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ENVIRONMENTAL AND ECONOMIC RATIONALE FOR LATVIA'S PACKAGING DEPOSIT SYSTEM

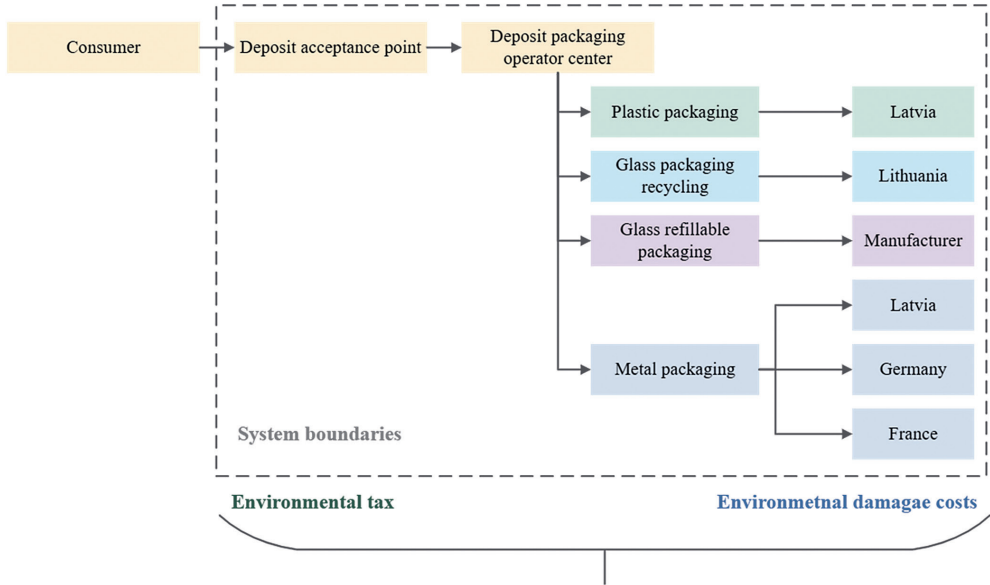
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Abstract – The packaging deposit system, also known as the deposit refund system (DRS) (also referred to as the deposit return system), aims to reduce waste disposal and promote recycling. The DRS has been introduced in most European countries and demonstrates high effectiveness, as evidenced by high packaging collection rates. In particular, the collection of valuable and recyclable materials is improved, while the environmental impacts and costs associated with the final phase of waste disposal are reduced. However, the overall environmental efficiency of DRS has rarely been analyzed to date, particularly regarding both the positive impacts related to reduced resource consumption and the potential negative impacts arising from system operation, such as the operation of DRS collection points and the transportation of collected packaging waste to recycling plants. Within the present research, the environmental and economic rationale of the Latvian DRS is analysed using a life cycle cost modelling approach, comparing damage costs and the environmental taxes applied to the corresponding packaging. The system boundaries are defined as “gate-to-gate,” and the functional unit is 1 tonne of deposit beverage packaging placed on the Latvian market and managed through the deposit packaging system. The system includes the resources required for the operation of deposit packaging collection points, transport to the deposit packaging operator’s centre, and transportation to packaging management and recycling sites. The life cycle inventory is based on data collected from DRS operators and other publicly available sources for 2024.

Keywords – *Environmental damage costs; environmental tax; packaging*



System boundaries for the Latvian packaging deposit system

Evaluation framework for environmental and economic rationale of packaging deposit system