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Federal Department of the Environment,  
Transport, Energy and Communications DETEC

**Federal Office for the Environment FOEN**  
Division

# **Legal framework and standards for WEEE management in Switzerland: -> Experience and future challenges**

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# Agenda

- **Experiences**
  - **Why an ordinance on WEEE**
  - **Classification of e-waste**
  - **Swiss WEEE regulations**
  - **Financing system for the collection and Recycling of WEEE**
  - **Transboundary Movements TBMs of e-waste**
  
- **Implementation and figures**
  - **Cooperation with the Private Sector**
  - **Figures on e-waste 2008 Switzerland**
  - **Preparation and Implementation of the Swiss WEEE-Regulations**
  - **Summary of the Experiences with the Swiss WEEE management**
  
- **Challenges**
  - **Limits / Maintenance of the financing system**
  - **Ecological improvements**
  - **Harmonization between the Swiss law and the European WEEE-directive where reasonable**



# SWITZERLAND

**Area:** 41'285 km<sup>2</sup>  
**Population:** 7.7 mio.  
**Cantons:** 26  
**Political System:** Federal  
**Material Flows:** 47 tons/person/year  
(33 tons thereof hidden flows abroad)



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**Cantons are responsible for the implementation of the WEEE-ordinance**



## Why an ordinance on WEEE?

### *Problems with WEEE*

- Strong and fast increase of the amount of WEEE
- Pollutants in the municipal solid waste
- Loss of valuable resources, if not recycled
- Insufficient recovery
- Uncontrolled conditions regarding the export

- **Swiss business circles indicated their interest in legally binding rules on the responsibility of traders, retailers, importers and manufacturers for taking-back and recycling of WEEE. This in order to give support to the starting and partially established voluntary collection and financing systems by individual Private Recycling Organisations (SWICO and SENS).**



# Ordinance on the Return, the Taking Back and the Disposal of Electrical and Electronic Equipment (ORDEE/ 1998) / 1

## Goal of the Swiss WEEE-regulation

- No e-waste in the municipal solid waste
- Maximum recovery of secondary raw material
- ESM disposal of problematic material





# Ordinance on the Return, the Taking Back and the Disposal of Electrical and Electronic Equipment (ORDEE/ 1998) / 2

## Content of the Swiss regulations on WEEE

- List of appliances
- Obligation to take back
- Obligation to give back
- Environmentally sound recycling and disposal
- Classification of e-waste (separate ordinance)
- Regulations for transboundary movements: Export / Import / Transit (separate ordinance)
- Restriction of the use of certain hazardous substances in electrical and electronic appliances: e.g. lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). (separate ordinance and corresponding to the European ROHS regulation)



***-> The Swiss WEEE-Ordinance is a framework legislation!  
This forms the basis for flexible implementation in line with the market!***



# Classification of e-waste

## Questions concerning EEE and WEEE:

- When is an EEE appliance a product ?
- When is EEE appliance a waste ?
- When is a WEEE hazardous ?

## Classification of WEE in the Basel Convention

- List A1180 determines hazardous wastes
- List B1110 determines non-hazardous waste
- Often unclear/difficult to determine which WEEE is hazardous and which is not.
- Classification unclear for appliances destined for repair

## Swiss WEEE classification

- Components containing PCB, mercury, asbestos: -> haz. waste
- All other WEEE: -> wastes under control
- Exports of all WEEE are under control, including EEE/WEEE destined for repair/refurbishment



# Classification of WEEE in the Basel Convention

**A1180 : Waste electrical and electronic assemblies or scrap containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they possess any of the characteristics contained in Annex III**

**B1110 : Electrical and electronic assemblies :**

- **Electronic assemblies consisting only of metals or alloy**
- **Waste electrical and electronic assemblies or scrap ( including printed circuit boards) not containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the characteristics contained in Annex III**
- **Electrical and electronic assemblies (including printed circuits boards, electronic components and wires) destined for direct reuse, and not for recycling or final disposal.**





# Swiss WEEE-Ordinance / 1

## Subject to the ORDEE:

- **Consumer electronics equipment**
- **Office, information and communication technology equipment**
- **Household appliances**
- **Tools (except large-scale stationary industrial tools)**
- **Sport and leisure appliances as well as toys**
- **Lighting equipment**
- **Lamps (without incandescent lamps)**

## Not subject to the ORDEE:

- **Medical devices**
- **Monitoring and control instruments**
- **Automatic dispensers / industrial machines with EEE**



## Swiss WEEE-Ordinance / 2

### Bring-back / return obligation

- E-Waste must not enter municipal solid waste. Consumers **must** return it to a retailer or to an e-waste collection point.

### Obligation to take back

- Retailers must take back **free of charge** e-waste of the type they normally sell – independent from the brand, and also if no new appliance is bought.
- Manufacturers and importers must take back **free of charge** e-waste of the brands manufactured or imported by them.
- Municipalities are not obliged to collect e-waste.  
**In small villages with no retailers municipalities are encouraged to take back e-waste.**



### **Environmentally sound recycling and final disposal**

- **Disposal license of the Canton**
- **Requirements for disposal:**
  - **Recycling / final disposal of WEEE must follow state of the art technology**
  - **Components containing pollutants must be removed before further treatment, and disposed of separately and environmentally sound.**
  - **Cathode ray tubes and metallic components must be recycled, as far as this is environmentally worthwhile and economically justifiable.**
  - **Non-recycled components (e.g. plastics with hazardous flame retardants) must be incinerated in suitable plants.**



# Financing system for the collection and Recycling of WEEE

## Voluntary system

- Industry and commerce established a voluntary financing system for the collection and recycling of WEEE
- Funds are raised through a “Prepaid Recycling Fee” / PRF

## Responsible Associations

- **SWICO**      Swiss association for Information, Communication Organisation Technology  
[www.swicorecycling.ch](http://www.swicorecycling.ch)
- **S.EN.S**      Swiss Foundation for Waste management  
[www.sens.ch](http://www.sens.ch)
- **SLRS**      Swiss Lighting Recycling Foundation  
[www.slrs.ch](http://www.slrs.ch)



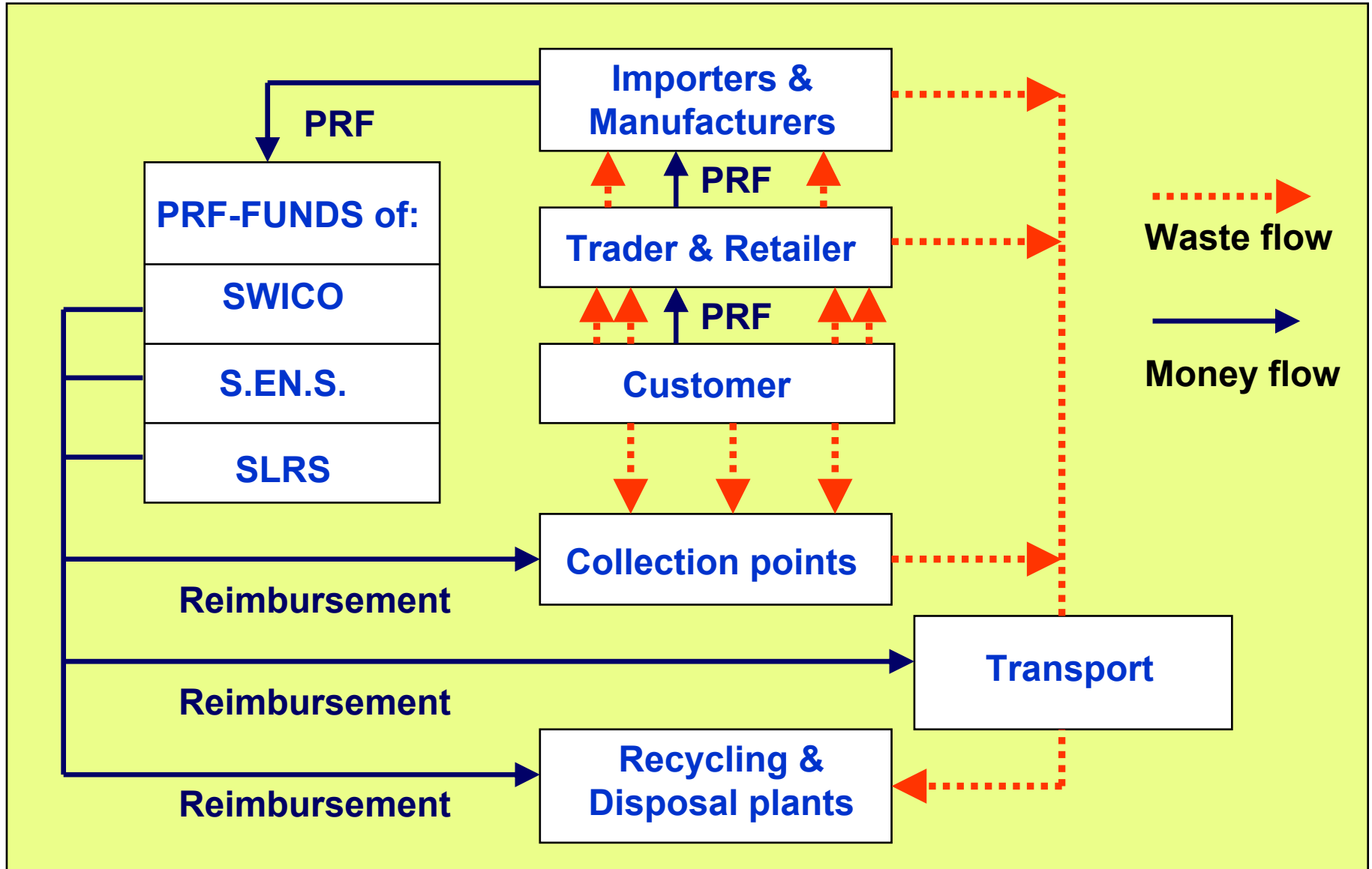
## Financing system based on a PRF

- Points of sale charge the customer a **Prepaid Recycling Fee (PRF)** imposed on new equipment.
- The PRF is transparently declared and „non profit“ fed into an PRF-fund via importers / manufacturers / distributors.
- The PRF is used to finance the collection, transportation and recycling of WEEE.
- The customer returns all equipment free of charge.
- As the financing is based on a voluntary system, „free riders“ may burden the system.





# Cash flow of PRF and flow of E-waste





# Transboundary Movements TBMs of e-waste

- **E-Waste can be exported or imported only with the authorization of the Federal Office for the Environment**

- **Requirements for TBMs:**
  - **Proof / evidence that the recovery process is environmentally sound**
  - **Importing and transit countries give their consent**
  - **Exports only possible to member countries of the OECD**

- **Exports of EEE-appliances for repair are subject to above mentioned export controls and requirements**

- **No restrictions for second-hand appliances**  
**Classification often difficult; therefore the following rule is applied:**
  - **Plug in and appliance works as originally intended -> product**
  - **Plug in and appliance doesn't work -> waste**



# Cooperation with the Private Sector: Principle

*is a principle of the Swiss Federal Law relating to the Protection of the Environment (LPE)!*

## Art. 41a LPE

The Federal Council and, within their area of responsibility, the Cantons shall cooperate with private sector organizations in enforcing this law.

- They may promote sector agreements by setting quantitative targets and deadlines for meeting them.
- Before enacting implementing regulations, they shall examine voluntary private sector measures. Wherever possible and necessary, they shall incorporate sectoral agreements into the implementing regulations in whole or in part.





## Cooperation with the Private Sector: Stakeholders

- **Ministries (e.g. State Secretariat for Economic Affairs)**
- **Other authorities (Cantons)**
- **Associations / organisations (industry, commerce, consumers etc.)**
- **PROs Private Recycling Organisations (SENS, SWICO, SLRS)**
- **Recyclers / disposal companies**
- **Producers**
- **Retailers**
- **Political Parties**



## What an ordinance shall guarantee

- **Balance in the market**
- **No trade barrier for products**
- **Cooperation with industry**
- **Minimum set of rules**
- **No monopoly**



# Preparation and Implementation of the Swiss WEEE-Regulations

## Overall monitoring and discussion forum:

- „Contact group“:  
all stakeholders meet periodically to discuss current problems and guide the different working groups elaborating / revising the guidelines

## Working groups that elaborate or revise guidelines:

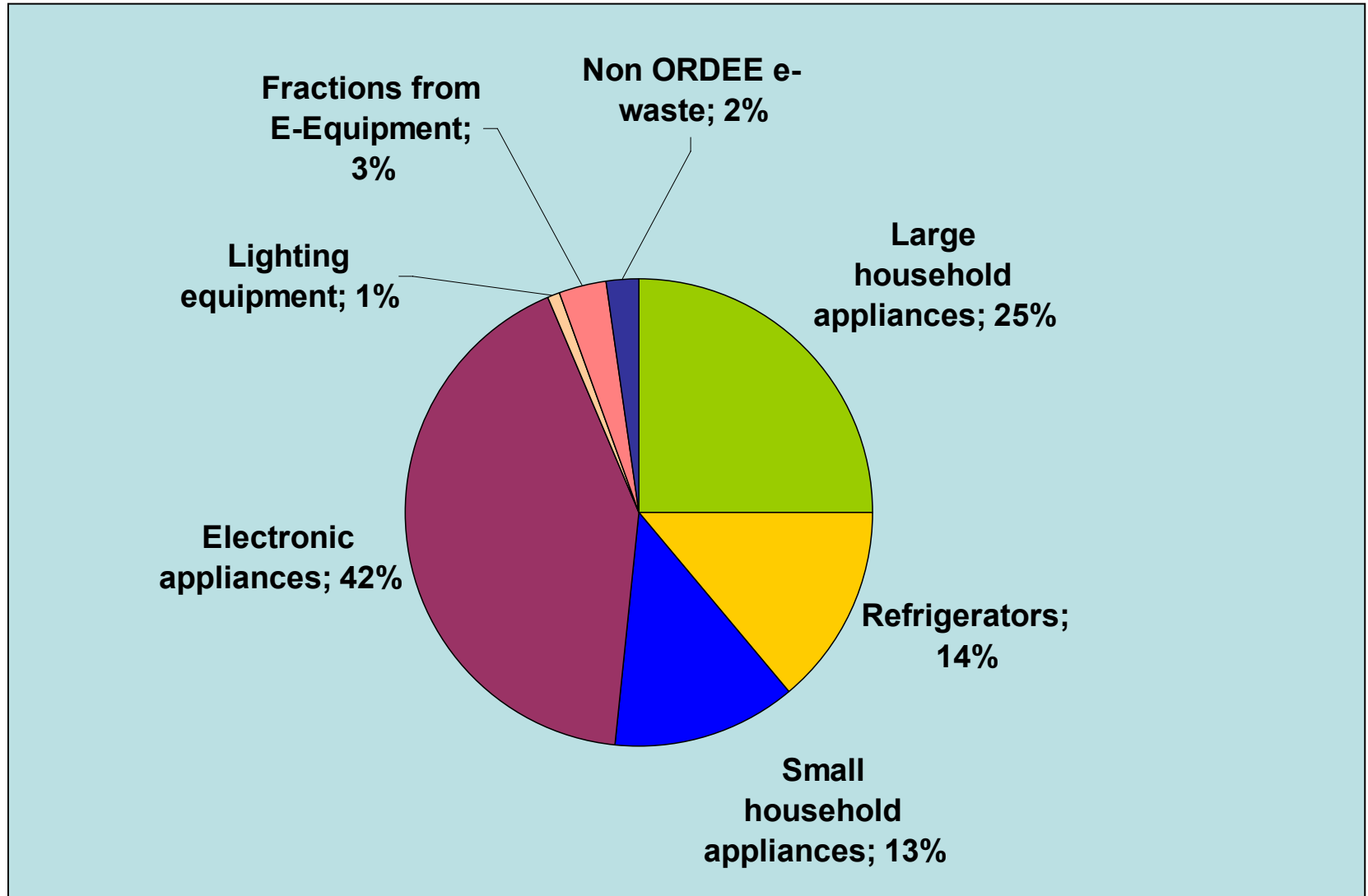
- Working group „Licensing“
- Working group „Information“
- Working group „State of the art recycling technologies“
- Working group „Coordination and control activities“
- Working group “Illuminants”
- Working Group “transboundary movements for repair, warranty cases, between same companies)

*In Switzerland guidelines put undefined legal phrases from laws and ordinances into concrete terms and thus enable their implementation to be uniform.*



# Figures on e-waste 2008 Switzerland / 1

## Processed e-waste in 2008





## Figures on e-waste 2008 Switzerland / 2

| <b>Processed WEEE in 2008</b>     | <b>Tons</b>           | <b>Generated fractions in 2008</b> | <b>%</b>   |
|-----------------------------------|-----------------------|------------------------------------|------------|
| <b>Large household appliances</b> | <b>26'800</b>         | <b>Metals</b>                      | <b>57%</b> |
| <b>Refrigerators</b>              | <b>15'100</b>         | <b>Plastics</b>                    | <b>15%</b> |
| <b>Small household appliances</b> | <b>13'800</b>         | <b>Metal- Plastic mixture</b>      | <b>11%</b> |
| <b>Electronic appliances</b>      | <b>45'000</b>         | <b>CRT and LCD</b>                 | <b>10%</b> |
| <b>Lighting equipment</b>         | <b>1'130</b>          | <b>Others</b>                      | <b>3%</b>  |
| <b>Fractions from E-Equipment</b> | <b>3'600</b>          | <b>Wires</b>                       | <b>2%</b>  |
| <b>Non ORDEE e-waste</b>          | <b>2'300</b>          | <b>Printed circuit boards</b>      | <b>1%</b>  |
| <b><u>Total (tons)</u></b>        | <b><u>107'730</u></b> | <b>Pollutants</b>                  | <b>1%</b>  |



## Figures on e-waste 2008 Switzerland / 3

### Total amounts of WEEE collected in Switzerland 2008

- collected: 107 730 tons = 14 kg per inhabitant
- PRF collected **66.941 millions CHF**
- Collection target of the WEEE-directive of the European Union for 2016: 65% WEEE collection rate (including B2B equipments) in function of the average amount of EEE placed on the market in the two preceding years in each Member States.



## Figures on e-waste 2008 Switzerland / 4

### WEEE PROs in Switzerland:

|              |                                    |
|--------------|------------------------------------|
| <b>SWICO</b> | <b>ICT-Appliances</b>              |
| <b>SENS</b>  | <b>Other appliances</b>            |
| <b>SLRS</b>  | <b>Lamps and lighting fixtures</b> |

### **Producers and importers taking part in the PRO-system:**

|               |            |
|---------------|------------|
| <b>SWICO:</b> | <b>553</b> |
| <b>SENS:</b>  | <b>527</b> |

**Collection points SWICO and SENS : 448 each (often together)  
plus every retailer of EEE**

### Prepaid disposal fee income:

|               |                    |                        |
|---------------|--------------------|------------------------|
| <b>SWICO:</b> | <b>37 Mio. CHF</b> | <b>(~ 32 mio US\$)</b> |
| <b>SENS :</b> | <b>30 Mio. CHF</b> | <b>(~ 26 mio US\$)</b> |

### Costs and collection rate

|                                       |                                      |
|---------------------------------------|--------------------------------------|
| <b>Recycling (per kg) :</b>           | <b>0.55 CHF/kg WEEE (~ 0.5 US\$)</b> |
| <b>Recycling costs (per person) :</b> | <b>7.70 CHF (~ 7.5 US\$)</b>         |
| <b>Collection rate per person:</b>    | <b>14 kg</b>                         |



# Summary of the Experiences with the Swiss WEEE management

- **EEE and WEEE constitutes a complex market**
- **(Political) awareness of alle stakeholders for WEEE is needed**
- **Information is an ongoing task**
- **framework regulation very successful**
- **Financing system must be introduced from the beginning**
- **Ongoing cooperation with all stakeholders is important and helpful**
- **High collection and recycling rates**
- **Good cooperation with all stakeholders**
- **Consumers are satisfied (assurance of esm recycling of WEEE)**
- **Revision / adaptation of the regulations are needed from time to time**





# Future challenges: Overview

**1. Limits / Maintenance of the financing system**

**2. Ecological improvements**

**3. Harmonization between the Swiss law and the European WEEE-Directive where reasonable**



# Future challenges / 1

## 1. Limits / Maintenance of the financing system

**The existing voluntary financing system may compromise the recycling system as a whole**

- **Market distortions because of side riders**
- **Problem with trade through the internet (internet sellers)**
- **Direct imports to the customers from abroad**
- **cherry pickers**

**Possible dominance of the PROs in the market**

- **PROs are requesting an own license of the recyclers beside the official license according to the Swiss regulations**
- **Risk of PROs actively intervening into the recycling market (Material flows, competition disturbances)**
- **Kick-backs of PRF money from the recyclers to the collectors in order to receive e-waste.**
- **Who owns the e-waste?**
- **Exportations versus autonomous solution**



## Future challenges / 2

### 2. Ecological improvements

#### Further conservation of resources

- Lacking requirements concerning the recovery of rare earth elements (e.g. Indium, tantalum...)
- Unused potentials: e.g. EEE of used cars
- Lack of regulations and technologies for the recovery of plastics
- Today hybrid cars do not under the WEEE regulations

#### Product design issues

- Today's system gives no incentives for a “greener” product design/product of the individual EEE producers
- Swiss WEEE regulations do not include requirements or incentives for a green for the product design
- Swiss WEEE regulations do not include request concerning energy efficiency of EEE (see e.g. EU Directive on energy using products)



## Future challenges / 3

### **3. Harmonization between the Swiss law and the European WEEE-directive where reasonable**

- **Inclusion of all e-waste categories defined in the EU-regulation into the Swiss regulations**
- **EU prescribes mandatory recycling and material recovery rates**
- **Marking of new equipment (crossed-out waste bin)**



# Thank you!

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