CIRCULAR ECONOMY of Plastics

INDEVCO

OUR COMMITMENT to a Circular Economy

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

SUSTAINABILITY CONTEXT

INDEVCO Flexible Packaging and Napco National Flexible Packaging are developing internal circular economies in Lebanon and Saudi Arabia, respectively, to increase the uptake of plastic scrap collection and recycling. The divisions have invested in recycling facilities and scrap collection, sorting and cleaning equipment.



Currently, the plastics plants use closed loop mechanical recycling to channel collected scrap into the same application or into applications requiring similar quality recycled resins, rather than combining all scrap into lower value final-use applications that cannot be recycled again.

B2B plastic films comprise one of the most attractive segments for recycling costbenefit balance, as The Ellen MacArthur Foundation reports in *The New Plastics Economy*. Immense opportunity exists for films and bags that do not fit into existing recycling streams: 95% of the value of plastic packaging materials is lost after first-use; 72% of plastic packaging is not recovered with 40% landfilled and 32% leaking out of the collection system.¹ And only 5% of material value is retained after considering loss during sorting and reprocessing.²

With Saudi Vision 2030 energizing a range of industries, Saudi Arabia's Public Investment Fund (PIF) announced a plan in October 2017 to establish The Saudi Recycling Company as a waste management government enterprise to support and operate investments in domestic recycling sector projects in alliances with private-sector companies.³

The Gulf Petrochemicals & Chemicals Association (GPCA) emphasizes further that developing the recycling infrastructure in Gulf Cooperation Council (GCC) countries, among the largest producers of plastic resins in the world, could add as many as 10 new jobs per ton of plastic waste.⁴

By reducing virgin raw material consumption and increasing reuse and recycling, INDEVCO and Napco align with UN Sustainable Development Goal SDG12 Responsible Consumption and Production.⁵ We will also focus on developing partnerships with government entities, resin producers, and industry associations to further plastic scrap management and recycling infrastructures, in line with SDG17 Partnerships.⁶





OUTCOMES

Collection, Sorting & Washing of Plastic Scrap

Impact

Invested in new recycling line and a high-speed turbo mixer in Saudi Arabia, as well as a new washing and recycling plant in Lebanon

Maintained steady collection of recyclable plastic scrap, of which 49.6% was from sister companies in Saudi Arabia:

Plastic films, clogs and lumps, bumpers and non-woven diaper trim

- Saved 58,855 m² in landfill area⁷
- Reduced greenhouse gas (GHG) emissions associated with landfilling by 597.6 metric tons of carbon dioxide equivalent (MTCO₂E)

Resin waste

- Converted 100% by sister companies

PVC Core waste



In 2017, Napco Recom Branch collected 96% of the group's post-industrial plastic scrap recycled, while sister company Masterpak in Lebanon collected 4%.

Resin waste was washed and sent for converting into quality recycled plastics. Film, clog, lump, non-woven, and bumper waste were segregated by polymer family and color, then ground, washed and sent for conversion into premium applications. PVC core waste was sold for reuse.

Napco continues to invest in equipment infrastructure and enlarge scrap collection

geographically within Jeddah in western Saudi Arabia and Jubail and Dammam in the Eastern Province. The operation optimizes sorting by material and color and includes both dry and wet washing capabilities to ensure the possibility of converting premium applications.

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For petrochemical producers, Napco offers 24/7 on-premises collection and recycling of polymer scraps. It also collects diaper pack trim from sister companies within Napco Consumer Products division, agri and strawberry films from local farms, and post-commercial films from shipping agencies, warehouses and commercial centers.

In Lebanon, Masterpak grew its recycling capabilities by launching a new plastics recycling plant in Bazyoun in September. This plant separates and washes agri films from local growers and post-consumer waste purchased from local 3rd party collectors.

By diverting plastic scrap that would have been landfilled or incinerated into useful applications, the plants support UN SDG12 (Target 12.5) to substantially reduce waste generation through recycling and reuse.⁹



POLYMER SCRAPS COLLECTED









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Regeneration of Recycled Resins

Impact

Increased production of recycled resins in Saudi Arabia and Lebanon by 62.5% from 2016

Reduced GHG emissions by approximately 75,235 metric tons of carbon dioxide equivalent (MTCO₂E)¹⁰

Sister companies converted 38.6% of recycled resins

Began regenerating recycled resins from agricultural films and postconsumer waste in Lebanon at new recycling plant in Q4 2017 In 2017, Napco Recom Branch in Saudi Arabia and Masterpak in Lebanon converted postindustrial plastic scrap into recycled resins.

Sister companies incorporated nearly 39% of these recycled resins into plastic films, thermoforming sheets, bitumens, drip irrigation pipes, injection molding grates and pallets. Agri and strawberry films, for example, were reconverted into mulch film and silage covers, while diaper trim pack was converted into films for the bitumen industry. Other resins were used to produce garbage bags and bin liners, as well as irrigation pipes.

INDEVCO Polymer Application Center for Technology (PACT) works with the group's recycling centers to recycle and compound difficult polymers, such as multi-layer barrier films, to selectively streamline the plastic scrap for higher value converting. Napco is further developing new ranges of compounded and recycled products for blown films, thermoforming films, and injected molded products.

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Regenerating plastic scrap into quality resins replaces virgin resins and promotes sustainable and efficient use of natural resources, in line with UN SDG12 (Target 12.2).¹¹





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- 3 Saudi Press Agency. (2017, October 16). Public Investment Fund to establish recycling sector company. http://www.spa.gov.sa/viewfullstory.php?lang=en&newsid=1677834
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- 5 United Nations Sustainable Development Knowledge Platform. Sustainable Development Goal 12. Ensure sustainable consumption and production patterns. https://sustainabledevelopment.un.org/sdg12
- 6 United Nations Sustainable Development Knowledge Platform. Sustainable Development Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development. https://sustainabledevelopment.un.org/sdg17
- 7 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 m2
- 8 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

- 9 United Nations Sustainable Development Knowledge Platform. Sustainable Development Goal 12. Ensure sustainable consumption and production patterns. https://sustainabledevelopment.un.org/sdg12
- 10 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)
- **11** United Nations Sustainable Development Knowledge Platform. Sustainable Development Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development. https://sustainabledevelopment.un.org/sdg17

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