

# Welcome to the EMPA

## Discussion Topics

- Introduction to the Swiss e-Waste Management System
- A short documentary on e-waste (Bangalore)
- the Swiss e-Waste Programme in India and the Clean e-Waste Channel Concept
- Discussion on developments in India and the value of the Swiss input

# E-Waste Recycling Practices in Switzerland

## Legal, Technical and Operational Aspects

# History of WEEE Recycling, Switzerland (CH)

- <1990 Individual strategies of certain manufacturers/distributors
- 1991 **S.EN.S.** introduces a recycling scheme for refrigerators and similar using a vignette.
- 1994 **SWICO** introduces a recycling scheme for IT and office electronics using an advance recycling fee.
- 1996 Introduction of collection points for all e-waste (paid via vignette, advance recycling fee or cash/bill).
- 1998 The “Ordinance on the Return, the taking back and the Disposal of Electrical & electronic Equipment” **ORDEE** becomes effective, defined and controlled by the **FOEN**.
- 1999 Mobile phones added to SWICO
- 2000 Graphics industry joins SWICO
- 2001 Telecommunications equipment added to SWICO
- 2002 Entertainment & consumer electronics and photography sector added to SWICO
- 2003 Prepaid Recycling Fee with S.EN.S. Most electric and electronic devices can be returned free of charge and nationwide.
- 2005 ORDEE adds Tools, Gardening and Hobby, Lighting Products, Recreational Equipment and others as of 1. January 2005



Swiss Foundation  
for Waste  
Management  
[www.sens.ch](http://www.sens.ch)



Swiss Association  
for Information,  
Communication  
and  
Organisational  
Technology  
[www.swico.ch](http://www.swico.ch)



Federal Office for the  
Environment (FOEN)  
[www.bafu.ch](http://www.bafu.ch)

# the goal of CH e-waste management system

avoid illegal dumping



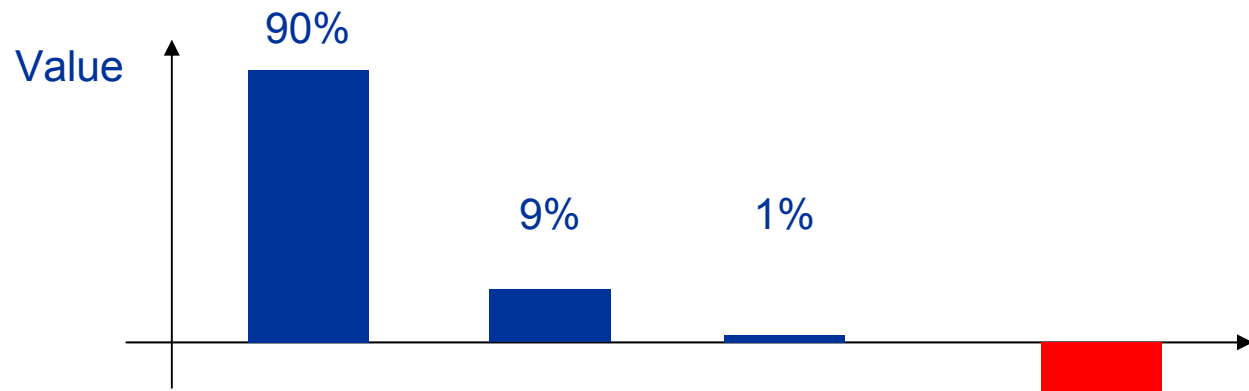
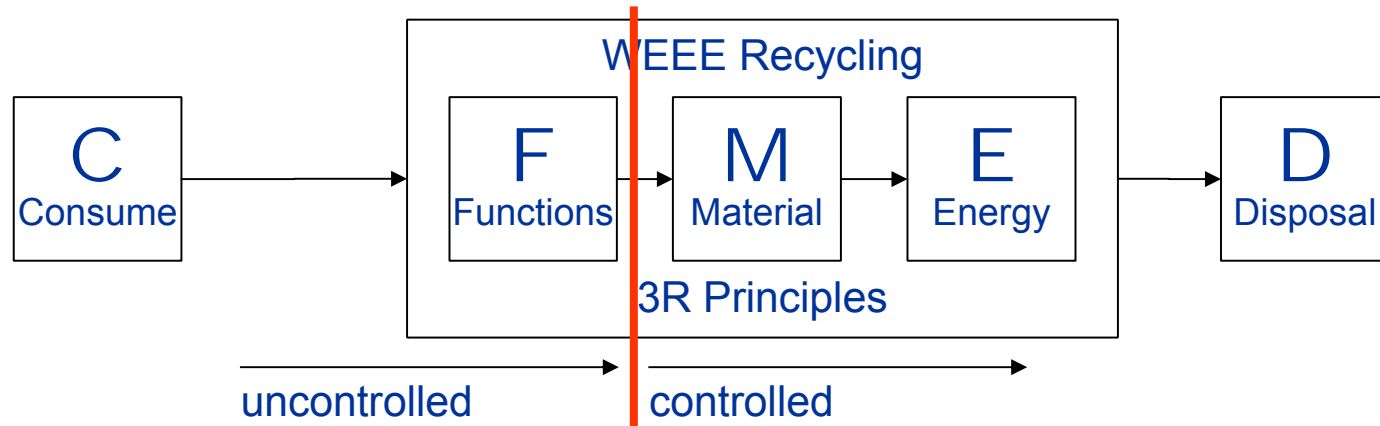
avoid e-waste entering the municipal waste stream



maximise return loop



# the scope of CH ewaste management system



1. Recover 'Functions' > highest value, most jobs, lowest risk
2. Recover 'Materials' > partly very profitable / very risky
3. Recover 'Energy' > only if material has to be destroyed

## Set the e-Waste Management System Principles (4)

### ■ responsibility

Manufacturers / importers commit to integrated waste management which includes the recycling of their electrical electronic and products products and ensure that the recycling solution operates smoothly.

### ■ simplicity

foremost consumers but also traders, manufacturers, recyclers – all stakeholders - must be able to master e-waste recycling.

### ■ reliability

crucial steps in the recycling chain require independent, transparent and trustworthy monitoring and control!

### ■ liquidity

If the market value of the recycled material can't pay for the process, additional funds have to be introduced. The Advance Recycling Fee (ARF) on new equipment allows their return free of charge.

# Swiss Legislators Role > ORDEE (1998, 2004) Ordinance on the Return, the taking back and the Disposal of Electrical & electronic Equipment

- Credo: the authorities have to limit their controls to the results > the industry is responsible to establish & operate the system.
  
- consequently ORDEE is very compact (4 pages) - it defines:
  - goal and scope of the ordinance
  - **responsibilities of the stakeholders**
  - major operational outline (licences, manifest, export, ...)
  
- ORDEE does **not** define:
  - technical details (emissions, (historical) equipment, )
  - enforcement details (targets, penalisation, ...)
  - management details (organisational setup, financing, ...)

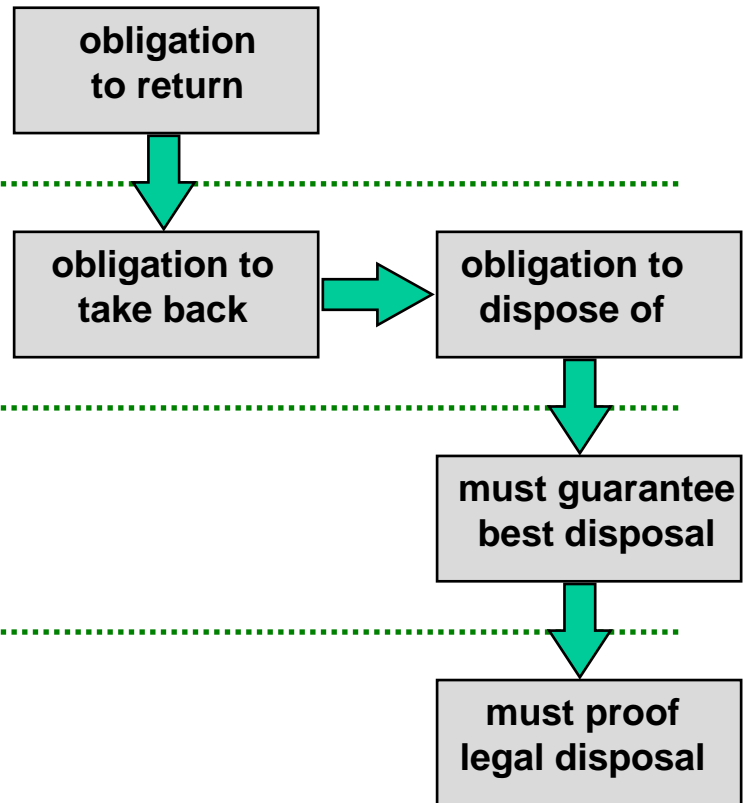
# Focus of the ORDEE > responsibilities

**Consumer**

**Retailer/  
Manufacturer/  
Importer**

**Recycler**

**Exporter**



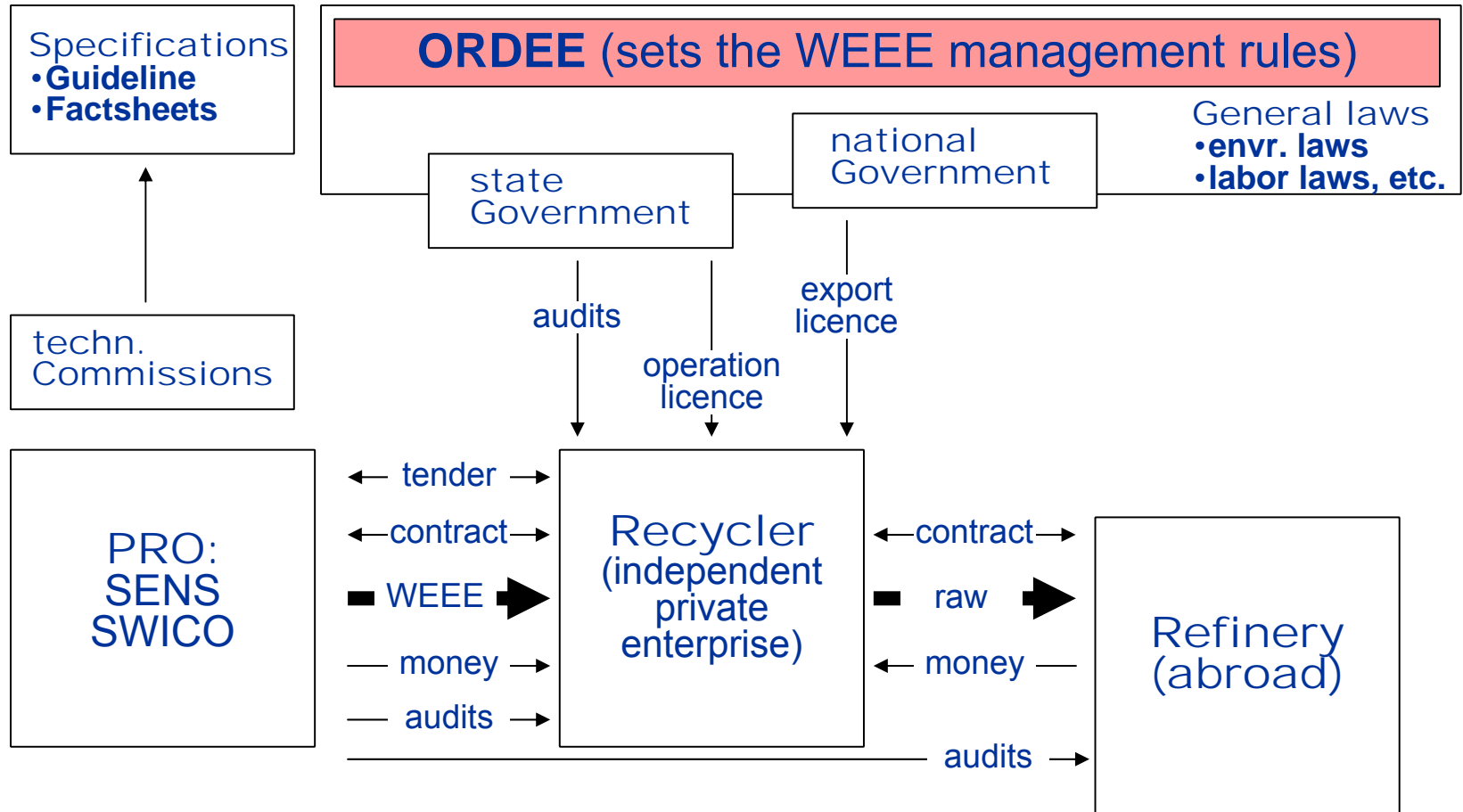
- free of charge!
- return it to a retailer, manufacturer / importer or to a collection point
- appliances they normally stock, M/I
- retailers may return it to M/I
- dispose of via own or existing PRO's system
- licence granted by cantonal authorities
- control by PRO and cantonal authorities
- export permit granted by FOEN

## ■ ORDEE sets principles implicitly!

- e.g. Extended Producer Responsibility (EPR) is not mentioned but factually it's imposed with the rule "who has to take back has to dispose of"



# A Swiss Recycler's Perspective



# WEEE Indicators, Switzerland

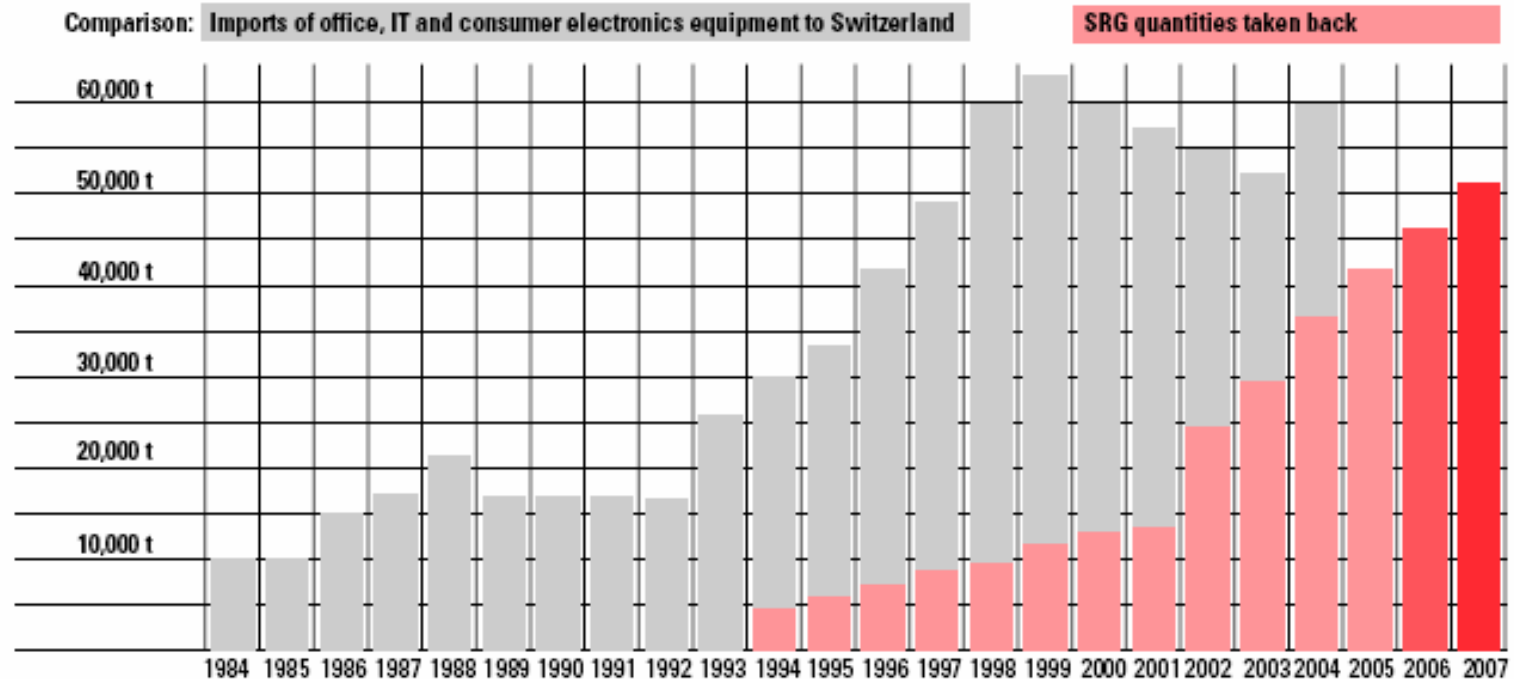
~7.4 Mio. Residents (2005)

~100'000 t **WEEE** per year for recycling (metric tons, 2005)

~42'000 t from the above 100'000 t are **electronic waste** (2005)

~34'000 t from the above 100'000 t are **electric waste** (2005)

>>> 10.2kg per capita per year (in 2005) (EU target 4kg in 2008)



# Four (4) WEEE System Operators

**SWICO**

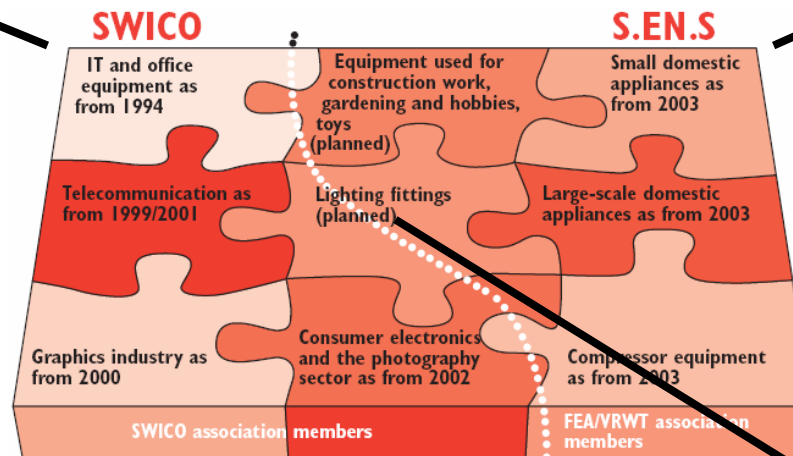


Swiss Association for Information, Communication and Organisational Technology <http://www.swico.ch>



**SENS**

Swiss Foundation for Waste Management <http://www.sens.ch>



**INOBAT**



Swiss Lobby Organisation for Battery Disposal <http://www.inobat.ch>

**SLRS**



Swiss Lighting Recycling Foundation <http://www.slrs.ch>

# WEEE Recyclers in Switzerland

- < 280 companies in the WEEE collection and recycling business
- Recyclers receive license from SAEFL
- Recyclers are contracted by SWICO, SENS (or other) schemes

		One, several or all Types:					
Authorisation for:		Consumer Electronics (CE)	Office electronics (ICT)	Small household appliances	White goods (large)	Cooling appliances (fridge ...)	Components
One, several or all Services:	Collection and Storage	✓	✓	✓	✓		✓
	General Sorting	✓	✓	✓	✓		✓
	General Dismantling	✓	✓				✓
	Decontamination	✓	✓				✓
	Special Treatment	✓	✓				✓

# Recycling Map of Switzerland

Examples of large e-waste recyclers:

## ➔ Mobile Recycling

Fonda: mobile refrigerator and white good recycling

## ➔ Electronic Waste

IMMARK: full processing line, focus: electronic waste

## ➔ Electric Waste

RUAG: full processing line, focus: all types e-waste

- Importers & Traders (total 251)
- Collection Points (total >420)
- Licensed Recycling Companies
- Solid Waste Incineration Plants
- Landfills

- Lakes
- Country Boundaries
- Admin. Boundaries

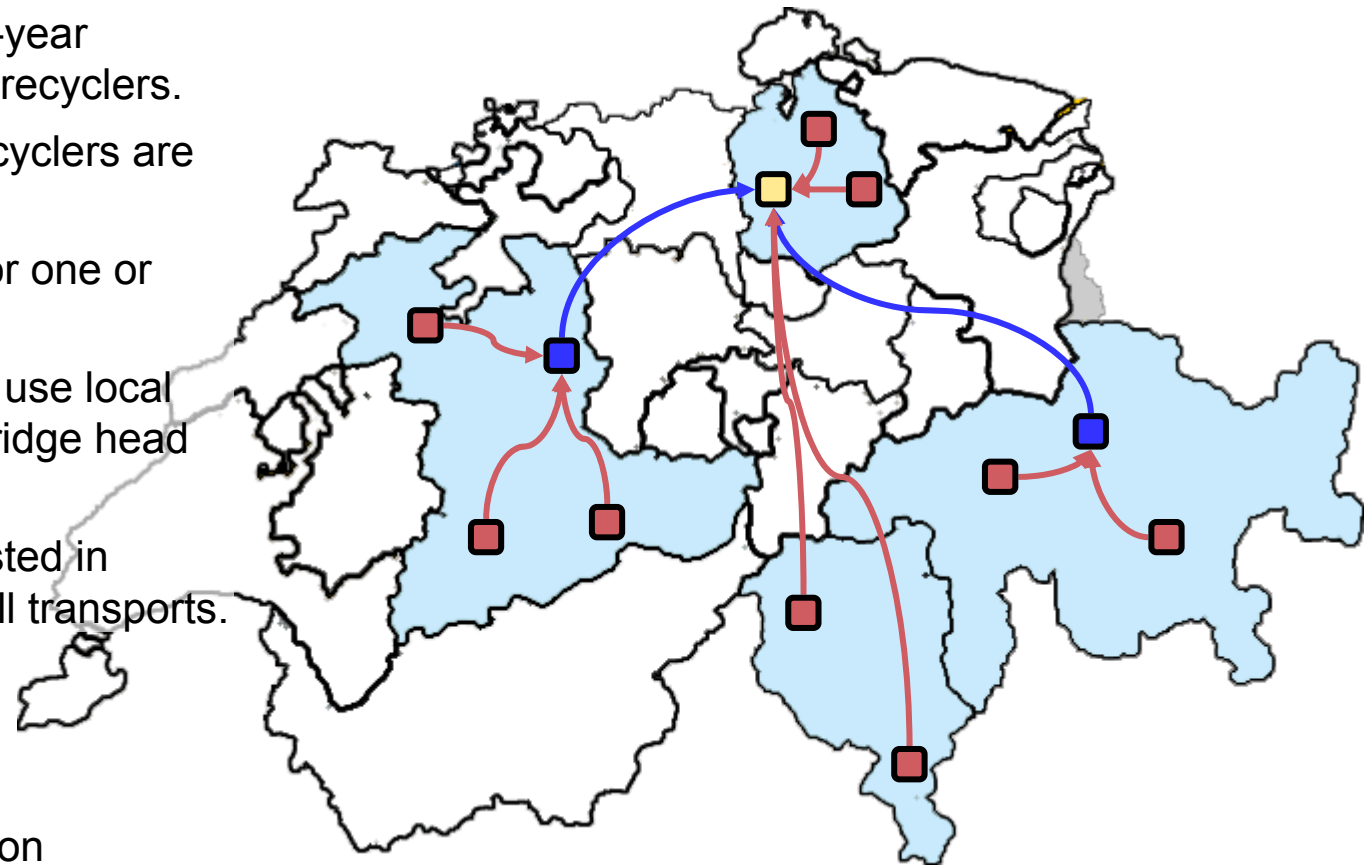


E-Waste Recycling  
Generic Recycling  
Process of WEEE

➔ Batteries  
BATREC: full processing line for battery recycling

# Principal SWICO Material Flow, Details

- SWICO allocates the 35 regions on a two-year contract basis to recyclers.
- 15 full service recyclers are contracted.
- A recycler bids for one or several areas.
- The recycler can use local dismantlers as bridge head in remote areas.
- SWICO is interested in minimizing overall transports.



Contracted Region

■ WEEE Recycler

■ Dismantler

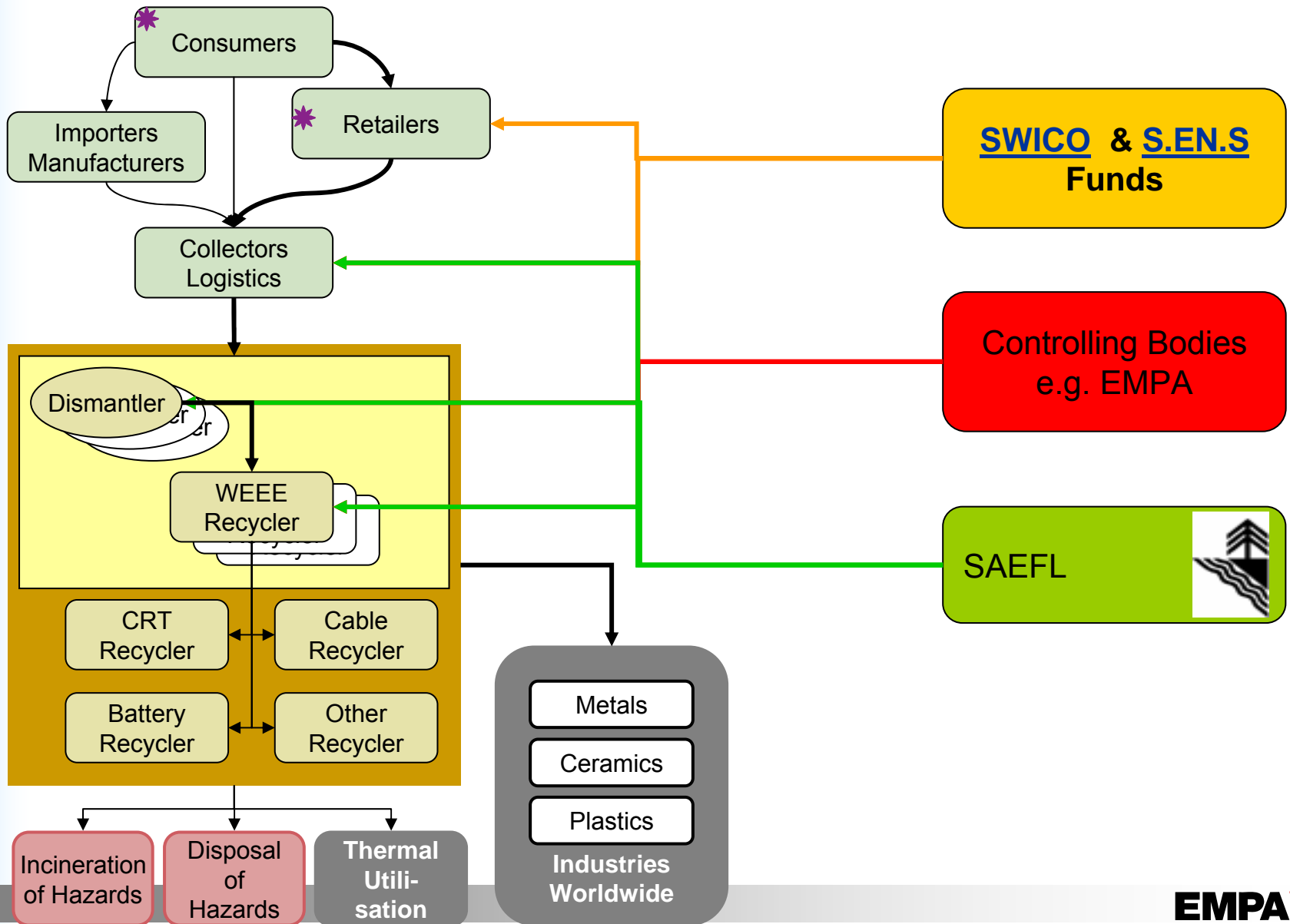
■ Collection Point

→ Transport paid by SWICO

→ Transport paid by Recycler

Several areas contracted to one recycler (fictitious example)

# Principal WEEE Organization



# Secondary Raw Materials

