addressed the general concern of harming the environment with specific focus on mitigating measures through use of recycled plastic. While governments determine policy directions, its translation to action involves many things, ministries, authorities, industry sectors and more importantly fulfilment of assigned responsibilities by identified entities in supply chains, in this case the packaged food industry.

use and is compliant with specifications set for the virgin material. The effectiveness of the recycling processes in removing chemical contamination is evaluated by maximum levels prescribed by challenge test(s). Use of recycled plastic and their compliance requirements are available for several countries, EU, US, and Japan. Reference was made to US FDA guidelines on the points to be considered by the manufacturer for making a proper evaluation of the producers process of recycling for food contact use. The European Commission provides a regulation for recycled materials and articles intended to come into contact with foods. Readers may reference these for more information.

• The four talks was followed by an engaging discussion with a panel comprising Dr KSMS Raghavarao, Professor of Chem Engg., IIT Tirupati, Director, CSIR-CFTRI;



• MoEFCC has set the forward path towards use of plastic waste by its Plastic Waste Management (PMW 2016) rules, relating to segregation, storage and its handover to local bodies or authorized agencies. This part of the waste management chain includes retailers and street vendors to manage their waste and reduce litter and random disposals. There is another obligation through the Extended Producer Responsibility (EPR) cast on Producer, Importer, Brand Owner for collection and recycling, applicable to both pre-consumer (industrial) and post-consumer packaging waste.

• The Food Safety and Standards Act (FSSA, 2006) under its risk framework, is in alignment with global practice and is well capable of determining the measures required for use of recycled packaging where materials come in contact with food. The Authority (FSSAI), through the Scientific Panel will provide a scientific risk assessment of the material and processes using post-consumer waste prior to the Authority setting up conditions and compliance requirements.

• Recycled plastic reduces the need for more virgin plastic and is the best way of minimizing material entering the environment. Source reduction is therefore the way forward. While there is an overwhelming desire and will on sustaining the environment, the most important next step is engaging stakeholders in a collaborative way to put it into practice.. The responsibility for waste is not of or by someone, but of and by everyone, until waste is eliminated.