

End-of-Life Vehicle Recycling in Japan

16 March 2024

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1. Overview

Development of ELV Recycling in Japan

Development of ELV Recycling

Effective utilization rate* was less than 85%

Target: effective utilization rate (weight ratio) more than 85% , and 99% until 2015

Target rate of effective utilization rate 99% was attained (13% thermal recovery rate included)



Recycling based on a market mechanism

Recycling based on soft law and a market mechanism

Recycling based on hard law, soft law and a market mechanism

Waste Management and Public Cleansing Law

* Effective utilization rate: material recycling rate + thermal recovery rate

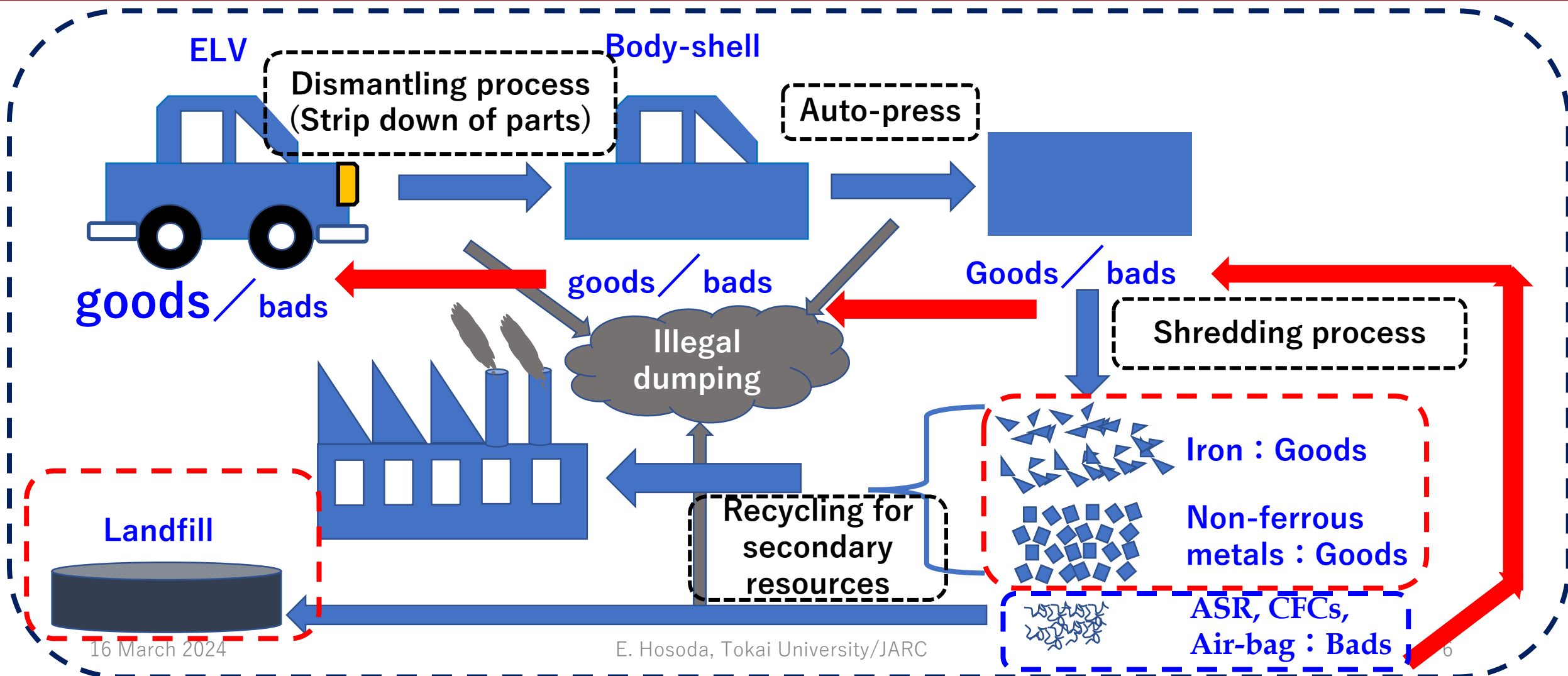
2. Before ELV Recycling Law was Introduced

- 1. ELV Recycling Based on Market Mechanism**
- 2. Initiative for Better ELV Recycling**
- 3. Turning Point for Legislation; Teshima Island Incident**
- 4. Limitation of the Initiative**

Before ELV Recycling Law was Introduced

- ELV recycling was made basically in competitive markets before ELV Recycling Law was introduced.
- Prices of ELV and its body-shell mainly depended on an iron-scrap price, and partly non-ferrous metal prices.
- Thus, as an iron price fell, prices of ELV and its body-shell also fell, sometimes fell down below zero. (Goods⇒Bads)
- Actually, the price of a body-shell of ELV became negative in the late 1980s.
- Some informal actors tried to avoid additional cost burden, by improper treatment of ELVs or even by illegal dumping.

ELV and its body-shell: from goods to bads



Initiative for Better ELV Recycling (1997)

- Since it turned out that the ELV recycling system based only on market mechanism did not work well, the government encouraged relevant actors of ELV recycling to cooperate one another for better treatment of ELVs.
- Thus, ELV Recycling Initiative was agreed by those actors in 1997.
- The initiative targeted 85% effective utilization rate of ELV for a while, and 95% until 2015.
- The limitation of the initiative was that it was only among formal actors, and informal actors were still active.

Turning Point for Legislation : Teshima Island Incident

- Since the late 1970s, an informal business company began illegal dumping of waste such as residue of end-of-life products in Teshima Island in Kagawa prefecture.
- The residue contained toxic substances and polluted the island.
- Automobile shredder residue (ASR) was considered to be one of the substances which caused pollution.
- The case was legally settled down in 2000, but it took huge amount of money to purify the polluted soil.
- The incident gave an impetus toward legislation of ELV recycling.

Heavily Polluted Teshima Island



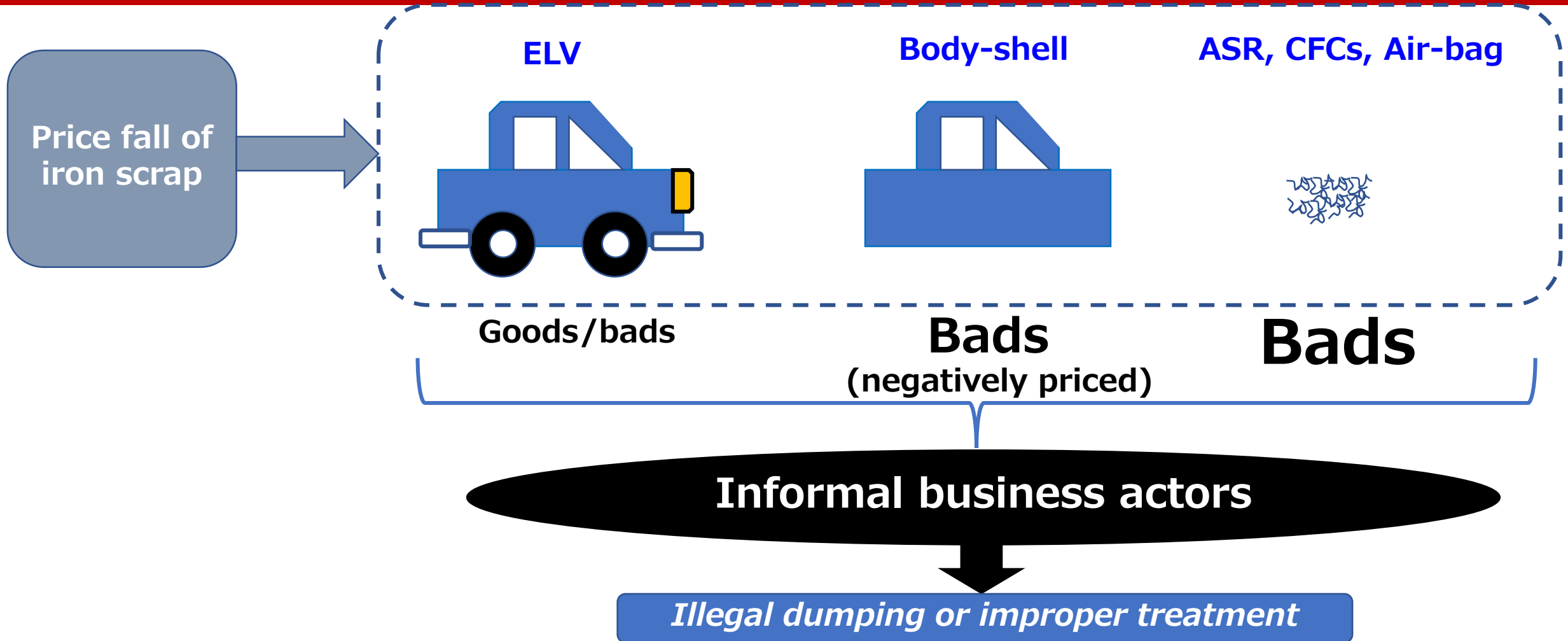
Source : Website of Kagawa Prefecture
<https://www.pref.kagawa.lg.jp/haitai/teshima/keii/teshi-1-1.html>

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E. Hosoda, Tokai University/JARC

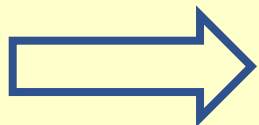
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The Point at the Issue



Limitations of the Initiative

- The ELV Initiative worked well to the extent that the effective utilization rate of ELV increased to nearly 85%.
- However, the rate was at most 85%, and a higher effective utilization rate was considered to be implausible.
- Furthermore, it was not easy to exclude informal actors by means of the initiative.
- This is partly because the appropriate fee for proper recycling and disposal of ELV was not charged to car-owners in the framework of the initiative.

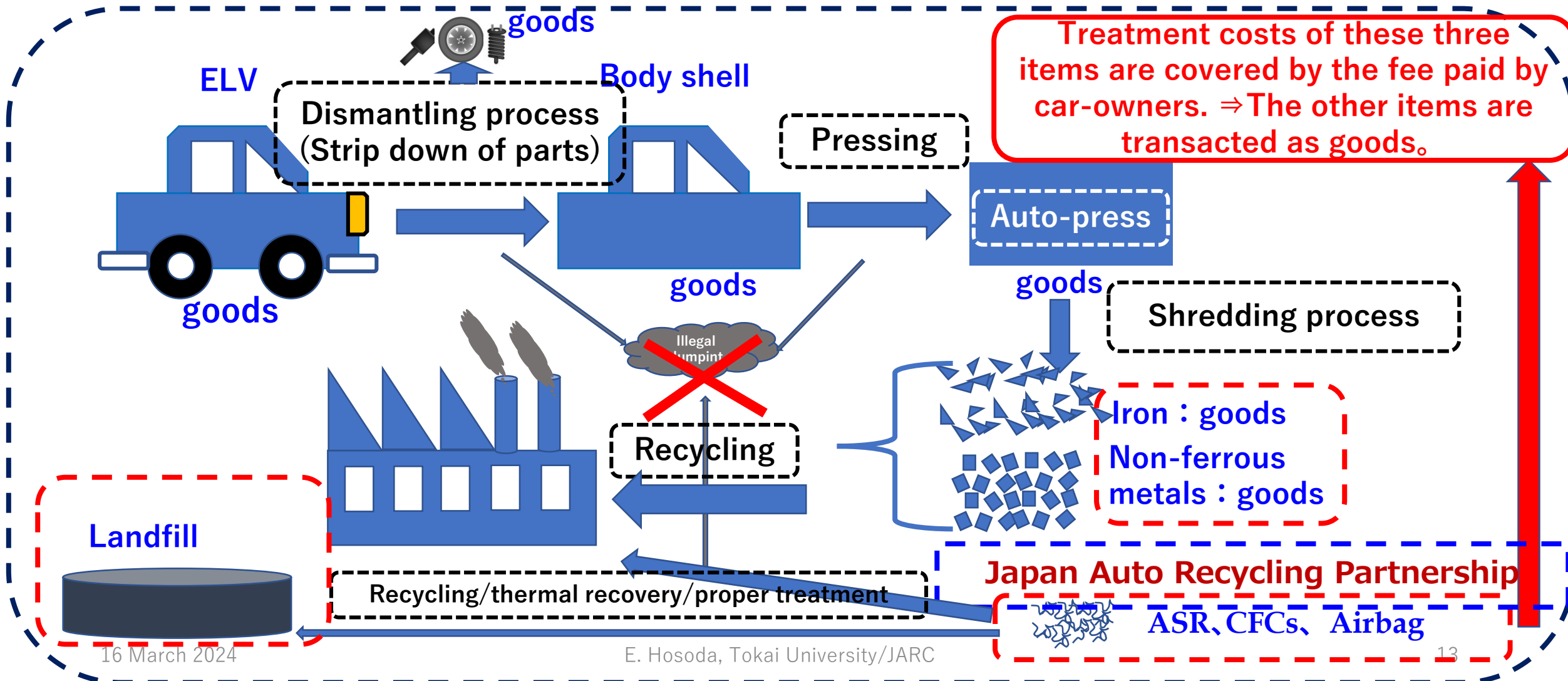


Necessity for legislation of the ELV Recycling Law

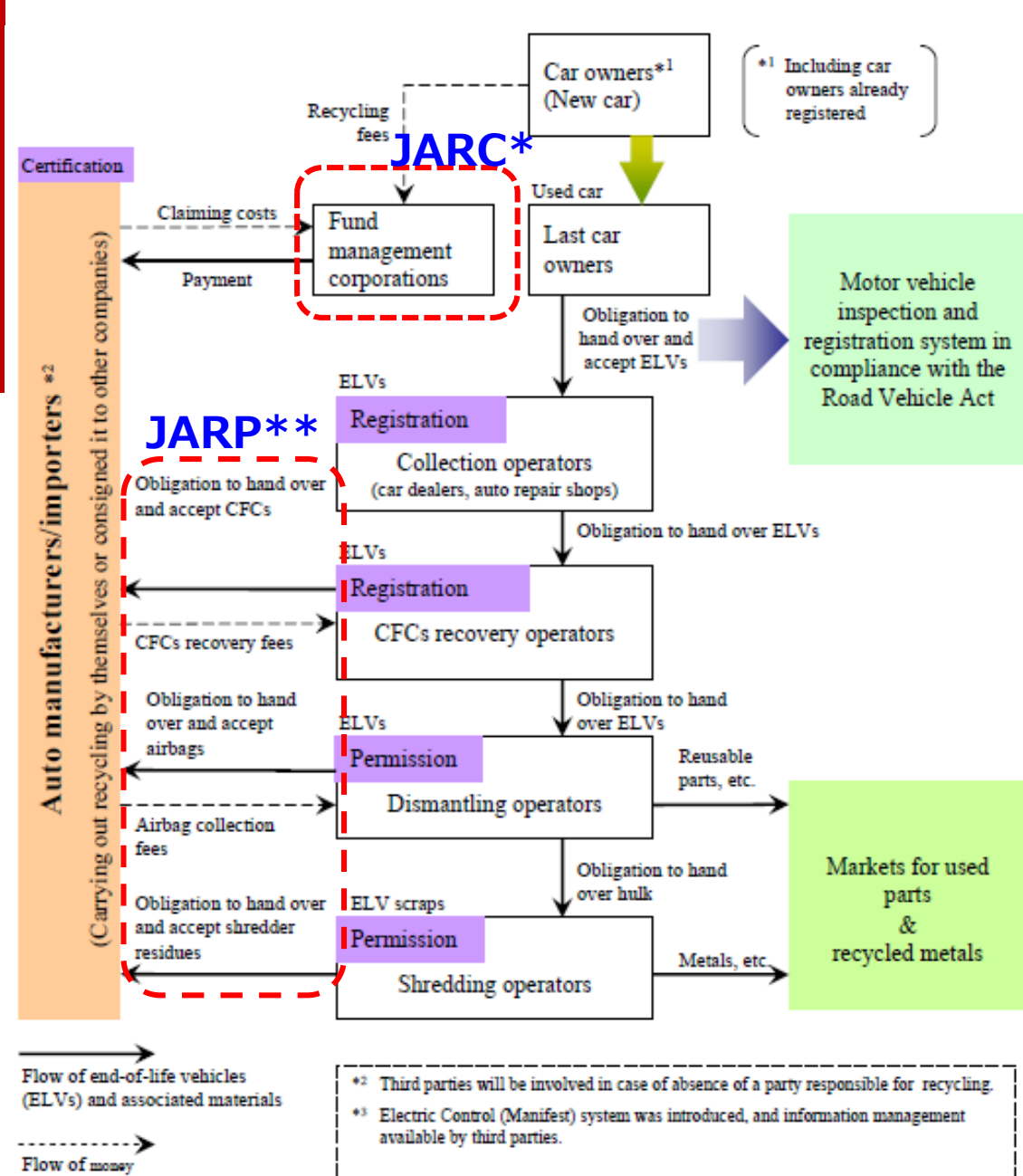
3. ELV Recycling Law

- 1. How ELV Recycling Law works**
- 2. Outcome of the Law**
- 3. Remaining Issues**

The Basic Idea of the ELV Recycling Law (2002)



Recycling Flow of ELV under the ELV Recycling Law



* JARC: Japan Automobile Recycling Promotion Center, the fund managing institution, designated by ELV Recycling Law

** JARP: Japan Auto Recycling Partnership founded by automobile manufacturers and importers

Source: Website of the Ministry of Environment, <https://www.env.go.jp/content/900452891.pdf>

Fundamental Points of the Law

- The law guarantees visibility of the flow of ELVs, legitimate transaction of ELVs among basically only formal actors, and appropriate charge-payment for ELV treatment.
- By charging treatment fee of ASR, CFCs and airbags on car-owners, other items of ELV have come to be transacted as goods in markets. ⇒ Wise use of markets!
- Car manufacturers are responsible for administrating and controlling proper treatment of ASR, CFCs and airbags.

Outcome of the Law

- The target rate of the effective utilization of ELV 95% was attained.
- The flow of ELVs was controlled by means of the legislation coupled with wise use of markets.
- Informal actors are excluded, although there are some exceptions.
- Markets of used and rebuilt parts of ELV are vitalized.
- Minute dismantling of ELV has gradually appeared.

Remaining Issues

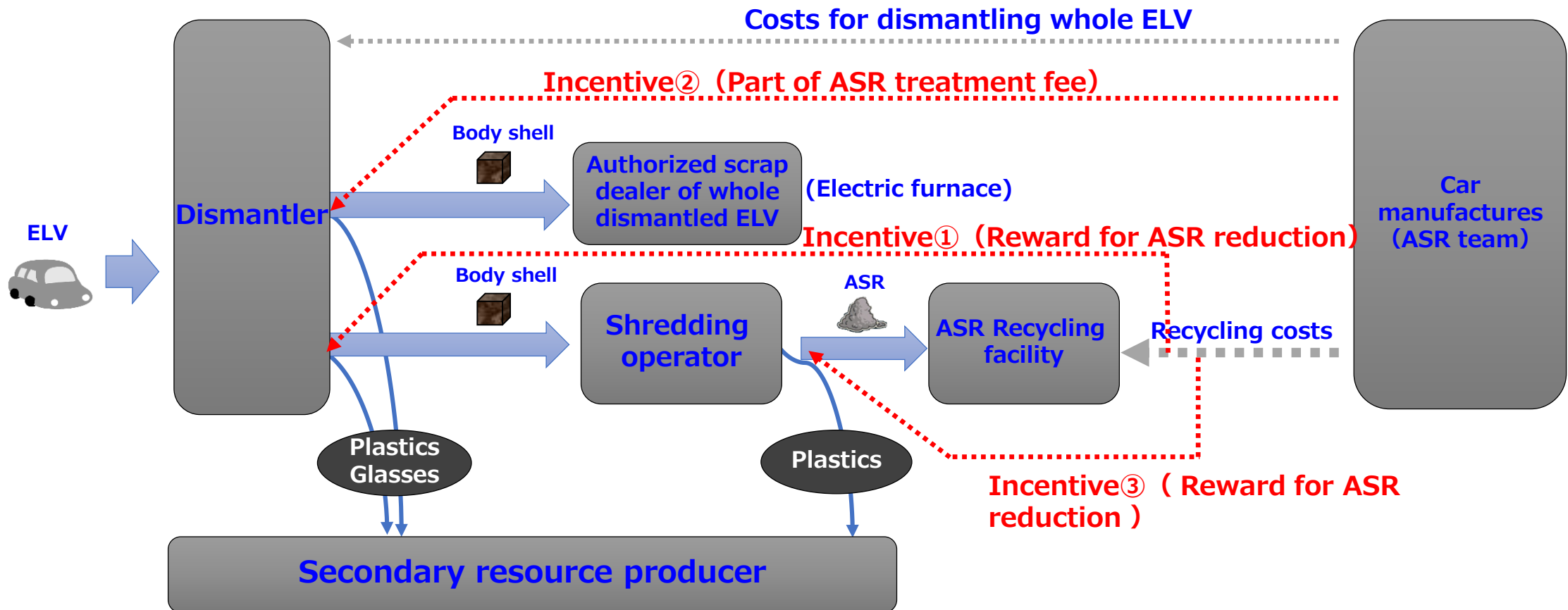
- How can ELV recycling contribute to realization of a circular economy (CE), accelerating more cyclical use of secondary resources?
- In other words, how can we promote advanced reuse and recycling of ELV, such as minute dismantling?
- A scheme of advanced reuse and recycling of HV, PHV, EV, FCV and so on must be launched.
- Particularly, a system of proper collection, reuse, recycling and disposal of lithium-ion battery (LiB) must be constructed.

4. Two Big Issues

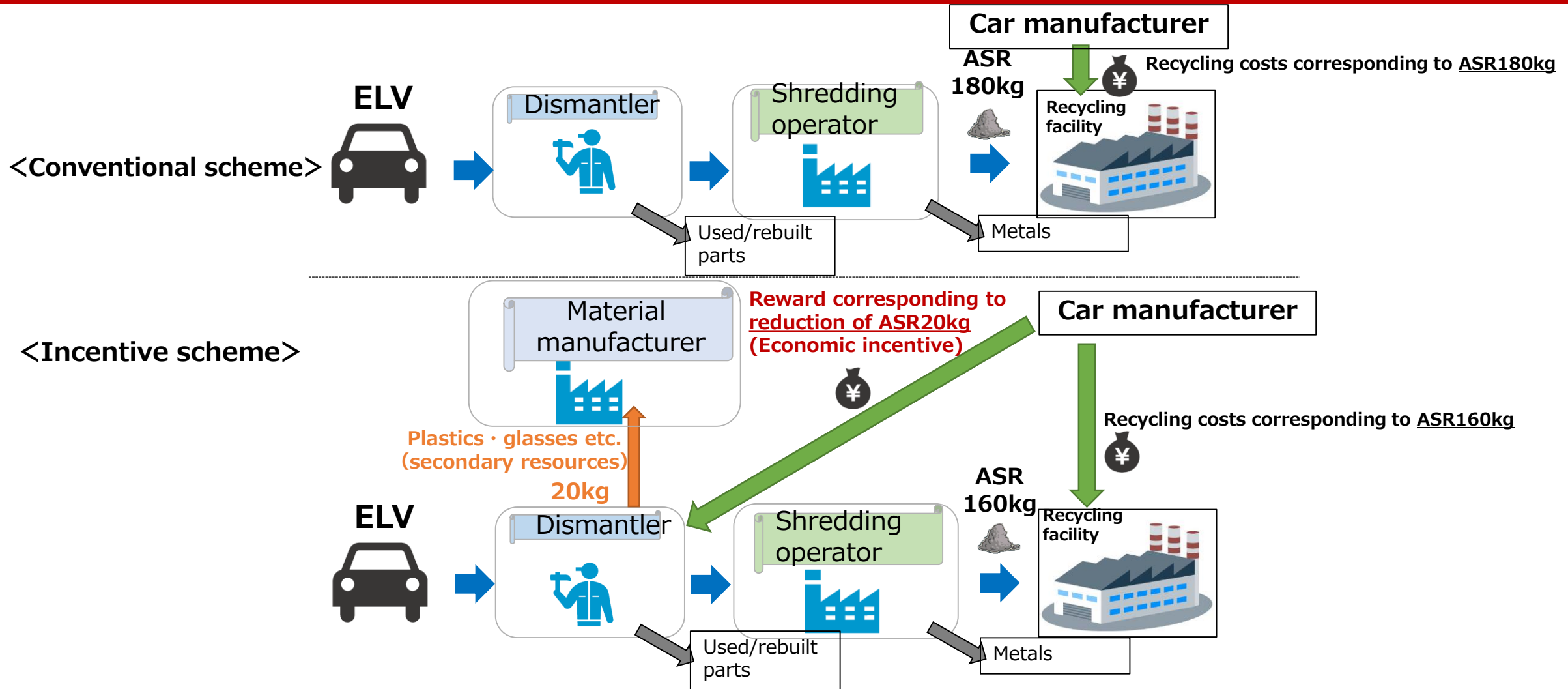
- 1. Issue 1: Scheme for Advanced Recycling**
- 2. Issue 2: Recycling of Lithium Ion Battery**

Incentive Scheme for Promoting Recovery of Secondary Resources

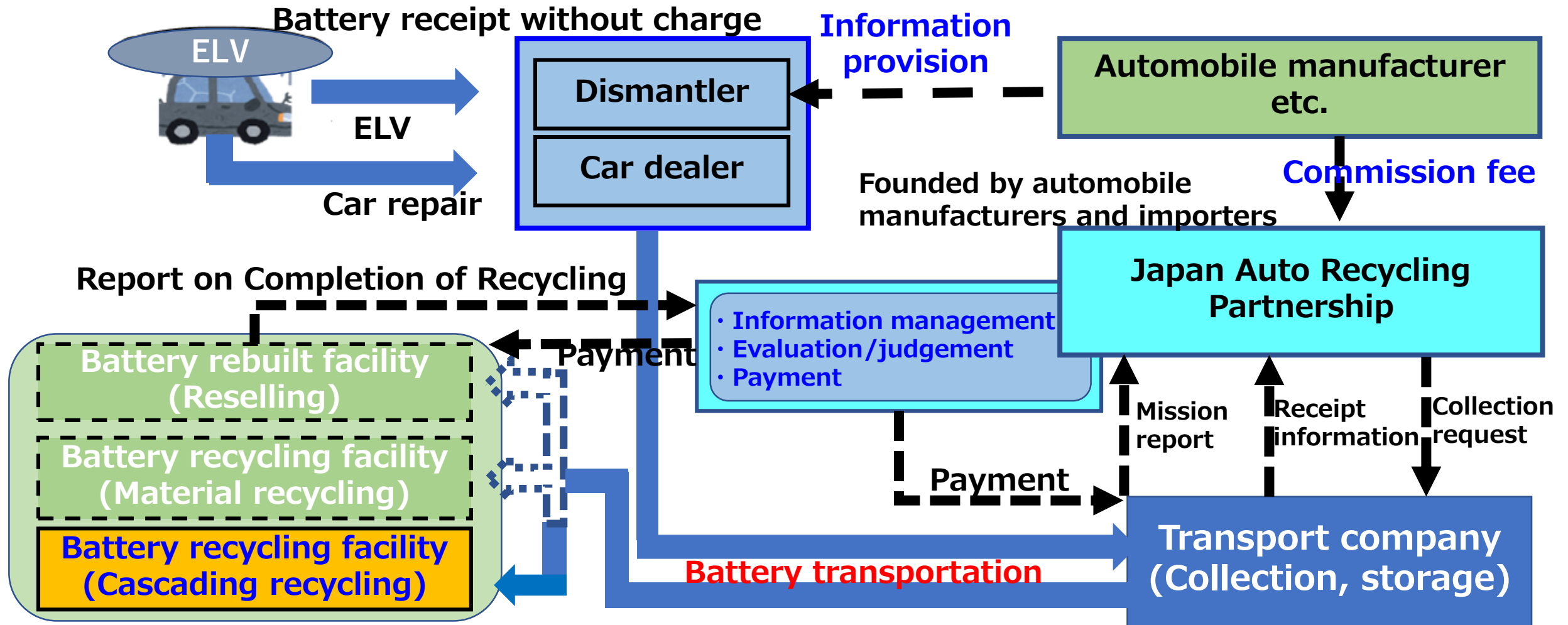
Rough sketch of the scheme



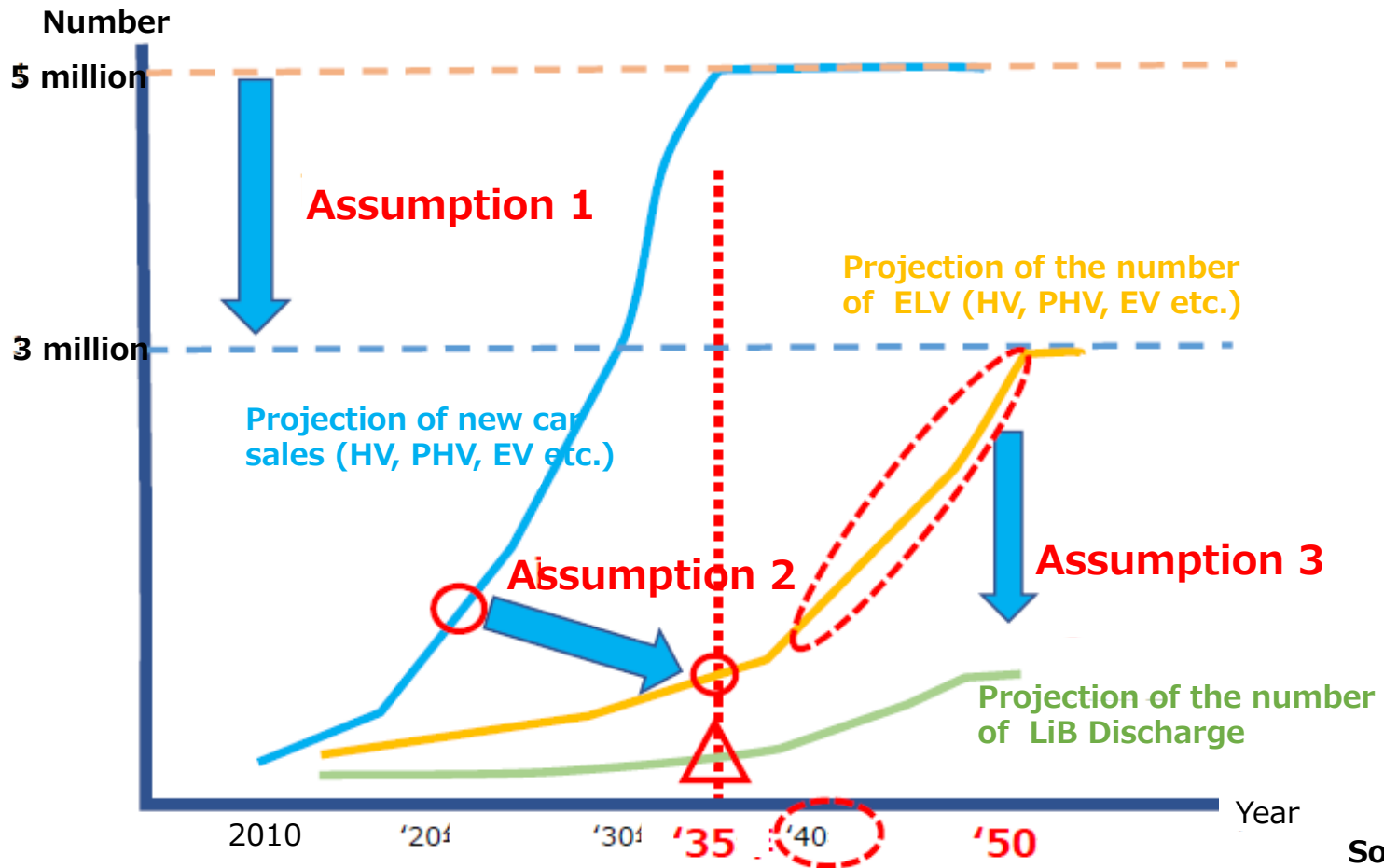
Comparison between Conventional and Incentive Schemes



LiB Recycling Scheme under Consideration



Projection of the Number of LiB Discharge



Assumption 1: The number of decommissioned HV, PHV, EV and so on is 60% of the new sales, so that the rate of LiB discharge is also 60% of the new sales.

Assumption 2: The average life time of those cars is 16 years.

Assumption 3: Automobile manufacturers and importers (JARP) collect only 20% of the number of LiB discharge.

Source: Japan Automobile Manufacturers Association

No Requirement for Manufacturers to Use Recycled Materials

- Yet, automobile manufacturers are not required to use recycled materials for their products.
- This forms a striking contrast to the EU's new ELV Regulation which has been proposed.



EU's newly proposed ELV Regulation

- **25% of the plastic used to produce a new vehicle must be recycled plastic**
- **25% of the recycled plastic must come from ELV**

5. Concluding Remarks

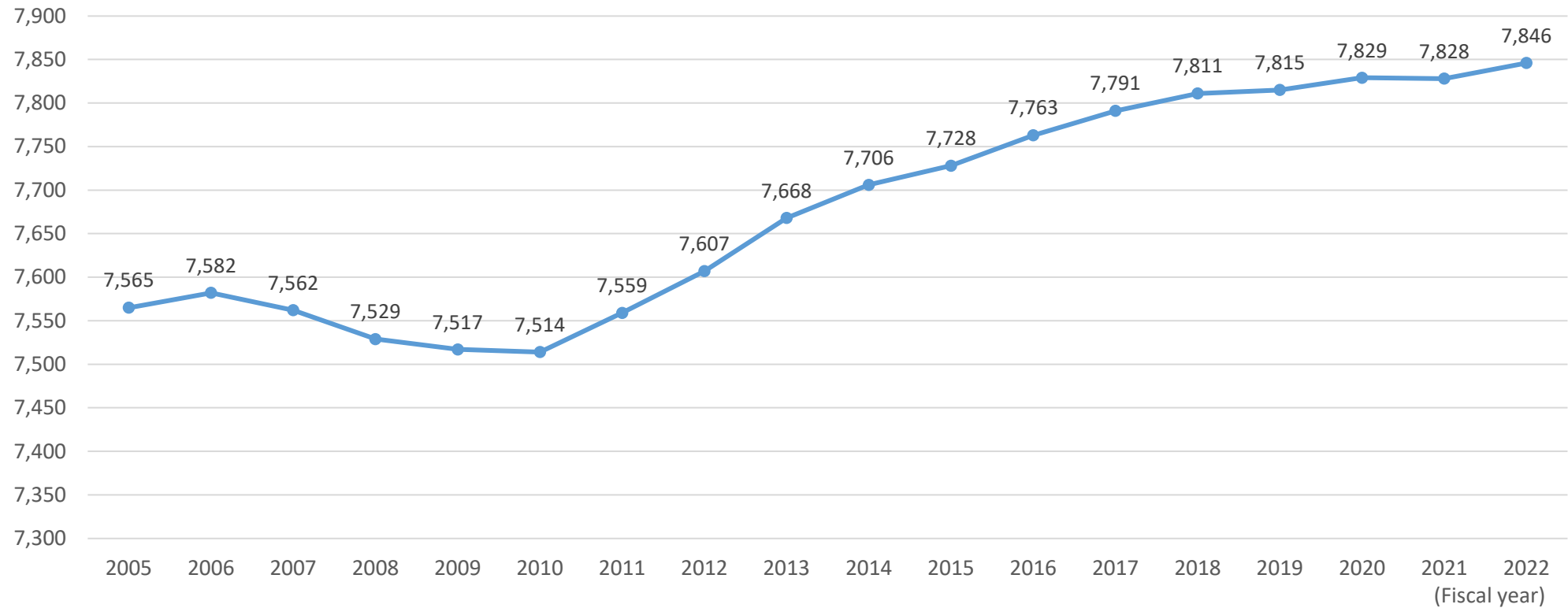
Concluding Remarks

- Under ELV Recycling Law, 99% of ELV is effectively utilized; 86% material recycling and 13% thermal recovery.
- The number of illegal dumping and improper treatment of ELV has decreased, since many informal actors are excluded from the ELV recycling scheme.
- Yet, thermal recovery should be replaced with material recycling and landfill of the residue should be minimized.
- The incentive scheme for promoting more advanced reuse and recycling is now under consideration.
- Car manufacturers and importers are planning a new scheme for collecting and recycling LiB.

6. Appendix

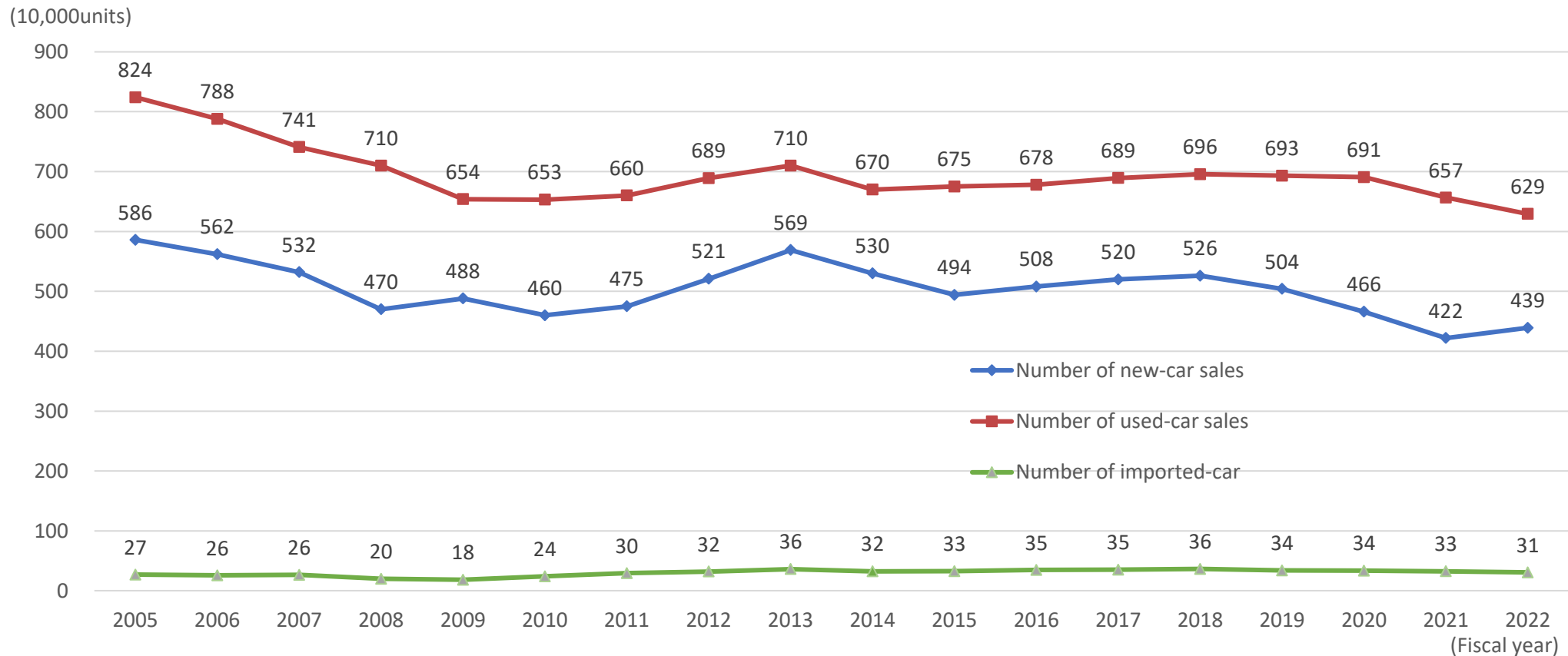
Number of Vehicle Owned

(10,000units)



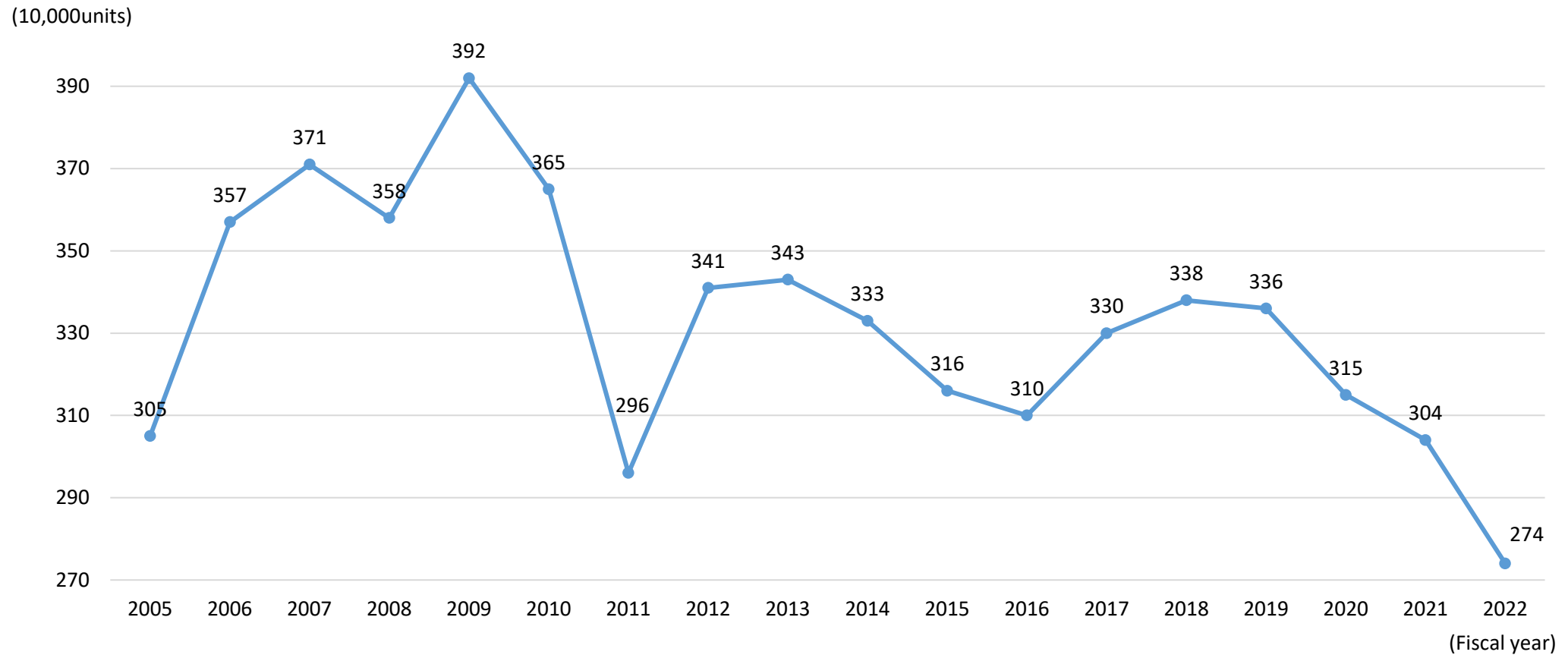
Source: Automobile Inspection & Registration Information Association
<https://www.airia.or.jp/publish/statistics/number.html>

Number of Car Sales



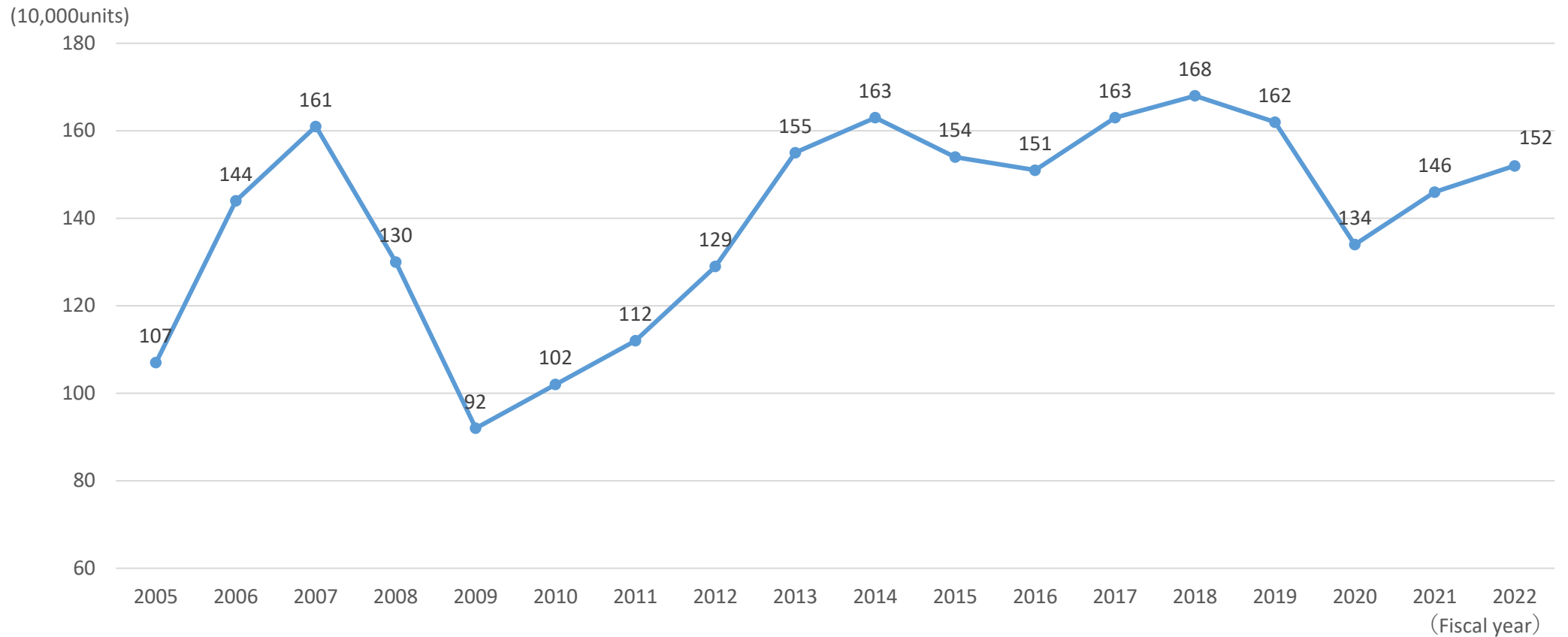
Source: Japan Automobile Dealers Association
National Federation of Light Vehicle Associations
Japan Automobile Importers Association

Number of ELVs Generated



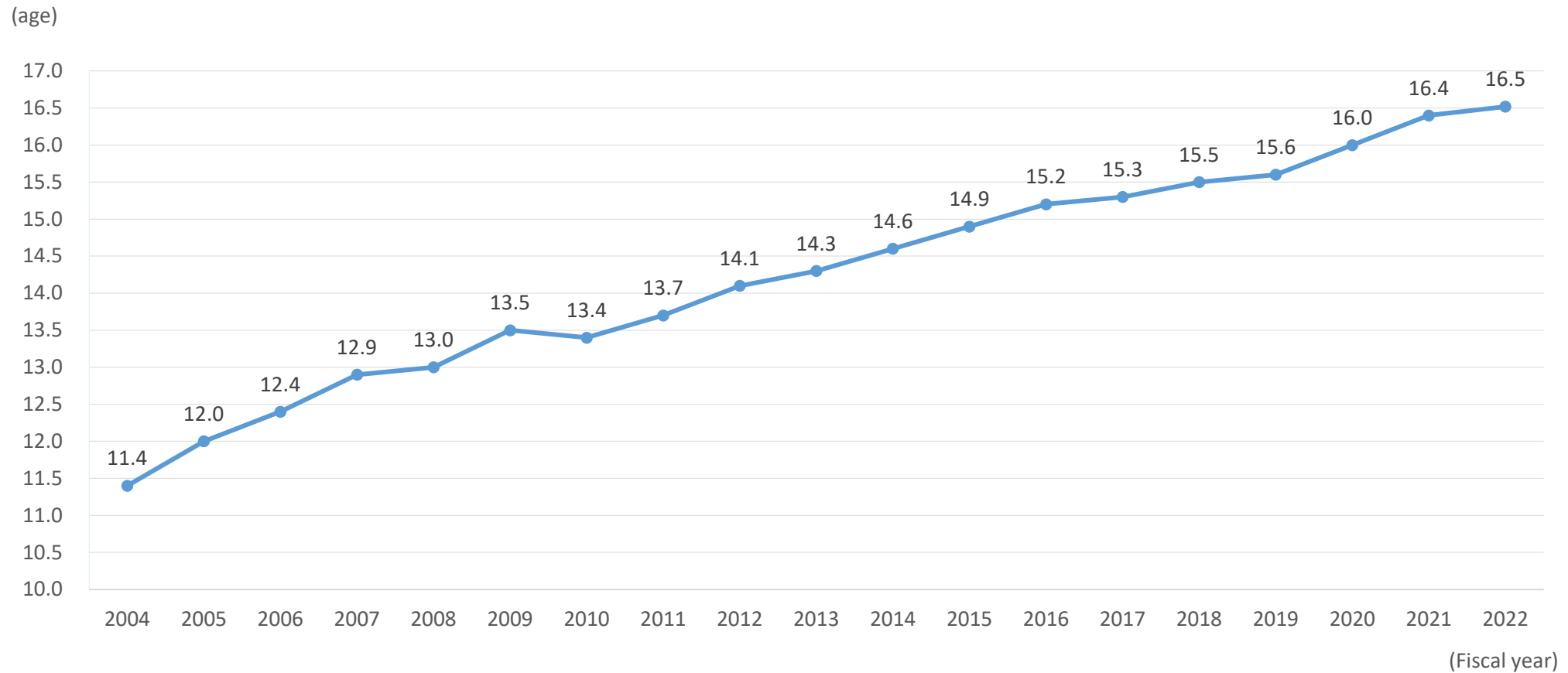
Source: Ministry of Economy, Trade and Industry (2023) The Current Situation of Automobile Recycling
https://www.meti.go.jp/shingikai/sankoshin/sangyo_gijutsu/resource_circulation/jidosha_wg/pdf/058_03_00.pdf

Number of Used-Cars Exported



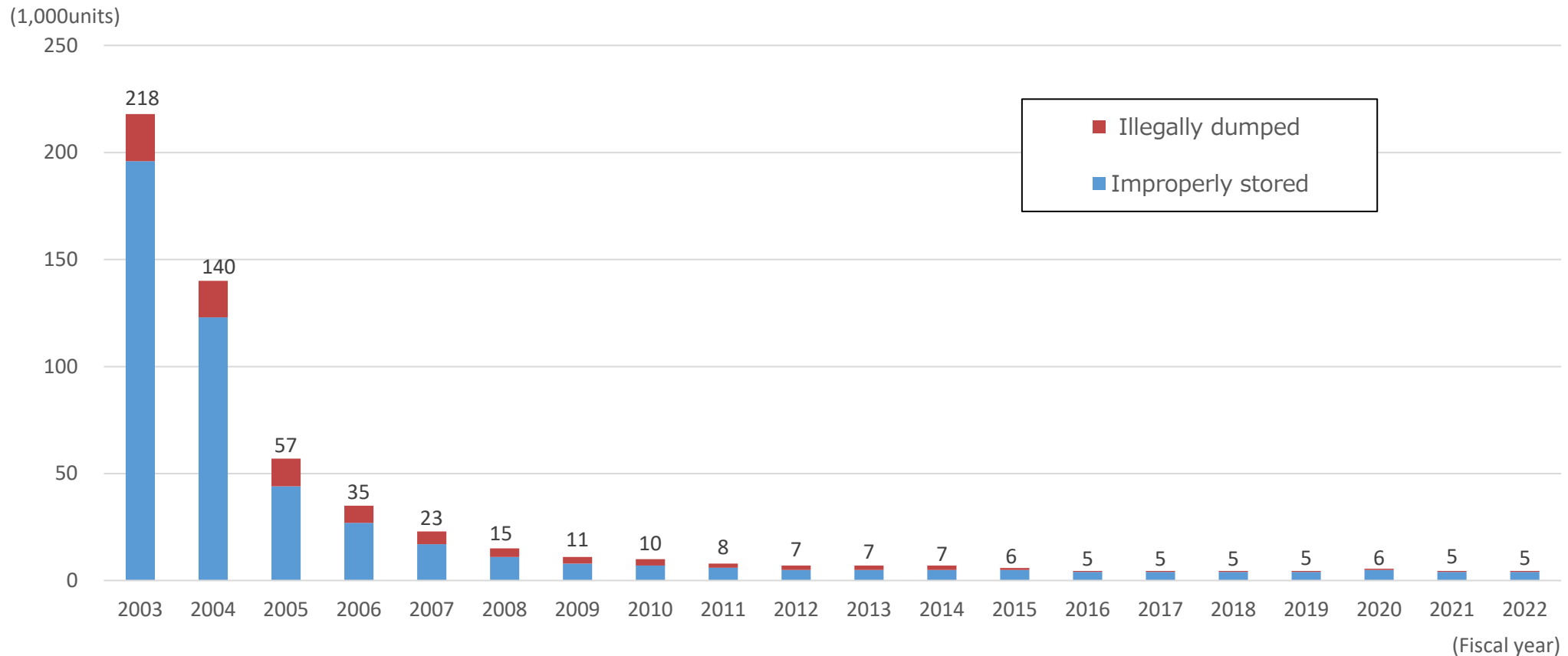
Source: Ministry of Economy, Trade and Industry (2023) The Current Situation of Automobile Recycling
https://www.meti.go.jp/shingikai/sankoshin/sangyo_gijutsu/resource_circulation/jidosha_wg/pdf/058_03_00.pdf

Average Lifetime of Automobiles



Source: Ministry of Economy, Trade and Industry (2023) The Current Situation of Automobile Recycling
https://www.meti.go.jp/shingikai/sankoshin/sangyo_gijutsu/resource_circulation/jidosha_wg/pdf/058_03_00.pdf

Number of Remaining Units of Illegally Dumped/Improperly Stored ELVs



Source: Ministry of Economy, Trade and Industry (2023) The Current Situation of Automobile Recycling
https://www.meti.go.jp/shingikai/sankoshin/sangyo_gijutsu/resource_circulation/jidosha_wg/pdf/058_03_00.pdf