

# An Analysis of End-of-Life Vehicle (ELV) Recycling in Emerging Economies

Krishna Mohan Thazhathu Valiyaveetil & R K Amit  
Department of Management Studies  
Indian Institute of Technology Madras  
Chennai, Tamil Nadu 600036, India  
krishnamohantv@gmail.com, rkamit@iitm.ac.in

## *Extended Abstract*

### **1 Introduction**

Limits to the availability of resources and improper waste management has emphasized the need of sustainable practices such as recycling. ELVs are complex products with immense scope for material recovery. Many materials can be recovered from ELVs such as steel (the major material), aluminum, polymers, fluids and rubber.

ELV recycling management differ worldwide due to various socio-economic and technological factors (Sakai et al., 2014). There are variations in levels of formalization, regulation, and coordination of the recycling chain. Regions such EU and Japan have mandated ELV recycling where the manufacturers collaborate with formal recyclers. Whereas ELV recycling in emerging economies like China and India are unregulated and are carried out by informal recycling sector which do not have enough dismantling capacity and employ poor technological and occupational practices.

The literature consider the dynamic aspects of ELV management. Zamudio-Ramirez (1996) consider the various impacts of changing vehicle composition on the automobile recycling industry of North America. Amaral et al. (2006) analyze the economic and environmental benefits of technological innovations in Portuguese ELV recycling industry. Inghels et al. (2016) analyze the impact of various macroeconomic factors and change in average life span of cars on ELV recycling in Belgium.

This work analyzes the ELV recycling in emerging economy. The ELV recycling in India is considered. With the vehicle population of India increasing at an alarming rate, the capability of the current ELV recycling infrastructure to sustain in the near future is analyzed.

### **2 Model**

The model considers the current ELV recycling situation in India. It represents a simplified ELV recycling system consisting of the informal dismantlers and material recyclers. The informal dis-

mantlers are having variable capacity which changes according to the profitability of the business. The model captures the dynamics of change in capacity and profitability of the dismantlers.

### 3 Results and Discussion

The results give the inadequacy of the current recycling infrastructure to handle the increasing number of ELVs. This may lead to abandonment of ELVs or old polluting vehicles continuing in the use stage. Also this leads to a lost opportunity for material recovery. Government should frame the right policies to ensure an environmentally sound management of ELVs such as formalizing the recycling industry and ensuring the participation of OEMs in recycling.

### 4 Acknowledgement

The authors thank the Nissan Research Support Program of Indian Institute of Technology (IIT) Madras (An MoU of Renault Nissan Technology & Business Centre India Private Limited (RNT-BCI) and IIT Madras) for funding this research work.

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