

DELL TECHNOLOGIES

DEVELOPMENT OF AN ASIA-BASED OCEAN PLASTICS SUPPLY CHAIN FOR PRODUCT PACKAGING

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Dell Technologies is a large, privately held company that provides consumers, industry, and government customers a range of technology products and service solutions. Based in Austin, TX, Dell has a rich history of supply chain and packaging innovation. As part of their commitment to ocean health outlined at the 2017 United Nations Oceans Conference, Dell pledged to source and incorporate 10 times their current ocean plastic usage into their packaging (up to 160K pounds cumulatively) by 2025.

Over 8M tons of plastic enters the ocean each year—a growth such that by 2050, there will be more plastic in the ocean than fish. Dell's strategy to tackle this looming environmental crisis is to create a supply chain that intercepts land-based mismanaged waste within 50 km of the shore, thereby targeting plastic at its highest economic value and addressing the root cause of ocean plastic early in its lifecycle. In 2016, Dell conducted a pilot in Haiti to source and incorporate 16K pounds of ocean plastic into a packaging tray for Dell's XPS-13" notebook; this Tauber project adapted the Haiti pilot to South Asia to capitalize on regional economic advantages and target the world's leading source of ocean plastic.

The Tauber team first defined a cost-effective supply chain for ocean plastic that could be scaled to meet growing demand. Building on previous internal and external research, the team defined viable sourcing locations of ocean plastic based on a variety of factors, including the availability of mismanaged waste, processing infrastructure, and logistical simplicity. Onsite visits in South Asia validated ocean plastic availability and confirmed the capability of local suppliers to source, clean, and process the material. Pricing, capacity, and quality certifications were modeled with logistics, manufacturing costs, taxes, and risk factors to define optimal supply chain scenarios for delivering ocean plastic resin to current Dell manufacturing sites in China as well as scenarios that co-located manufacturing in regions with suppliers.

The team then identified and recommended that Dell certify three Indonesian and Indian partners as viable sources of ocean plastic and co-locate packaging manufacturing in these countries. The proposed supply chain delivers scalability with the production capacity to source nearly 500 times Dell's commitment for ocean plastic usage, or the equivalent of 1.8 billion plastic bottles annually; it also reduced the total landed cost of ocean plastic by 73% over the current state, and by 31% and 16% against prevailing recycled and virgin plastic prices, respectively. Co-locating manufacturing of the current XPS-13" packaging tray with sourcing also reduced manufacturing costs by 54%, saving Dell more than \$350K. At the conclusion of the project, the Tauber team successfully delivered an innovative supply chain capable of delivering scalability and cost-effectiveness to both Dell and other like-minded companies.