

**Title:** Treat, dump, or export? How domestic and international waste management policies shape waste chain outcomes

**Abstract:** Illegal or unwanted waste disposal methods such as dumping and export are prevalent in practice. To minimize the negative impact of these methods, policymakers have implemented laws and regulations designed to combat them. Even so, violations are rampant as a high degree of heterogeneity between firms and proprietary information render monitoring imperfect. Decentralized waste disposal chains, a common form of inter-business organization in this sector, compound this problem as firms also have limited information available on the other waste chain partner, which creates complex interactions between firm behavior and policy interventions. Against this background, we analyze the effects of domestic and international waste regulations targeting dumping and export, respectively, on firm incentives and compliance. We develop a two-tier waste chain with a manufacturer that generates waste and an operator that treats it. The manufacturer's waste quality and the treatment operator's efficiency are private information. Both can avoid compliance cost by violating regulations where the manufacturer can arrange for the export of the waste and the operator can dump it. We characterize equilibrium waste outcomes and examine the impact of the regulatory climate. Our analysis reveals that primarily focusing on penalizing dumping by treatment operators can worsen waste chain outcomes. Solely focusing on penalizing low-quality waste exports, a common intervention in practice, can also backfire. Instead, penalizing manufacturers for downstream dumping should be given consideration. In addition, the asymmetry in export burden between waste quality levels should be reduced, which improves both waste outcomes and treatment operator profits.