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## Refillables for sustainability:

Key facts and figures from the independent PwC-study on different types of beverage packaging



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Deutsche Umwelthilfe

# Overview

- Who is Deutsche Umwelthilfe (DUH) and what does it do?
- Main findings of the study „Reuse and Recycling Systems for Selected Beverage Packaging from a Sustainability Perspective” carried out by PwC





# Who is Deutsche Umwelthilfe (DUH) and what does it do?




Deutsche Umwelthilfe

# Deutsche Umwelthilfe (DUH)

- Independent non-governmental organization (NGO)
- Nature and consumer protection
- Founded in 1975
- 85 employees
- 6,5 Mio EUR annual budget (2010), 30.000 sponsors
- Classical nature protection projects and policy campaigns
  - Deposit systems for beverage packaging
  - High standards for recycling (WEEE, packaging etc.)
  - Low sulfur fuels / Environmental zones
  - Renewable energy ...



Deutsche Umwelthilfe



**Main findings of the study „Reuse and Recycling Systems for Selected Beverage Packaging from a Sustainability Perspective“ carried out by PwC**



# Why another study about deposit systems?

- A lot of studies regarding deposit systems with false data and unrealistic assumptions on the market
- Certain industrial sectors have commissioned tainted studies arguing against deposit systems
- Most available studies focus either on environmental or on economic aspects of collection and recycling systems for beverage packaging



# Taking stock of the past, taking reality into account: PwC study on deposit systems

- Reuse and Recycling Systems for Selected Beverage Packaging from a Sustainability Perspective
- Commissioned by the independent NGO Deutsche Umwelthilfe
- Carried out by the auditing and consulting organization PricewaterhouseCoopers (PwC)
- For the first time a sustainability check on systems for collection and recycling of beverage containers



# A global PwC team effort

**PwC Germany**  
Dieter W. Horst  
Miriam Scherf  
Jens Brodersen



**PwC Poland**  
Agnieszka Rum



**PwC UK**  
Henry le Fleming



**PwC Japan**  
Akira Hayakawa



**PwC USA**  
Alexandre Rossin



**PwC Austria**  
Philipp Gaggl



**PwC Spain**  
Mariluz Castilla



**PwC Australia**  
Kerryn Schrank





# Scope of the PwC study

- Three different systems for collection and recycling
  - Refillable bottles (with deposit)
  - One-way (single use) beverage containers with deposit
  - One-way beverage containers in curbside collection systems (no deposit)
- Different kind of beverage packaging
  - Glas bottles (refillable and one-way)
  - PET bottles (refillable and one-way)
  - Beverage cans
  - Beverage cartons



# Evaluation model in the PwC study

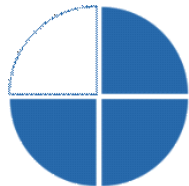
- 10 ecological impact categories with 16 indicators; e.g.
  - Resource and material use
  - Collection and recycling rates
- 8 economic impact categories with 19 indicators; e.g.
  - System costs and revenues
  - Impacts on businesses and competition
- 6 social impact categories with 9 indicators; e.g.
  - Employment
  - Implementation of producer responsibility



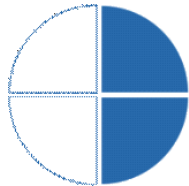
# Evaluation model in the PwC study



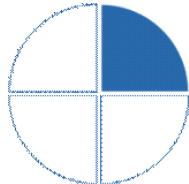
= System's influence on the indicator is very positive



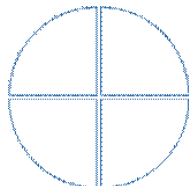
= System's influence on the indicator is predominantly positive



= System's influence on the indicator is slightly positive or negative



= System's influence on the indicator is predominantly negative



= System's influence on the indicator is very negative





## Main findings of the PwC study

- Refillable systems are more sustainable than one-way systems
- Deposit systems are more sustainable than curbside collection of beverage containers
- Deposit systems for beverage containers enable higher collection rates and better recycling
- Deposit system for one-way beverage containers is not more expensive than curbside collection
- Deposit system for one-way beverage containers is more cost efficient than curbside collection
- Deposit systems and curbside collection can coexist well
- Political measures (in addition to deposit on one-way containers) are necessary to promote refillable systems

# PwC: Refillable bottles are best in class

- In all three pillars of sustainability refillable bottles beat one-way beverage packaging systems, e.g. in the categories
  - Resources use
  - Global warming
  - Ecological packaging design
  - System costs
  - Start-up difficulties
  - Product diversity
  - Employment
  - Implementation of producer responsibility



# Refillable bottles for waste prevention

- Refillable bottles are often heavier than one-way beverage packaging.
- Due to the multiple use, they need less packaging material per product and produce **less packaging waste**



# Refillable bottles for waste prevention



1 refillable glass bottle (0,5 liter) replaces 42 beverage cans (0,5 liter )

# Refillable bottles for waste prevention

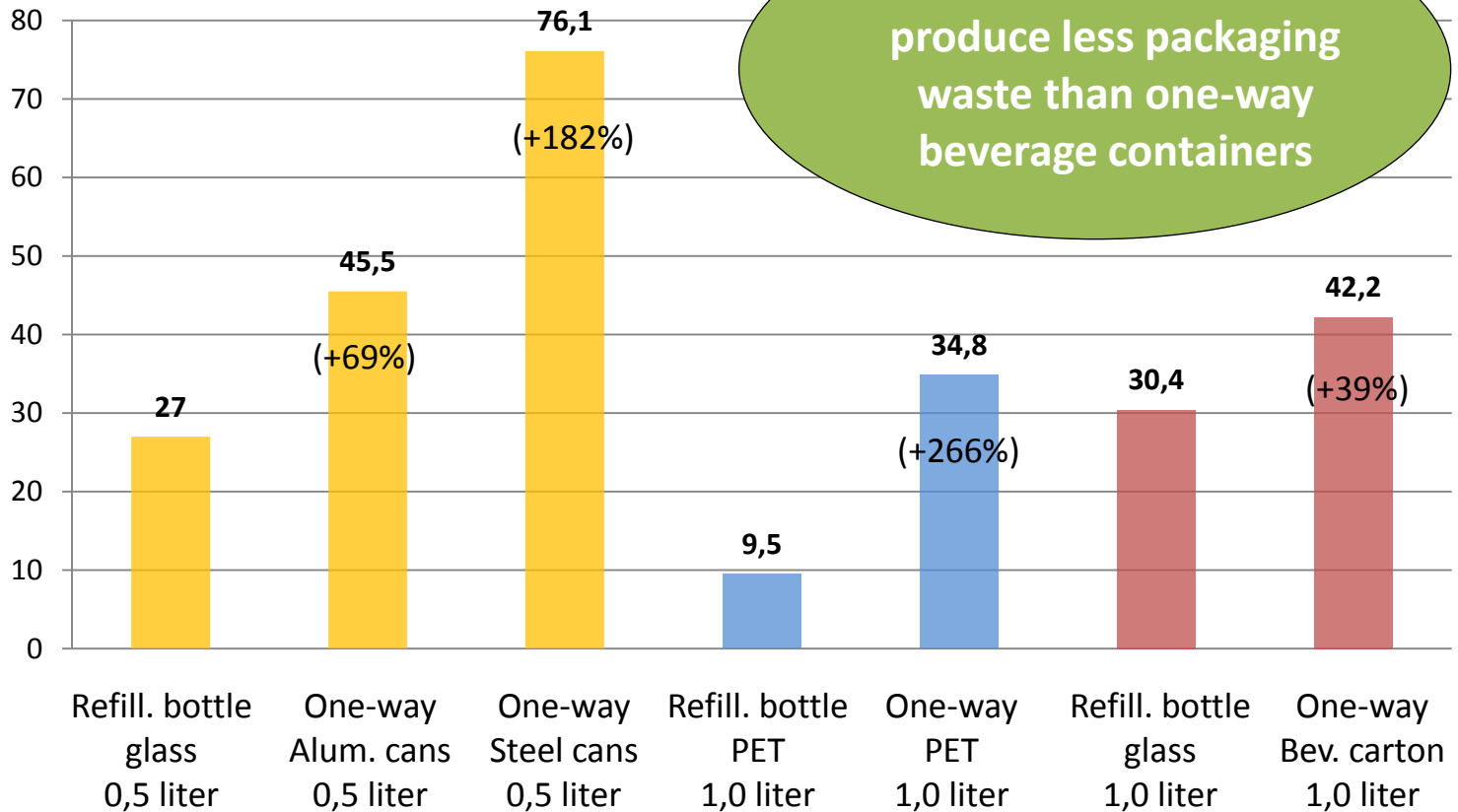


1 refillable glass bottle (1 liter) replaces 46 beverage cartons (1 liter)



# Refillable bottles for waste prevention

kg packaging material per  
1.000 liter product



Refillable bottles produce less packaging waste than one-way beverage containers

Source: DUH on the basis of data from PwC, 2011

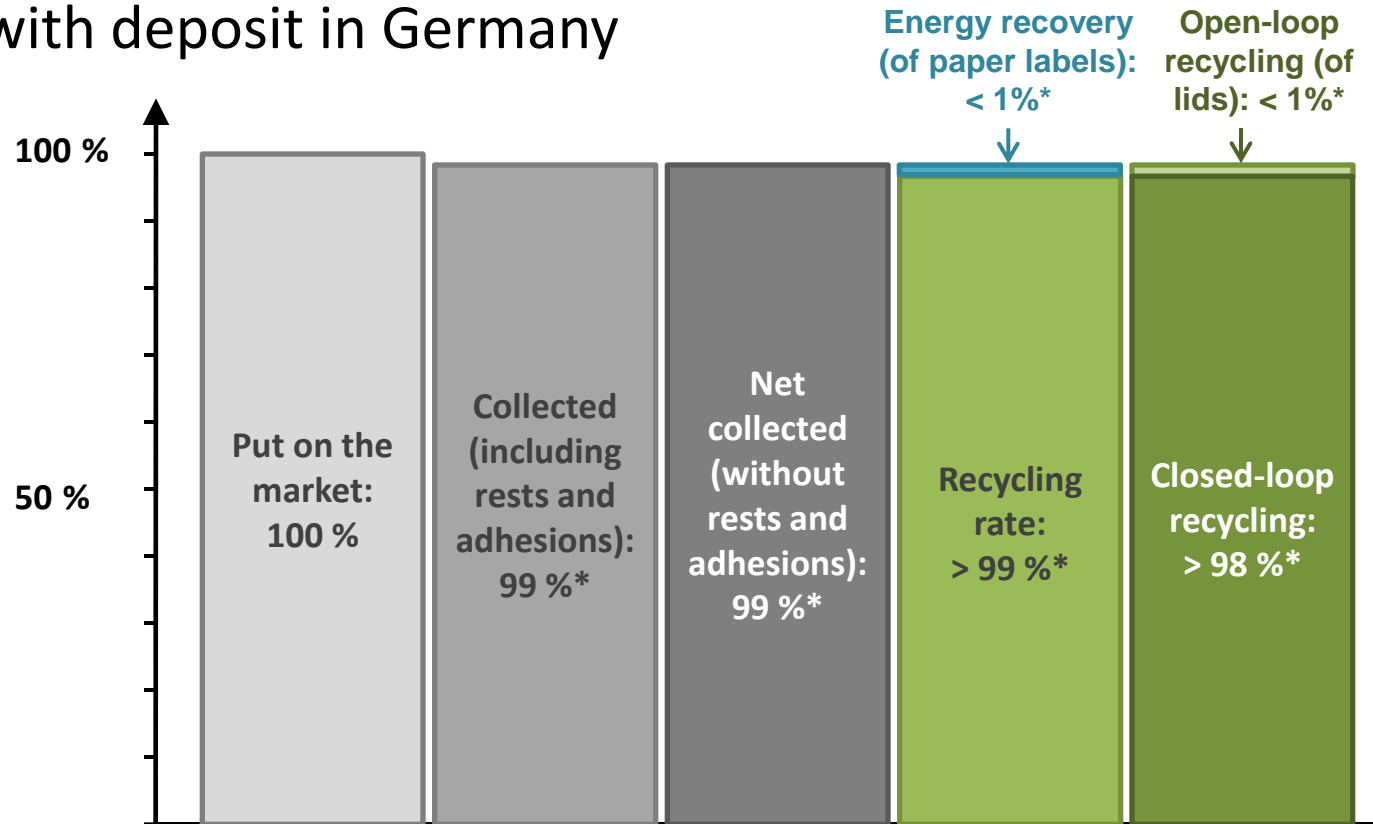
Beer

Water

Juice

# PwC: Deposit achieves much higher collection and recycling rates than curbside collection

- Collection and recycling rates for refillable glass bottles with deposit in Germany

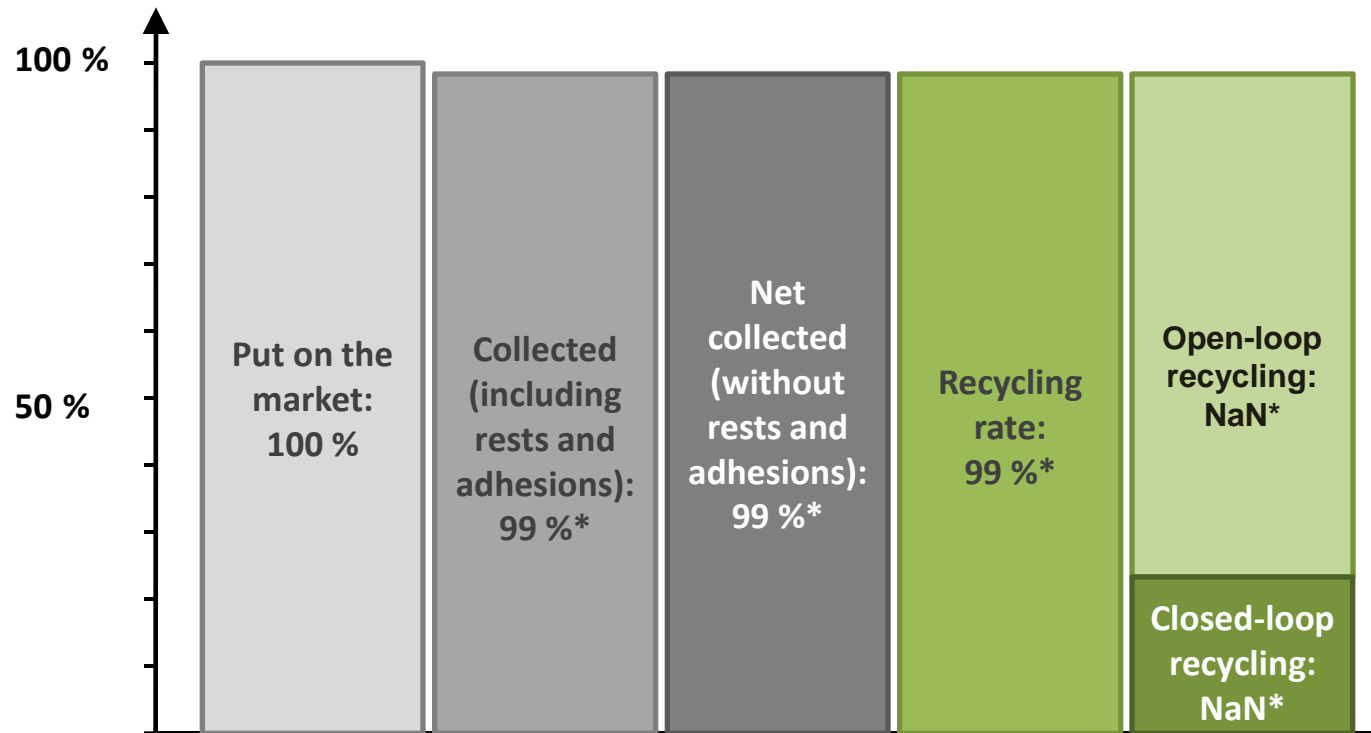


Source: PwC, 2011

\* Compared to the amount of packaging put on the market

# PwC: Deposit achieves much higher collection and recycling rates than curbside collection

- Collection and recycling rates for PET refillable bottles and PET one-way bottles with deposit in Germany

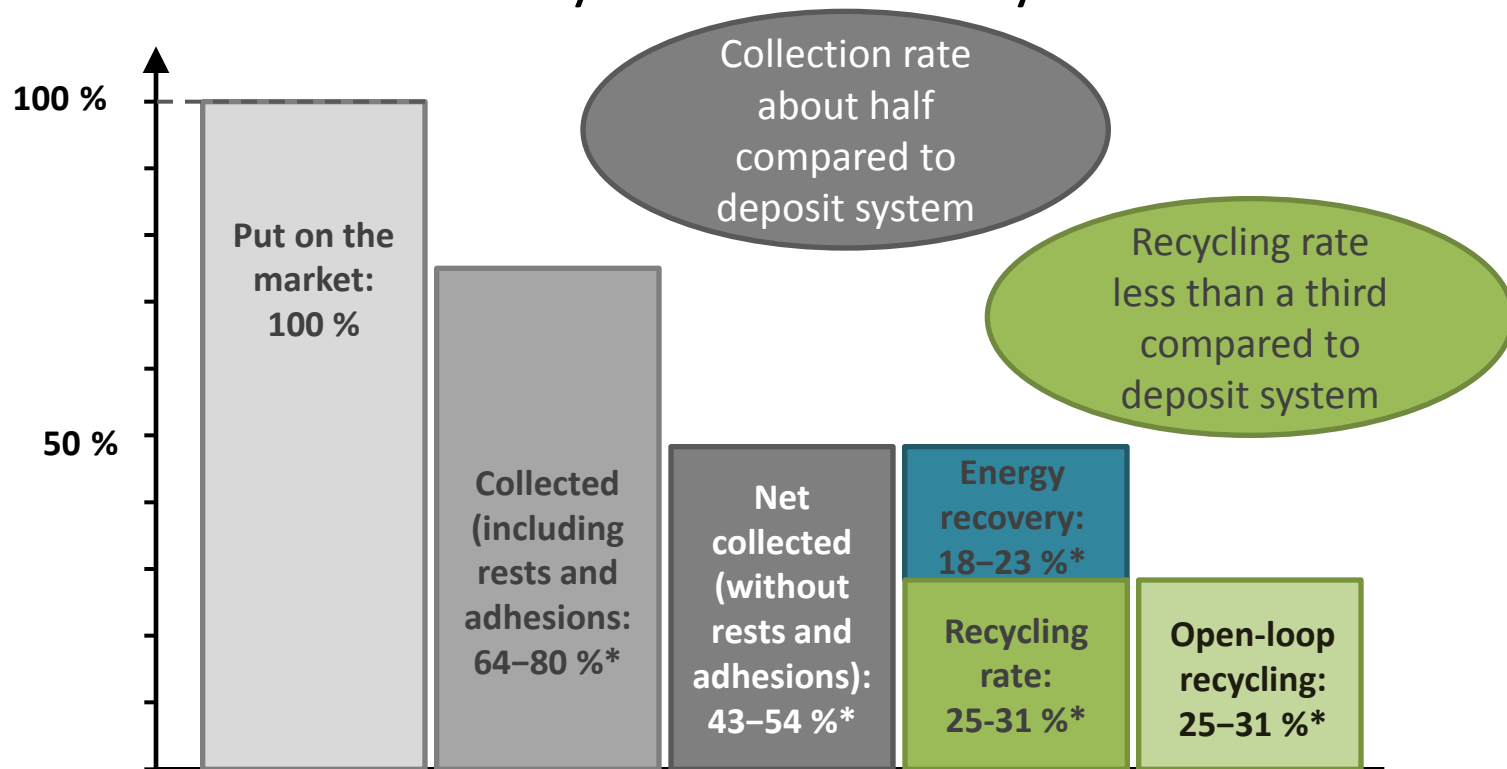


Source: PwC, 2011

\* Compared to the amount of packaging put on the market

# PwC: Deposit achieves much higher collection and recycling rates than curbside collection

- Collection and recycling rates for PET one-way bottles in curbside collection system in Germany




Source: PwC, 2011

\* Compared to the amount of packaging put on the market

# PwC: Deposit systems enable not only more, but also better recycling

- In the deposit systems all collected materials are recycled.
  - “Clear” PET from deposit system: 460-530 EUR / t
- The materials collected in the curbside collection are worse in quality and only partly recycled.
  - “Clear” PET from curbside collection: 275-320 EUR / t
- The quality of the PET from the curbside collection is not good enough to enable bottle-to-bottle recycling

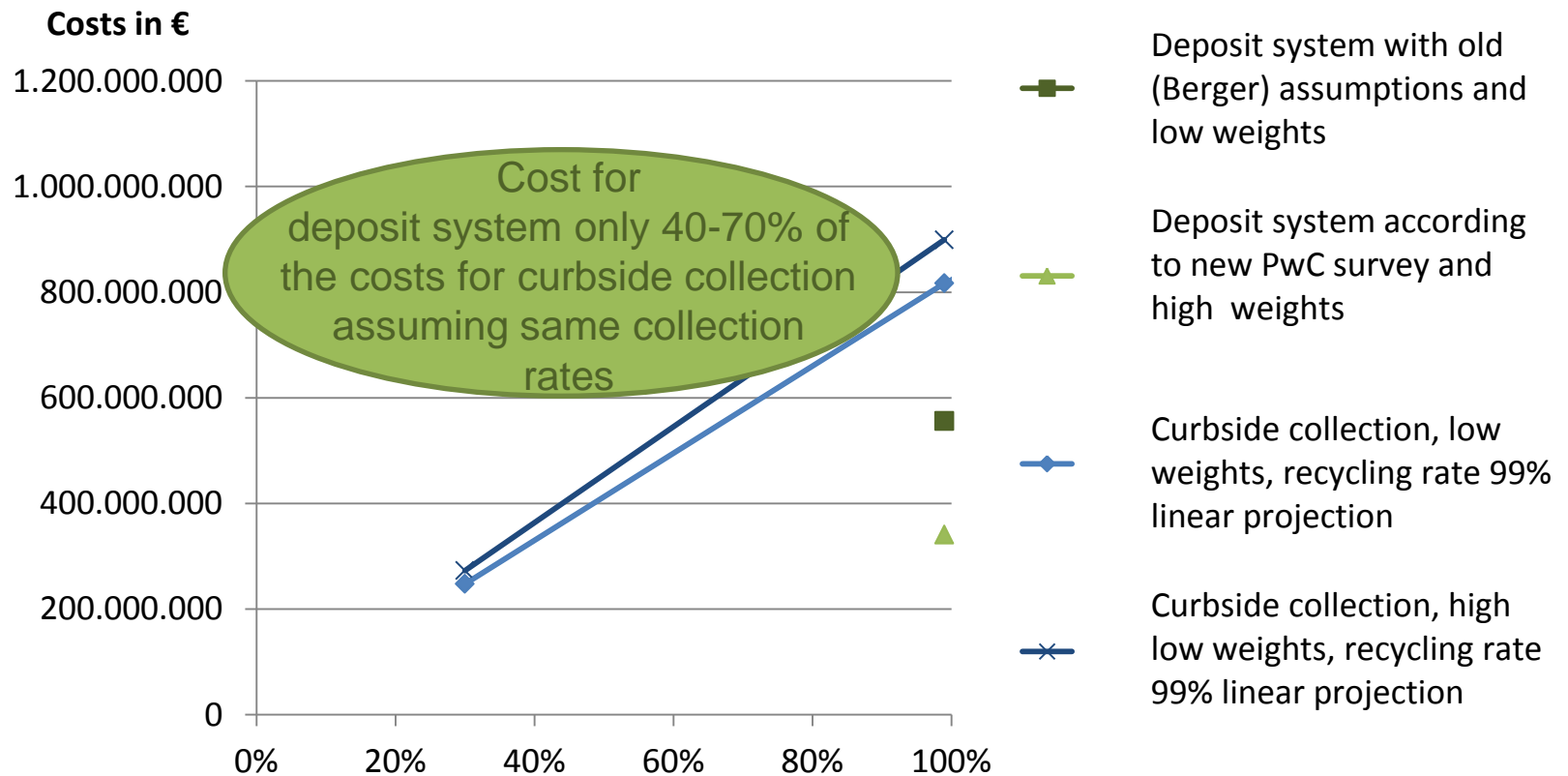




## PwC: Deposit systems are not more expensive than curbside collection

- Earlier analyses arrived at the finding that the deposit system gives rise to higher costs.
- Current data indicates that developments are tending to favour mandatory deposit systems and that participation in a deposit system can be less costly than participation in a green dot system.
- **In Germany, the costs for the one-way deposit system are (under realistic assumption) 14 % lower than for the curbside collection system (green dot system).**

# PwC: Deposit systems are more cost efficient than curbside collection





## PwC: Differentiated view of total system costs for one-way and refillable systems

- Total costs for **beverage producers** are 43-46% lower for refillable systems than for one-way systems
- Total costs for **retail** depending on packaging unit, line of business and the take-back logistics
- Altogether the **total system costs** for refillable systems seem to be lower compared to one-way systems



# PwC: Deposit systems and curbside collection can coexist very well

- Mandatory deposit systems and green dot systems for single-use beverage containers are aimed in part at different segments.
- The two systems supplement one another and can coexist very well.





# PwC: Refillable systems need political support

- Deposit systems contribute to achieving the following political targets:
  - High collection rates (up to 98,5%\*)
  - High recycling rates (up to 98,5%\*)
  - High recycling quality (*bottle-to-bottle* and *closed-loop* recycling)
  - Reduction of littering
- Deposits on one-way beverage packaging alone does not secure high refillable quotas. Political steering instruments promoting refillable systems are needed.

\* Based on the amount of packaging put on the market



# PwC: Refillable systems need political support

- PwC recommendations for achieving high refillable quotas in Germany (in addition to the one-way deposit):
  - Clear labeling of one-way and refillable packaging
  - Unification and extension of the one-way deposit
  - Information campaigns
  - Improved data
  - Accreditation of refillable systems
  - Incentive levy for ecologically disadvantageous types of beverage packaging
  - Appropriation of the revenues from the incentive levy (e.g. direct financial benefits for environmentally advantageous beverage packaging such as refillable bottles)



**Thank you very much for your attention!**

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