

Supporting the transition from conventional plastics to more environmentally friendly alternatives

TICAD8 – UNIDO side event

25 August 2022, Virtual

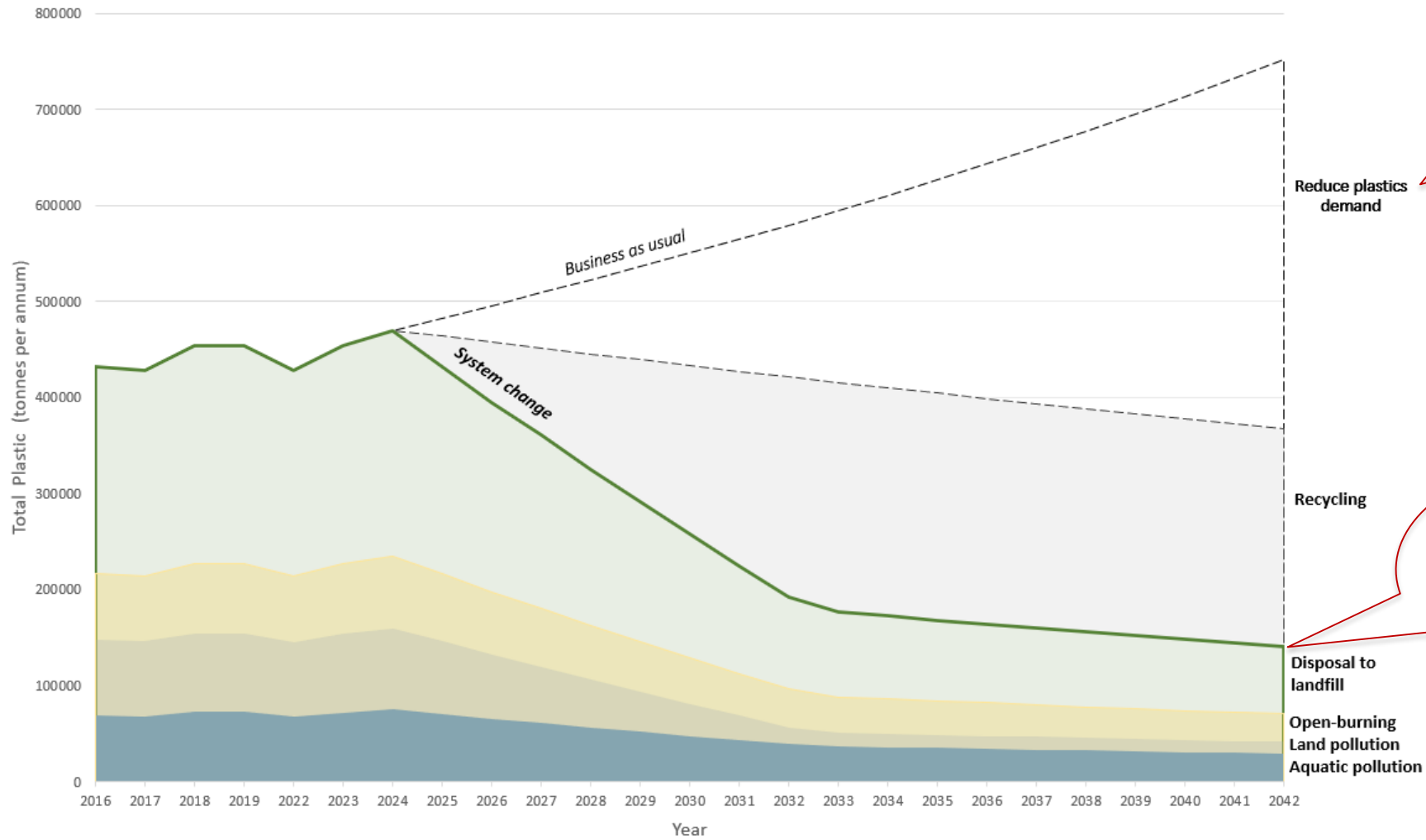
Presentation by Suzan Oelofse, Valentina Russo, Maya John, Melanie Samson, William Stafford



Background – Plastics Leakage from South Africa

- Estimated leakage to oceans at **15,000-40,000 tonnes per annum** (Verster and Bowman, 2020)
- The CSIR in collaboration with Pew Charitable Trusts and Oxford University have tested the Breaking the Plastic Wave Pathways tool using South African data to develop evidence-based strategies to reduce plastics pollution
- Japanese Government in June 2019 committed grant funding to support South Africa to combat marine plastics litter in South Africa

Sustainable system change intervention – Pathways Tool



UNIDO/CSIR/Wits joint project funded by Japan



Title:

Support for transitioning from conventional plastics to more environmentally sustainable alternatives.

Objective:

The amount of plastic leakage into the environment (incl. marine environment) in South Africa is reduced.

Output 1 (CSIR):

Develop an Action Plan to support sustainable transition to alternative material

Output 2 (Wits):

Strengthened plastics recycling capacity by capacity building activities including integration of the informal collectors sector.

Activities under Output 1

- Identification of single-use plastics with opportunities for replacement
 - Prioritisation for LCA study based on stakeholder rankings
 - Takeaway container (meal kit i.e., polystyrene clamshell and cup)
- Material substitution opportunities for each product
 - Maintaining product functionality
 - Commercially available alternatives
 - Life Cycle sustainability assessment to confirm if alternative provide best social, economic and environmental solution
- Assessment of potential to produce alternative materials locally
 - Natural fibres
 - Bioplastics (Biobased and compostable)
 - Reusable non-plastic materials: glass, ceramic and stainless steel
- Assessment of available technologies for final treatment of alternative materials
- Demonstration of identified technologies/materials
- Development of an Action plan

Main findings from LCSA for meal kit

- Raw material extraction and polymer production contribute most environmental impacts
- Polystyrene is the preferred option from eLCA perspective
- Compostable plastics, biobased plastics, bagasse and paper are less persistent in the environment than conventional plastics
- Polystyrene is 400 times worse than paper in terms of environmental pollution at end of life
 - Persistence in the environment
 - Material pollution
- Increasing recycling rates of polystyrene meal kits will improve environmental performance by 30% over 5 years
- Increased recycling of biobased and compostable alternatives will improve environmental performance by 40% over 5 years.

UNIDO funded Biodegradation Testing Laboratory (ISO accreditation in process) at the CSIR

- Testing against ASTM/ISO standards.
- Biodegradation in different media (compost, soil and aqueous) and time-frames
- Verify claims of imported products
 - biodegradable/compostable/environmentally friendly without any certifications
 - Oxo-degradable plastics banned in Europe imported to African countries
- Dispel popular misconceptions of bioplastics
 - Biodegradation occurs under **specific conditions** and is **dependent on the structure** of the biopolymer.

Oxo statement

Oxo degradable plastic packaging is not a solution to plastics pollution, and does not fit in a circular economy

News article

“Biodegradable plastic bags survive three years in soil and sea”



<https://www.theguardian.com/environment/2019/apr/29/biodegradable-plastic-bags-survive-three-years-in-soil-and-sea>

Demonstration of technologies/materials

- 3 grades of biopolymers were provided to the CSIR for prototype development
 - PHBH-151C **suitable for flexible** product applications
 - PHBH (X331N and 080X) **suitable for injection molding** of rigid products
- Mechanical and thermal testing of biopolymers completed at the CSIR
- Biopolymers mixed with agro-waste and injection molded at local manufacturing facility (MouldPlastics) to form different types of prototypes



Output 2: Education & Training for Waste Picker Integration - Activities

1. Mapping out the current status
2. Design of capacity building interventions
 1. Videos
 - 4 animated videos on integration
 - 2 videos on day in the life of a waste picker
 - 3 videos on integration case studies
 2. Training materials on understanding and implementing waste picker integration
 - Municipal officials
 - Waste pickers
 3. Webinar series on Waste picker integration
 4. Website on education and training for waste picker integration under development (www.wastepickerintegration.org)

Output 2: Education & Training for Waste Picker Integration - Activities

3. Implementation of capacity building interventions

- Webinars
- Workshops

4. Awareness development and outreach

- Media interviews
- Newspaper articles
- Conference presentation at ISWA World Congress on gender and waste work
- SA to Alliance to End Plastic Waste webinar

5. Development and piloting of South Africa Waste Picker Registration System (SAWPRS)

- Facilitated active stakeholder involvement in development of the SAWPRS online system
- Piloted registration training and registration of waste pickers on the SAWPRS
- Developed 3 stage registration process + training workshop now being rolled-out
- Registered and verified 994 waste pickers
- Joint registration by waste pickers and metropolitan municipalities forged new working relationships

Action Plan

The following interventions/actions are required:

- Decision support ensuring improved sustainability
 - Lifecycle sustainability assessments
 - Indicators for environmental pollution and persistence
- Gate keeping preventing green washing
 - Testing and verification of claims
 - Standards
- Support for local production enhancing the South African economy
- Investment in end-of-life infrastructure

The background features a complex, layered design. On the left side, there are several interlocking gears of various sizes, some rendered in a lighter blue and others in a darker blue. The right side of the image is dominated by large, overlapping geometric shapes, primarily triangles and polygons, in shades of blue. The overall aesthetic is technical and modern.

END

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