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

SENS

Swiss Foundation for Waste Management
www.sens.ch

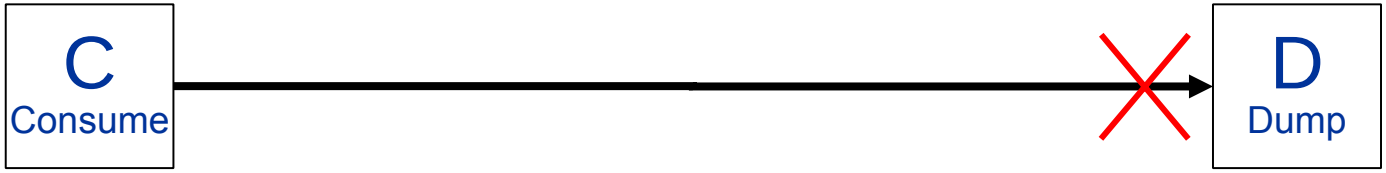
SWICO

Swiss Association for Information, Communication and Organisational Technology
www.swico.ch

Federal Office for the Environment (FOEN)
www.bafu.ch

the goal of CH e-waste management system

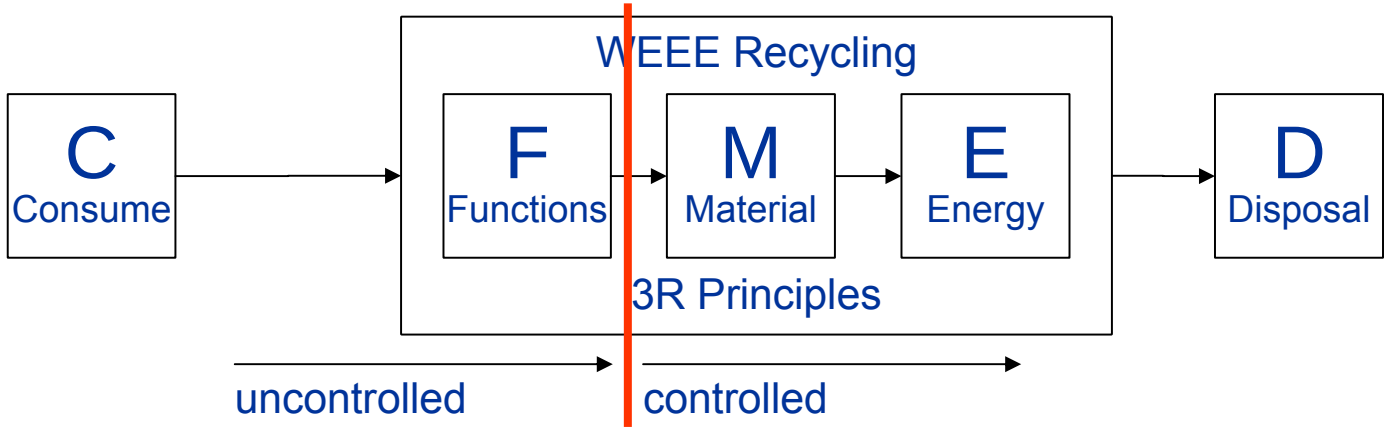
avoid illegal dumping

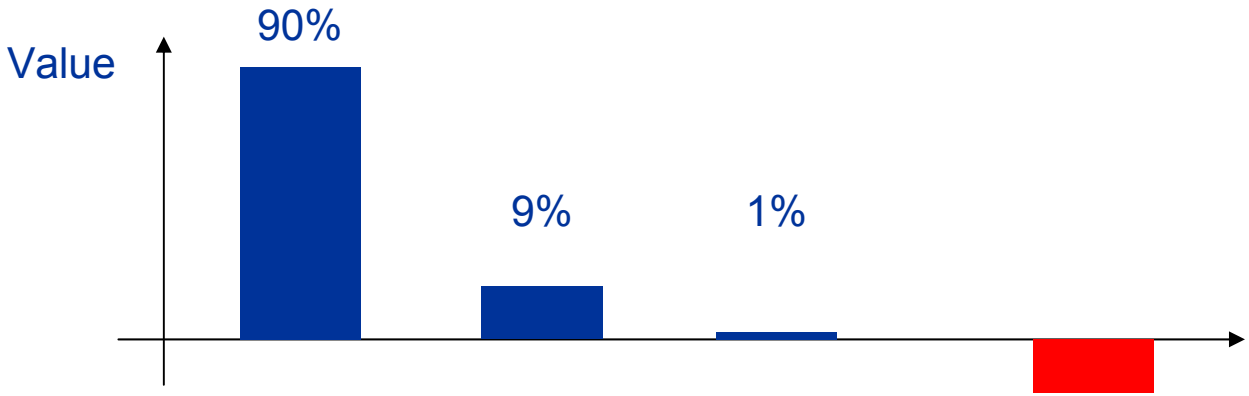


avoid e-waste entering the municipal waste stream

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.

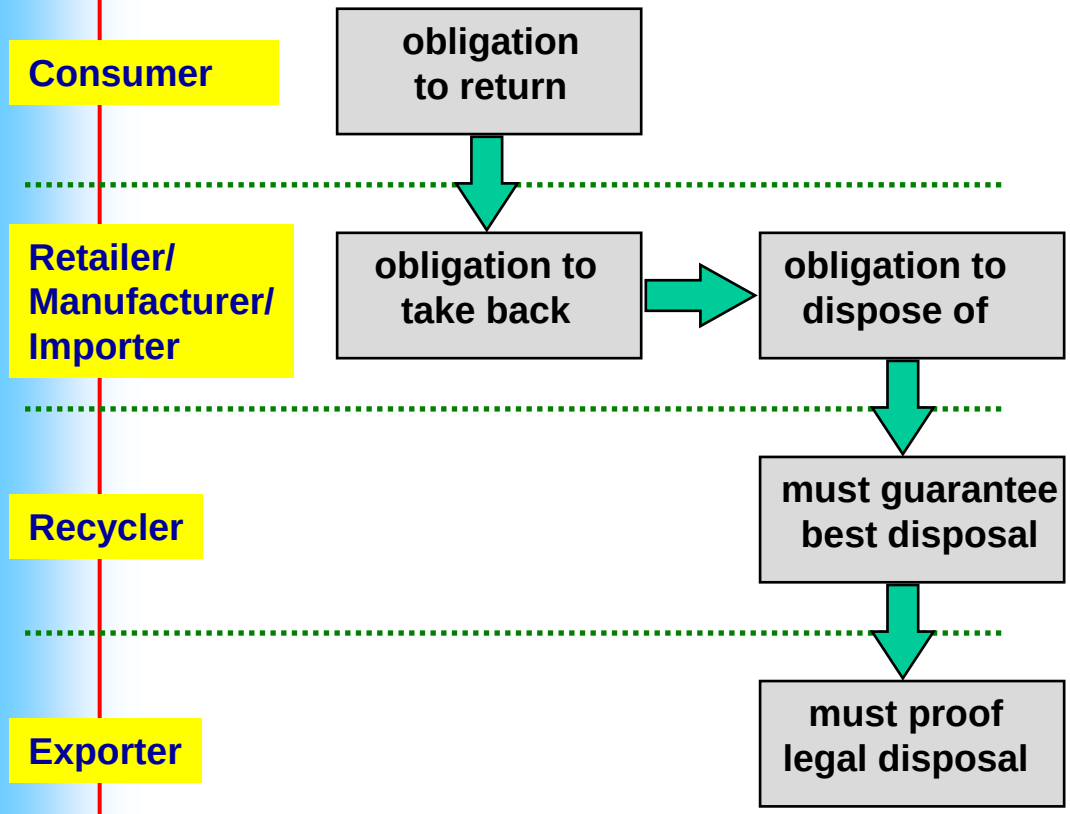
Swiss Legislators Role > ORDEE (1998, 2004) Ordinance on the Return, the taking back and the Disposal of Electrical & electronic Equipment

- 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



- free of charge!
- return it to a retailer, manufacturer / importer or to a collection point

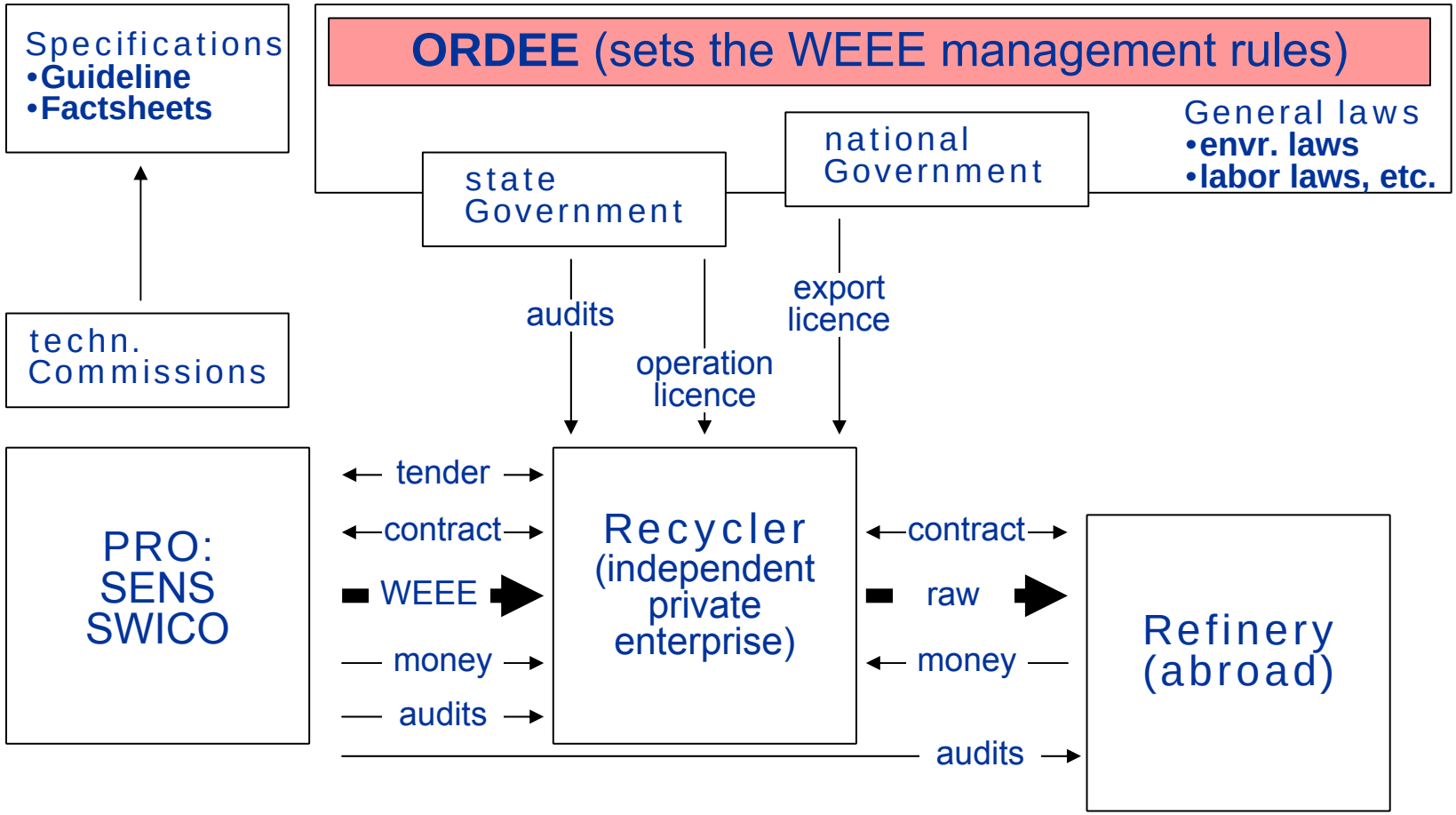
- appliances they normally stock, M/I
- retailers may return it to M/I
- dispose of via own or existing PRO's system

- licence granted by cantonal authorities
- control by PRO and cantonal authorities

- export permit granted by FOEN

- ORDEE sets principles implicitely!
  - 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"

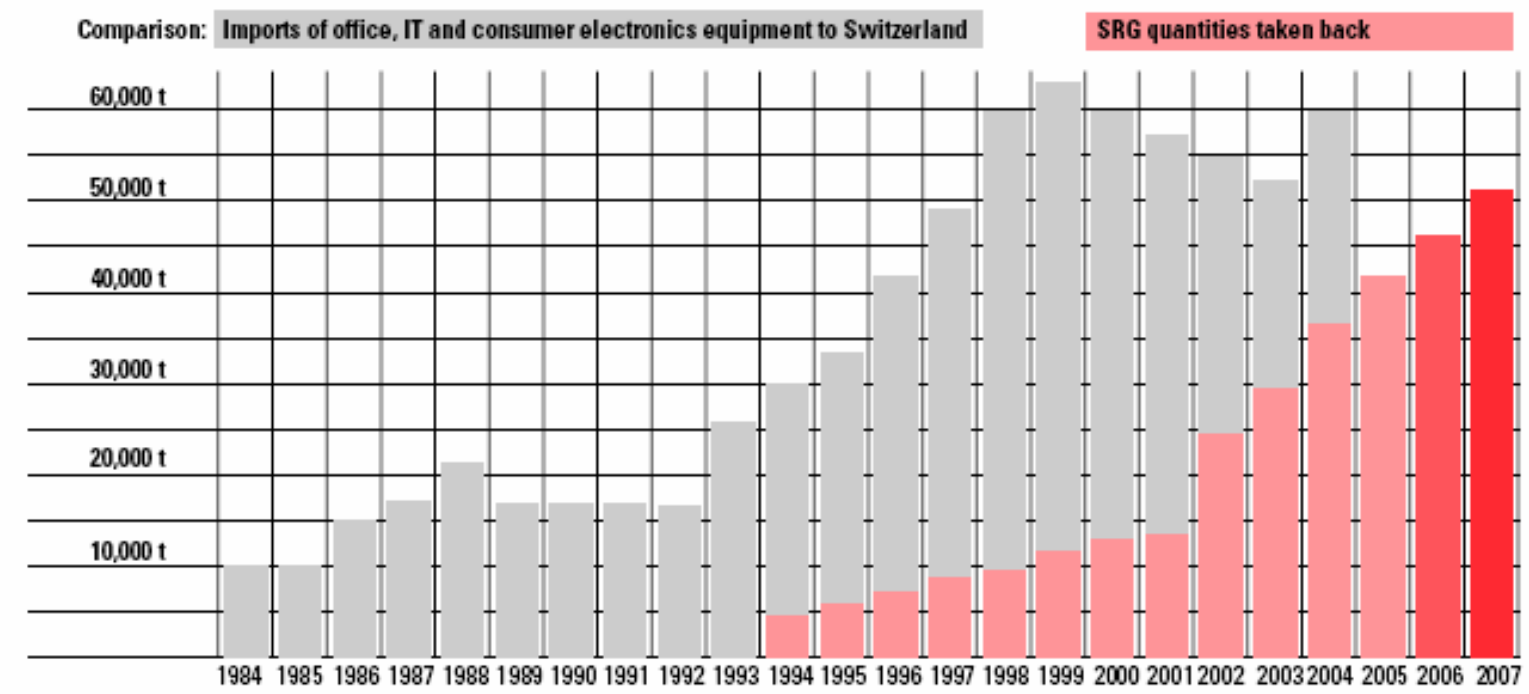
A Swiss Recycler's Perspective



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)



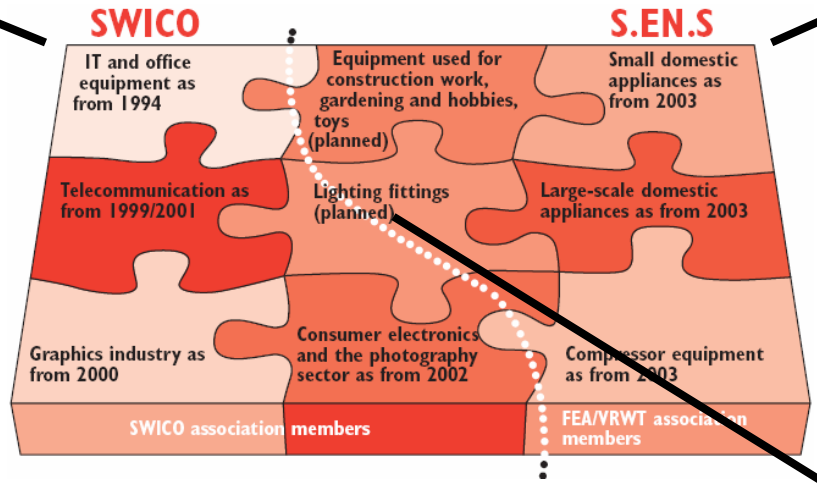
Four (4) WEEE System Operators

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

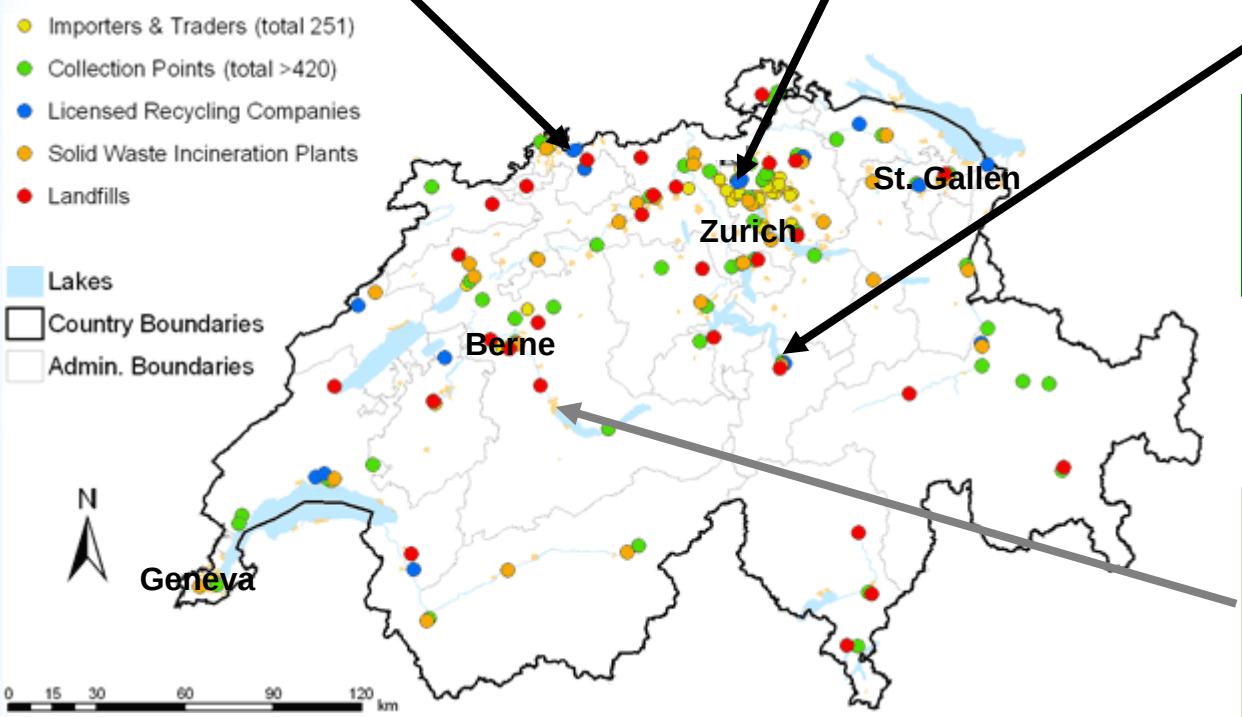
- **< 280** companies in the WEEE collection and recycling business
- Recyclers receive license from SAEFL
- Recyclers are contracted by SWICO, SENS (or other) schemes

		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	➔ Electronic Waste	➔ Electric Waste
Fonda: mobile refrigerator and white good recycling	IMMARK: full processing line, focus: electronic waste	RUAG: full processing line, focus: all types e-waste

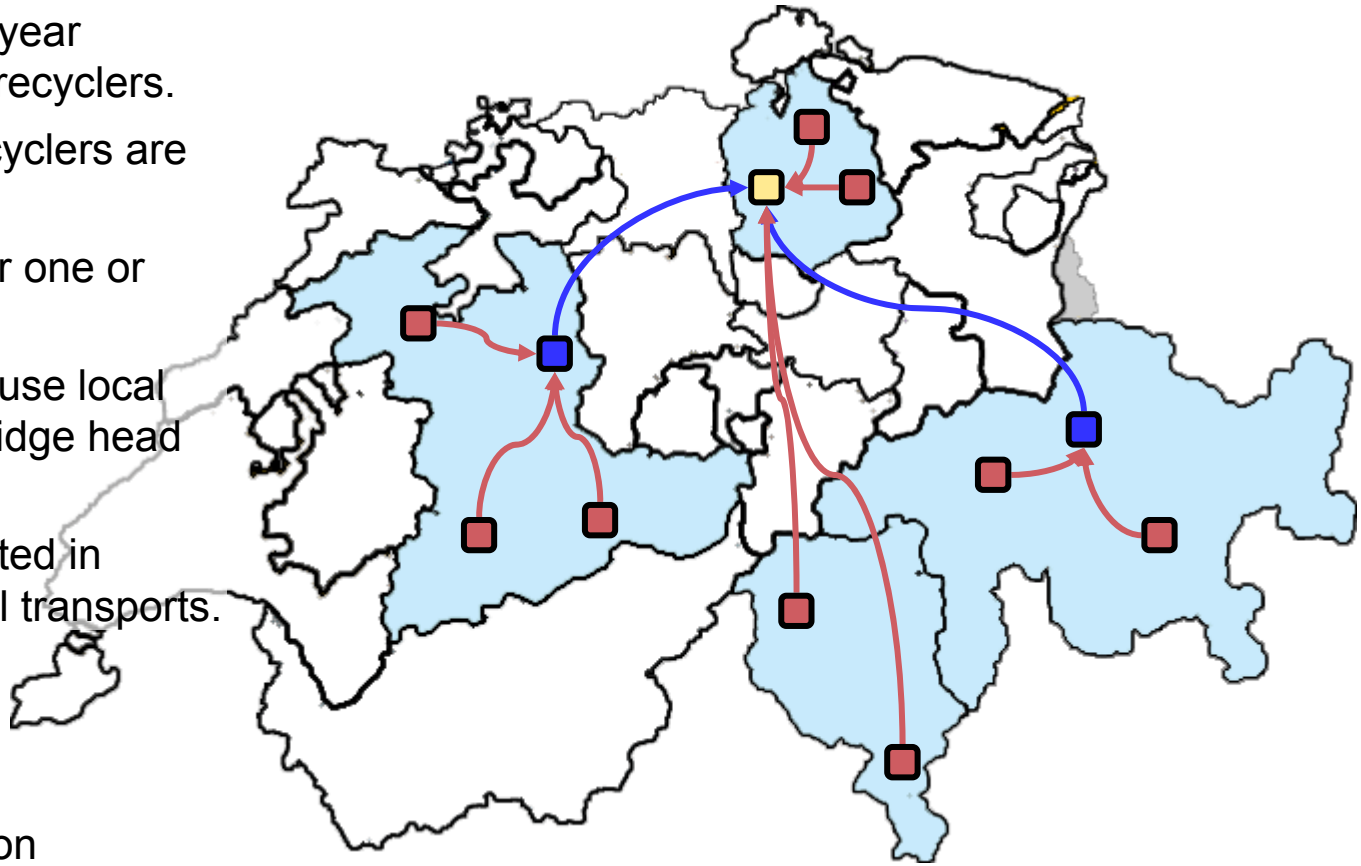


E-Waste Recycling
Generic Recycling
Process of WEEE

➔ **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

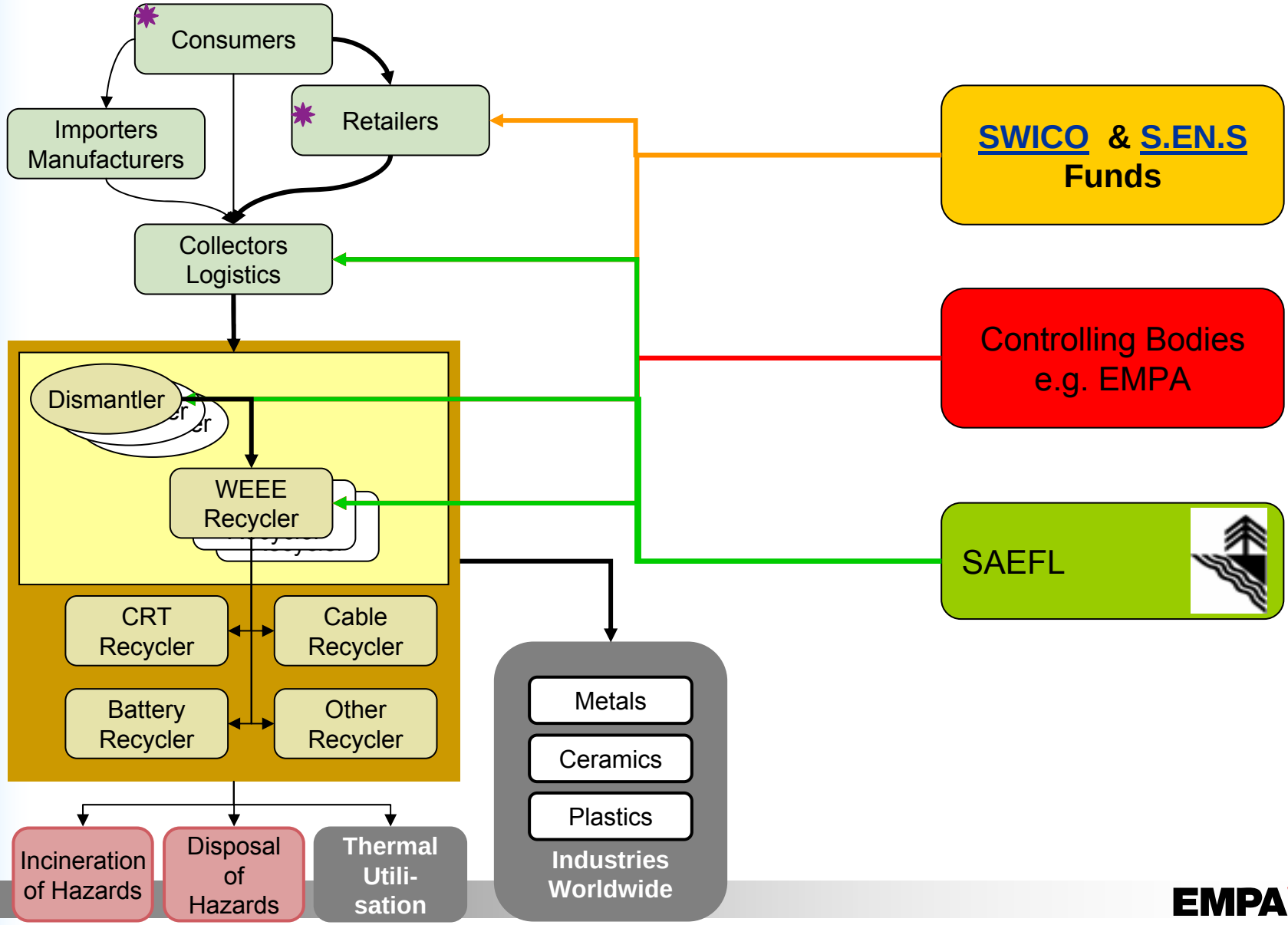
Collection Point

Transport paid by SWICO

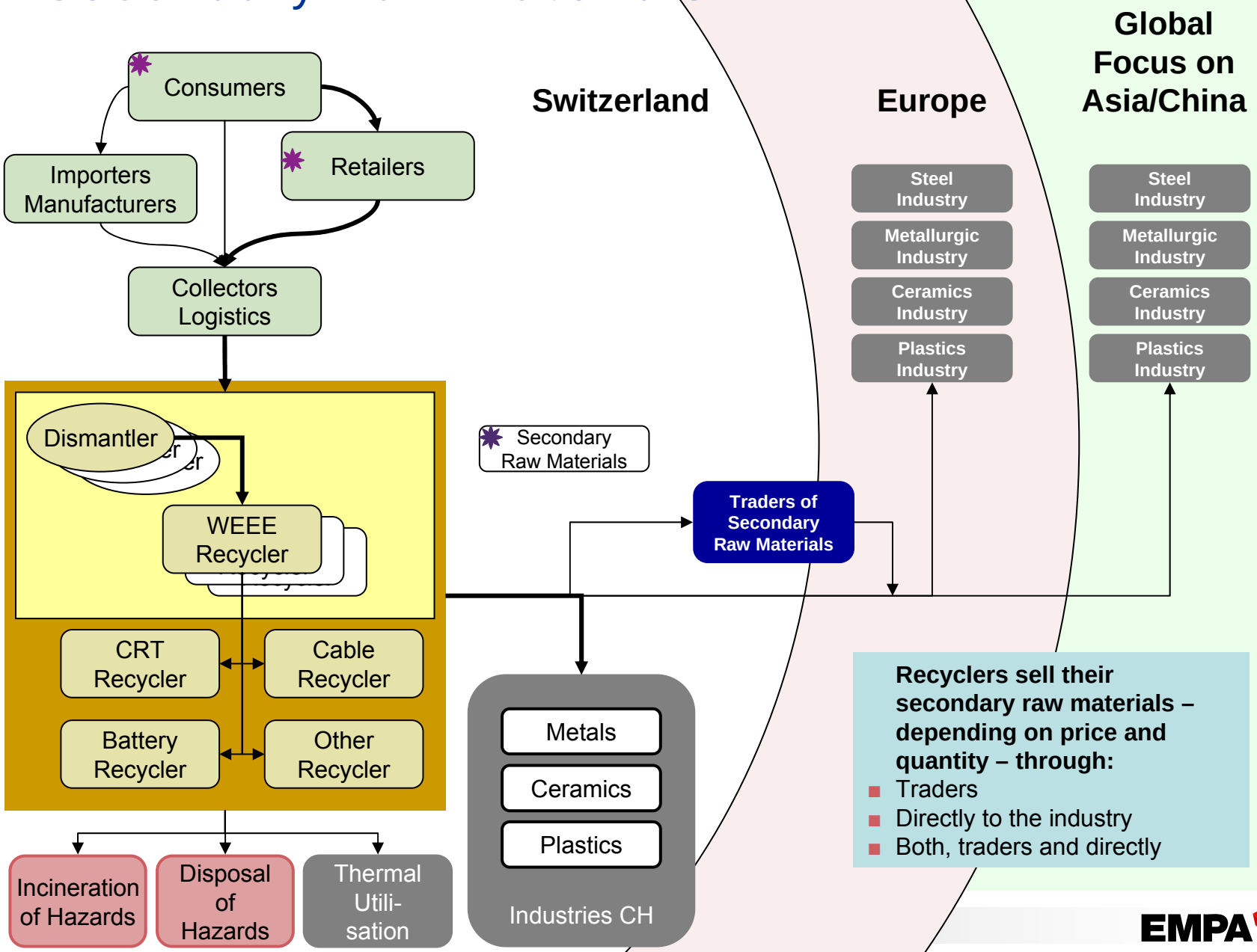
Transport paid by Recycler

Several areas contracted to one recycler (fictitious example)

Principal WEEE Organization



Secondary Raw Materials



Recyclers sell their secondary raw materials – depending on price and quantity – through:

- Traders
- Directly to the industry
- Both, traders and directly