



# United Nations Environment Programme en.lighten Initiative

## Global Efficient Lighting Center

### Environmental Sound Management

*Monitoring , Verification and Enforcement (MVE)  
Jing Wang – Global Efficient Lighting Center  
1-3 October 2013 – Cotonou, Benin*



BMZ



Federal Ministry  
for Economic Cooperation  
and Development



Future-makers.  
Building the futur  
Let's join forces.

**PHILIPS OSRAM**



nLtc

National Lighting Test Centre  
China

# Andreas Adam, since 2011 at



“ **Global responsibility for Electronic Waste**

“ **Personal contribution in the following Organizations:**

- **ZVEI: Task Force Electronic Waste**
- **ZVEI: Working Group Environment and Recycling**
- **Expert team of the national register in Germany stiftung ear**
- **Lighting Europe: Working Group Recycling**
- **UNEP, Project en.lighten**

“ **Personal Shareholder Mandates :**

- **Lightcycle, Germany**
- **Ekolamp, Czech Republic**
- **Ekolamp, Slovak Republic**
- **UFH, Austria**



# European Solutions to fulfill the take-back obligation



## Keyfigures 20 European „pure“ lighting CRSOs

Key data	Total 20 CRSO's
Put on Market (pcs x Mio)	600 Mio pcs
Put on market (KG x1000 / Tons)	78.000 Tons
Collection rate KG (vs KG PoM n-6 years)	35%
Annual cost 2011	€ 84 Mio
Average cost per KG (PoM)	€ 3,07
Main Cost Driver	
- Marketing	Ca. 30'0 Mio Euro
- Logistics	Ca. 25'0 Mio Euro

*\*) Total of all available data from CRSOs (20 countries)  
Ireland, Greece and Portugal not included*



# Output Fractions

Output Fraktion	Share in %	User	Purpose
Natron Glas	80-90 %	Lampenindustry	Production tubes
Mixed Glas (Energy saving lamps)	80-90 %	Flachglasindustrie , Hohlglasaufbereitung	z. B. Fenster etc.
		Consstruction Industriy	Filling
		Lead production	Resource for Leadrecycling
		Cleaning Industry	Polish
Metals	7 -14 %	MetalMills	Ressource for production
Plastics		Wastefactories	Thermal recycling (heat&energy)
Fluorescent powder	1-3 %	1. Rare earthe recycling 2. Controlled landfill	
Mercury	< 0,01 %	Chemical INdustry Chlorine Industry Lampindustry	Ressource



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## Lesson learned after 8 years WEEE

- “ European Union defines the frame, member states the reality.
- “ Level playing field for all importers and producers is key.
- “ Clear description of products in scope and the relevant marking.
- “ Be aware of the technological change and the lifetime of products.
- “ Recycling is easy, collection a challenge.
- “ Training and education for consumers, collection sites and recycling facilities is a **must** to avoid uncontrolled exposure to mercury.



# Overview conventional Lamps within WEEE scope

Incandescent and Halogen outside WEEE scope

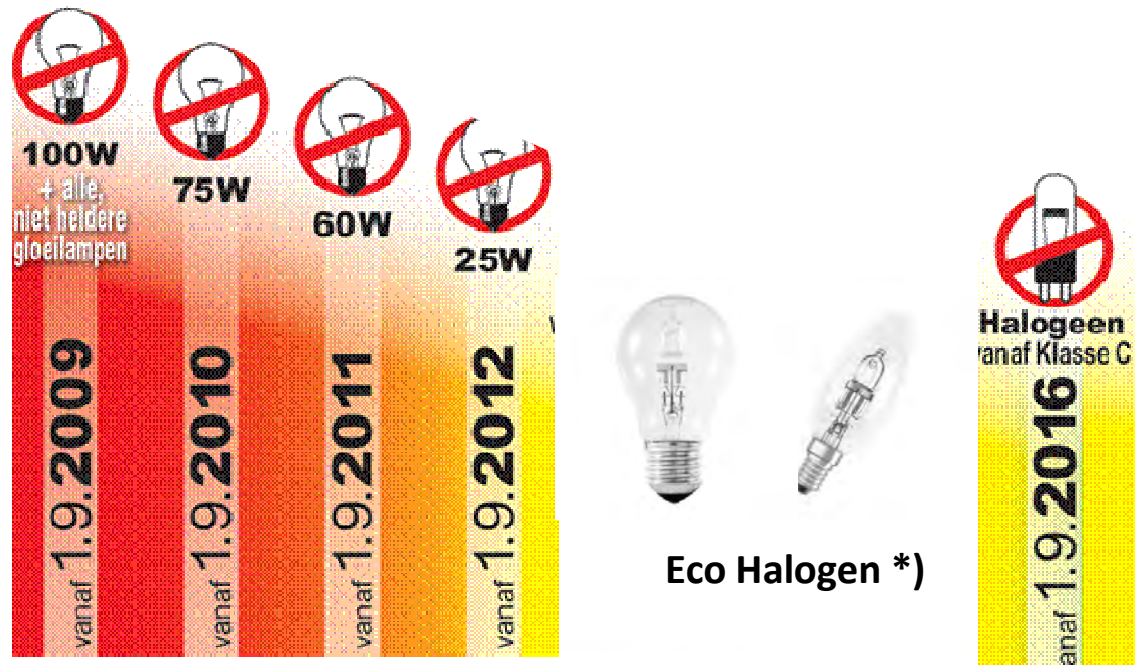
	Types of lamp	Description Technology	Shape	Type of lamp	Construction shapelamp type
TL	Fluorescent lamps	Low-pressure discharge lamps (several mbars), contain a noble gas and mercury, fluorescent materials convert radiation to visible light	Tubular		> 15
	Fluorescent lamps, non-tubular in shape		Various shapes		> 5
CFL-ni	Compact fluorescent lamps (CFL-NI)		Varied with insertion base		> 25
CFL-i	Energy-saving lamps (CFL-I)		Varied with screw base		> 25
HID	High intensity discharge (HID) lamps	High-pressure discharge lamps (> 1 bar), contain a noble gas, mercury, sodium, rare earth elements			> 50
		Low-pressure discharge lamps (several mbars), contain a noble gas and sodium			> 5

# In scope tomorrow?

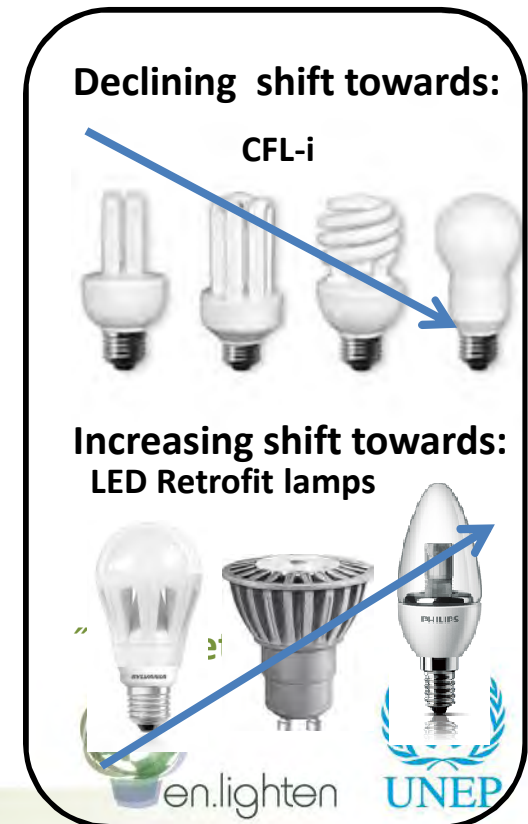
LED Retrofit Lamps will cannibalize various conventional Lamps types:

- Within WEEE scope: mainly CFL-I and TL (HID is replaced by LED modules)
- Outside WEEE scope: Incandescent and Halogen

## EU scheme for Phase out Incandescent and Halogen

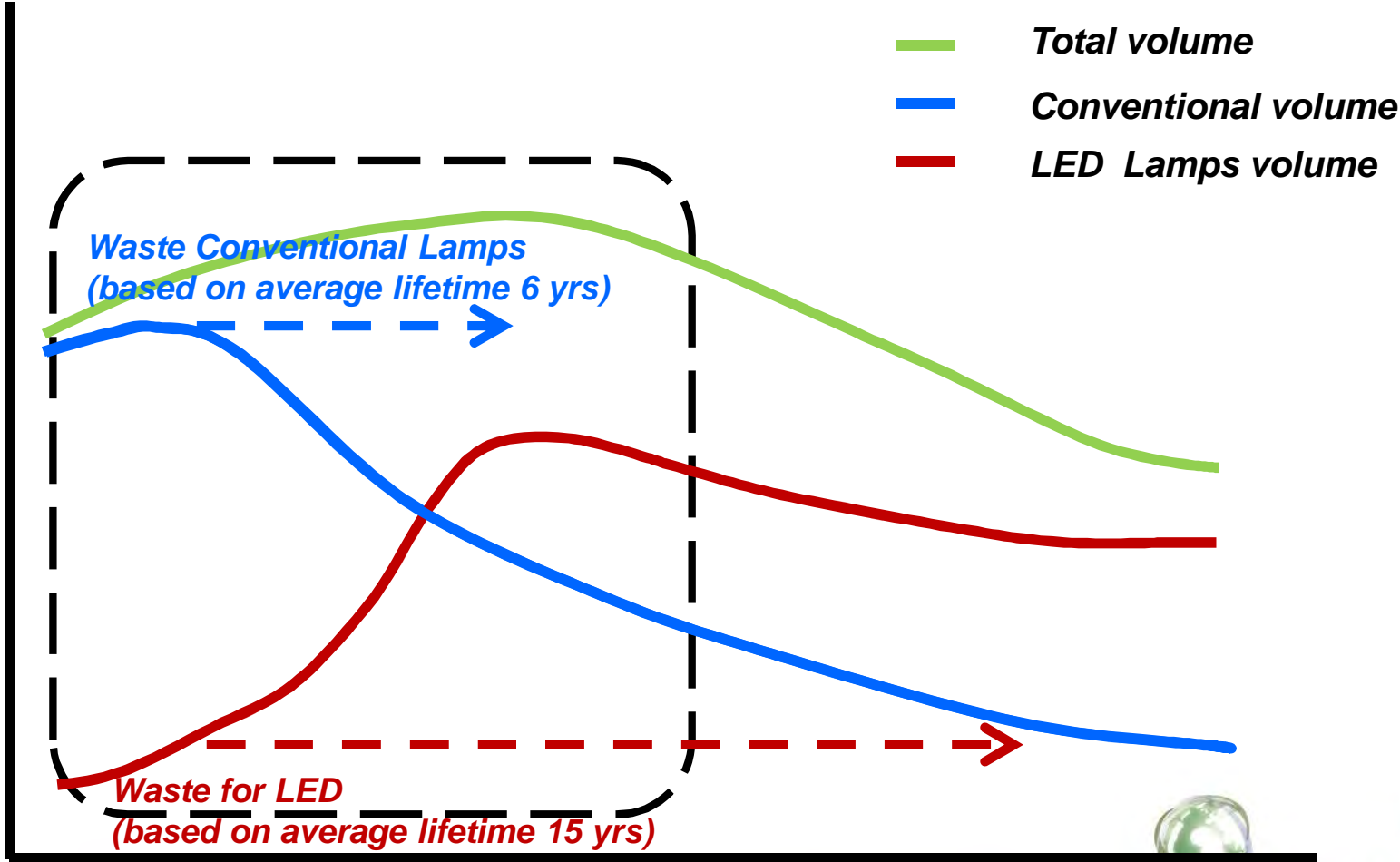


*\*) still subject to review in 2014*





# Volume mix for WEEE relevant Lamps Put on Market in the next decade (1/2)



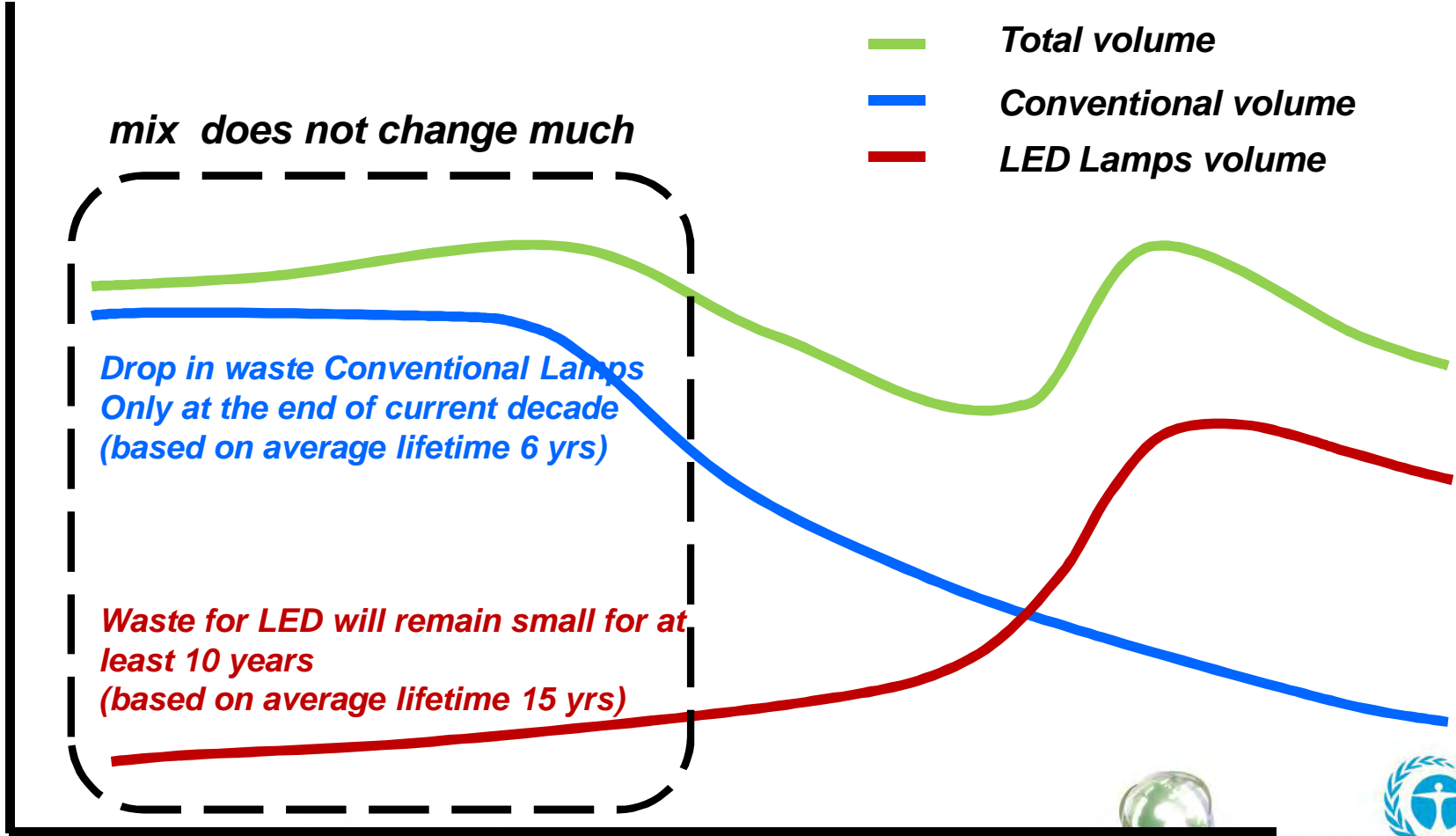
2010

2020

2030



# Volume mix for WEEE relevant Lamps Waste Flows in the next decade (2/2)



2010

2020

2030



## Key messages

- “ Your decision today has a long lasting impact for your countries.
- “ Electronic waste will be an issue, lamps alone might not be the topic. Maybe alliances with other industries can be of help.
- “ The lighting industry is offering access to benchmark information.
- “ The competence is bundled in our CRSO in Spain –

## The Ambilamp University

- “ Make use of the existing knowledge, contact us.
- “ The program is tailored to have a ESM strategy drafted after one week of on hands learning.





**Thanks  
Merci  
Obrigado**

[www.enlighten-initiative.org](http://www.enlighten-initiative.org)



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