Partnering for a_____Circular Economy of PlasticsINDEVCO

Environment

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Partnering for a *Circular Economy of Plastics*



OUR COMMITMENT

is to foster premium re-use of plastic waste to reduce carbon emissions and to divert plastics destined for landfills or incineration into recycled applications supporting a circular economy of plastics

Management Approach

As manufacturers of plastic packaging and the backlash against plastic waste, INDEVCO Flexible Packaging and Napco National CJSC Flexible Packaging divisions have taken an active role in pushing towards a circular economy of plastics, meanwhile create green revenue streams from recycling plastic waste. Equipped with recycling facilities and waste collection, sorting and cleaning equipment, INDEVCO offers waste-to-energy technologies, and post-industrial plastic collection, recycling, and regeneration. The topic boundaries extend from our manufacturing operations to our partners, from suppliers to customers to consumers and government entities, municipalities, petrochemical producers, NGOs, and other public parties.

Learn More http://sustainability.indevcogroup.com/waste-circular-economy

Context

The world is moving away from the linear model of consumption (Take–Make-Use–Dispose) to a circular economy of plastics which focuses on innovating, redesigning, and extending product lifecycles to facilitate re-use and recycling. In this system, waste no longer represents product end-of-life but rather a new form of raw material that goes back into the production process as many times as possible. This model creates new value streams from waste, diverts plastics from landfill and marine, and reduces consumption of virgin raw materials and energy. Thus, the emission of greenhouse gases and use of nonrenewable resources is decreased.

In the Middle East and Arabian Gulf, rapid economic development and population growth have accelerated depletion of resources and increased waste generation, greenhouse gas emissions, and other negative environmental impacts. To maintain the growth rate and reduce vulnerability, Gulf Cooperation Council (GCC) countries are moving toward a path of sustainability and circular economy. ^[1] The Gulf Petrochemicals & Chemicals Association (GPCA) has highlighted the importance of plastic raw material producers in the Gulf to transform into a circular economy to attain sustainable growth and development. ^[2]

The Ellen MacArthur Foundation, in collaboration with the UN Environment Programme, launched the Global Commitment to the New Plastics Economy in October 2018 to eliminate unnecessary plastic items to innovate plastics, so that they are reusable, recyclable or compostable, and to circulate plastics to keep them out of the environment.^[3]

OUTCOMES

Lebanon, Saudi Arabia

Napco National's Recom in Saudi Arabia and Masterpak in Lebanon collect, sort, wash and recycle post-industrial plastic scrap. In 2018, over 40% of plastic scrap collected came from sister companies.

Masterpak plant in Zouk Mosbeh recycled and converted its own post-industrial scrap, while its plant in Bazyoun separated and washed agricultural films from local farmers and post-consumer plastic scrap collected from local third party collectors for conversion by sister companies.

Recom collects post-industrial plastic scrap across Saudi Arabia for recycling at plants in Jeddah and Dammam. Partnering with petrochemical producers, Recom offers 24/7 on-premises collection and recycling of polymer scraps. Recom also works with sister consumer products plants to collect diaper pack trim, local farms for agri and strawberry films, and shipping agencies, warehouses and commercial centers to collect post-commercial films.

In 2018, Napco National launched its sustainability program focused on partnering with schools to spread awareness on segregation and plastic recycling, as well as provide plastic scrap recycling services. Recom presented at schools and welcomed students to visit its recycling facility.

IMPACT

25% Increase of plastic scrap collection

> **74,023 m²** of post-industrial plastic scrap diverted from landfill ^[4]

> > Eliminated GHG emissions associated to landfilling by

752 MTCO₂E of carbon dioxide equivalent ^[5]

Maintained production of Recycled Resins

Eliminated associated GHG emissions by

66,196 MTCO₂E of carbon dioxide equivalent ^[6]

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Each type of plastic scrap collected is recycled differently:

- Resin waste is washed and sent for converting into quality recycled plastics
- Films, clogs, lumps, and non-woven diaper trims are segregated by polymer family and color, then ground, washed and sent for conversion into premium applications
- PVC core waste is sold for reuse

Plants maintained steady production of recycled resins, while resin prices dropped in 2018, adversely effecting local demand for recycled resins. Sister companies utilized nearly 65% of regenerated resins, converting into such plastic films as mulch film, silage covers, garbage bags, bin liners, thermoforming sheets, bitumens, drip irrigation pipes, injection molding grates, and pallets.

INDEVCO and Napco plastics converting plants use closed loop mechanical recycling to enhance plastic properties and regenerate collected scrap into same quality resins higher value converting that can be recycled again.

In addition, our plants work in consultation with INDEVCO Polymer Application Center for Technology (PACT) to leverage extensive polymer expertise and testing capabilities to recycle and compound difficult polymers, such as multi-layer barrier films, as well as develop new ranges of compounded and recycled products.

See Appendix H for references.

Plastic Scrap Collected by Type



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APPENDIX H

Partnering for a Circular Economy of Plastics References

- 1. Putting GCC cities in the loop: Sustainable growth in a circular economy.(2019) Ideation Center. https://www.ideationcenter.com/media/file/Putting-GCC-cities-in-the-loop.pdf
- 2. Transforming into a Circular Economy. (2018). The Gulf Petrochemicals & Chemicals Association (GPCA) https://gpca.org.ae/wp-content/uploads/2019/05/Circular-Economy-poster.pdf
- 3. Ellen MacArthur Foundation (2019, June). New Plastics Economy Global Commitment June 2019 Report.
- 4. To calculate the approximate landfill surface saved, we followed the following assumptions
 - a) When disposing, plastic waste would be compressed in bales
 - b) Each waste bale holds 400 kg (0.4 MT) with a width of 110 cm, height of 80 cm, and length of 130 cm
 - c) Volume of bale = LxWxH= 1.144 m3
 - d) Landfill area per bale = $LxW= 1.43 m^2$
- United States Environmental Protection Agency (2015, March). WARM Version 13: Exhibit 4, p. 5. https://www3.epa.gov/epawaste/conserve/tools/warm/pdfs/Plastics.pdf
 Net landfilling emissions = 0.04MTCO2E/Short Tonne = 0.0363 MTCO2E/tonne
- 6. Pusch, Thema Umwelt, 1/2009, p. 3

https://timeforchange.org/plastic-bags-and-plastic-bottles-CO2-emissions Derivation: Recycling of plastic saves on average about 2.5 kg CO2 per kg of plastic (~2.5 MTCO2 per MT of plastic)