TAITEX Workshop in Mexico City
on solid waste integrated management in urban areas

Waste management in Hamburg, Germany

- finance, taxation, private/public sector -

STADTREINIGUNG HAMBURG

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Content

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1. Waste management in Germany
2. Waste Management by Stadtreinigung Hamburg (SRH)
   - general information
   - costs and revenues
   - finance by fee or tax?
   - role of private sector

Waste management in Germany

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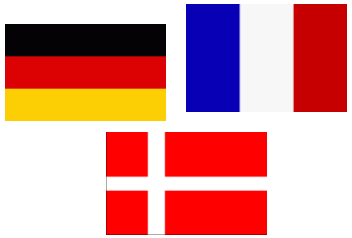
International agreements
Concerning mainly the control of transboundary movements of waste
(Basel Convention, 4th Lomé Convention, Resolutions of OECD-council)

European legislation
EU legislation is superordinated to national legislation in EU-states
(Waste Framework Directive, Directive on Packaging/Packaging Waste, Landfill Directive, E-scrap-Directive, …)

National legislation (e.g. Germany)
Waste framework: Closed Cycle Management Act. Lots of ordinances and administrative regulations (Packaging Ordinance, TASi)

State legislation in Germany (e.g. Hamburg, Bavaria)
Concretion/completion (responsibilities) of national legislation.
Administrative regulations (e.g. sealing of landfills, construction/operation of composting plants). Preparation of waste management plans.

Municipal regulations (e.g. Hamburg)
Further guidelines in municipalities
(Hamburg Waste Management Act, City Cleaning Act, Official Fee Act)



Picture sources: Adpic Bildagentur; www.nationalflaggen.de; www.weltkarte.com

Waste management in Germany

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- **Main law for waste management in Germany: "Closed Cycle Management Act"** (Kreislaufwirtschaftsgesetz)
  - **Paradigm shift in Europe:** Focus on climate and resource protection
    - 5-step waste hierarchy: 1. Prevention of waste, 2. Preparing for re-use, 3. Recycling, 4. Other recovery, e.g. energy recovery, 5. Disposal
    - By 2015: Area-wide separate collection of biowaste, metals, plastics, paper and glass
    - By 2020: Quotas for substantial and energetic usage (e.g. 65 % recycling of municipal solid waste)
  - Lots of other topics concerning waste management: e.g. waste treatment plants and landfills, supervision of waste transports, certification of waste management companies
  - Important: Responsibilities for waste disposal (household waste!)

Waste management in Germany

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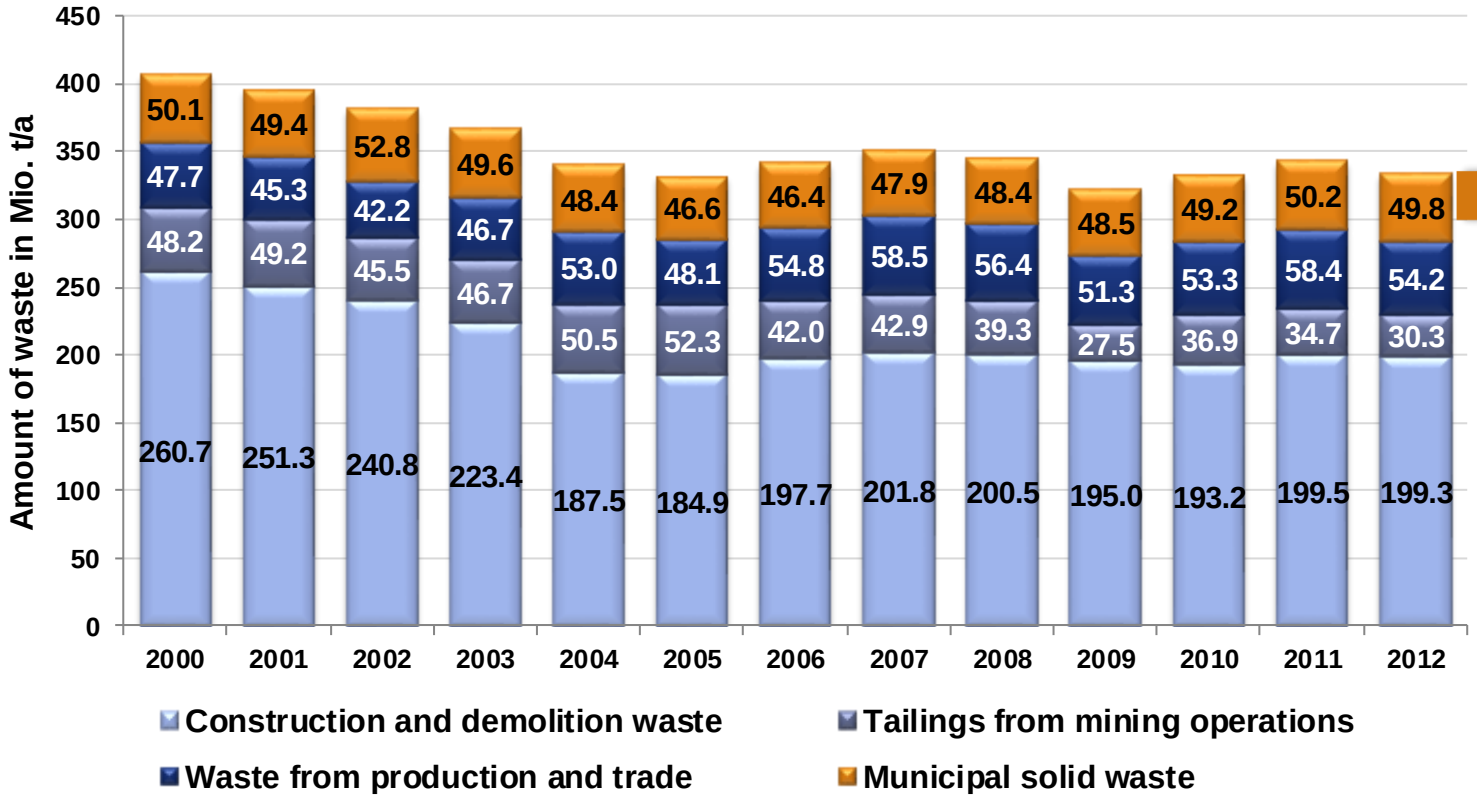
Total amount of waste in Germany



43.7 Mio. t of MSW in 2012 are household waste

Source: Statistisches Bundesamt

Waste management in Germany

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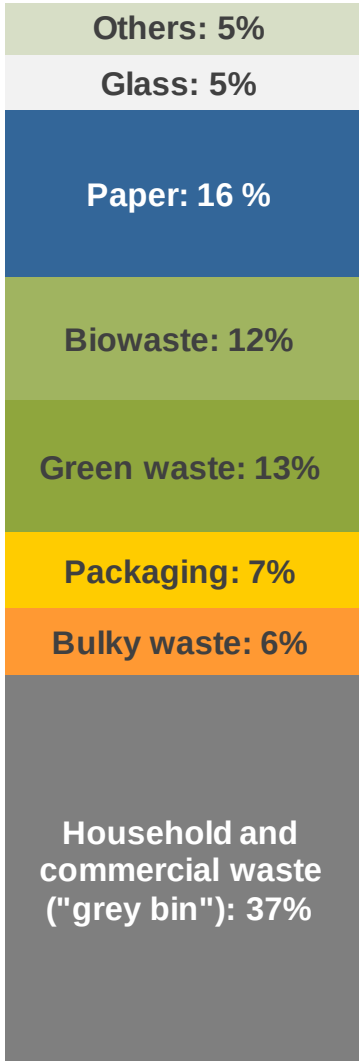
- Average composition of <u>total</u> household waste in Germany (43.7 Mio. t in 2012)
  - Separate collection is already established, but could be improved as a large part of household and commercial waste (grey bin) still consists of the listed fractions such as paper, biowaste, packaging etc.



Commercial waste: Waste from industry and trade, but similar to household waste

Waste management in Germany

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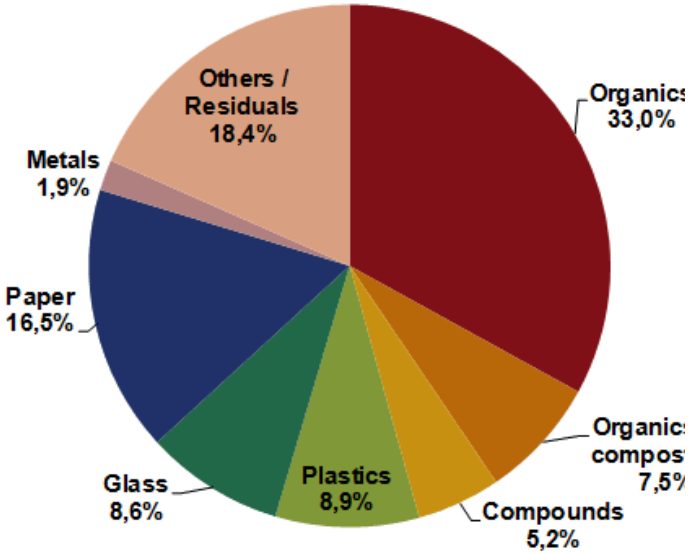
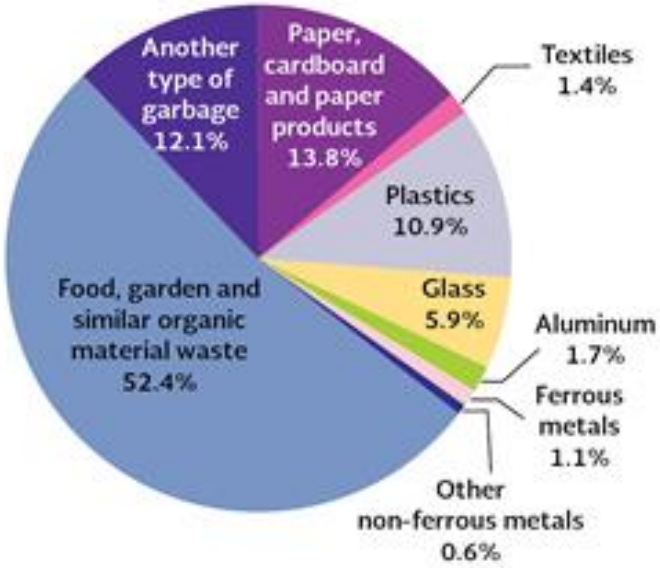
Average composition of RSU

Hamburg/Germany



Waste collection: 99,99 %

Mexico



Source:
Dirección General de Equipamiento e Infraestructura en Zonas Urbano-Marginadas, Sedesol. México. 2012.

Waste collection: 90 % (cities)
13 % (rural / semi urban)

Waste management in Germany
- financing of waste management -

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General schemes for financing waste management

- financing by taxes
- financing by variable charging fees
  (i.e. pay-as-you-throw)
  - pay-per-bag
  - weight-based
  - volume-based
- financing by producer responsibility schemes
  (i. e. batteries, white/brown goods, packaging)
- mixed schemes

Waste management in Germany
- incentive in waste management -

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General schemes for incentives in waste management

- strong incentives
  - save money (fees, deposits)
  - compliance with a law

- less strong incentives
  - environment protection
  - ressource protection
  - climate protection
  - social responsibility (re-use-projects)
  - social pressure

Waste Management in Hamburg
- public / private sector -

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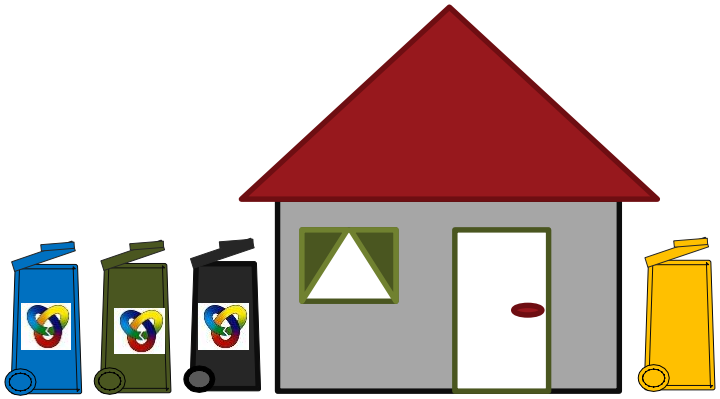
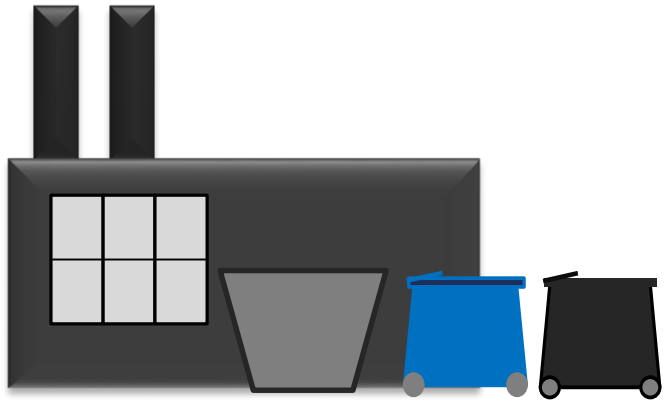
Responsibilities for disposal of 4 waste groups according to German Closed Cycle Management Act

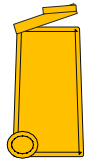
Waste from households:	Waste from industry, trade, mining and demolition and construction:
Local authorities (public sector)	**In competition (private sector)**



Hamburg: Stadtreinigung Hamburg



BUT:
Local authorities are not responsible for disposal of packaging from households (Private sector / „dual“ system)



Waste Management in Hamburg
- public / private sector -

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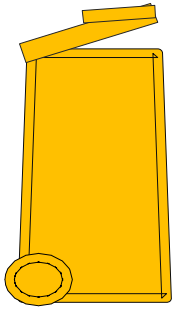
Waste from households

- **Local authorities are responsible for waste management of MSW (municipal solid waste)**
  - MSW: waste / paper / non packaging plastic / hazardous waste / bulky waste / green waste
  - Their focus lies not on profit maximisation, but on a guaranteed secure / safe waste disposal and on services for the public.

- **Dual Systems are responsible for the collection and recycling of lightweight packaging**
  - 2.3 million tons of lightweight packaging are collected yearly in Germany
  - Only 1.2 million tons of those have been licensed

Dual System



Waste Management in Hamburg
- general informations -

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- Area Hamburg: 755 km²
- Inhabitants: 1.75 Mio.
- Households: 915,000

- Public company by legal basis since 1994
- Responsible for waste from private households
- Owned by Free and Hanseatic City of Hamburg (FHH)
- Financed by fees

- Waste management for around 1.2 Mio. tons/a
  - Reuse / recycling
  - Marketing for reuse / recycling
  - Fermentation
  - Incineration

Waste Management in Hamburg
- general informations -

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Duties of Stadtreinigung Hamburg according to SRH-law are carried out with around 2,600 employees and 700 vehicles

Public duties	Commercial activities	Others
▪**Disposal (collection, transport, treatment) of household waste**	▪**Disposal (collection, transport, treatment) of commercial waste**	▪Appropriate to object of company SRH e.g.:
▪Cleaning service of streets and pavements	▪Cleaning service of streets (events)	▪ Plants for energy production (solar, wind, landfill gas)
▪Winter service	▪Winter service	▪ Marketing of paper
	➢In competition with private companies	

Waste Management in Hamburg
- general informations -

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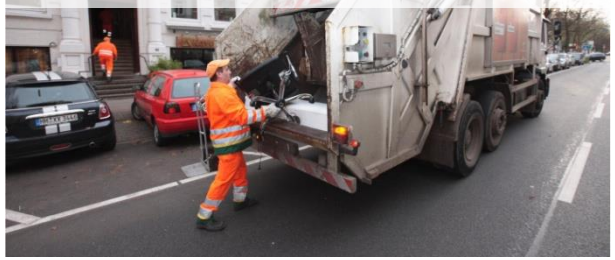
Pick-up system

Kerbside collection of household waste in 4 bins

Bring system

Depot containers

Bulky waste collection on demand



12 waste receipt stations in Hamburg

Waste Management in Hamburg
- general informations -

STADTREINIGUNG HAMBURG

Different collection systems (pick-up system)

Waste Management in Hamburg
- general informations -

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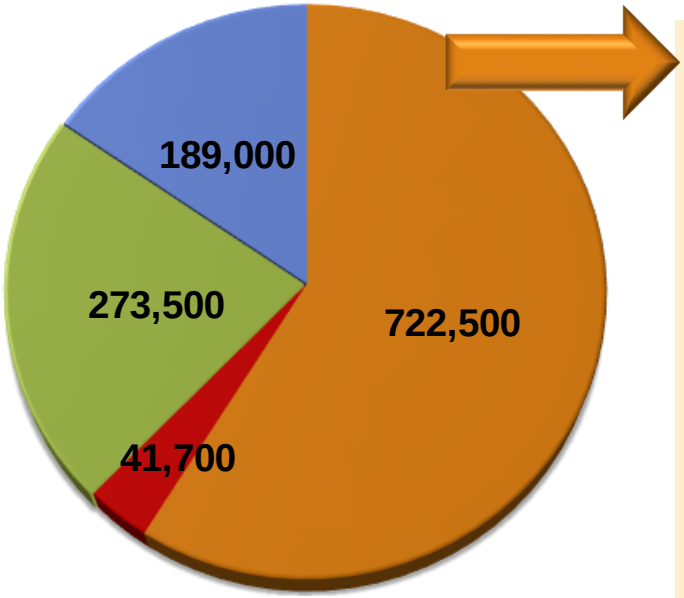
Amount of waste collected in 2013 (~1.2 Mio. t)

- Waste from households
- Waste from street cleaning
- Waste from industry and trade
- Household waste from other municipalities



Including

- Residual waste
- Waste paper
- Biowaste
- Green waste
- Waste recyclables
- Bulky waste
- Hazardous waste
- Electronic scrap

Waste Management in Hamburg
- costs and revenues -

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Principle of financing waste management:
Waste producer pays for service of waste disposal

- Whole costs are passed to the waste producer ➔ **fees**
- Recovery of costs without making profit
- Fee structure in Germany is regulated by law and has to be determined in a scale of fees

- Up to 80 % of total costs for household waste management are fixed costs
- Main cost factors: Employees / treatment plants (~30% each)
- Costs for: Administration, organisation, service, communication, maintenance (repairing, loss), capital costs (depreciation, rate of interest), rent (buildings, equipment), operation, investment, costs for aftercare (landfills), salary / other employee costs, others…

Waste Management in Hamburg
- costs and revenues -

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Fee structure has three basic functions

- **Financing** function:
  To cover the costs of the MSW disposal
- **Allocation** function:
  To transfer the costs of service to service user
- **Guidance** function:
  To provide an opportunity for the consumer to influence their behaviour (incentive)

Fee system has to be

- Economically stable
- Cost covering
- Legally compliant (no internal cross-subsidisation)
- Equal for all citizens

Waste Management in Hamburg
- costs and revenues -

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- Fee per month per household in Hamburg

Base fee | Service fee | Other fee

GRUND-GEBÜHR

6,56 €

BEHÄLTERGEBÜHR RESTMÜLL

Behälter-größe in Litern	Gebühren-klasse	Gebührensatz in Euro/Monat wöchentliche (14-tägliche) Leerungen	
60[1]	R0060	**11,57**	(7,52)
80[1]	R0080	**13,29**	(8,64)
120[1]	R0120	**15,18**	(9,87)
240[1]	R0240	**23,95**	(15,18)
500	R0500	**68,70**	–
770	R0770	**86,93**	–
1.100	R1100	**105,57**	–

BEHÄLTERGEBÜHR BIOABFALL

Behälter-größe in Litern	Gebühren-klasse	Gebührensatz in Euro/Monat 14-tägliche (wöchentlich) Leerungen	
80[1]	B0080	**1,72**	–
120[1]	B0120	**1,96**	–
240[1]	B0240	**3,02**	–
500	B0500	**8,89**	(13,67)[5]
770	B0770	**11,25**	(17,30)[5]
1.100	B1100	**13,66**	(21,01)[5]

BLAUE ALTPAPIERTONNE

Behälter-größe in Litern	Gebühren-klasse	Gebührensatz in Euro/Monat ohne Extra-leistungen
120[1]	P0120	Ohne gesonderte Gebühr[4]
240[1]	P0240	
1.100	P1100	

TRANSPORTGEBÜHR ABFALLBEHÄLTER

Behälter-größe in Litern	Transport-weg in Metern	Maximale Stufenzahl	Gebühren-klasse	Gebührensatz in Euro/Monat je Transport innerhalb von 4 Wochen
60–240[2]	Bis 15	1	T1	**0,85**
60–240[2]	Bis 50	1	T2	**1,86**
60–120[2]	Bis 15	2 und mehr	T3	**2,81**
60–120[2]	Bis 50	2 und mehr	T4	**4,02**
500–1.100[3]	Über 25 bis 50	–	T5	**4,93**

- **Example (2 person household):**
  6.56 € + (11.57 € + (4*0.85 €)) + 1.72 € + 0 €
  => 24.97 € / month

Waste Management in Hamburg
- costs and revenues -

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- Calculation of costs and revenues => economic plan
- Alignment of fees necessary if
  - Total costs cannot be recovered by current fees and no possibilities for reduction => Increase of fees
  - High revenues => Reduction of fees
  - “Education” of citizens => New fee structure e.g. to improve separate collection behaviour of citizens
- Example SRH: SRH proposes a fee alignment
- Senate of Free and Hanseatic City of Hamburg determines (or refuses) fee alignment
- Last fee alignment in 2011: Start of recycling offensive to improve separate collection (increase of paper, biowaste, metals, plastics; decrease of residual waste) by incentive

Waste Management in Hamburg
- costs and revenues -

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- Revenues from waste treatment:
  Selling of electricity, heat, cooling energy, compost, biogas, capacities for waste treatment plants, contracts for waste management from industry and trade

- Revenues from selling of recycling materials:
  Paper, metals, 2nd hand products (e.g. bulky waste, clothes)

- Further possibilities: Saving of cost by increase of efficiency (improvement of working processes, restructuring of company etc.)

Waste Management in Hamburg
- costs and revenues -

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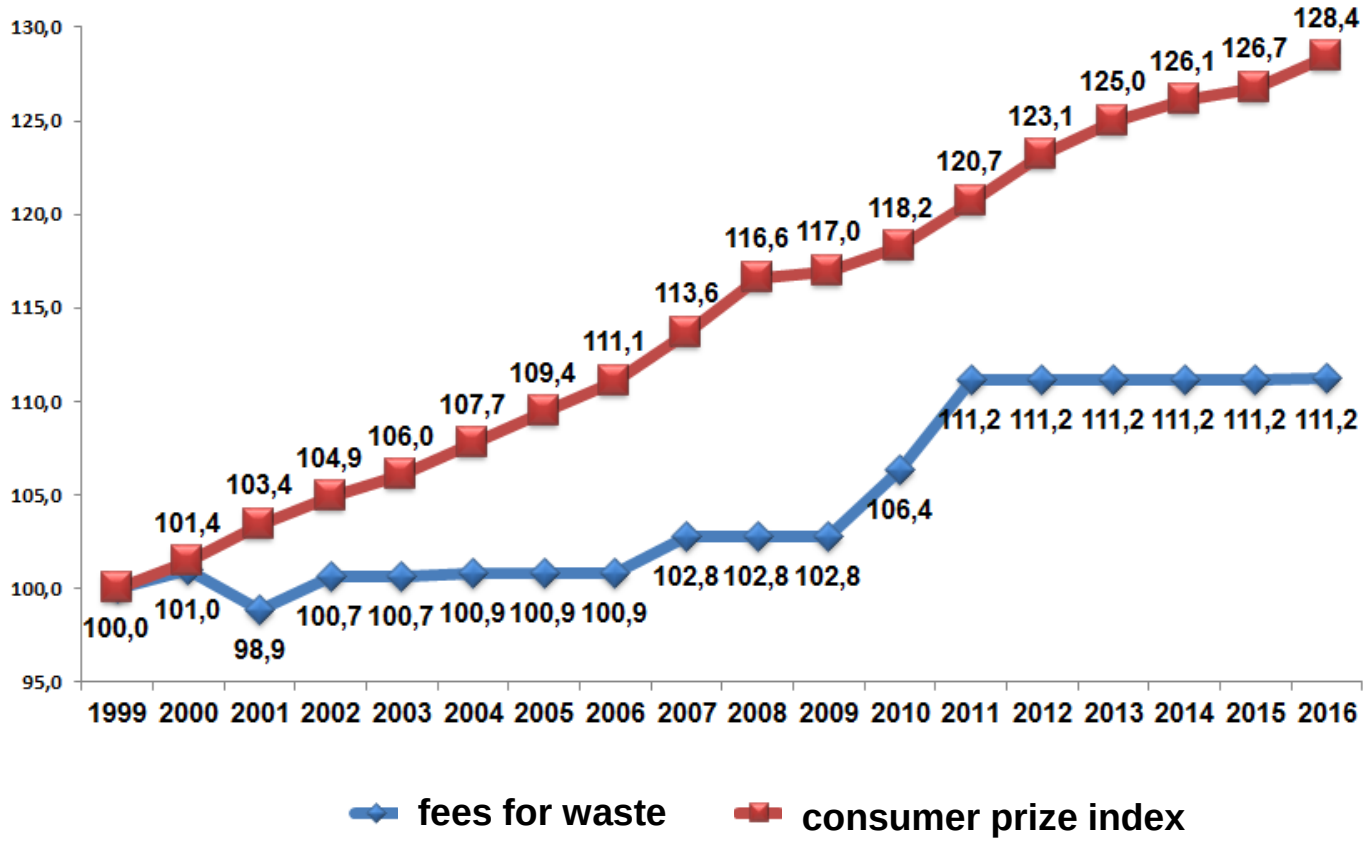
Revenues and reduction of costs help to stabilize fees



Waste Management in Hamburg
- fee or tax -

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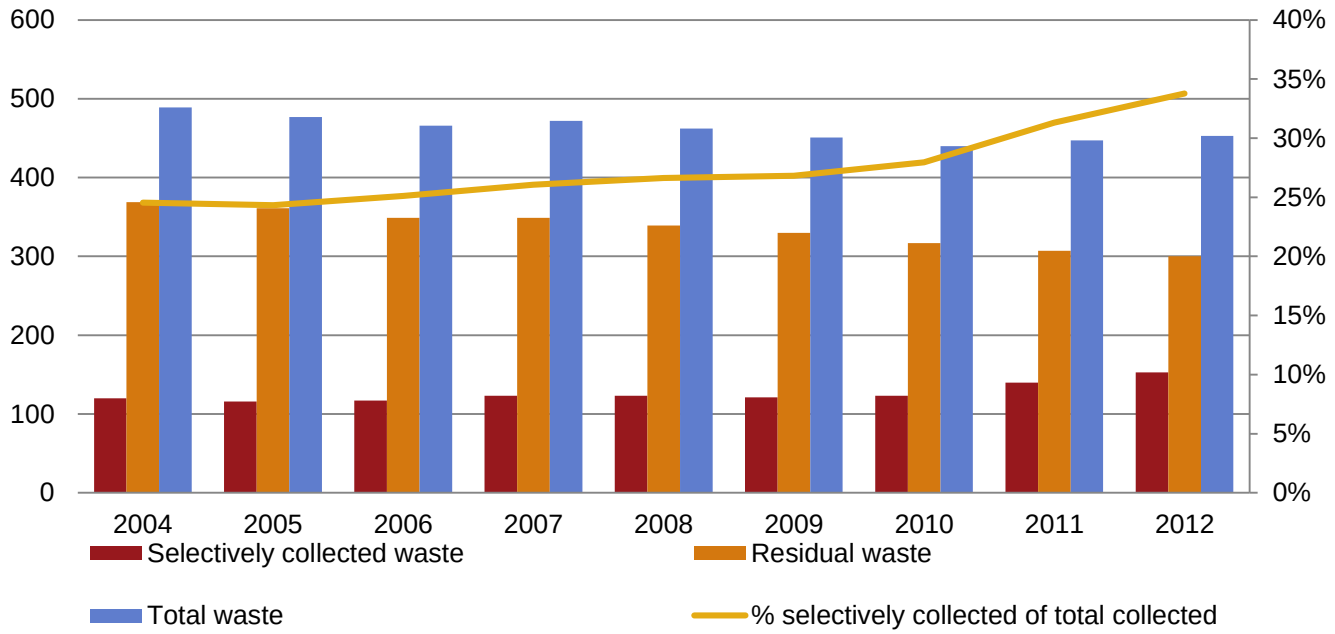
Effects of fee on waste from private households



Waste Management in Hamburg
- fee or tax ? -

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Financing waste collection an treatment by

- **tax**
  - ↓ offers low incentive to avoid waste
  - ↓ offers low incentive for waste sorting in households
  - ↑ to raise taxes is easy

- **fee**
  - ↑ Offers high incentive to avoid waste
  - ↑ offers high incentive for waste sorting in households
  - ↓ to raise fees is more complicated
  - ↓ incentives to avoid fee by illegal waste dumping

Thank you for listening !

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Dual System

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BellandVision

DER GRÜNE PUNKT

interseroh

10 Dual Systems in Germany:

zentek

VEOLIA UMWELTSERVICE

LANDBELL®

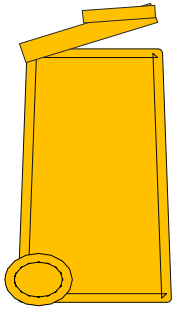
Reclay Group

RKD RECYCLING KONTORDUAL

VFW REVERSE LOGISTICS GROUP

EKO-PUNKT®

Dual System



Dual System

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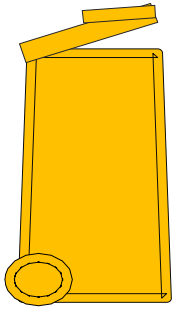
- **Positive Effects**
  - Build up of the recycling sector
  - Development of sorting technology
  - Polluter pays principle: Producers are responsible for their packaging.
  - People perceive waste separation as contribution to environmental protection, they are willing to separate their waste.

Dual System



Dual System

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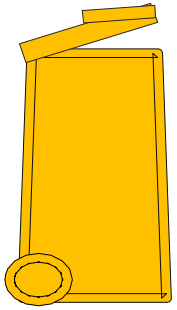
- **The “Dual System” in Germany**
  - These 10 Dual Systems are in contractual relationships with numerous disposal companies that as subcontractors handle the operational side of the business in approximately 450 different contract territories nationwide.
  - This results in a mesh of more than 20.000 contractual relationships that is neither transparent nor controllable.

Dual System



Dual System

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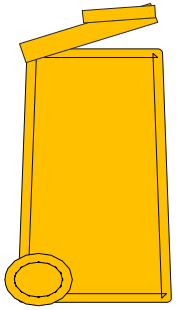
- **Problems (1)**
  - Dual Systems must work together even though they are competitors.
  - It is difficult to control the system.
  - Not all producers license all of their products
  - Short term contracts (2 - 4 years) lead to problems at conversion.
  - In 1998, quotas were based on the amount of licences instead of the total (packaging) market amount so that the quota lost its effectiveness as a control tool.
  - By now, cartel authorities are also occupied with the design of the system which – quite frankly – doesn‘t make it any more efficient or easy to handle.

Dual System



Dual System

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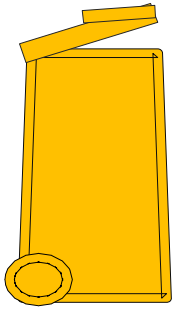
- **Problems (2)**
  - The deposit system of disposable packaging results in even less transparency
    -> there actually are two different systems for collecting plastic and metal packaging
  - Sometimes Municipalities have to answer to the citizens because the collection of packaging is not handled professionally, these are only some examples of problems that can arise, when the collection of packaging is handled by private companies:
    - people working for the collecting companies are underpaid and overworked
    - poor quality bags rip, causing disruption and soiling
    - old vehicles and tins are used which results in inconvenience and a not very attractive look and feel for the user

Dual System



Dual System

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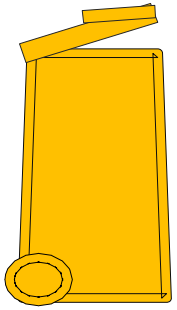
- **Problems (3)**
  - Sorting focused on a few big central facilities which resulted in
    - Higher cost and increased complexity of transportation
    - Small and medium-sized facilities can‘t compete and have to shut down which leads to all the known negative effects on municipalities
  - Most of the 10 dual systems are owned by finance investors or one of the few big disposal companies. These have their own set of priorities which leads to a reduced rate of only 30 % of packaging that is really recycled (as in prepared for re-use). Thermal recycling is just more profitable.
  - Today, more than 20.000 special agreements are necessary to keep the system going.

Dual System



Dual System

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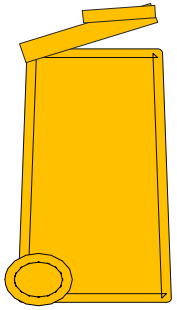
- **Problems (4)**
  - Municipalities can‘t tell or influence what happens with packaging that‘s collected within their jurisdiction.
  - Federal states are hardly able to monitor these processes even though they are obligated to.

Dual System



Dual System

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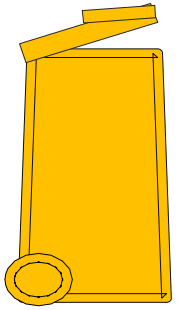
- **Operational Problems (1)**
  - The collection of lightweight plastic packaging (with private companies) presents a lot of problems, these are some that occur frequently:
    - Streets, complexes or single houses are skipped, their „yellow trash“ is not getting collected.
    - Due to weather reasons, packaging is not collected anywhere (even though public disposal companies still collect waste).
    - Collections are not carried out within scheduled timeframes.

Dual System



Dual System

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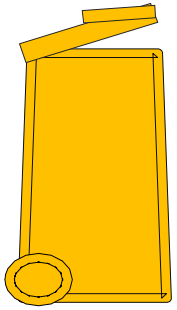
- **Operational Problems (2)**
  - Especially when contract partners are changed, the aforementioned problems are common.
  - Maybe in order to save on expenses or to make sure that bags aren‘t used for other purposes, inferior material is used: bags rip, contents spill onto the ground …
  - In many municipalities there isn‘t a sufficient number of bags to provide the households. This, too, is especially true when contracts change.
  - All of these disruptions cause pollution of the public street space.

Dual System



Dual System

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Conclusions

- Those who suffer the most by the lack of quality in the private companies‘ services, citizens and municipalities, have no handle to punish or sanction poor performance. (They can‘t, for instance, lower the collectors‘ remuneration.)
- The Dual Systems who could, often don‘t feel responsible for local disturbances and they are financially secure because of the licence fees.

Austria decided to collect and recycle only the easily recyclable plastic bottles (instead of collecting mixed plastic waste as well) when landfills were forbidden.

Dual System