

Evaluation of Plastic Waste Recycling in the West Bank, Palestine

Issam A. Al-Khatib¹, Ayah Alassali²

¹Birzeit, Birzeit, Palestine. ²Hamburg University of Technology, Hamburg, Germany

Abstract

Recycling plastic waste in developing regions faces significant challenges, yet innovative solutions are emerging from within the sector. This study examines the experiences of 40 plastic recycling companies in the West Bank, ranging from small firms to large enterprises. Nearly half employ 1–10 workers, and 28% report annual revenues between NIS 3–4 million. The majority focus on manufacturing plastic products (85%), while others sort (25%) or collect (22.5%) waste. Commonly recycled materials include PO-flexible (77.5%) and HDPE (65%), sourced through imports (85%) and local collectors (47.5%).

Recyclers face several barriers, notably unreliable supply chains (80%), low material value (55%), and bureaucratic obstacles (40%). In response, many have adopted robust quality control measures—72.5% conduct pre-production testing, and 95% test products post-production. Energy needs are met entirely by the local grid, with 27.5% also using solar power.

Despite limited resources, recyclers stress the need for better government support, efficient waste collection, and access to modern technologies. Most products (82.5%) are sold domestically, reinforcing the sector's role in local economic growth.

This study underscores the importance of policy support, community involvement, and investment to advance plastic recycling in the West Bank. The adaptive strategies identified provide a blueprint for sustainable waste management in similar developing contexts.