Contribution ID: **139** Type: 口头报告

# Driving Out Bad Money with the Good: Policy Design for Retired Electric Vehicle Batteries


## 摘要

问题定义：在发展中国家，大多数退役电动汽车电池（REVB）由非正规电池回收商（IBR）回收，而非正规电池回收商（FBR），这反映了“劣币驱逐良币”式的市场失灵。我们探究了这种市场失灵的根源，并评估了现有政策工具——即政府资助的回收补贴政策和基于制造商的延伸生产者责任（EPR）政策——在解决该问题上的有效性。我们还尝试提出一种结合两种政策优点的责任共担政策，旨在为这一市场失灵提供更全面的解决方案。

方法论/结果：我们构建了一个考虑 IBR 与 FBR 之间回收价格竞争的闭环供应链模型。考虑了四种政策情景：无政策、回收补贴、EPR 以及责任共担政策。结果表明，在没有政策干预的情况下，由电池制造商决定的 IBR 与 FBR 之间的回收成本差距会持续扩大，从而加剧市场失灵。当 IBR 仍然活跃于回收市场时，三种政策均无法有效激励制造商缩小成本差距。然而，当 FBR 回收具有社会效率时，责任共担政策能够首先将 IBR 逐出市场，进而激励电池制造商降低回收成本差距，从而为 EPR 政策和单独的回收补贴政策的有效性创造条件。

管理启示：考虑到发展中国家回收成本差距较大，政府应首先实施责任共担政策。在 IBR 退出市场且回收成本差距缩小后，可以转向 EPR 政策，最终过渡到回收补贴政策。



## 关键词

退役电动汽车电池；回收竞争；回收补贴政策；生产者延伸责任政策；责任共担政策



## Abstract

Problem definition：In developing countries, most retired electric vehicle batteries (REVBs) are recycled by informal battery recyclers (IBRs) rather than by formal battery recyclers (FBRs), reflecting a market failure described as “Bad money drives out good money”. We investigate the root causes of this market failure and evaluate the effectiveness of existing policy instruments—namely, government-funded recycling subsidy policy and manufacturer-based EPR policy—in addressing the problem. We also try to propose responsibility-sharing policy that combines the strengths of both policies, aiming to offer a more comprehensive solution to this market failure.

Methodology/results：We develop a closed-loop supply chain model with recycling price competition between the IBR and FBR. Four policy scenarios are considered: No policy, recycling subsidy, EPR and responsibility-sharing policies. Results show that without policy intervention, the recycling cost gap between IBR and FBR—determined by battery manufacturers—continues to increase, driving the market failure. When IBRs remain active in the recycling market, none of the three policies effectively incentivize manufacturers to lower the cost gap. However, the responsibility-sharing policy can first drive IBRs out of the market when FBR recycling is socially efficient and subsequently incentivizes battery manufacturers to reduce the recycling cost gap, which establishes the conditions under which EPR and stand-alone recycling subsidies can be effective.

Managerial implications：Given the large recycling cost gap in developing countries, the government should first implement the responsibility-sharing policy. After IBR exit the market and the recycling cost gap narrows, it can shift to EPR, and finally to recycling subsidy.



## Keywords

Retired electric vehicle battery; Recycling competition; Recycling subsidy Policy; EPR Policy; Responsibility-Sharing Policy

**Author:** Mr 商, 辰宣 (Tsinghua University)

**Presenter:** Mr 商, 辰宣 (Tsinghua University)

**Session Classification:** 环、化、材、技、能源战略

**Track Classification:** 口头报告: 环、化、材、技、能源战略