

*The Recovery of Fluorocarbons
From the End -of -Life Vehicles
(ELVs) In Japan*

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Importance of Recovering Refrigerant from ELVs

- Over 70mil Automobiles are in use in Japan and 90% of them are equipped with MAC
- Approx. 4 mil Automobiles become End of Life a year
- Say 400g refrigerant (CFCs / HFCs) left in an ELV,
 $400\text{g} * 4 \text{ mil} * 90\% = 1,440 \text{ ton}$

Development of Recovery of Refrigerant from ELVs in Japan

➤ Voluntary Plan (- 2002)

Refrigerant industry, auto industries and local governments established recovery/destruction system at regional level (“Fluorocarbon Recovery Promotion Board”)

➤ The Fluorocarbons Recovery and Destruction Law

(Oct. 2002 - Dec. 2004)

➤ The ELV Recycling Law (Jan. 2005 -)

The Fluorocarbons Recovery and Destruction Law

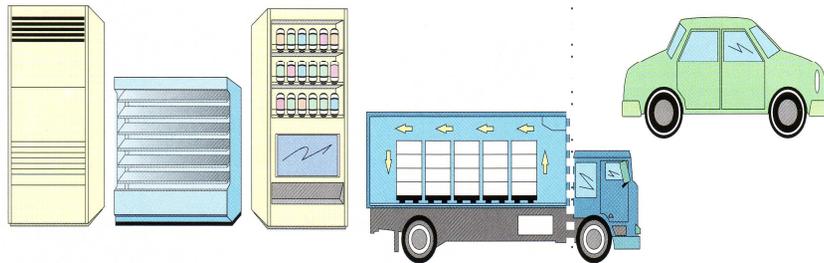
Purpose of the Law

- **Restrain the emissions of Fluorocarbons to protect ozone layer and prevent global warming**
- **Require mandatory recovery and destruction of end-of-life fluorocarbons by placing responsibilities on relevant parties**

Scope of the regulation

- **Class 1 specified equipment : Air conditioning, refrigerators and chillers for business use**
- **Class 2 specified equipment : Mobile Air Conditioning (MAC)**
- **Fluorocarbons**
 - CFCs, HCFCs : ODSs**
 - HFCs : Greenhouse effect gas**

Class-1 specified equipment

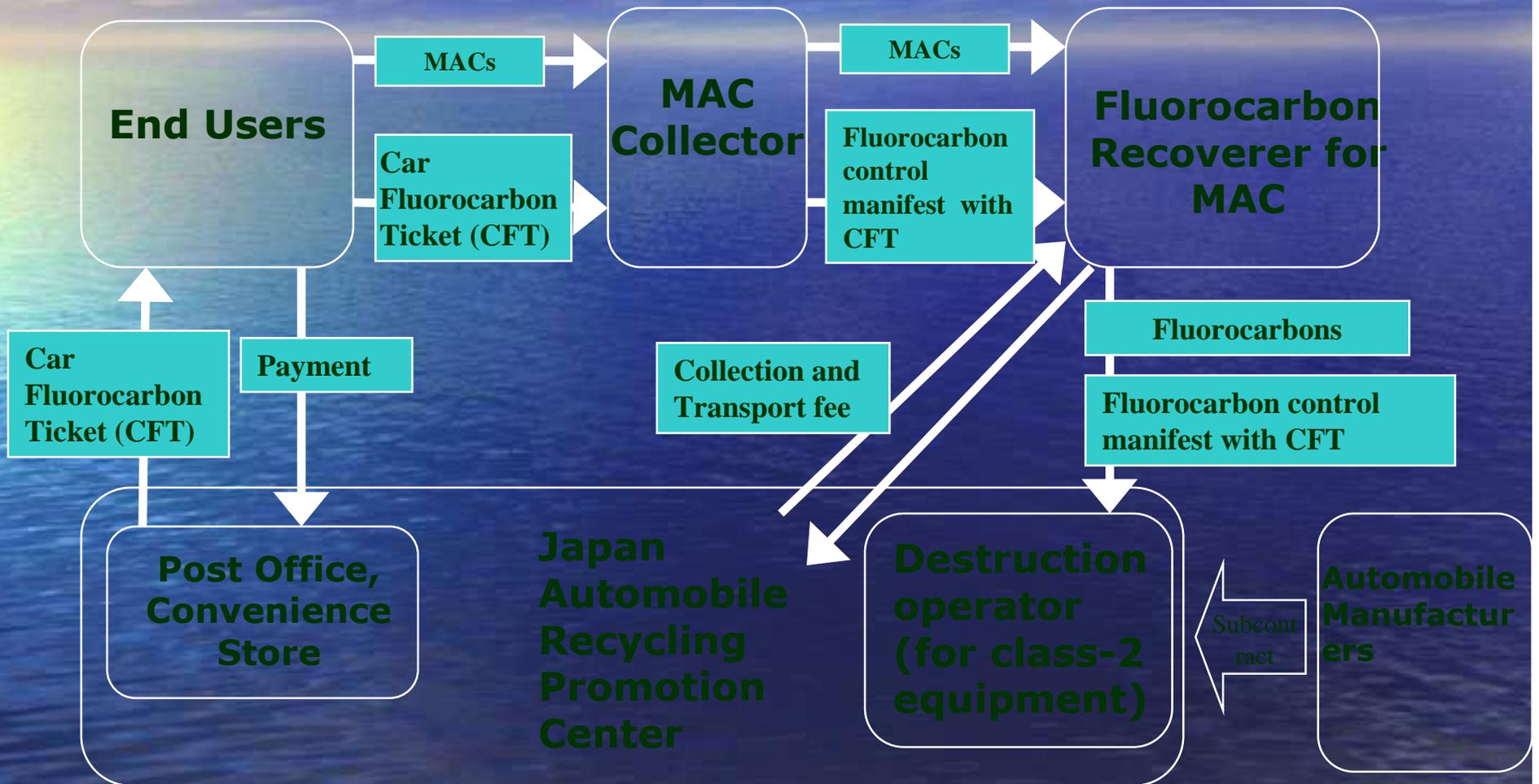


Class-2 specified equipment (MAC)

Division of Roles for MAC(Class 2)

- **Assignment of Roles to relevant parties involved in the treatment of MAC in ELVs with registration and license system**
 - End-users**
 - MAC collectors (=car dealers, maintenance service agents etc.)**
 - Fluorocarbon Recoverer**
 - Automobile manufacturers/importers**
 - Destruction Operators**

Scheme for MAC (Class2)



Roles of end-users (Class 2)

- **Hand-over MAC in ELVs to the registered MAC collectors**
- **Payment of the fee for recovery, transportation and destruction to automobile manufacturers / importers by buying CFT (Car Fluorocarbon Ticket)**

Roles of MAC collector (class2)

- **Need to be registered by prefectural governors**
- **Receipt of MAC in ELVs from end-users**
- **Delivery of MAC to a fluorocarbon recoverer along with fluorocarbon control manifest**

Roles of Fluorocarbon Recoverer (class 2)

- **Need to be registered by prefectural governors**
- **Receipt MAC in ELVs from a MAC collector and recovery of fluorocarbons following the recovery standard**
- **Delivery of recovered fluorocarbons to automobile manufactures / importers along with fluorocarbon control manifest unless reused**

Roles of Destruction Operator

- **Need to be licensed by the Competent Ministers**
- **Receipt and destruction recovered fluorocarbons from automobile manufacturers / importers**
- **Record-keeping and report of the information to the Competent Ministers**

Roles of automobile manufacturers / importers

- **Receipt of recovered fluorocarbons from fluorocarbon recoverers**
- **Subcontract of destruction of recovered fluorocarbons to destruction operators**
- **Payment of the recovery fee to fluorocarbon recoverers and the destruction fee to destruction operators**

Result of Fluorocarbons Recovery and Destruction Law

- Before the law, Industry sectors etc tried to recover fluorocarbons voluntarily. 129MT of fluorocarbons were destroyed in 2001.
- In 2003 F/Y, 638MT of fluorocarbons are recovered and 420MT are destroyed.
- The number of ELVs with MAC received in 2003 F/Y is 1.7mil. Compared with total ELVs in Japan, this figure is not satisfying.

Difficulty in enforcing Fluorocarbons Recovery and Destruction Law

- **Payment at the disposal of ELVs works against end-users' proper hand-over of ELVs to registered MAC collectors**
- **The law focuses mainly on fluorocarbons in MAC, not comprehensively on overall treatment of ELVs. Imposing strict control on the treatment of colorless and odorless fluorocarbons is quite difficult**
- **Recovery of Fluorocarbons from MAC is integrated into the ELV Recycling Law**

ELV Recycling Law

Purpose of the Law

- Create and implement a new recycling system which ensures the proper recycling and appropriate treatment of ELVs
- Prevent illegal dumping and inappropriate treatment of ELVs

by assigning mandatory roles to the manufacturers / importers and other parties involved

3 obstacles in the treatment of ELVs

- **Automobile Shredder Residue (ASR)**

 - Dwindling landfill site for waste

- **Fluorocarbons**

- **Air-bags**

 - Explosives included in air-bags to be treated properly

Scope of the Regulation

➤ Overall treatment of End-of-Life 4 Wheeled Vehicles

Focuses on

-ASR

-Fluorocarbons

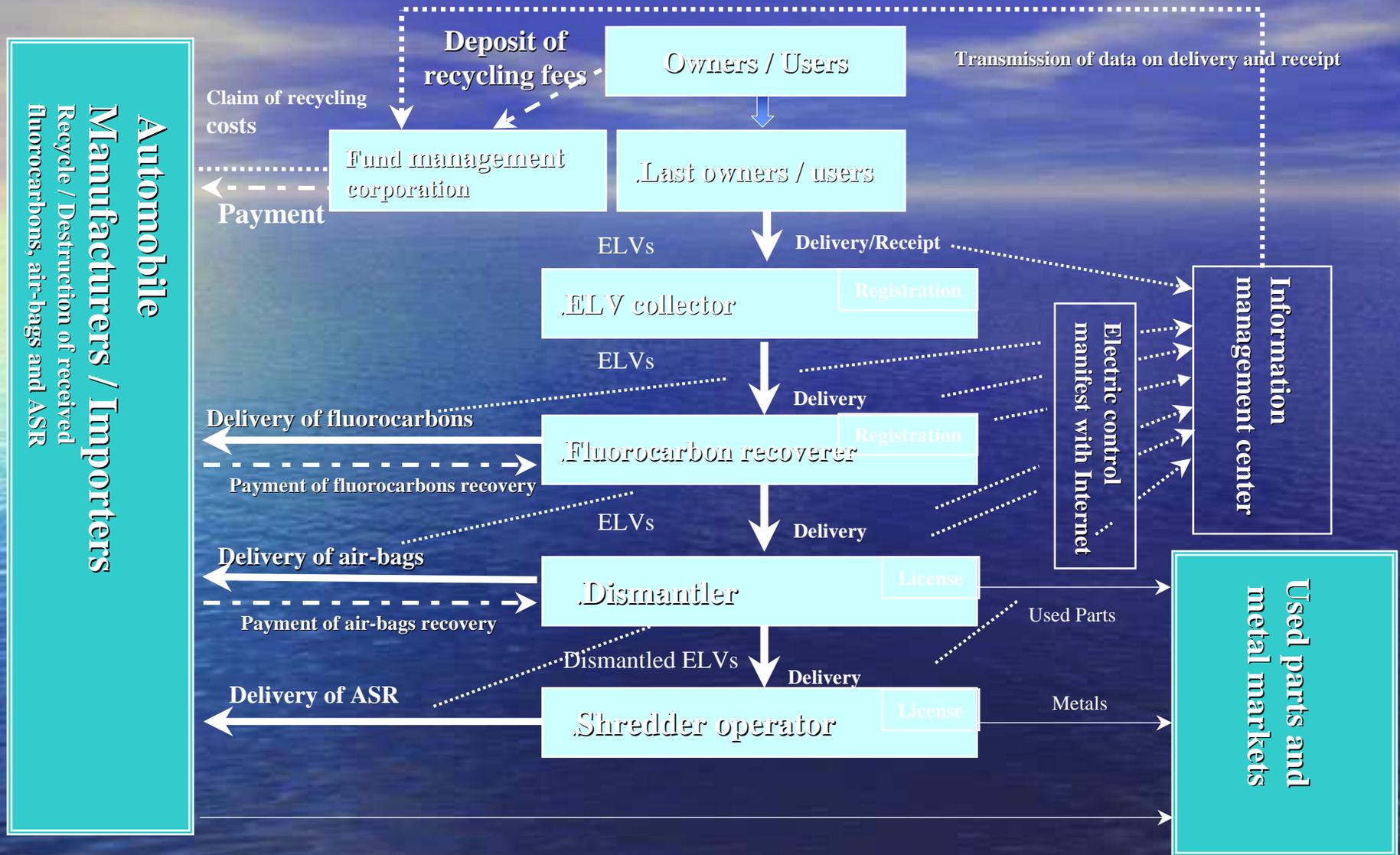
-Air-bags

➤ Automobile manufacturers/importers accept and destroy/recycle these three items following the standard

Division of Roles under the ELVs Recycling Law

- **Assignment of Roles to relevant parties involved in the overall treatment of ELVs with registration and license system**
 - Automobile owners/users**
 - ELV collector**
 - Fluorocarbon recoverer**
 - Dismantler**
 - Shredder operator**
 - Automobile manufacturers / Importers**

Overview of the ELV Recycling Law



Flows of information
 Flows of ELVs etc
 Flows of money

Roles of Automobile Owners/Users

➤ Automobile owners/users

-Payment of recycling fees

-Hand-over of ELVs to an ELV collector

-Choosing an easy-to-recycle vehicle

Roles of ELV Collector

- **ELV collector (needs to be registered)**
 - Receipt of ELVs from Automobile owners/users after confirmation of payment of recycling fees**
 - Delivery of ELVs to a fluorocarbon recoverer**
 - Report of receipt and delivery of ELVs through “electric control manifest system”**

Roles of Fluorocarbons Recoverer

- **Fluorocarbon recoverer (needs to be registered)**
 - Receipt of ELV from an ELVs collector**
 - Recovery of fluorocarbons from ELVs and delivery of recovered fluorocarbons to automobile manufacturers/importers unless reused**
 - Delivery to ELVs to a dismantler**
 - Report of receipt and delivery of ELVs/fluorocarbons through “electric control manifest system”**

Roles of Dismantler

- **Dismantler (needs to be licensed)**
 - Receipt of ELVs from a fluorocarbon recoverer**
 - Dismantling ELVs and hand-over of recovered air-bags to automobile manufacturers /importers**
 - Delivery of dismantled ELVs to a shredder operator**
 - Report of receipt and delivery of ELVs/air-bags through “electric control manifest system”**

Roles of Shredder Operator

- **Shredder operator (needs to be licensed)**
 - Receipt of dismantled ELVs from a dismantler**
 - Shredding dismantled ELVs and hand-over of ASR to automobile manufacturers/importers**
 - Report of receipt and delivery of dismantled ELVs/ASR through “electric control manifest system”**

Roles of Automobile manufactures /Importers

- **Receipt and recycling/destruction of fluorocarbons, air-bags and ASR based on the principle of EPR**
- **Pricing on recycling fees in accordance with the necessary costs of recycling/destruction**
Range of recycling fees for a medium size car is around JPY10,000(\$100) to 18,000(\$180) and around JPY2,000(\$20) is for destruction of fluorocarbons
- **To design and produce easy-to-recycle automobiles, which leads to reduce recycling fees paid by owners/users**

Payment of Recycling Fees in advance

- **Payment of recycling fees is necessary prior to the new/renewal vehicle registration/ inspection**
- **Without the payment, vehicles are not to be registered/inspected**
- **Recycle fees for automobiles non-registered /before renewal registration is to be paid at the hand-over to an ELV collector**

Introduction of Electric Control Manifest

- “Electric Control Manifest” system is introduced to ensure that all relevant parties properly do their duties.
- All relevant parties have to report receipt and delivery of each ELV and three items with the internet
- The Electric Control Manifest system shares the data of vehicles with the registration data base, and information of dismantled vehicles is as a condition for the deregistration of an ELVs

Efficacy of the ELV Recycling Law

- **Coverage of all the treatment procedure of ELVs**
- **Payment of recycling fee in advance**
- **Introduction of electric control manifest system**
- **Tied up with the vehicle registration and de-registration system**

**expected to achieve considerable
improvement in the end-of-life**



fluorocarbons recovery