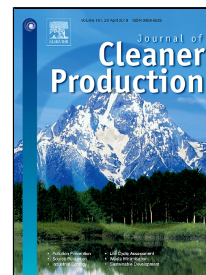


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Improving end of life vehicle's management practices: An economic assessment through system dynamics

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Abstract

End-of-Life Vehicles (ELVs), together with Waste from Electrical and Electronic Equipments (WEEE), are one of the most valuable sources of secondary raw materials. Their reuse for producing new goods is a well-known topic in the literature. However, End-of-Life (EoL) strategies implemented by companies remained the same since the last century, completely based on materials market prices. Progressively, this way of doing exposed the entire ELV recovery chain to a series of unwanted market risks. The purpose of this paper is proposing an alternative way to cope with the material's mix evolution in cars through the recovery of automotive electronic components. By applying an already existing model based on the System Dynamics (SD) methodology to the Italian context, a real time comparison of several configurations (scenarios) of the national ELV recovery chain has been implemented. Results quantified the expected impact on profits of both dismantlers and shredders in about 9 and 7.6 billion euros within fifty years. This way, dismantlers should lead the new recovery process, considering the highest increase in profits. However, the level of risk related with this option has been hypothesised as higher than a scenario with shredders leading the business.

Keywords: End of Life Vehicles; System Dynamics; Economic Assessment; Italian context.

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