

German Environment Agency

Umwelt
Bundesamt 

Global Methane Forum, Geneva, 20.03.2024

Germany: Methane Mitigation in the Waste Sector

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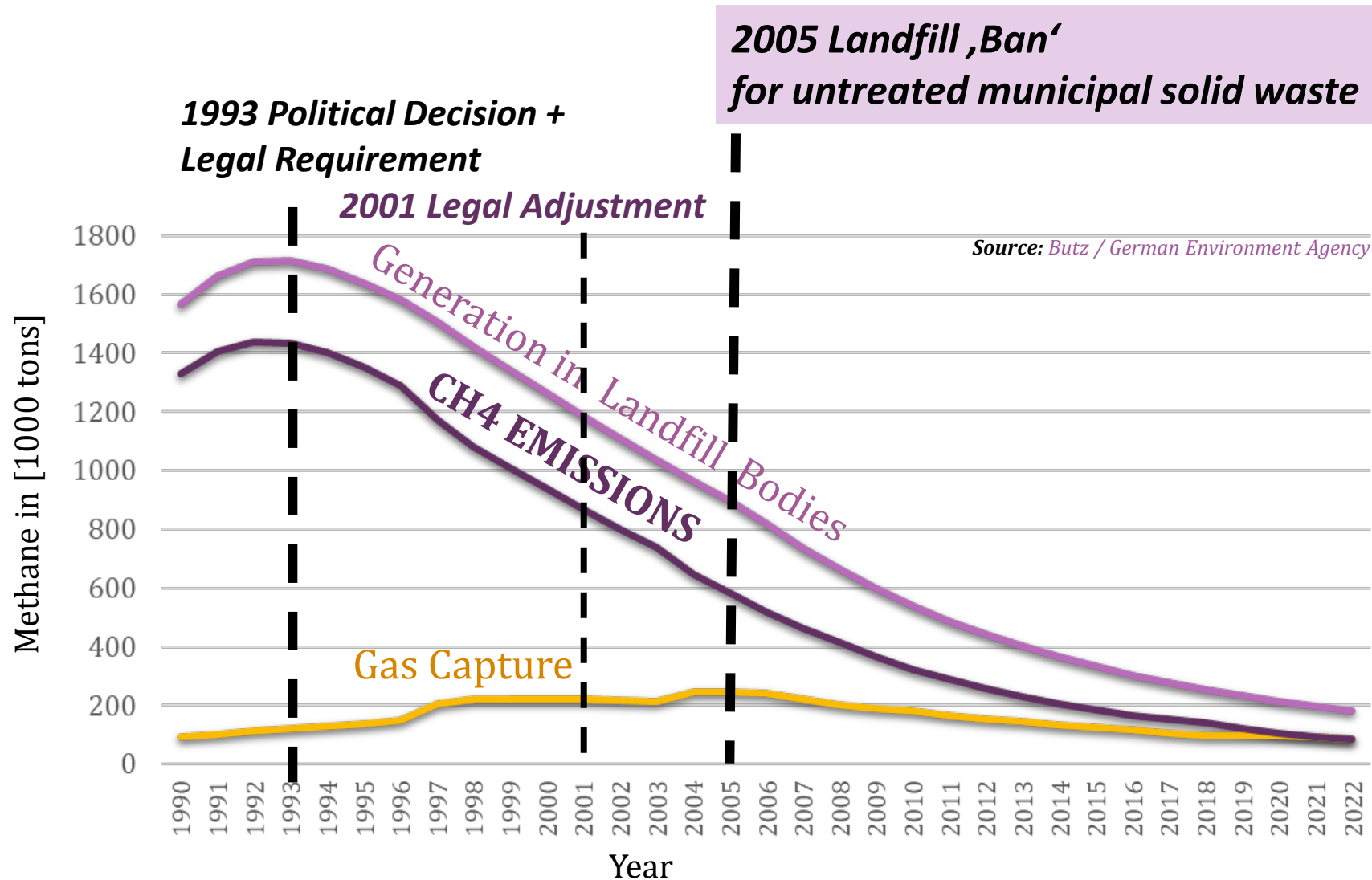
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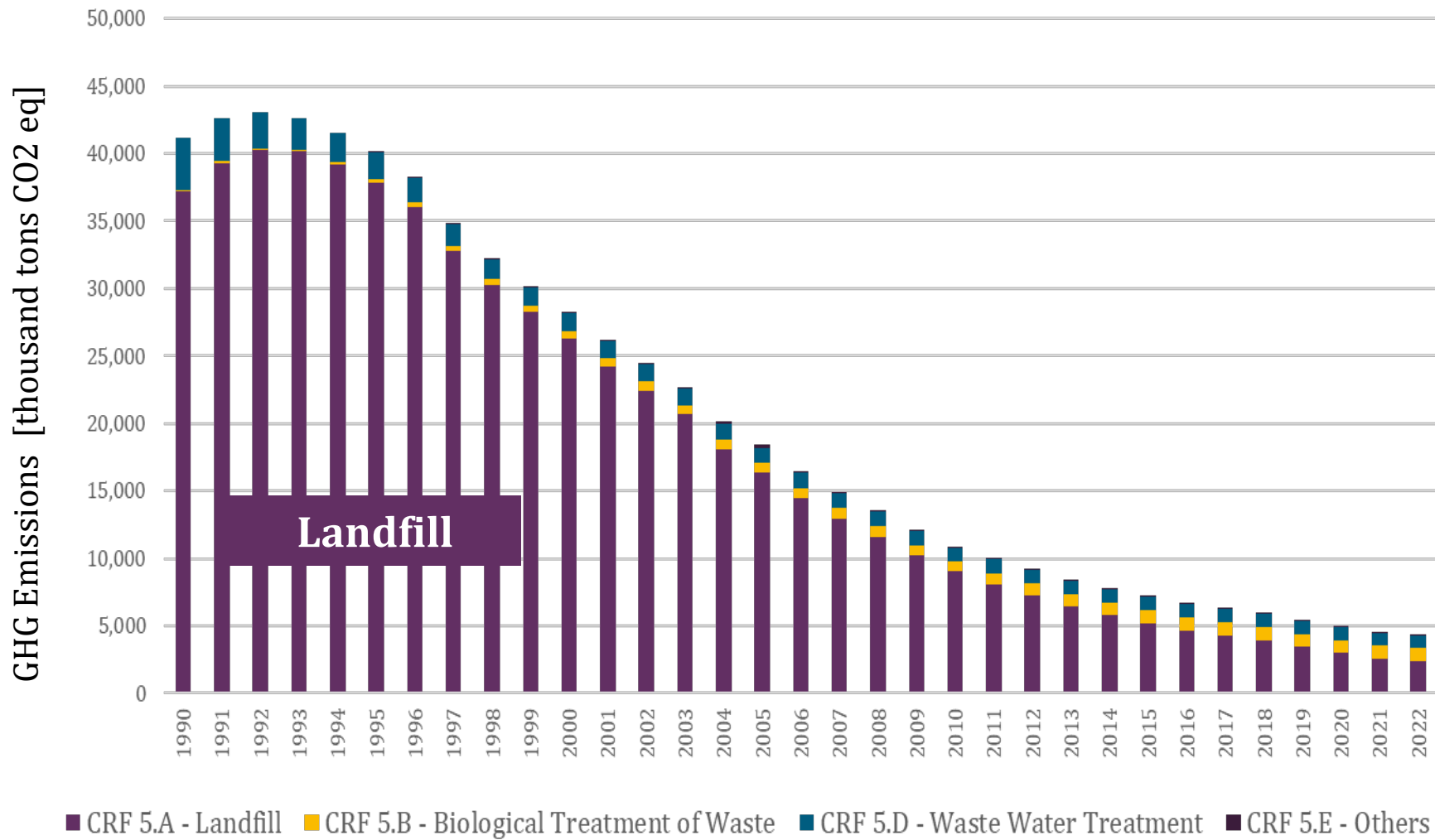
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Example Germany: Waste Policy Impact on Methane Emissions from Landfill



- **Avoid legacy for future (generation)**
- 12-year transition period for infrastructure development
- **Controllable Parameter:**
 - 1993 Technical Ordinance on MSW: TOC < 3 %
 - 2001 Waste Disposal Ordinance: For waste from bio-mechanical treatment: TOC < 18 %, Respiration Activ. AT4 < 5 mg/m³, Gas Formation Rate GB21 < 20 ml/g
- **Minimize biodegradable waste in landfill body is crucial to curb methane formation**
- **Landfill gas capture compulsory**

Effective Reduction of Methane: Germany National Inventory Reporting



- Emission reduction of more than 90 % compared to 1990 by ban to landfill untreated waste
- Methane formation in landfills continues for decades
- Emissions from Biological Waste Treatment significantly lower than from landfill and result from process, storage, operation failures, accidents

Source: Umweltbundesamt,

https://www.umweltbundesamt.de/sites/default/files/medien/361/dokumente/2023_03_15_em_entwicklung_in_d_ksg-sektoren_pm.xlsx

Avoiding methane formation in landfills by applying the waste hierarchy



(1) Prevention & Reduction

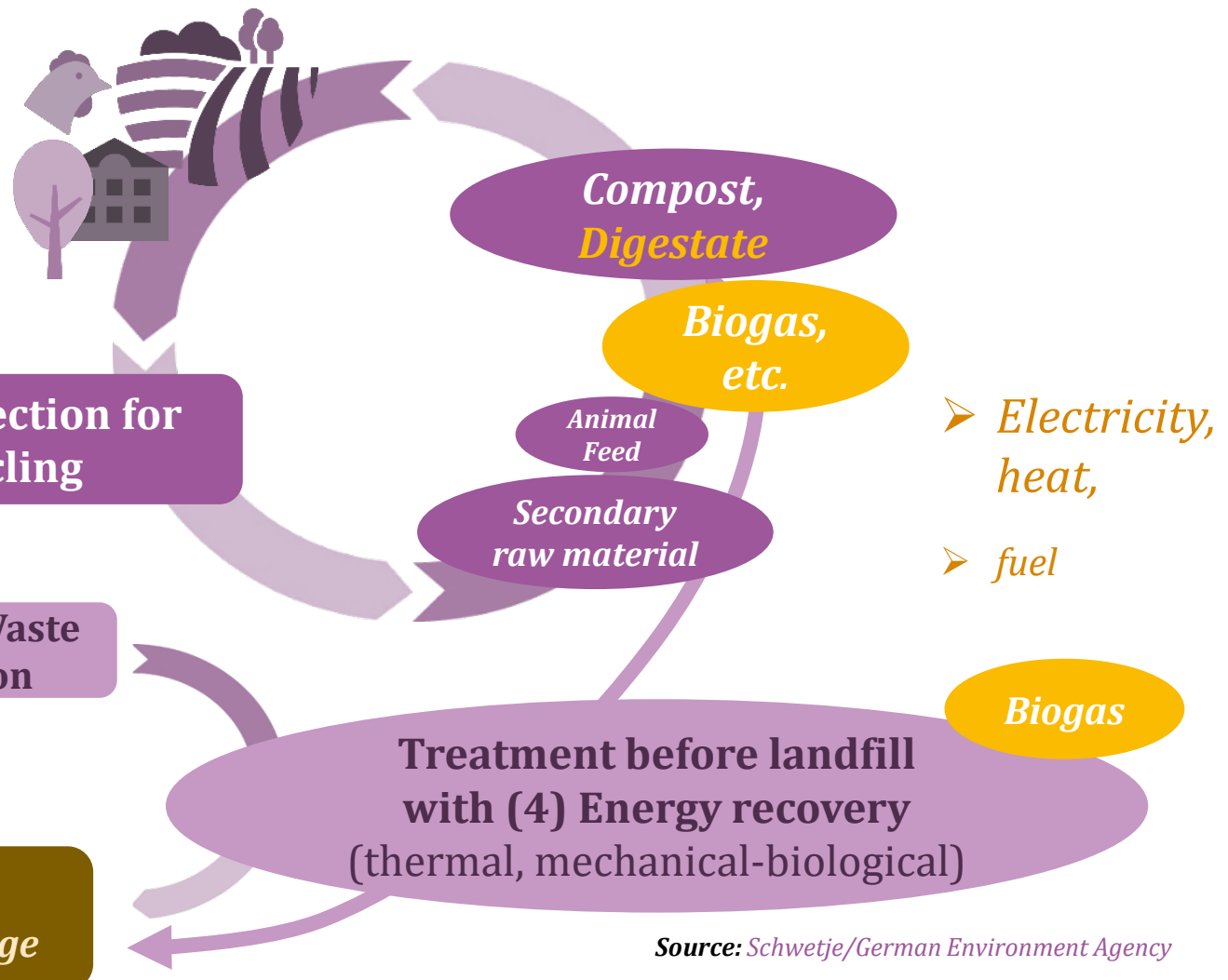
(2) Preparation for Re-use

Separate Collection for
(3) Recycling

Residual Waste
Collection

~~Directly,
un-treated~~

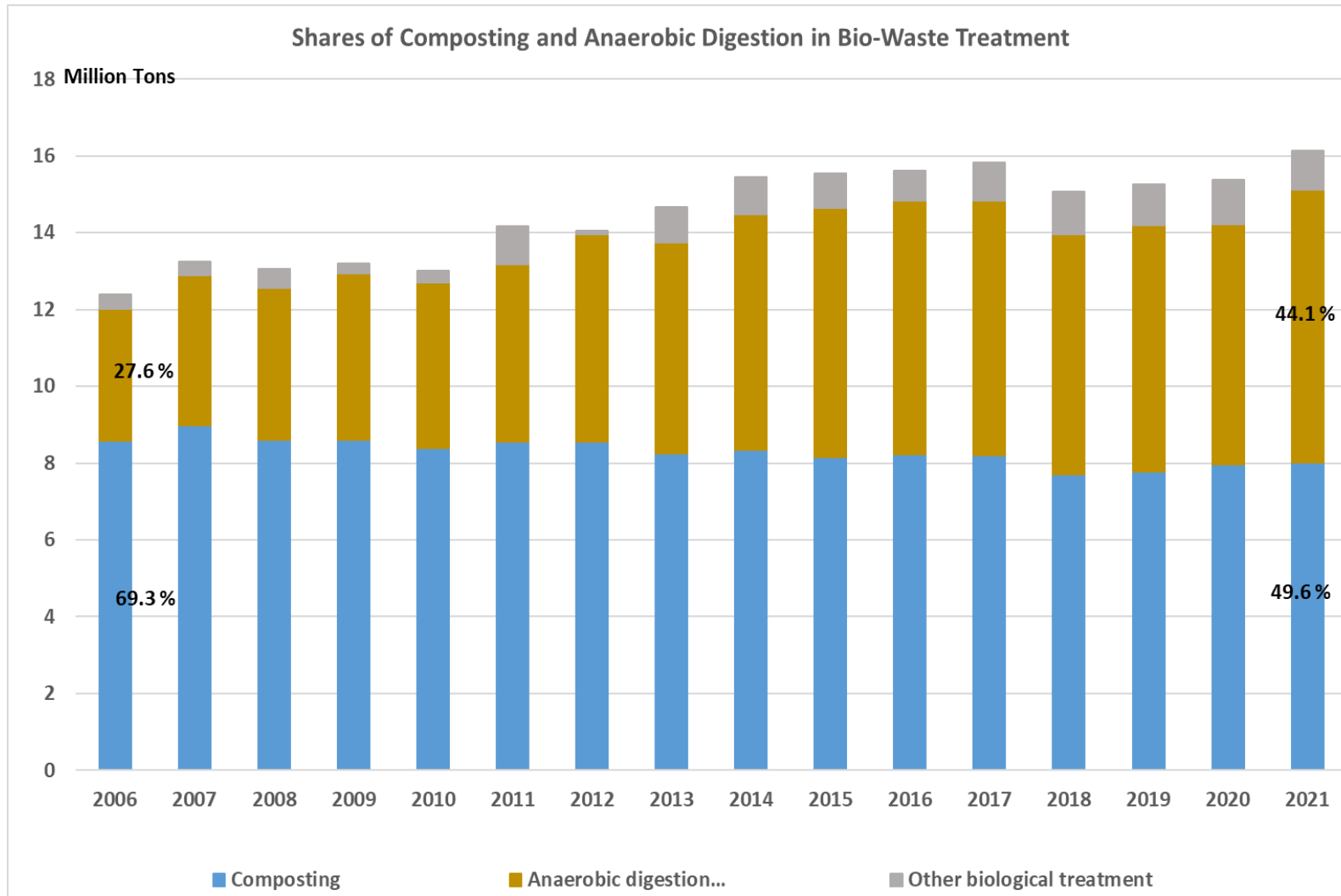
Landfill
+ LFG capture / usage



Source: Schwetje/German Environment Agency

Germany:

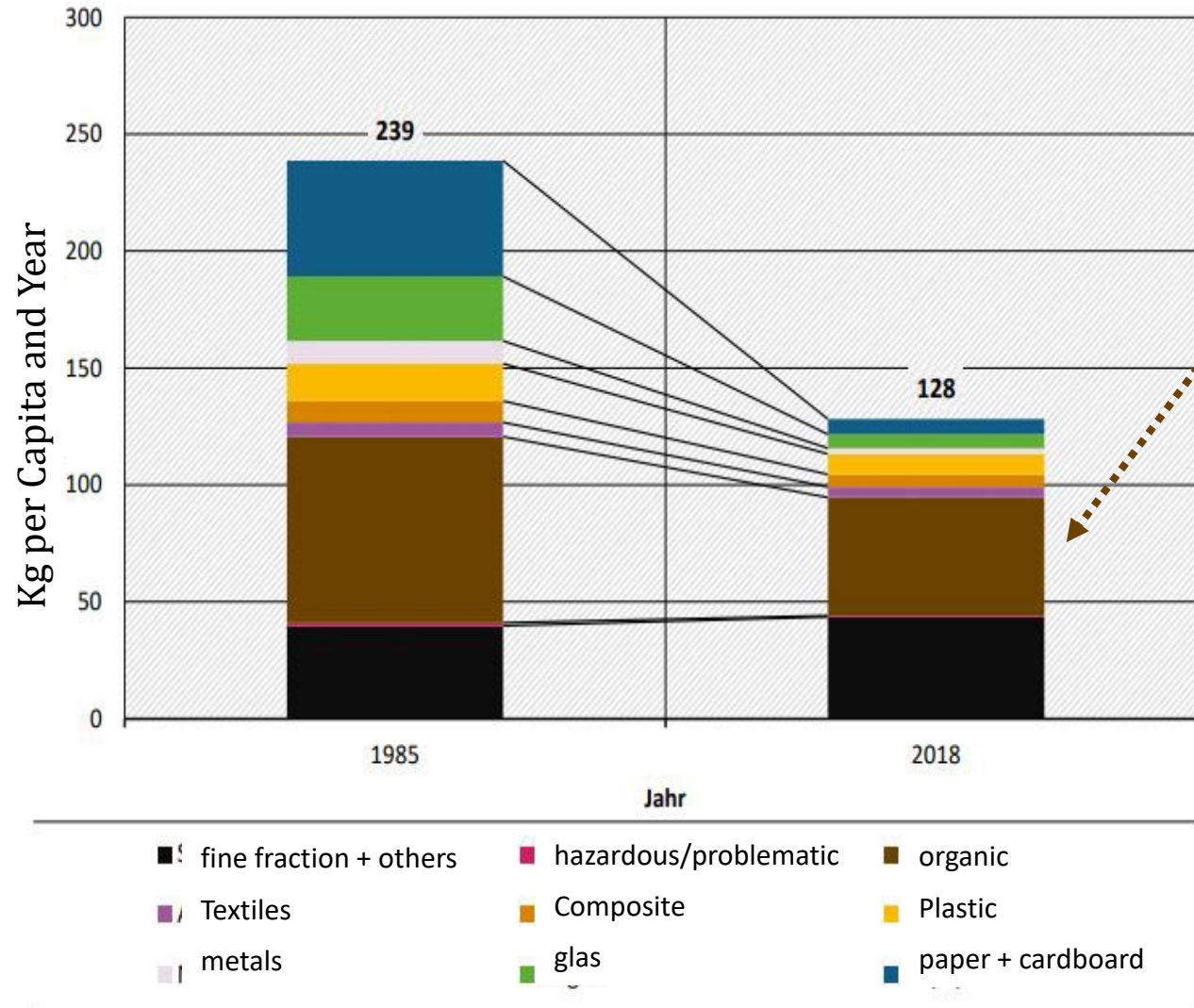
Trends in Treatment of household and commercial Bio-Waste (separately collected): 2006-2021



- **Measures along the waste hierarchy and implementation of circular economy:**
 - Increase in amounts separately collected and treated
 - Increase in anaerobic digestion
- **To avoid methane generation in landfills along with other environmental benefits, the separate collection and treatment of biodegradable waste including by anaerobic digestion is crucial**

Why pre-treatment before landfill?

Germany: Residual waste, a glance into the bin



Per capita household waste amounts and composition for 1985 and 2018

Despite separate collection of biowaste, the residual waste contains 39.3 % (weight) of organic waste, corresponding to 50.4 kg per inhabitant and year.

- To stop the formation of methane in landfills: pre-treatment remains necessary

Quelle: eigene Darstellung, INFA GmbH

Example Germany: Relevant Policy Measures along the Waste Hierarchy

BAN LANDFILL OF UNTREATED MUNICIPAL SOLID WASTE

- Prevent and reduce food waste
- Separately collect organic waste and treat/recycle/recover by composting, (plus) **anaerobic digestion (AD)** or other
- Treat residual waste still containing biodegradable fractions before final disposal: thermal or bio-mechanical with extraction of recyclables, recovery of energy



- ✓ *Minimization of methane emissions, leachate and other environmental impacts of landfills*
- ✓ *Reduction of municipal solid waste for landfill*
- ✓ *Minimize costs and efforts for closure and after care, as e.g. leachate and other problems like subsidence a minimal*

AD / Renewable Energy Scheme for Support

Thank you for your attention

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