About 30 million tons of plastic waste --or 10% of the world's annual plastic production-- reaches the oceans each year, most from developing coastal countries. We study novel business models of organizations with a triple bottom line (TBL) objective that is a weighted sum of profit, and environmental and social impacts. These organizations sell (a) plastic offsets and (b) segregated plastic. We introduce and analyze models of a firm partnering with a plastic recycling supply chain comprising collectors and a processor to sell (a) or (b) or both. We find that (a) or (b) generate positive environmental and social impacts, while (b) gives a larger share of the local supply chain surplus to the collectors than (a). When the firm maximizes its profit, it still generates social and environmental impacts if the local price of recycled plastic is not too high. Furthermore, when the firm sells both (a) and (b), it attains a higher TBL value than (a) or (b) but could perform worse than (a) in terms of its social or environmental impacts. Our numerical study, calibrated with real data, shows that it is easier to generate social and environmental impacts if the local price of recycled plastic is low and the number of collectors is not large. Interestingly, organizations that employ a TBL objective can generate much larger environmental and social impacts with a slight reduction in profits. Our model and results provide theoretical support and insights into new initiatives for tackling ocean plastic pollution.

(Copies of the paper are available in the ABA Department offices)