World Bank Webinar

Deploying Advanced Technology to unlock the Circular Economy

Martyn Tickner
Chief Advisor, Circular Solutions
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The Alliance to End Plastic Waste
Translating commitment into action

Since 2019, we have convened a global network of more than 90 industry leaders and partners across the plastics value chain. Together, we have built a portfolio of more than 35 projects across over 80 cities.

Key principles:

1. Act now… or risk permanent damage for future generations

2. Collective action… no organisation can tackle this alone

3. A cross-value chain approach… no single business sector can drive true system change

4. A do-tank, not a think-tank… discussion, policy, and public pledges are good, but we need real action and real investment
Closing the gaps to achieve a Circular Economy of plastics

Affordability Gap
- Costs to deliver PCR quality and quantity desired may exceed value derived.

Quality Gap
- PCR must be ‘fit-for-use’ w/o contamination. Advanced sorting and advanced recycling are needed.

Quantity Gap
- Basic collection & processing systems are needed in many regions. Advanced sorting enables rigids and flexibles recovery for full circularity.

Data Gap
- Improving data at all points of the plastic value chain, particularly waste management.

Design Gap
- Using recycled resin, optimising material usage, consider alternatives and design for recycling.

Alignment Gap
- Many differing opinions exist relative to solutions possible, steps required, and responsibilities.

White Paper to be published May 2022
From Plastic Waste to Circularity – step by step

**Basic Waste Management**
- Mixed Waste MRF
- Engineered Landfill
- Informal Sector Collection
- Municipal Collection
- Household Segregation

**Advanced Waste Management**
- Design for Reuse & Recycling
- Recycling Economy
- Traceability Solutions
- New Delivery Models
- Eco-modulated EPR schemes
- Petrochemical Feedstock Recycling
- Solvolysis
- Advanced Mechanical Recycling

**Level 5**
- Green Chemistry
  - Biodegradable Alternatives
  - Biobased Plastics

**Level 4**
- Circular Usage
  - Consumer Engagement /Education – 3R’s
  - Brand-owner/Retailer Take-Back, DRS schemes

**Level 3**
- Recovery/Recycling
  - Basic Recycling
  - Urban Scale Waste-to-Energy
  - Small Scale Waste to Fuel/Energy

**Level 2**
- Sorting
  - Mixed Waste MRF
  - Clean MRF
  - Industrial composting/Bio-digester

**Level 1**
- Collection & Containment
  - Engineered Landfill
  - Informal Sector Collection
  - Municipal Collection

**Emerging Solutions**
- UMI/NI Countries
- LI/MI Countries
- Out of AEPW Scope

**Increasing maturity**

**Elimination of Waste**

**TIME**

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Key Messages

1. Advanced Mechanical and Chemical Recycling both require high quality feedstocks
   • Chemical Recycling is intolerant of contaminants
   • Mechanical Recycling must offer products with functional performance approaching that of virgin plastics (Quality Gap).
     • Functional performance intrinsically reflects that of the feedstock mixture

2. High quality feedstocks require precise sorting
   • Segregation at source – Post-industrial/post-commercial; Reverse Vending+Deposit Return Schemes; Brand Owner/Retailer Take-Back
   • Extraction from mixed Household Waste requires either Manual Sorting by object recognition (low productivity) or advanced detection/automated sorting (high capital)

3. Advanced detection technologies for advanced sorting are rapidly emerging (Near Infrared, Digital Watermarks, AI Enabled object recognition)

4. The Alliance is funding development of the Holy Grail technology (Digital Watermarks)
   • Invisible watermarks printed or embossed on the article or label; detection by smart phone or optical sensors on a sorting/recycling line
   • High speed detection and sorting demonstrated in Europe, now preparing for adoption on full commercial scale

5. Key however is ensuring economic incentives are in place to support development of an optimal infrastructure and logistics
   • Recycling from thousands of different plastic articles requires an evolving network of primary, secondary and tertiary sorting and recycling
   • Primary sorting at (small) city level; Secondary sorting at large city or regional level; Tertiary sorting at regional level
THANK YOU!