

Evaluation of the environmental impacts of take-away beverage cups and possible measures to reduce the consumption?

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BACKGROUND



Starting points

- Visible littering (“hot spots”) of beverage take-away cups, e.g. Coffee-to-go (C2G),
- Political pressure from
 - NGOs
 - Municipal waste collection systems (costs of collection)
- Requests of German regions (“Bundesrat”) to the German Federal Government to intervene
- C2G as symbol for non-circular throw-away consumption



Political answer: Research project

- **Client:**

- German Federal Environment Agency [UBA] (www.umweltbundesamt.de/en)

- **Project title:**

- Investigation of the ecological significance of disposable beverage cups for out-of-home consumption and possible measures to reduce consumption

- **Purpose of the project:**

- Creation of figures on quantities of consumption
- Evaluation of the relevance concerning waste management and life cycle assessment
- Derivation and evaluation of options for political and economic actions

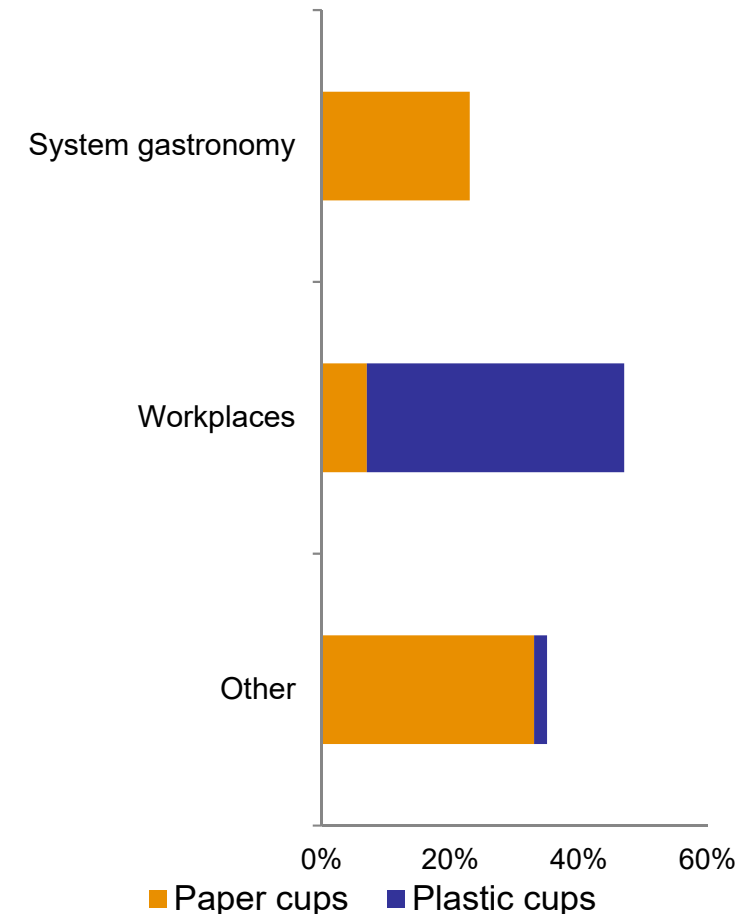
- **Methods applied**

- LCA
- Consumer survey
- Literature review
- Phone interviews with scientific experts, practitioners
- Analysis of instructive examples
- Expert workshops



Framework – points of sale

- Examination of disposable and reusable systems for hot beverages (C2G) primarily used for out-of-home consumption
- This includes various distribution channels (sales over the counter and vending machine distribution) and locations of consumption:
 - System gastronomy (coffee chains such as Starbucks, fast food venues such as McDonalds, but also other catering systems → **disposable cups are predominantly offered here.**
 - Workplaces (e.g. canteens, social and factory areas, hospitals, etc.) → **mainly rented space for vending machines.**
 - Others (e.g. bakeries, cafés, petrol stations, retailers) → **mainly out-of-home consumption.**

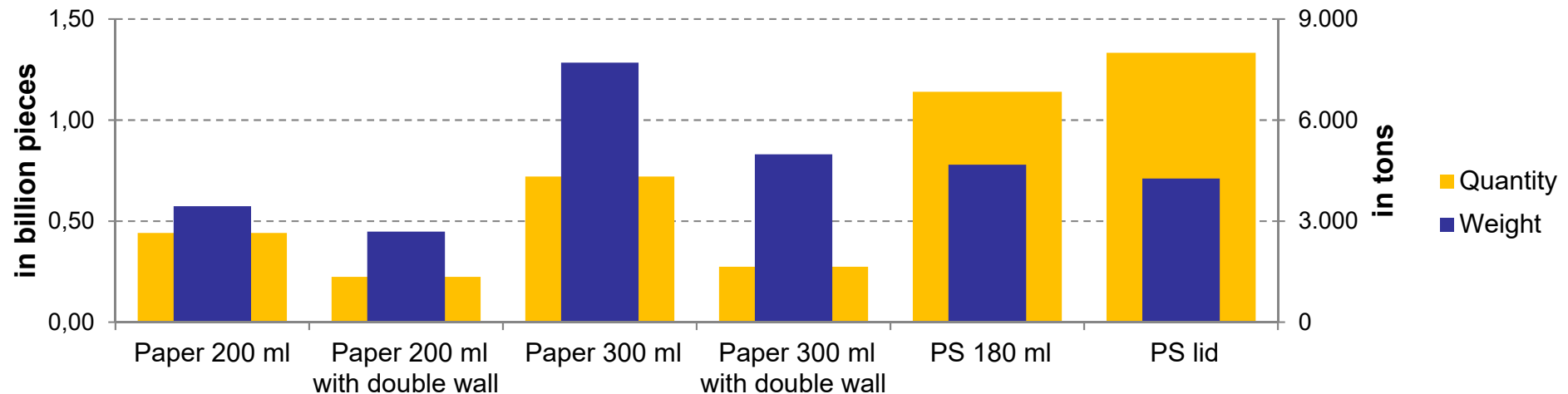




FINDINGS



Quantities and weights



- **In total 2.8 billion cups in the „out-of-home consumption“ in Germany in 2016**
 - 1.66 billion paper cups (plastic laminated, the "classic take-away-cup") (share: 60%)
 - 1.14 billion plastic cups (mostly polystyrol (PS), mainly vending machine cups) (share 40%)
- **In addition, 1.33 billion polystyrene lids are consumed**
 - 70% of all paper cups are given out with lid
 - 15% of all plastic cups are given out with lid
- **BUT – total weight of 28,000 tons (28 kt)**
 - Weight of 19 kt (paper etc.) has a share of 0.3 % of paper subject to mechanical recycling
 - Weight of 9 kt (plastics) has a share of 0.6 of plastics subject to mechanical recycling



LCA - comparisons

– Disposable cups

- disposable cups without lids
- disposable cups with lids
- systems in waste incineration, cement plants and recycling (for paper cups future option)

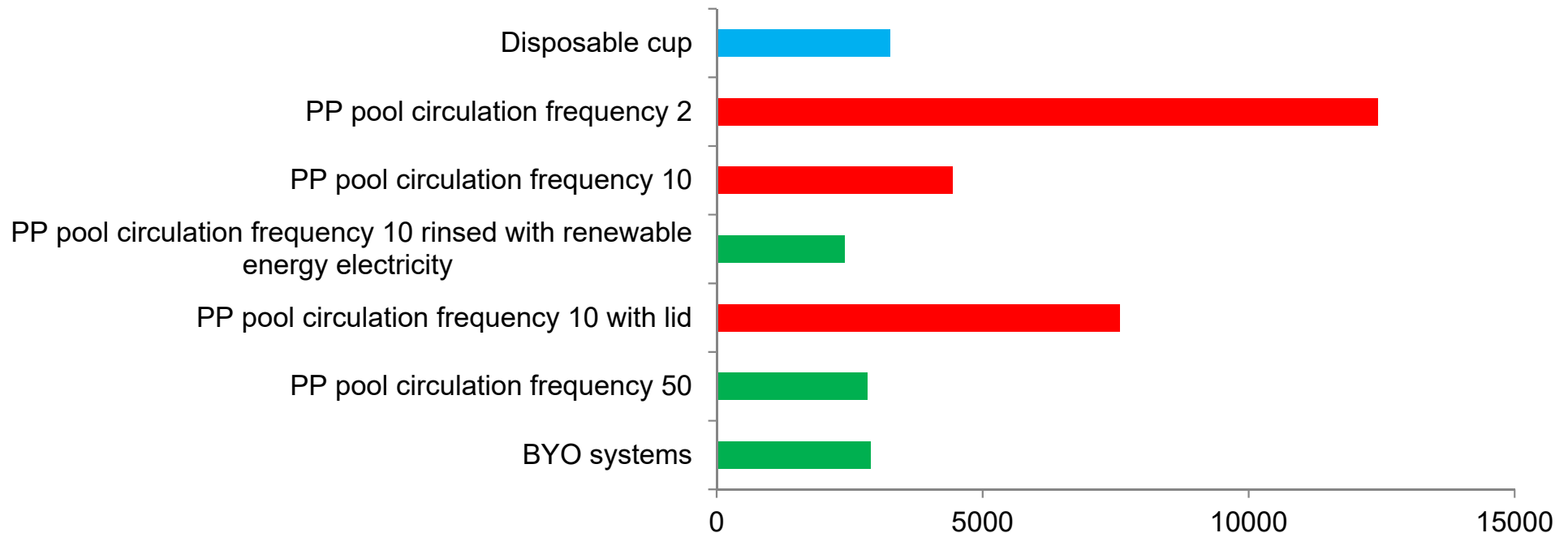
– Reusable cups

- Bring-your-own (BYO) system = dishwasher expenses only (can also be used as a proxy for cups in cafés)
 - Polypropylen (PP) reusable pool with central flushing
 - with and
 - without
- disposable lid for various circulation frequencies

Comparison to reusable systems (CO₂ emissions)



- **Assumption: Substitution of 2.8 billion coffee servings consumed in 2016. Changes (with regard to CO₂) presented as population average in ...**



- **Conclusions:**
 - Returnable cups must meet certain requirements in order to achieve an advantageous life cycle performance compared to disposable cups.
 - Hygiene aspects must be ensured



MEASURES

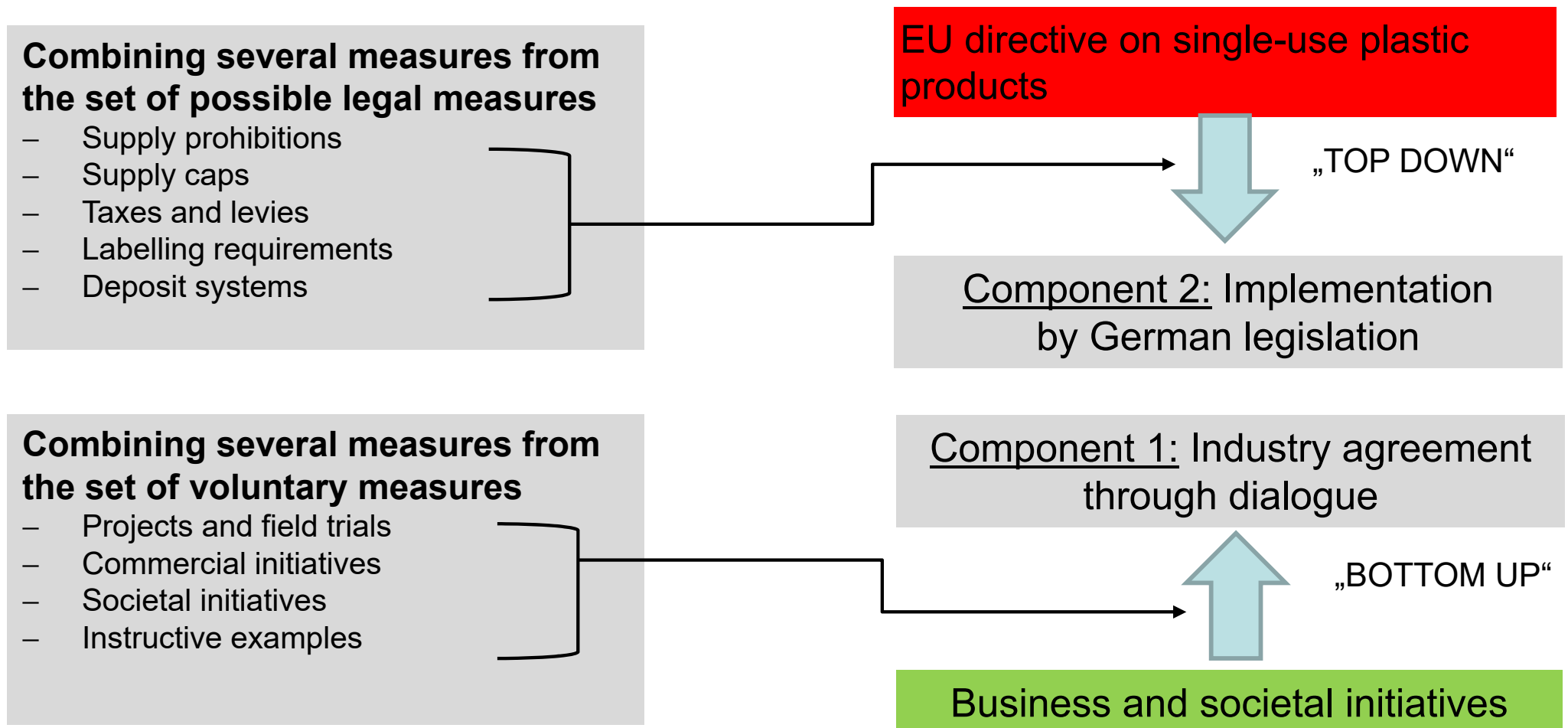


Voluntary measures - projects and field trials

- **Tests and studies limited in time and scope**
- **A few matches, especially from the scientific field (abroad)**
- **Results**
 - Varying reactions of adjustment to change in prices according to the cup type with (Prospect Theory):
 - Losses less accepted than profits
 - Significant behavioural changes due to additional pricing of single-use cups
 - Discounts on reusable cups significantly less effective
 - Stand-alone measures are of low effectiveness compared to a combination of several measures
 - "Nudging" as a new topic, but no application in the investigated area



“Dual approach”





Component 1: Industry agreement I

- **Indicative target:**
 - Reduction of the current level of 34 disposable cups/person * year by 50%.
- **Industry dialogue with the involvement of:**
 - Economy, especially large chains
 - Business and trade associations
 - Environmental and consumer organisations
 - Authorities and Ministries
- **Characteristics:**
 - External moderation
 - Market coverage > 50%
 - Agreement on measures to achieve objectives



Component 1: Industry agreement II

- **Economic incentives**

- Price differentiation at the POS

- Cup: disposable cup + 20 cents, reusable cup – 20 cents (each incl. VAT)

- Lid: disposable cup + 10 cents (incl. VAT)

- Deposit

- Reusable cup 1€, Reusable lid 50 cents (incl. VAT)

- **Nudges:**

- Reusable cup as standard cup

- Reusable cup preferred placement at POS

- **Market coverage:**

- Narrow-meshed return locations (small-scale, cross-regional)

- **Training and education of staff**



Component 1: Industry agreement III

- **Littering funds**
 - Deposit of 50% of the revenues from disposable cup and lid surcharges
 - Use for the collection of falsely disposed single-use cups and lids as well as campaign (see below)
 - Nationwide vs. decentralised approach to be discussed
- **Eco-label Blauer Engel**
 - Development of requirements for labelling
- **Campaigns and Marketing**
 - Bundled and easily recognizable components
- **Monitoring**
 - Annual monitoring report
 - Implementation by an independent, commissioned institution

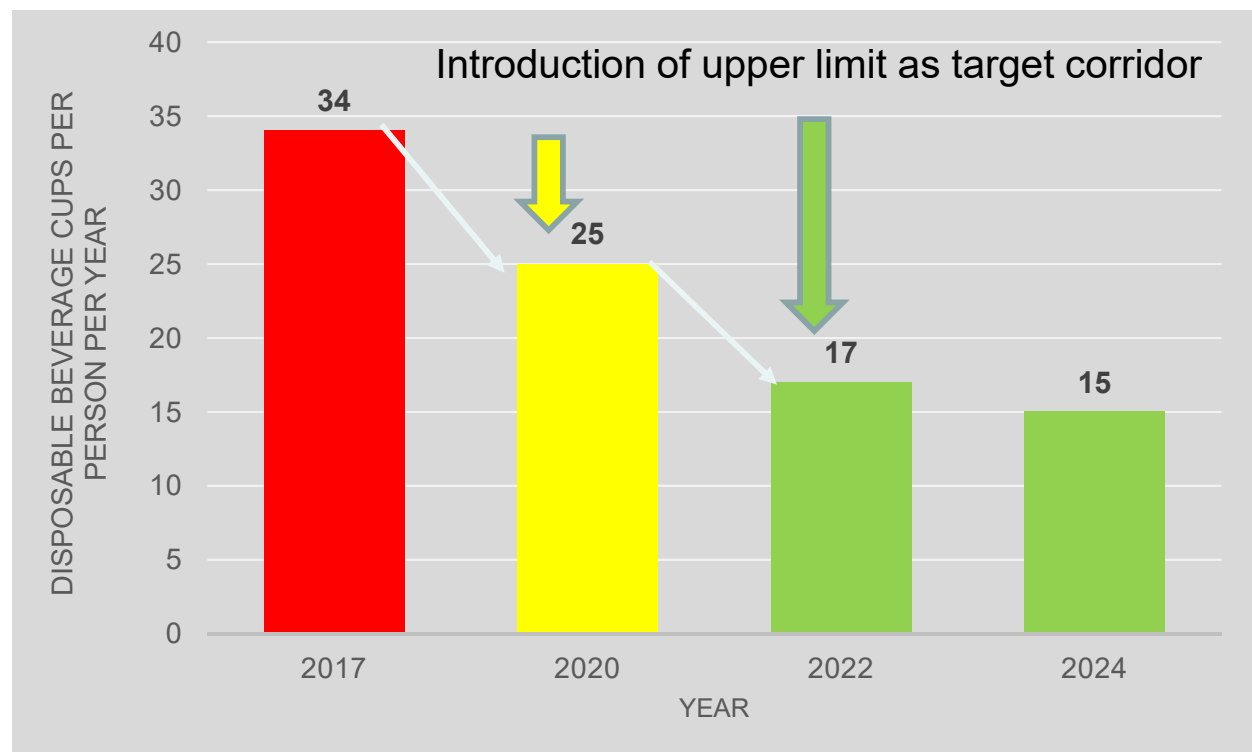


Component 2: Legal measures I

- „Shadow of hierarchy“ → Highlighting the seriousness of the environmental objective & developing frameworks
- „Just in case“ if industry agreement fails

– Measures

- Caps:
Determination of an upper limit of 50% compared to the status quo (in two steps)





Component 2: Legal measures II

- **Collection of levies**

- Disposable cup: 20 cents (incl. VAT)
- Disposable lid: 10 cents (incl. VAT)

- **Littering funds**

- earmarked revenues achieved from the levies as well as the deposit slip on disposable cups and lids are to be paid into a littering fund
- Use of littering fund to finance the costly collection of disposable cups and lids disposed of wildly in the environment.
- Nationwide vs. decentralised approach to be discussed

- **Deposit system**

- Compulsory deposit for disposable cups of 25 cents (incl. VAT)
- Payment of the deposit slip into the littering fund

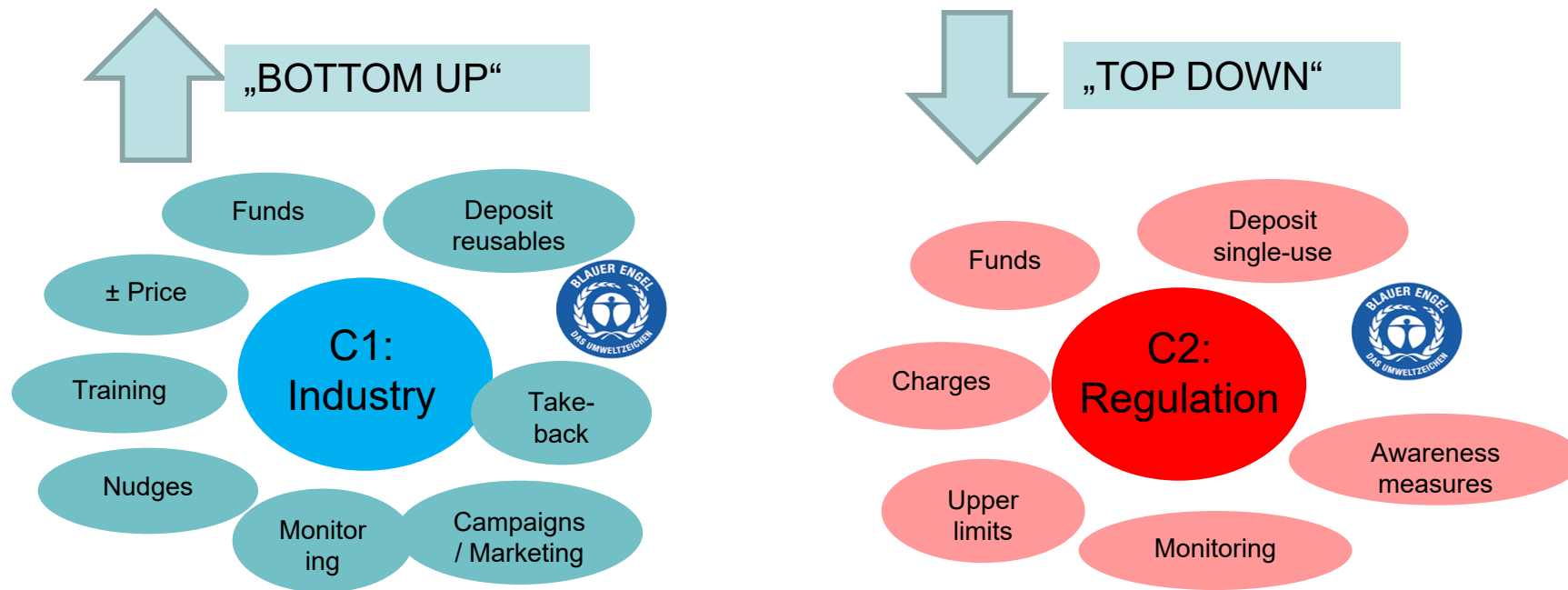


Component 2: Supporting measures

- **Awareness-raising measures, not of legal nature:**
 - Some of the funds allocated to the Littering Fund should be used for
 - To stay
 - Handling of disposable cups and lids to avoid littering
 - Continuation of the development of labelling requirements for “Blauer Engel”



Key measures of the dual approach





KEY MESSAGES



Key messages

- In Germany, 2.8 billion disposable beverage cups for take-away are consumed in 2016 = **34 cups per inhabitant per year**.
- Numerically low total environmental impacts and waste quantities – But: must be related to the **very limited service life** of the product
- The main problems with the use of the disposable cups are **littering** and the insufficient implementation of the **polluter-pays principle**.
- A possible approach - "**dual approach**" → especially littering funds
- But do not forget: **Coffee-to-stay**
→ change of consumption patterns (links to “sufficiency” and degrowth paradigm)

Final report could be downloaded here:

<https://www.umweltbundesamt.de/publikationen/oekologische-bedeutung-einweggetraenkebecher>

Thank you for your attention.

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