WEBINAR # 4 Fact Sheet

Alternative Recovery Technologies and Policy Outlook

INTRODUCTION TO THE REDUCING PLASTIC WASTE IN CANADA PROJECT

The two-year project aims to deepen knowledge and strengthen the implementation of solutions to reduce plastic waste in Canada through knowledge sharing and peer-to-peer exchanges with European Union (EU) counterparts. The project is part of the Circular Plastics in the Americas Program as part of the EU commitment to the UN Sustainable Development Goal to support the transition toward sustainable production and consumption.

WEBINAR OBJECTIVE

Following on our first three webinars covering roadmaps, advances in collection and sorting technologies, and mechanical recycling innovations for flexible packaging, our fourth and final webinar explores how chemical recycling can contribute to the achievement of plastic recovery goals in Europe and related policy considerations to drive innovation in this sector.

SPEAKERS

Virginie Bussière
Pyrowave, Canada
Moderator

Adela Putinelu
Plastic Energy, UK
Speaker

Jasmin Brinkmann
ISCC Systems GmbH,
Germany
Speaker

Lara Dammer
Nova Institute, Germany
Speaker

Opening Remarks – Virginie Bussière, Pyrowave, Canada

Virginie Bussière provided a brief overview of the importance of advancing new recycling technologies to reduce plastic waste, as there are so many plastics currently not recycled. She noted the importance of policy to drive innovation in this sector, and how Canada is looking to the EU as a leader in this industry.

Ms. Bussière introduced the webinar speakers who represent leading examples of new alternative technologies for recycling plastics, certification schemes in place that can assist in tracking progress to achieving plastic recycling targets, and how policy drivers influence innovation in this space.

Jasmin Brinkmann, International Sustainability and Carbon Certification (ISCC) Systems GmbH

Jasmin Brinkmann introduced ISCC, which is a global sustainability certification system that offers third party certification for all sustainable feedstocks, including agricultural and forestry biomass, circular and bio-based materials and renewables. In particular, ISCC certifies chemical recycling processes and bio-based plastics to support the validation of suitable alternatives to reduce dependency of fossil fuels. Chemical recycling offers a new avenue for recycling of plastics, due to the limitations of mechanical recycling technologies. Certification for chemical recycling processes guarantees traceability for raw material identity, movement, and destination. As well, the process authenticates that correct volumes of recyclables have been processed. The chain of custody is verified to ensure use of the certification is credible, and companies can have validated claims of amount recycled.

ISCC established the bioeconomy certifications for chemical recycling of plastics in 2020, with a working group defining processes to track mass balance requirements, and another establishing a verification process for claims. Now, ISCC certifies all raw material that goes into the supply chain from bio agriculture, tall oil, mixed plastic waste, waste textiles, or waste tires. All entities in the supply chain that physically receive material must have individual certificates, issued by a cooperation certification body trained by ISCC. These certificates are audited, as they are used for sustainability declarations. For companies using the mass balance approach, it is a verification process that ensures accounting follows transparent rules. The same applies when using the chain of custody option of physical segregation of waste streams. There is a high demand from brand owners and all parts of the supply chain for this certification. ISCC also offers a licensing option.

ISCC Certification	ISCC License
Annual audit by certification body	No annual audit by certification body
Own mass balance calculations are allowed	Signing a license agreement
Provision of documentation regarding compliance with ISCC certification scheme	Reporting of annual incoming and outgoing volumes of ISCC certified products
Certified material can be fundamentally altered	Certified material cannot be fundamentally altered – no attribution allowed

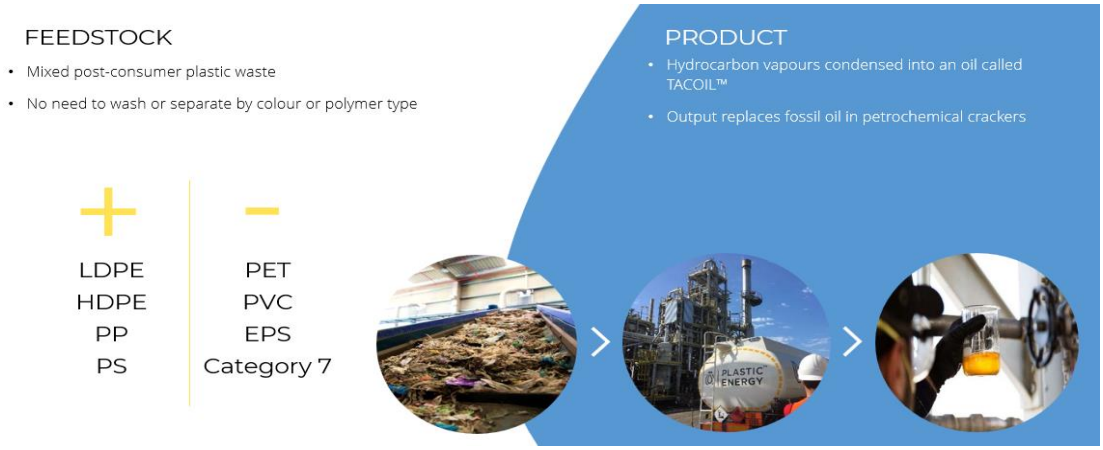
Key messages:

- ✓ The ISCC certification process is important for verifying the process of tracking mass balance, which ensures a transparent process and a credible claim.
- ✓ For companies using the mass balance approach, the verification process ensures accounting follows agreed rules and is transparent.

Adela Putinelu, Plastic Energy, UK

Adela Putinelu presented an overview of how chemical recycling provides a complimentary solution to mechanical recycling and can address limitations of more conventional technologies. Plastic Energy is a global industry leader in chemical recycling with commercial plants operating in Spain and the United Kingdom, and facilities under construction in France and the Netherlands.

An overview of the recycling technology was presented, it includes post-consumer plastic to plastic recycling, with mass balance conversion verification available through the ISCC certification process. Hydrocarbon vapours are condensed into an oil (Tacoil), which is then used in manufacturing to replace virgin fossil oil. The feedstock used is mixed post-consumer plastic waste that includes polyolefins not currently recycled by mechanical recycling. The process does not require washing or separating. The chemical recycling process allows new resins to be produced from waste plastic feedstocks, so the result is that plastics are not "downcycled"; products manufactured using resins produced by chemical recycling can be used for food packaging, cosmetics, or pharmaceutical applications.



The role of chemical recycling as an alternative technology for waste management is potentially significant, with an entire industry set for growth if certain enabling conditions are in place. Policy drivers such as including chemical recycling within the current EU waste framework directive and associated legislation with appropriate certification requirements such as mass balance verification are very important and will level the playing field.

Key messages:

- ✓ Chemical recycling plays a growing role in the circular economy. The benefits of chemical recycling must be communicated better to decision-makers, the public, and non-governmental organizations, because it has a complimentary role to play with mechanical recycling.
- ✓ This role needs to be incentivized in current programs such as extended producer responsibility legislation, recycled content targets in the EU waste framework directive, or other economic instruments.
- ✓ Including requirements to verifying claims and tracking mass balance in new legislation is critical to ensure transparency and a level playing field within the industry.

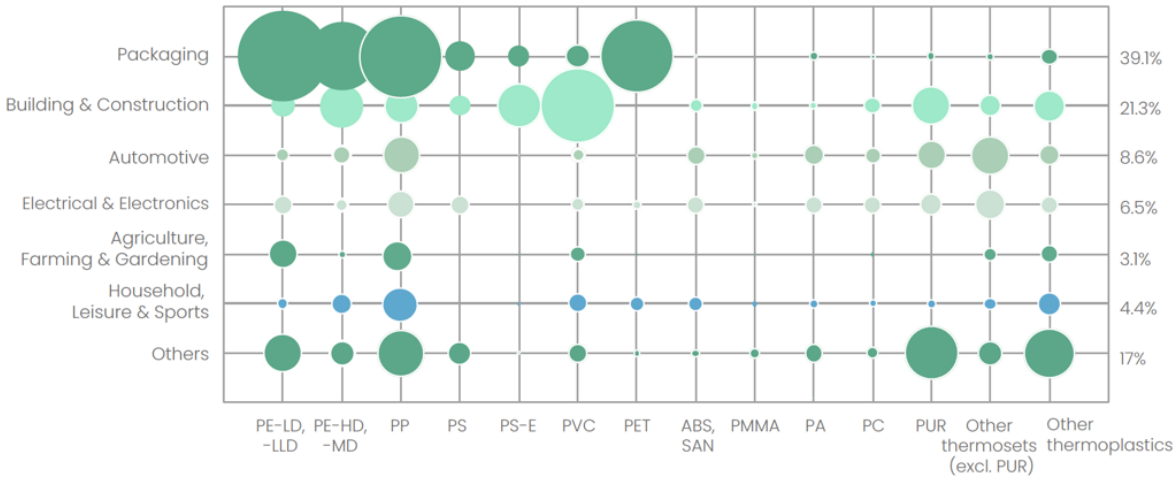
Lara Dammer, Nova Institute, Germany

Lara Dammer presented an overview of Nova Institute, which is a private independent research institute specializing in the transition of chemicals and materials to renewable carbon, offering a wide range of services to support businesses in their transition to a climate neutral future.

The European Green Deal sets the overarching goal of becoming climate neutral by 2050. This is a strategic policy lever from which many action plans and directives have been developed. The EU Circular Economy Action Plan is one important policy driver of recycling innovation for plastics while the EU Packaging and Packaging Waste Directive (PPWD), in the process of being amended, will set new mandatory requirements for recycled content in packaging. The Sustainable Products Eco-design Regulation is also anticipated to drive recycled content standards for product categories such as textiles, furniture, mattresses, and electronics. Once these policies are fully implemented there will be a significant demand for chemical recycling innovation in this sector to meet the targets. In the next 17 years a ten-fold increase of recycled content is necessary for the packaging sector alone. While the EU is "technology neutral" in its policy framework, the application of current definitions of what is a waste (End-of-Waste Criteria) in national legislation hampers the uptake of certain feedstocks and recycled materials and inclusion in recycled targets. Work is underway to define what will be allowed to count towards the recycled content targets and possibly harmonize the application of end-of-waste criteria for certain waste stream. The EU's Joint Research Committee recently updated its method to define End of Waste Criteria and further recommended among others five plastics streams for further development of EU-wide end-of-waste or by-product criteria.

An overview of the future demand for recycled content by sector and by polymer is presented following.

Demand by sector and polymer (total 50.3 MT)



Plastics Europe. Plastics – the Facts 2022.

Policy challenges identified that affect the chemical recycling industry in the EU:

1. Currently, only post-consumer feedstock is allowed to be counted for the PPWD targets.
2. There is no EU wide standard to calculate the mass balance certification for chemical recycling.
3. There is new criteria under development to identify when a waste is no longer a waste under the Waste Framework Directive. This is called "End of Waste" (EOW) criteria; there is some uncertainty regarding how chemical recycling will fit into the framework and methodology under development.
4. There is significant variation across member states in terms of infrastructure and recycling technologies in place for recycling plastics, and in the use of economic instruments to drive recovery of recyclables.

DISCUSSION Q & A

Questions from participants focussed on:

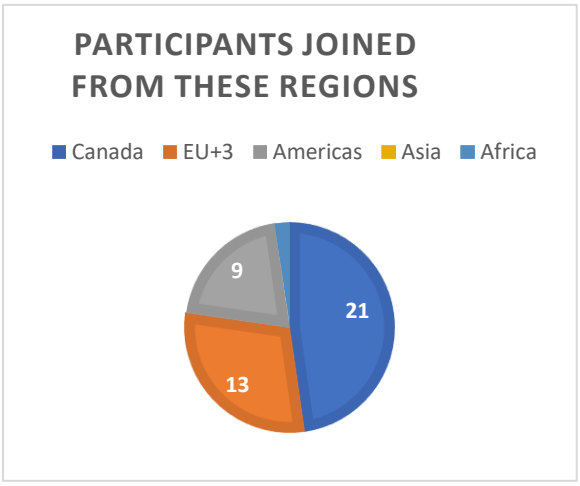
- The chemical recycling technology and the mass balance approach. Speakers explained that the normal % of Tacoil obtained from a certain quantity of plastic waste input is 70 to 75%, depending on the quality of plastic waste in the feedstock.
- The feedstock quality required for the recycling technology. Responses indicated that the company will collaborate with waste management partners to provide a sorting service and ensure feedstock does not include plastics widely acceptable in mechanical recycling processes. Their feedstock can include plastics that are rejected from mechanical recyclers and waste management companies. All of their feedstock is post-consumer plastics not industrial plastics.
- The certification process, and whether ISCC dictates the methodology to attribute circular inputs to outputs. Response: ISSC does not dictate the methodology, rather they offer different attribution options which must be verifiable by auditors. The claims must be linked to the methodologies utilized.
- The likelihood that the EU policy framework might include post industrial material in the future. Speakers noted that this is not expected in the near future, as policy makers have been focussed on defining the rules for post-consumer waste streams in the directives and strategies.
- What improvements the speakers think would further strengthen the EU policy framework. Responses included (1) more specific targets for recycling within the EU or within a region or country; (2) improved tracking and auditing requirements; (3) recycled content standards for multiple product categories, and; (4) including chemical recycling in the list of approved recycling technologies for achieving targets in all member states, not just at the EU level.

KEY TAKE AWAY MESSAGES

- ✓ Chemical recycling plays an important role in the circular economy. The benefits of chemical recycling must be communicated better to decision-makers, the public, and non-governmental organizations, because it has a complimentary role to play with mechanical recycling.
- ✓ There are proven methods to track and verify feedstocks and calculate recycled content from chemical recycling processes. The ISCC certification process is important for verifying the process of tracking mass balance, which ensures a transparent process and a credible claim.
- ✓ Including the requirement to verifying the process of tracking mass balance in new legislation is critical to ensure credibility, transparency and a level playing field within the industry.
- ✓ Despite the ambitious policy framework currently in place in the EU, there are opportunities to strengthen directives under development to improve opportunities for the chemical recycling sector, such as developing an EU standard to calculate the mass balance certification for chemical recycling and including chemical recycling within the "End of Waste" (EOW) criteria under development.

EVENT AUDIENCE

44 Attendees	45% Women	55% Men	0% Prefer not to say



KEY RESOURCES

International Sustainability and Carbon Certification (ISCC) Systems: www.iscc-system.org

Plastic Energy: plasticenergy.com

Nova Institute: nova-institute.eu

European Commission:
EU Waste Framework Directive
EU Packaging and Packaging Waste Directive overview
EU Circular Economy Action Plan
EU Green Deal
EU Joint Research Committee

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