



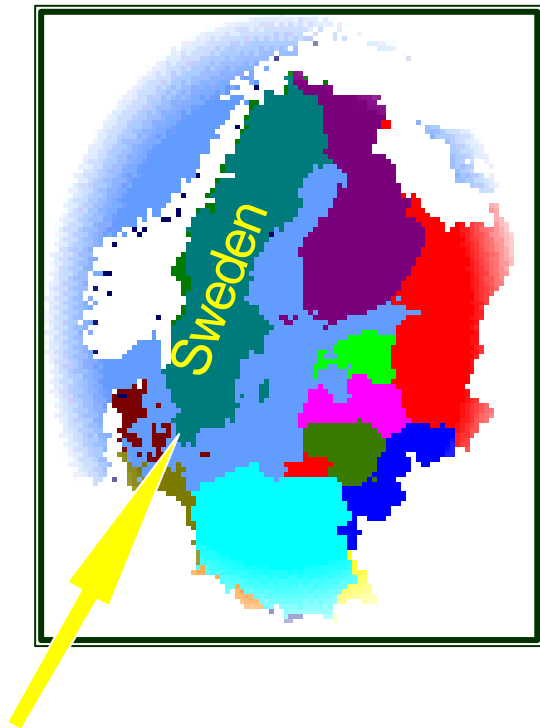
the international institute for industrial  
environmental economics  
at Lund University

# EPR in Europe

**Thomas Lindhqvist**

**IIIEE**

2<sup>nd</sup> National Extended Producer Responsibility Workshop  
7 March 2002  
Winnipeg, Manitoba, Canada



# IIIEE Keywords...

Inter-  
disciplinary

Applied  
Research

Pollution  
Prevention



**17 countries**

**An  
International and  
Interdisciplinary  
Staff**

**Engineering  
Natural science  
Law  
Economics  
Business Admin**

*Thomas Lindqvist*

# Educational Programme

Ph.D. Programme

M.Sc. Programme

Undergraduate Courses

Special Courses

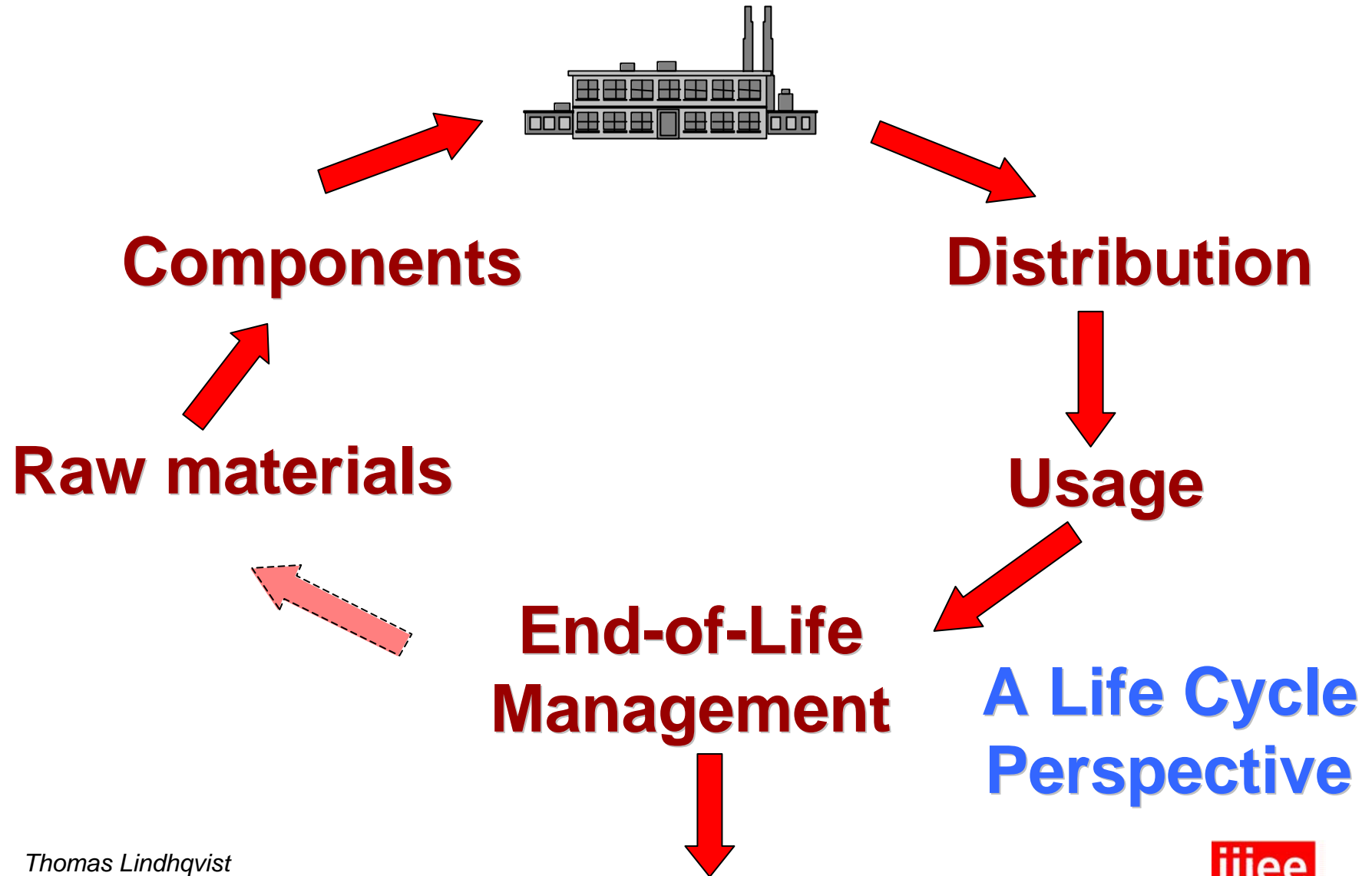
# Why extended producer responsibility?

- Waste treatment will get increasingly expensive
- Disposal costs is seldom included in the product price
- It is difficult to solve problems related to product content after the manufacturing

# Extended Producer Responsibility

- Reduced total impact of a product
- Responsibility for “new” parts of the (entire) life-cycle
- Special attention to take-back, recycling, final disposal
- Policy principle

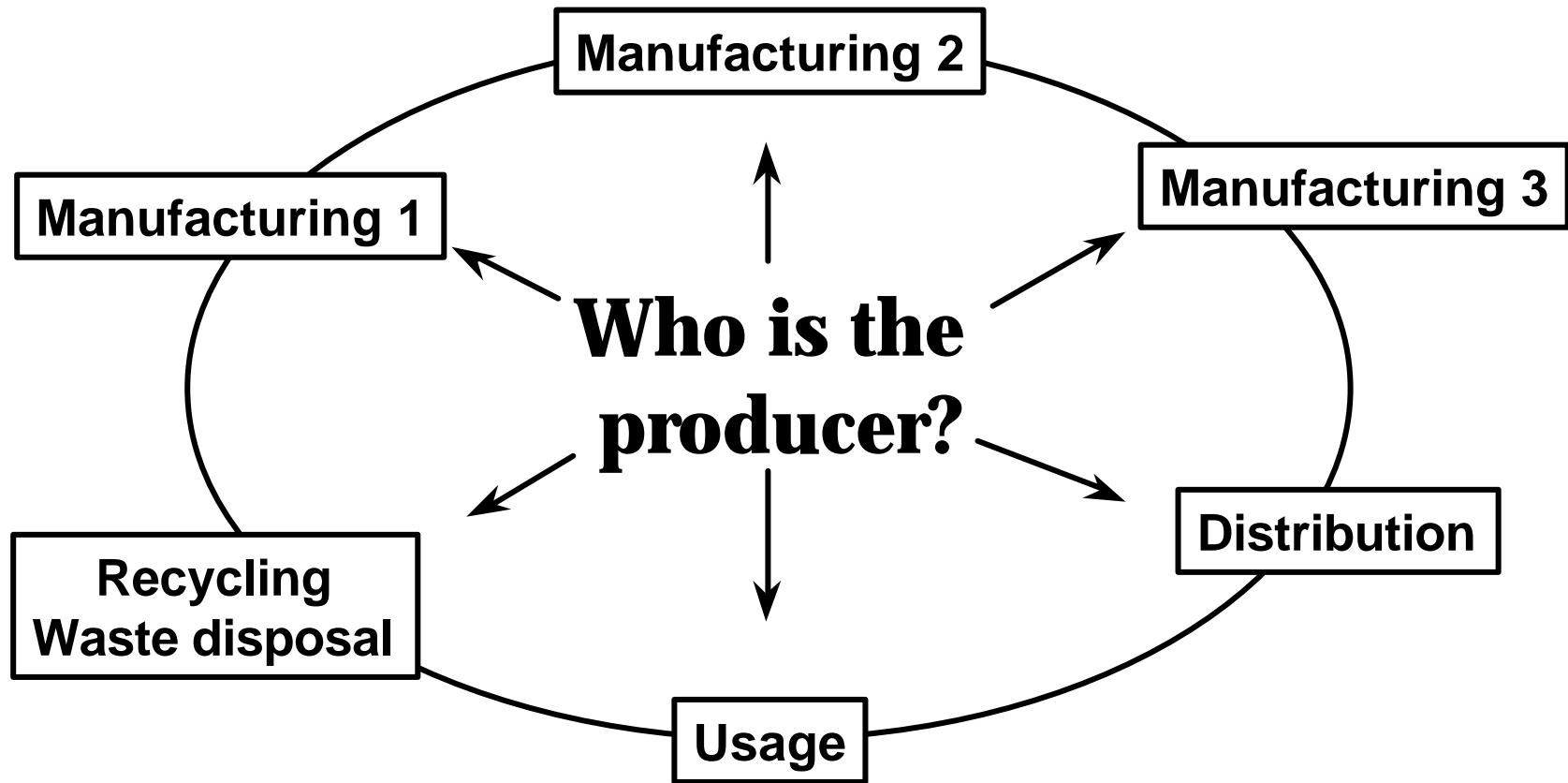
# From Point Sources to Diffuse Emissions



# What are the aims?

- Two main goals:
  - Solve the problems related to the already existing waste.
  - Stimulate environmentally conscious product development.

# A moral question? (normative choice)



Or a question of effective leverage points?

# Extended Producer Responsibility

Extended Producer Responsibility (EPR) is implemented through administrative, economic and informative policy instruments.

# Extended Producer Responsibility

What products are relevant for EPR-based policy interventions?

What products are relevant for a specific policy intervention (based on the EPR principle)?

# Factors Affecting the Results

- Characteristics of the products
- Voluntary vs. mandatory
- Allocation of responsibility
  - Collective vs. Individual, financial vs. physical
- Financial mechanism
- Establishment of other requirements
- Systems surrounding the products
- Awareness and perception in society

# Characteristics of the Products

## Focus so far

- High volume in the waste stream (packaging, cars)
- Difficult to manage (EEE, cars)
- Contain hazardous substances (batteries, cars, EEE)

## Issues

- Consumers' ability to distinguish the difference between products covered by an EPR programme and those uncovered (batteries)
- Complex products and coverage of components by other programmes (batteries in EEE, tyres and EEE in cars)

# Voluntary vs. Mandatory

Voluntary programmes work best when:

- product contains high amount of valuable resources at post consumer stage (cars)

Mandatory programmes:

- reduce free rider problems
- achieve higher collection/reuse/recycling results
- stimulate design for end-of-life management when consumers are not demanding it (cars, EEE)

# Other Requirements: Collection, Reuse & Recycling Targets

- Mandatory numerical targets are effective in achieving high collection, reuse, recycling rates
- Collection targets: increase separate collection, reduce littering
- Reuse/recycling targets: drives design changes and technical improvement (prevention at source)
- Difficult to set collection targets for durable products (EEE, cars)

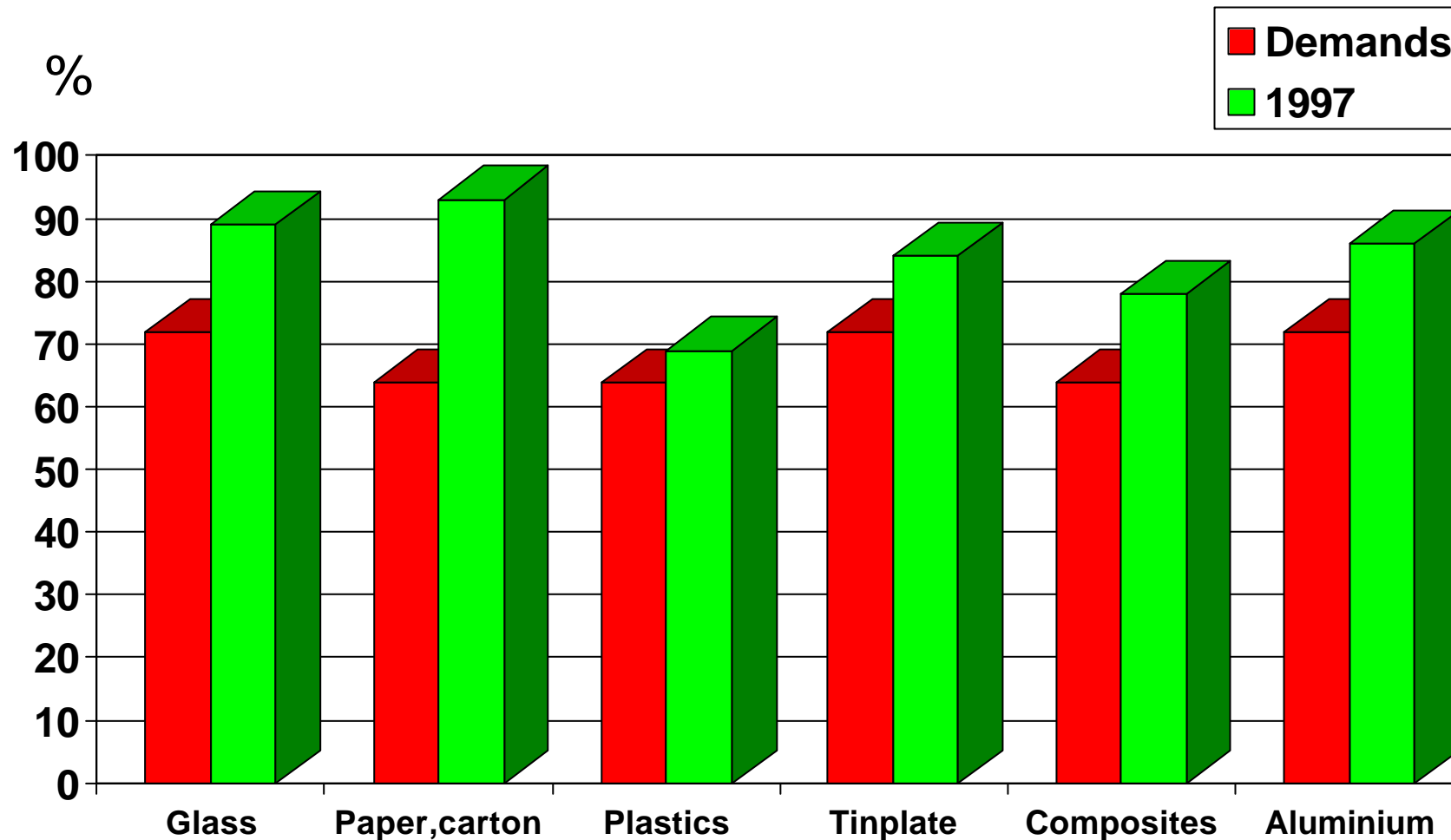
# Other Requirements: Substance/Landfill Bans

- Powerful components of some EPR programmes that trigger product re-design and development of alternative substances
- Threat of the ban encourages increased collection and recycling

# Collection System

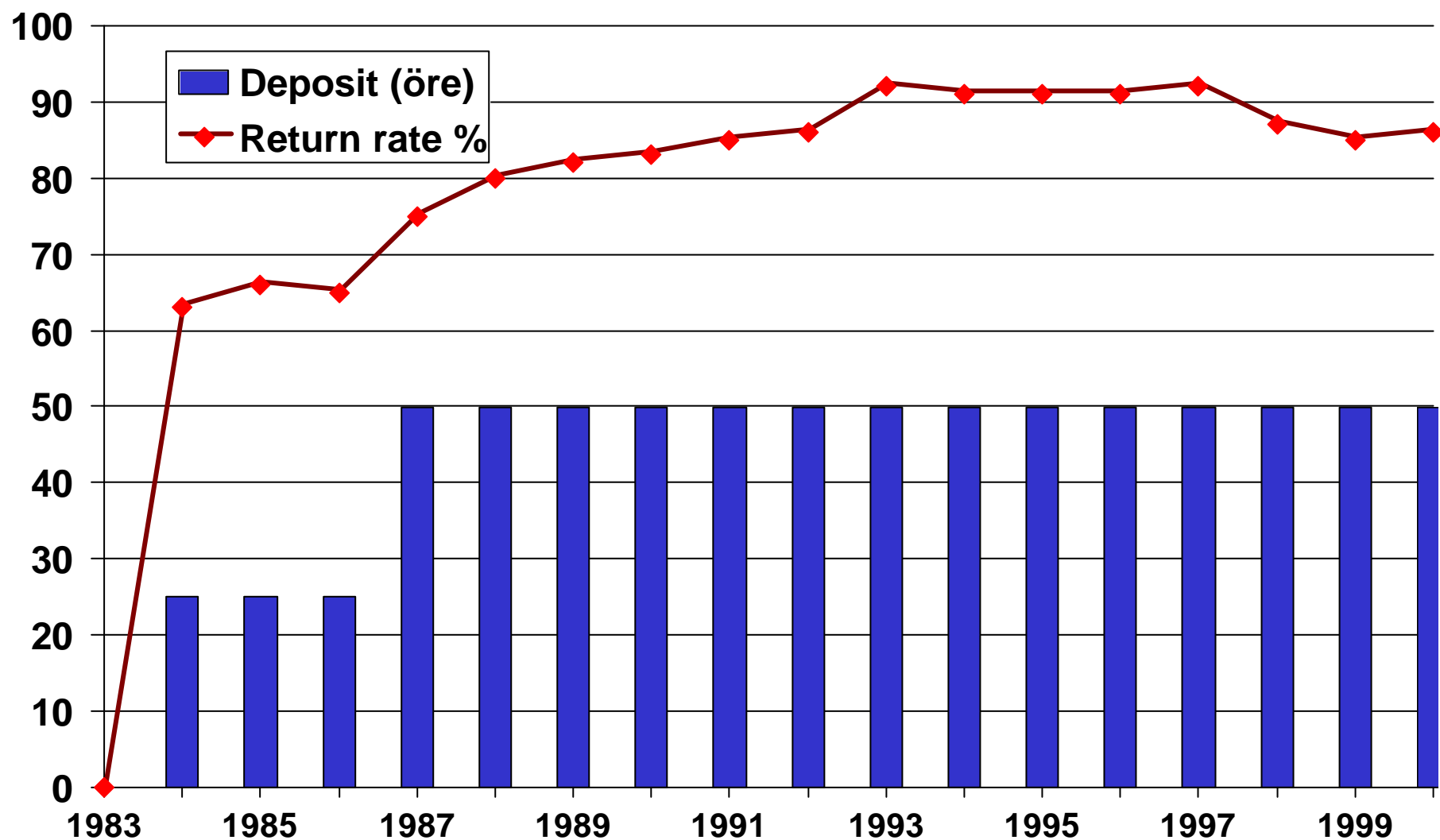
- Achievement of high collection rates requires:
  - adequate financial incentives for consumers
  - convenience for consumers
  - information for consumers
- Size, weight of products and scope of products covered by an EPR programme affect collection rates (small or large EEE, all or selected batteries).
- Retailers can attract more customers as a result of participation in collection of old products (batteries, EEE).

# Result of Dual System 1997



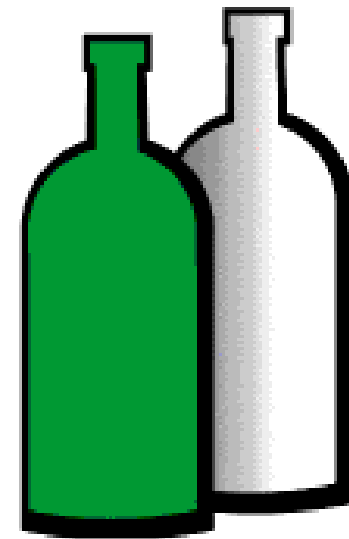
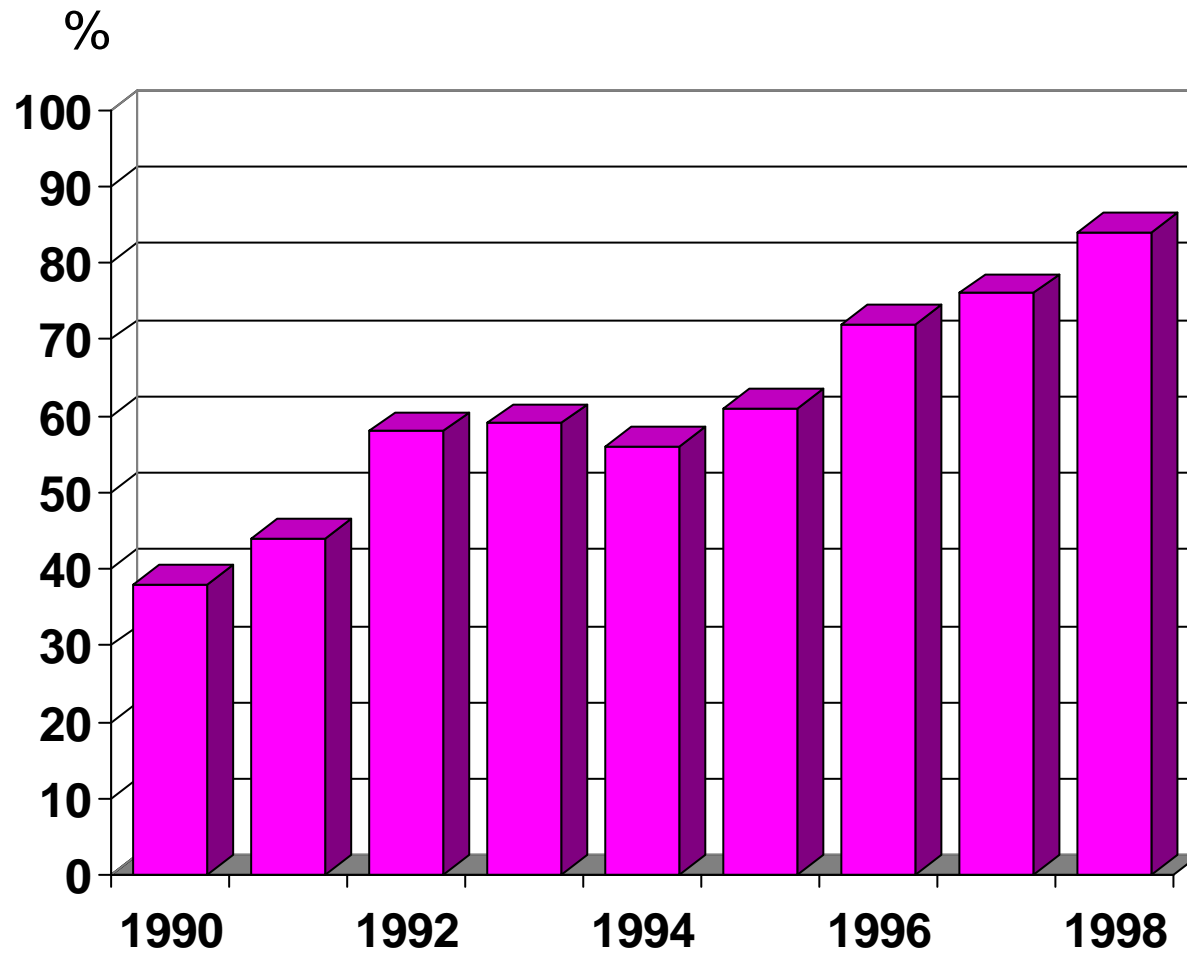
# Aluminium Cans for Beer and Soft Drinks

## Sweden - Return rates and deposit size 1983-2000



Thomas Lindqvist

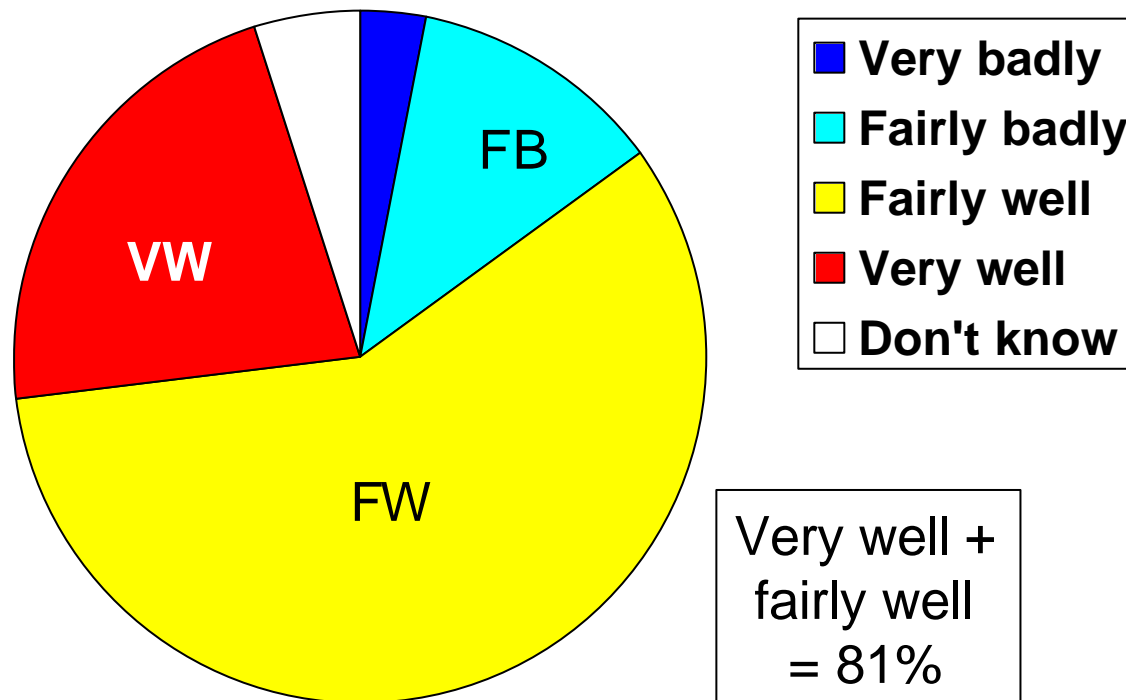
# Sweden – Glass Recycling 1990-1998



Source: Svensk GlasÅtervinning

# Sweden - Packaging Ordinance

Poll by SIFO in early 1999 about the attitudes of the Swedes towards the packaging system.



**Question:**  
How do you think the collection of packaging is working?

# Use of Existing Infrastructure

- Use of existing skills, knowledge and infrastructure for collection and recycling facilitates fast and efficient implementation (local government, retailers, end-of-life managers).
- Ownership and management of the infrastructure can be adjusted for EPR programmes (cars).

# Allocation of Responsibility for Non-Durable, Simple Products

- Include products such as packaging, some batteries
- Producers often organise a collective collection and recycling system (PRO).
- Properties of products allows the fees paid in a collective financial system to reflect actual recycling costs.

# Allocation of Responsibility for Durable, Complex Products

- Products include EEE, cars
- Properties of products make collective financing systems ineffective at stimulating design change.
- Individual producer financial responsibility fails to address orphan products and requires appropriate collection system.
- Individual producer physical responsibility promotes design change
- Last-owner-pay systems create a disincentive for collection.

# Legislative development for EEE

## Europe

- Three proposed EEE-related directives in EU
- Netherlands, Norway, Switzerland, Sweden

## Asia

- Taiwan, Japan

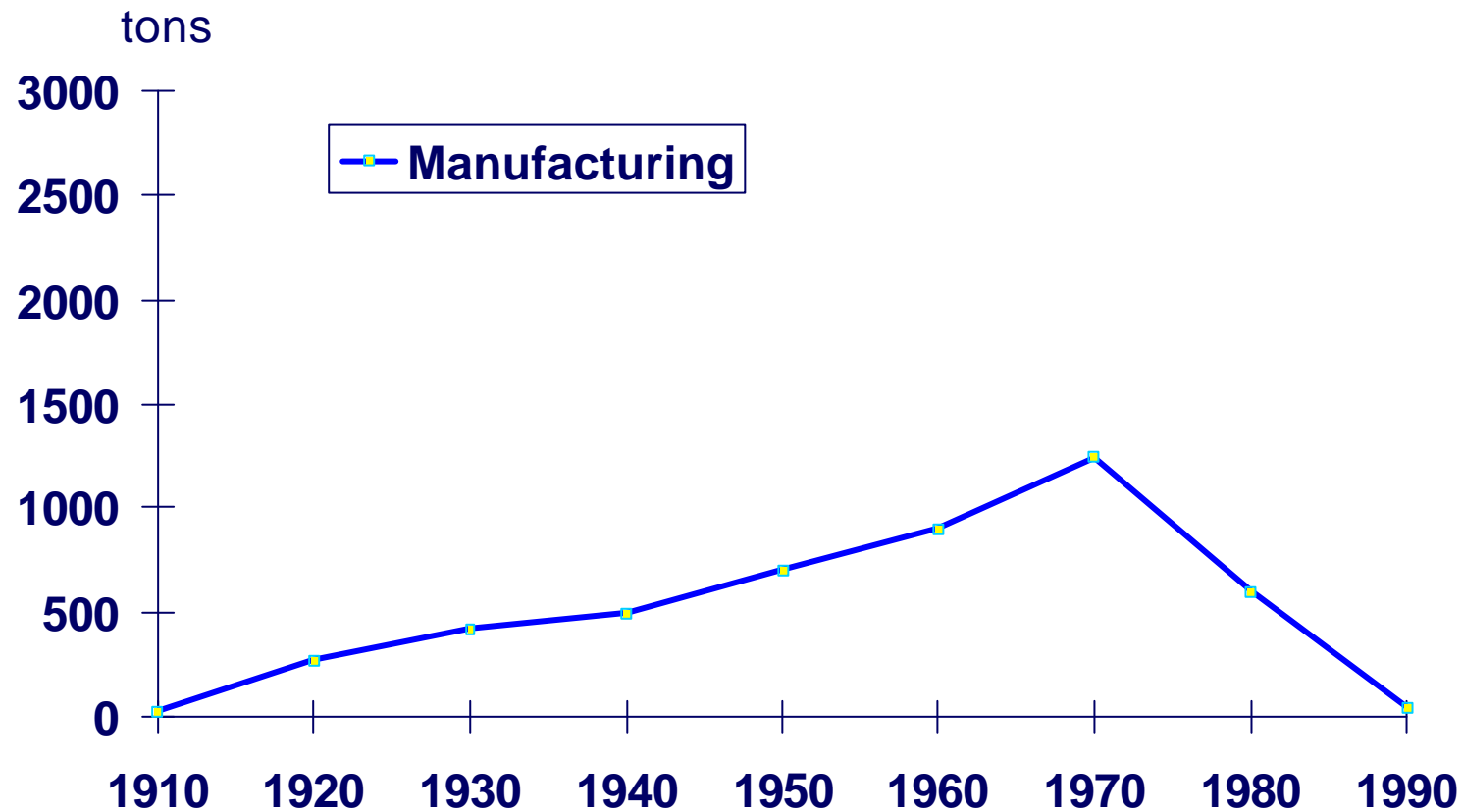
# Three Proposed EEE Related Directives in EU

1. Proposal for Directive on Waste Electrical and Electronic Equipment (WEEE Directive)
2. Proposal for Directive on the restriction of the use of hazardous substances in EEE (RoHS Directive)
3. Draft proposal for Directive on the impact on the environment of EEE (Design Directive)

# Proposed EU EEE Directives and reaction of industries

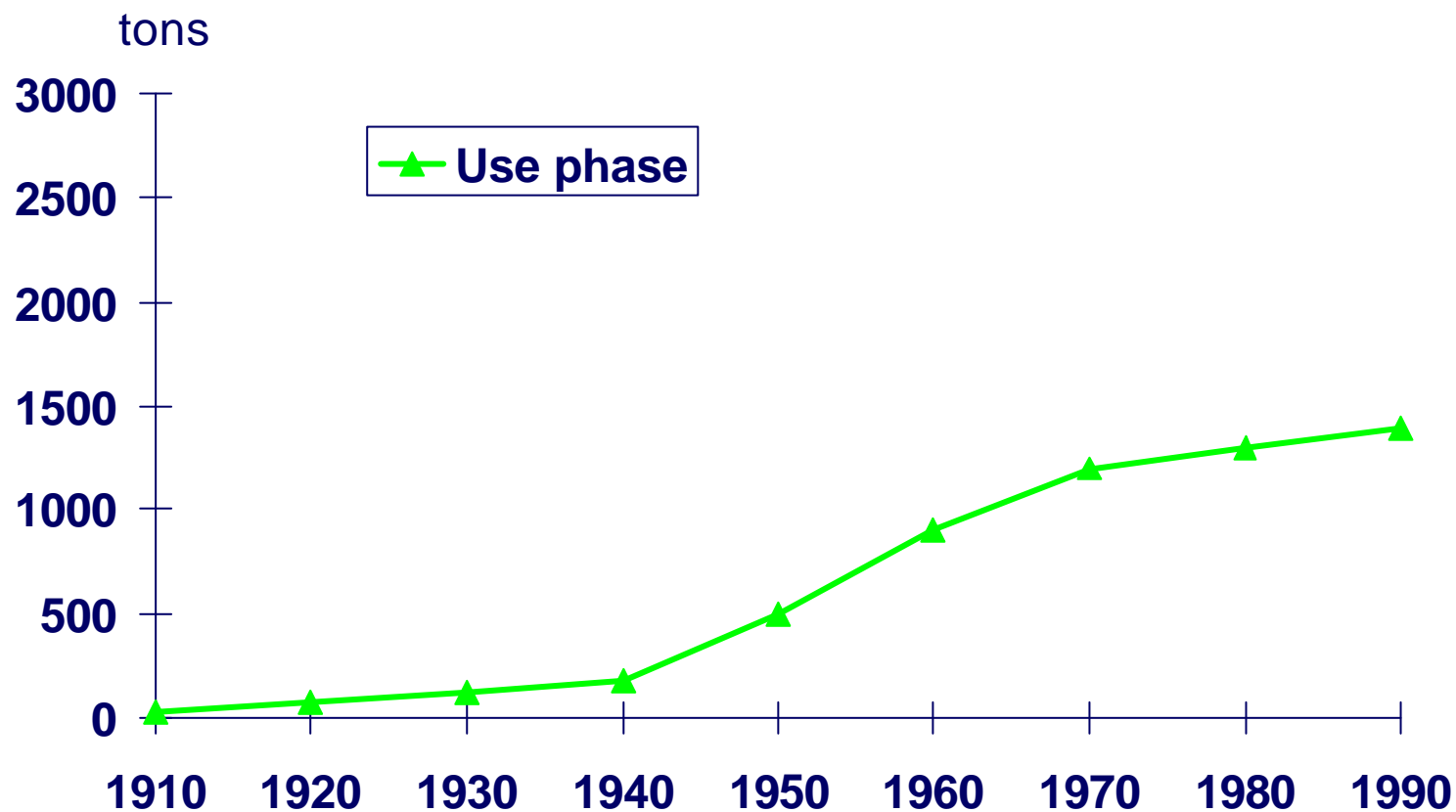
- Responsibility for collection
- Recycling targets
- Historical products and retroactive law
- Collective vs. individual responsibility
- Material ban (e.g. lead free solder)
- LCA

# Emissions of Cr from manufacturing facilities



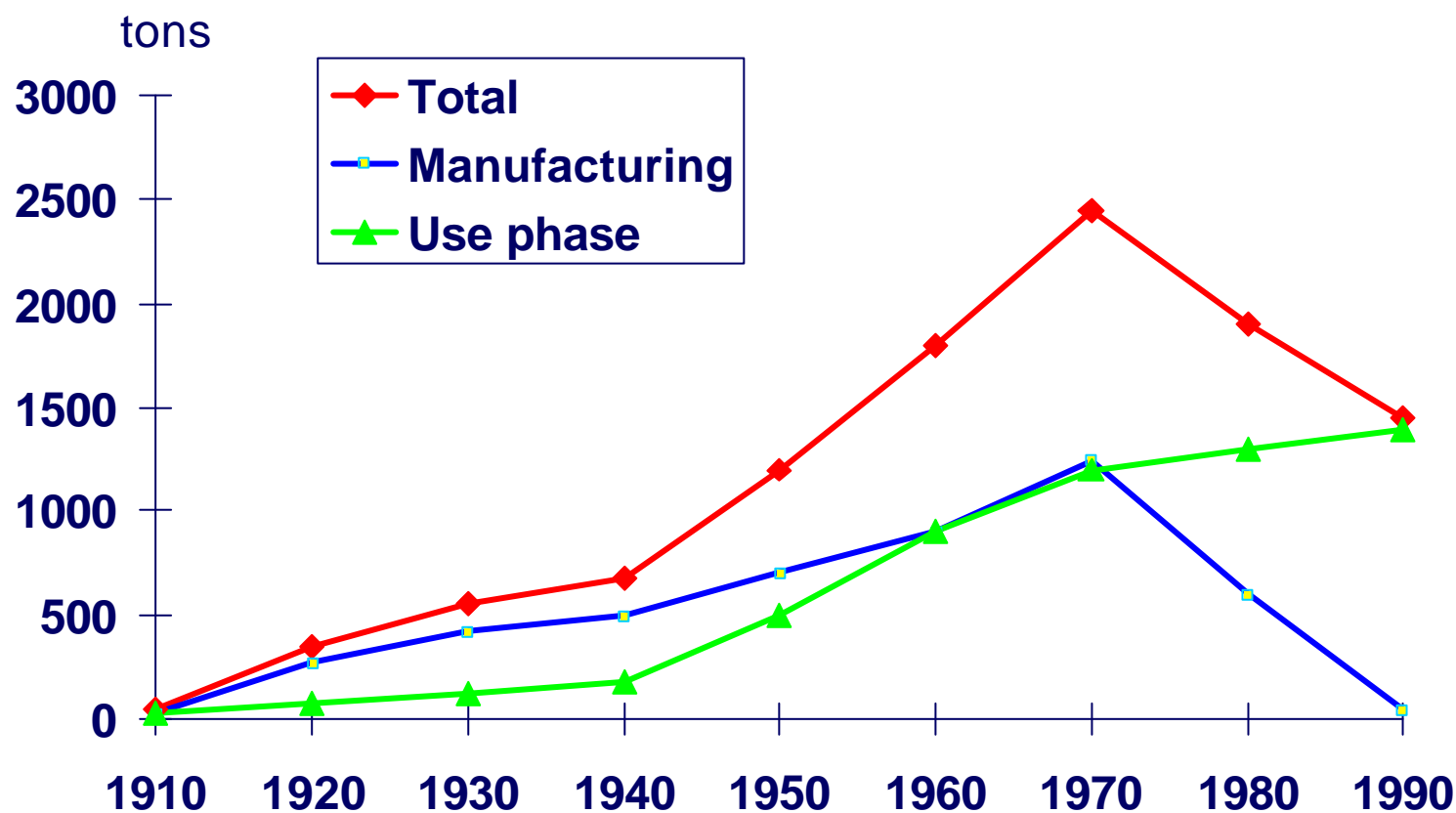
Kretsloppsdelegationen rapport 1997:14, Fig. 21:3

# Emissions of Cr from use phase of products



Kretsloppsdelegationen rapport 1997:14, Fig. 21:3

# Emissions of Cr from manufacturing vs. use phase of products



Kretsloppsdelegationen rapport 1997:14, Fig. 21:3

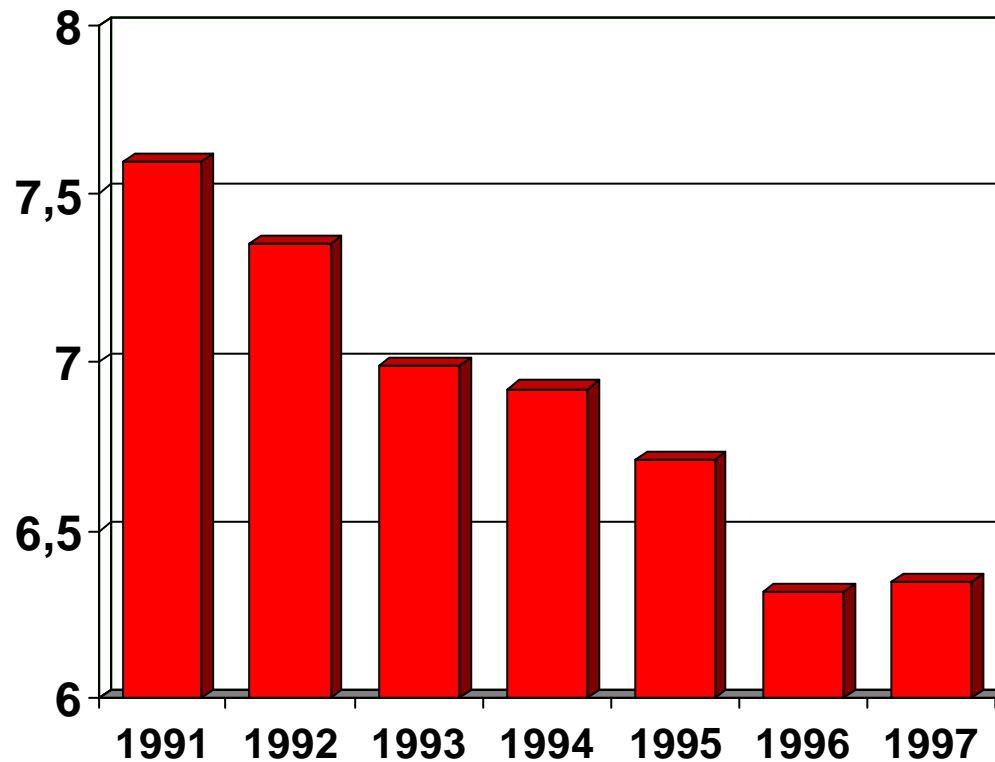
## Point emissions / emissions from use Input & accumulation in society

Metal	Point emissions	Emissions from use	New material in products	Accumulated in society
Al			130 000	3 000 000
Pb	400	3 600	30 000	2 200 000
Cu	100	600 - 1100	100 000	3 500 000
Cr	40	760 - 940	50 000	2 000 000
Ni	60	4 - 40	10 000	400 000
Zn	1000	1100-1400	40 000	2 500 000
Cd	3	50	170	5 000

**tons/year**

Kretsloppsdelegationens rapport 1997:14, tab. 21:2

# Packaging consumption in private households and small businesses in Germany 1991-97 (mill. tonnes)

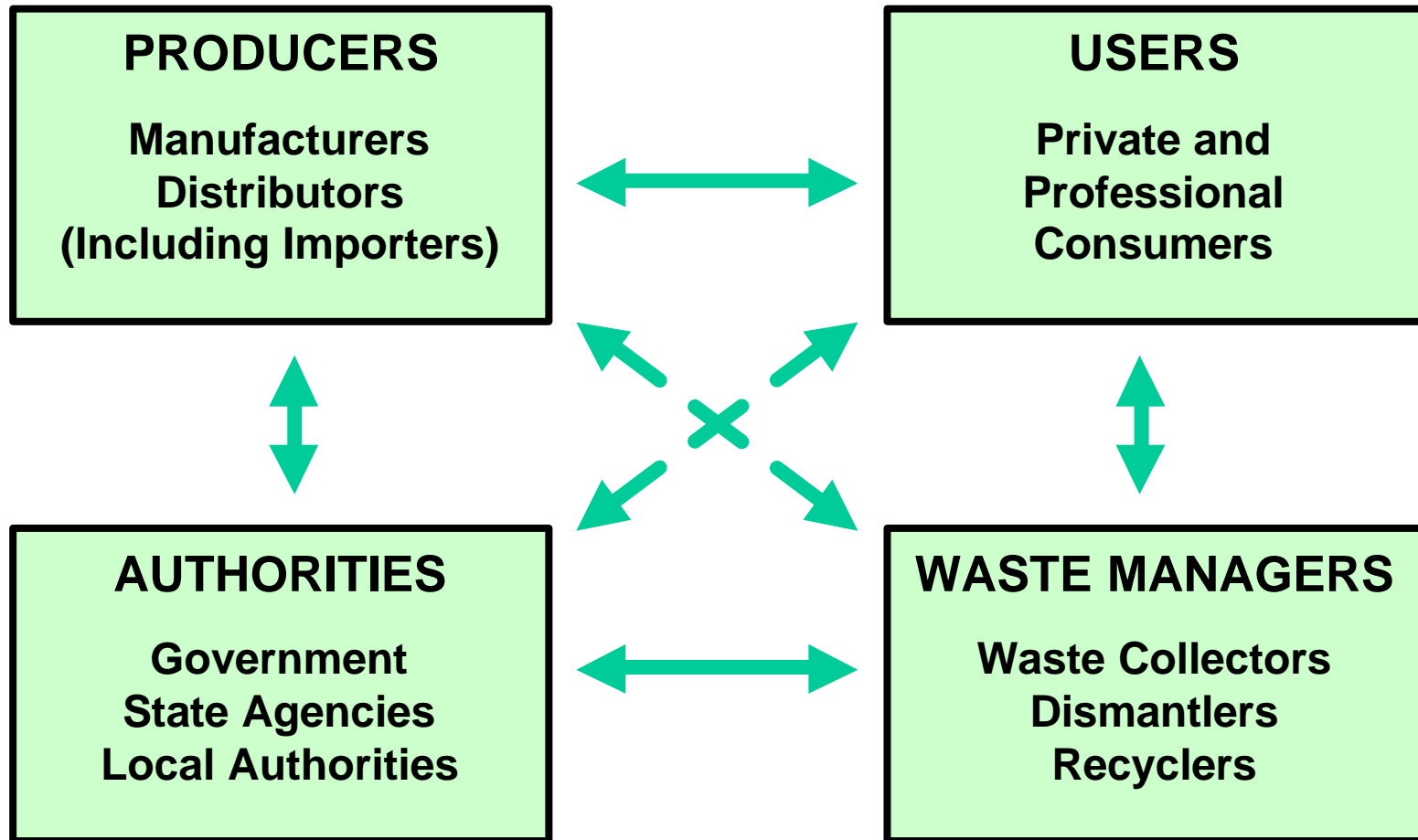


**1991:  
The Packaging  
Ordinance is  
introduced**

# Design Goal

- Changes of products
- Changes of processes
- Product system changes
- Managerial changes
- ...

# Feed-back in Product Systems



# Thank you!

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