Deutsches Biomasseforschungszentrum
gemeinnützige GmbH

DBFZ

Universität Rostock
Traditio et Innovatio

Biogene Abfälle und Reststoffe – Beitrag zu Klima- und Ressourcenschutz?!

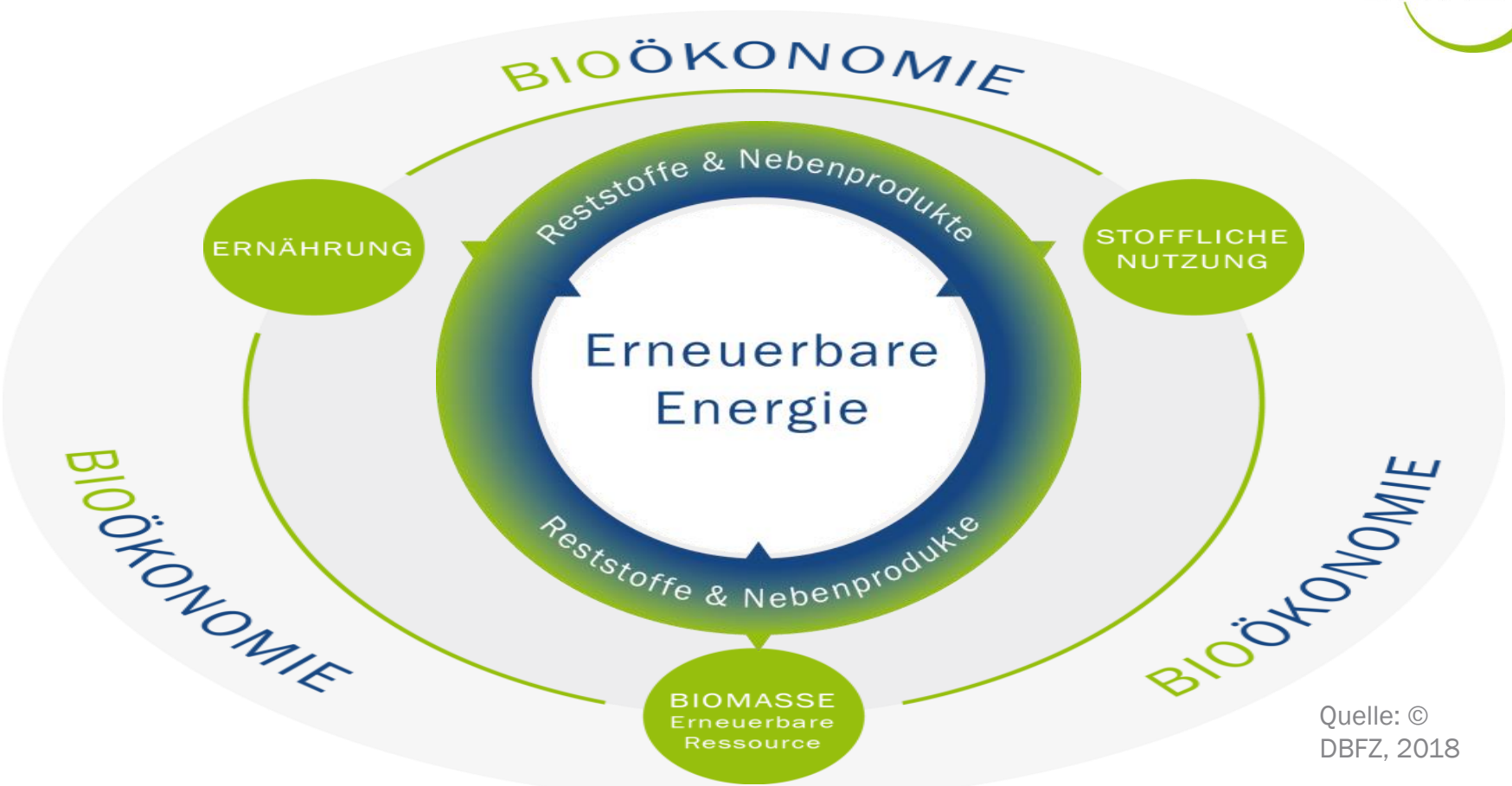
Michael Nelles





Beitrag im Rahmen der „11th International Bioeconomy Conference“ am 14. und 15. Juni 2023 in Leuna

Biomasse ist eine (stark) limitierte Ressource

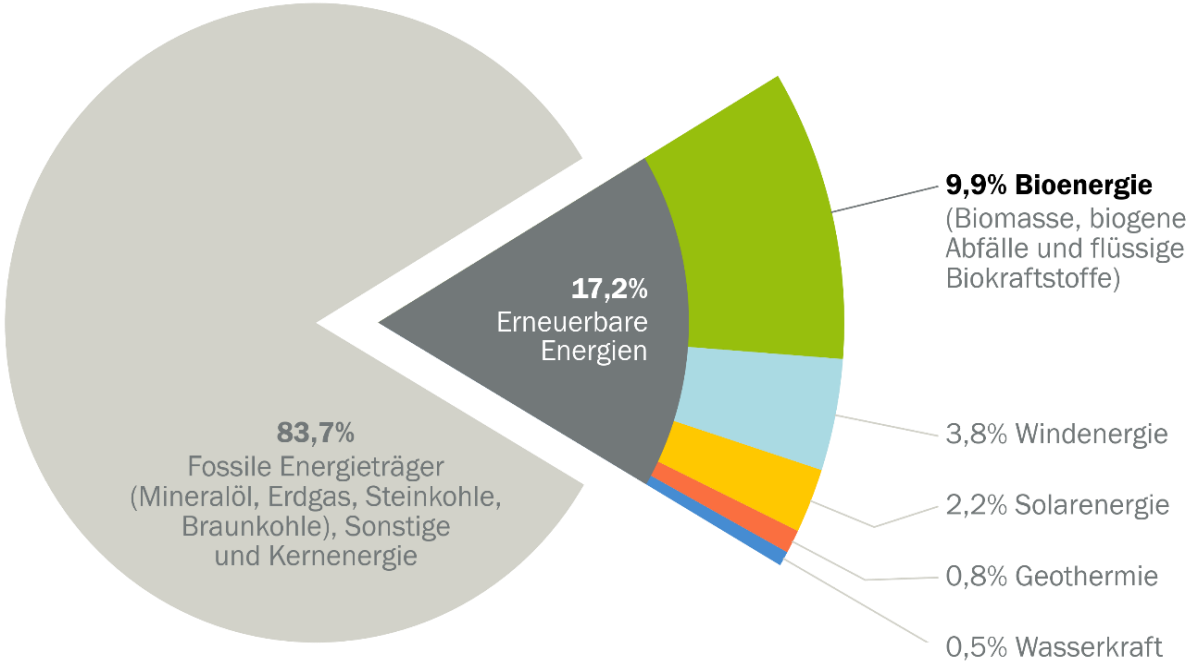


Quelle: © DBFZ, 2018

Klimaneutralität = Material- und Energieeinsparung + Erneuerbare Energien + (biobasierte) Kreislaufwirtschaft

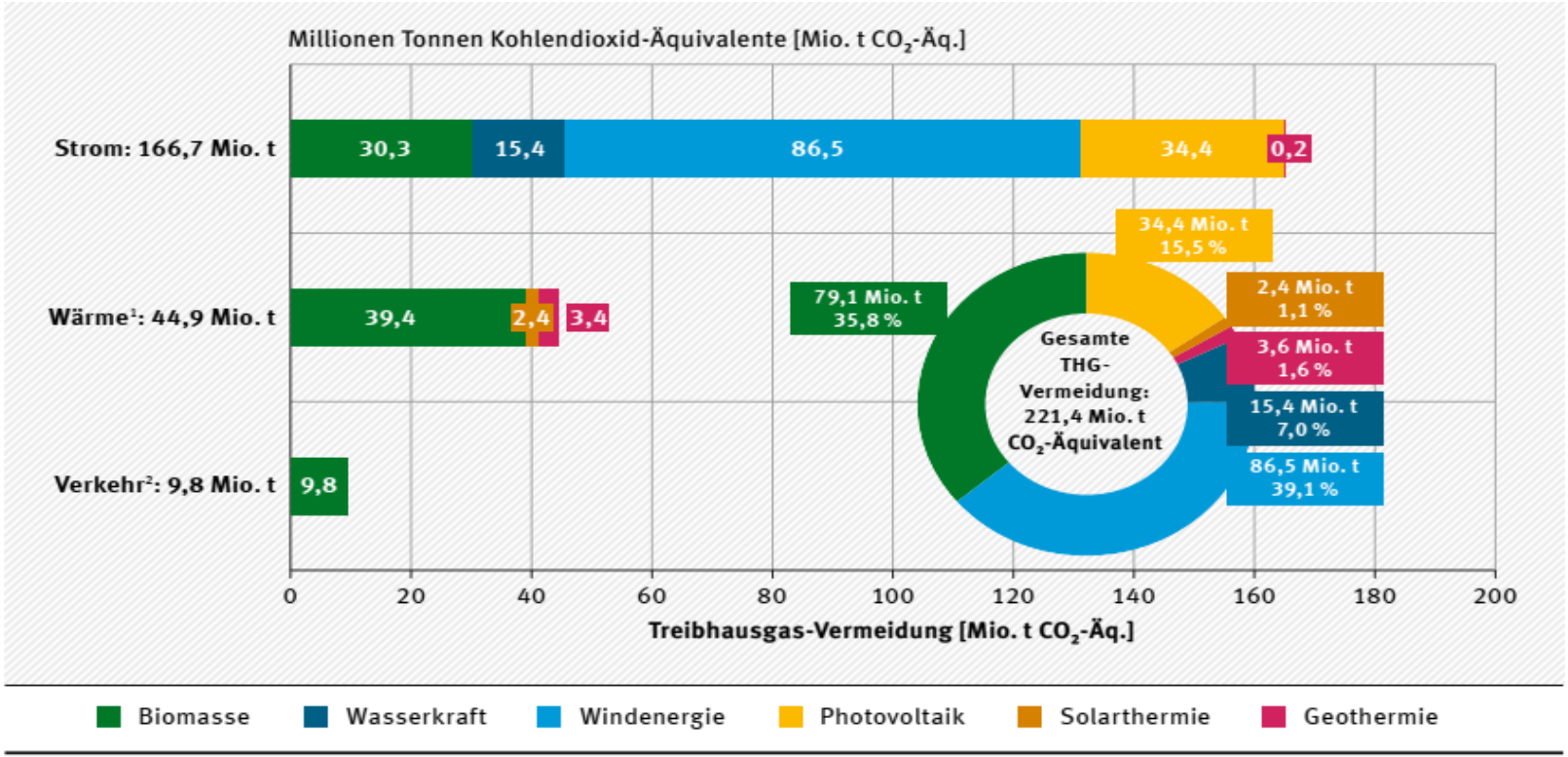
Anteil der EE am PEV in Deutschland 2022

Primärenergieverbrauch in Deutschland 2022: 11.769 PJ



−0,9% Stromaustauschsaldo nicht dargestellt
Quelle: Arbeitsgemeinschaft Energiebilanzen e.V. "Energieverbrauch in Deutschland im Jahr 2022" Stand 2023-03-06

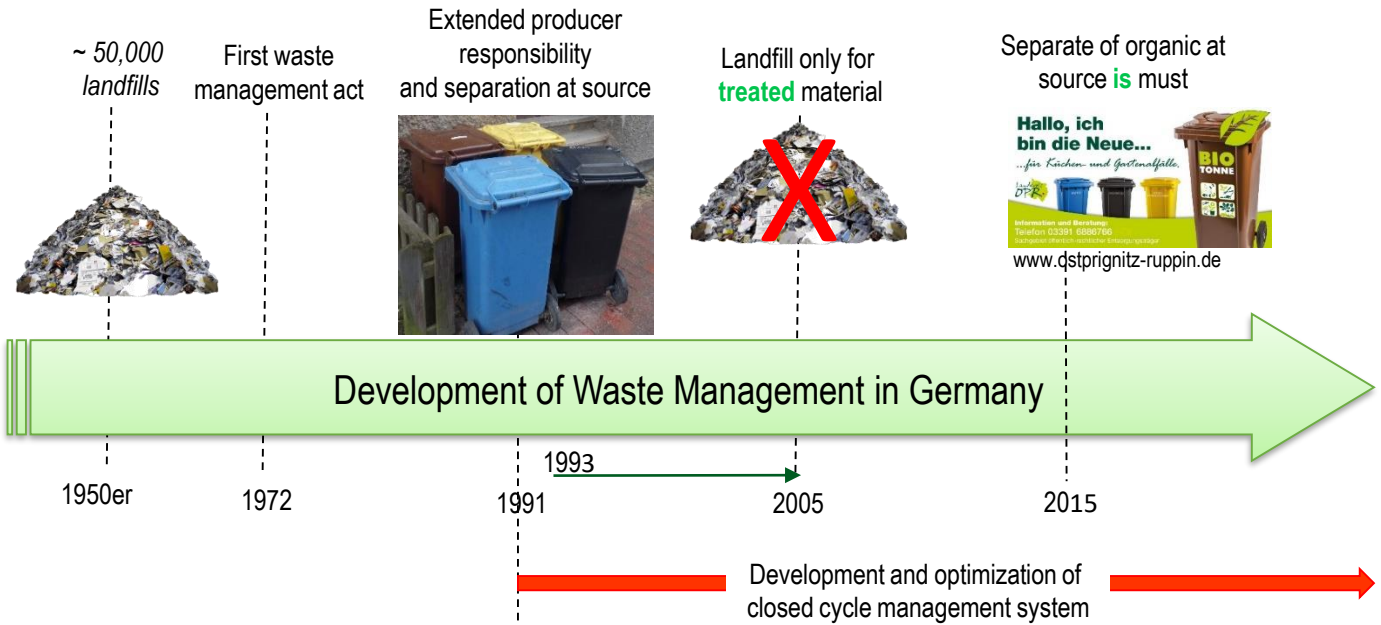
Vermiedene THG-Emissionen durch EE 2021



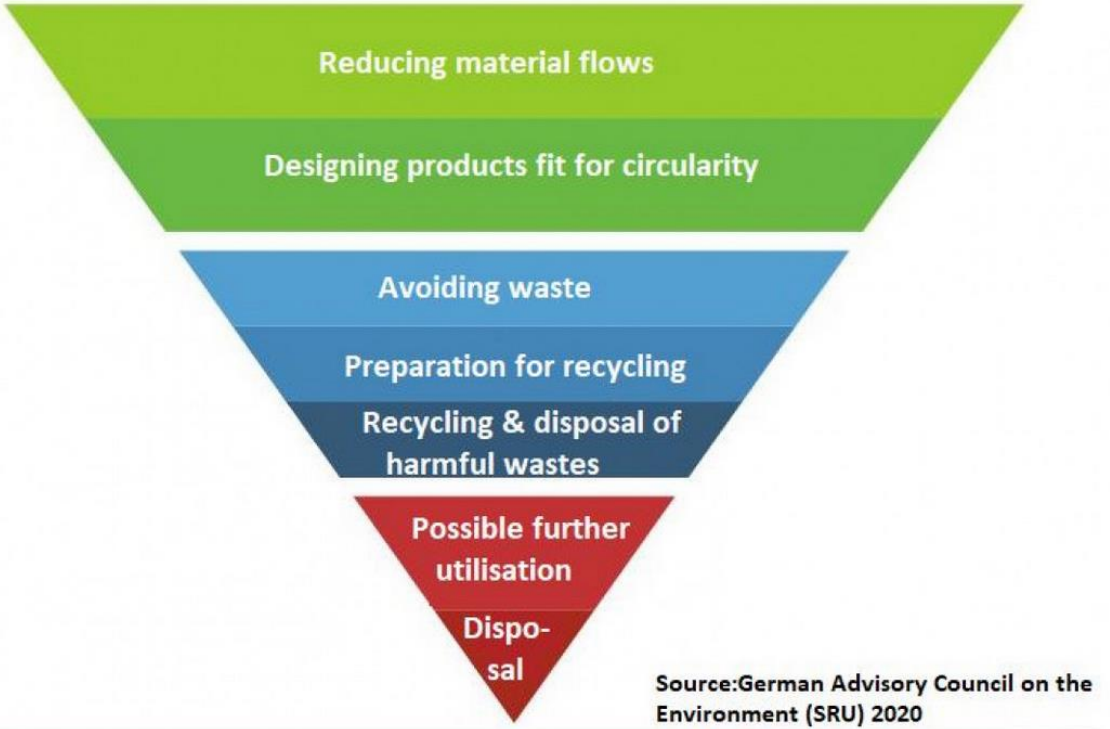
[1] ohne Berücksichtigung des Holzkohleverbrauchs
[2] ausschließlich biogene Kraftstoffe im Verkehrssektor (ohne Land und Forstwirtschaft, Baugewerbe sowie Militär und ohne Stromverbrauch des Verkehrssektors), basierend auf vorläufigen Daten der Bundesanstalt für Landwirtschaft und Ernährung (BLE) für das Jahr 2020 sowie den fossilen Basiswerten gemäß § 3 und § 10 der 38. BImSchV

Quelle: Umweltbundesamt (UBA)

Waste Management in Germany

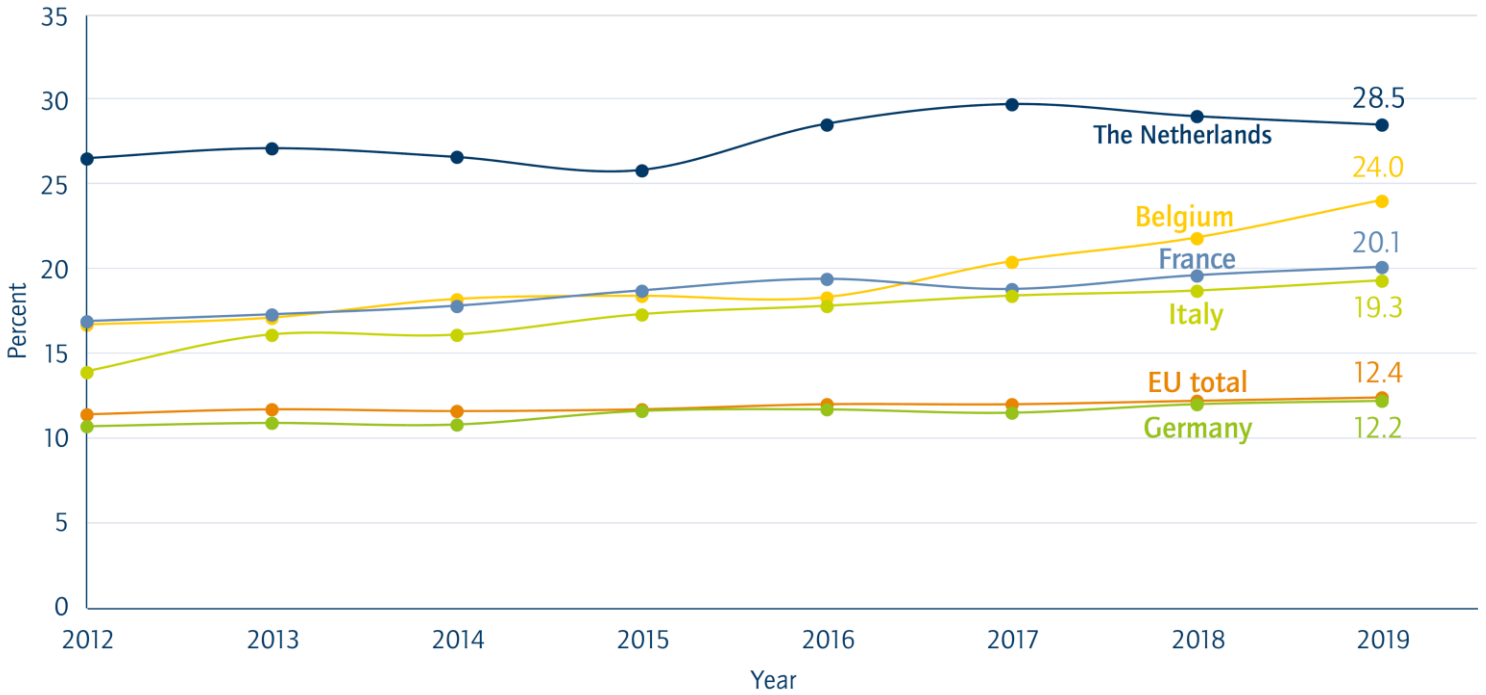


Waste Management Hierarchy towards Circular Economy

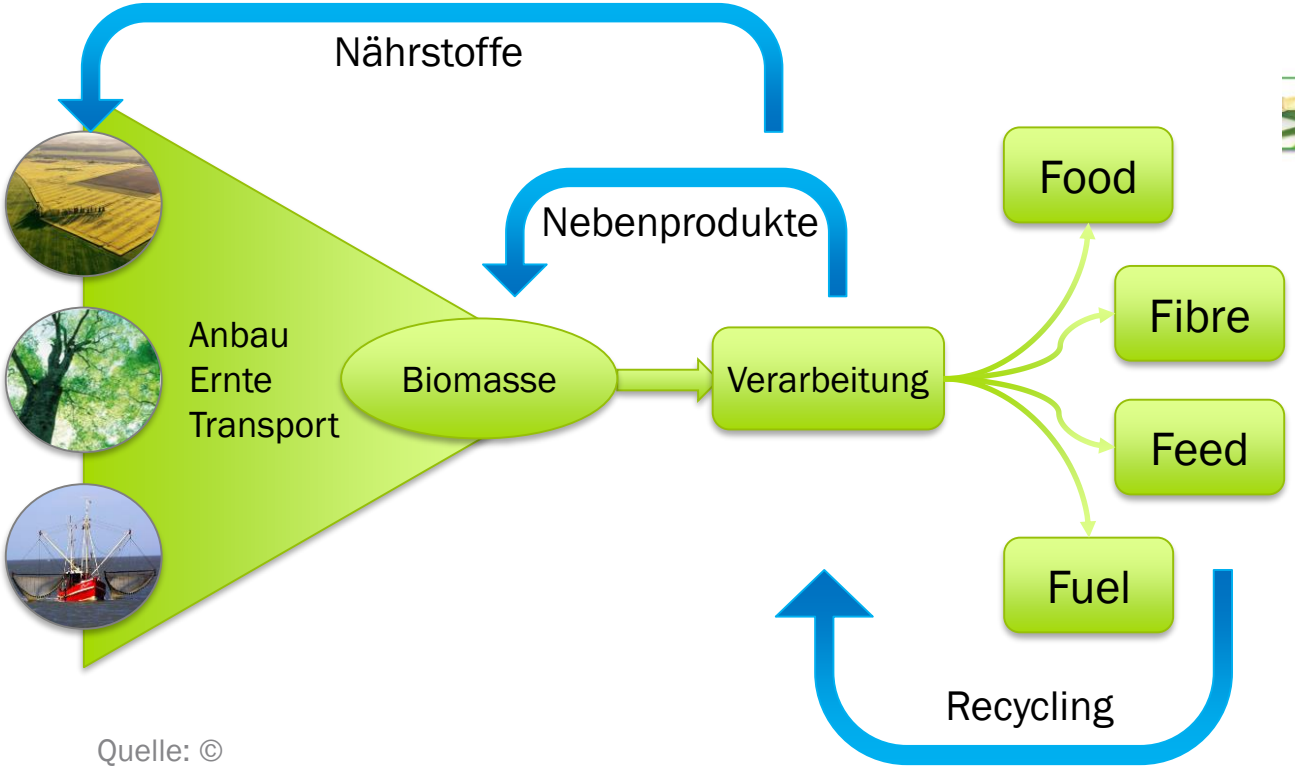


Development of the circular material use rate (CMR), 2012 to 2019

(Source: Eurostat 2020)



Die biobasierte Kreislaufwirtschaft – Abfall- und Reststoffverwertung als zentrale Aufgabe!

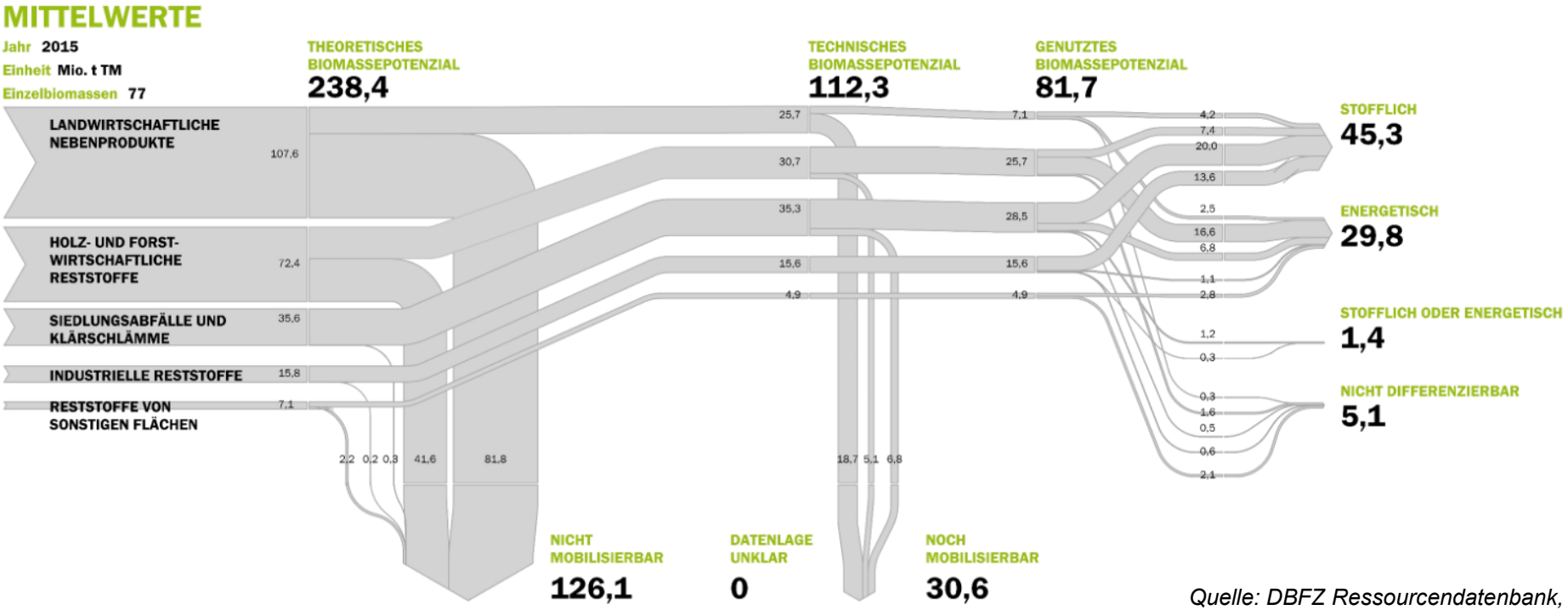


Quelle: © DBFZ, 2017

DG AW RESSOURCEN NEU DENKEN.

DGAW-Positionspapier 2021

Biogene Reststoffe – ein wesentlicher Stoffstrom für eine nachhaltige Kreislaufwirtschaft und Bioökonomie



Quelle: DBFZ Ressourcendatenbank, http://webapp.dbfz.de)

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Weltweite Klimagas-Emissionen der Wertschöpfungskette „Lebensmittel“

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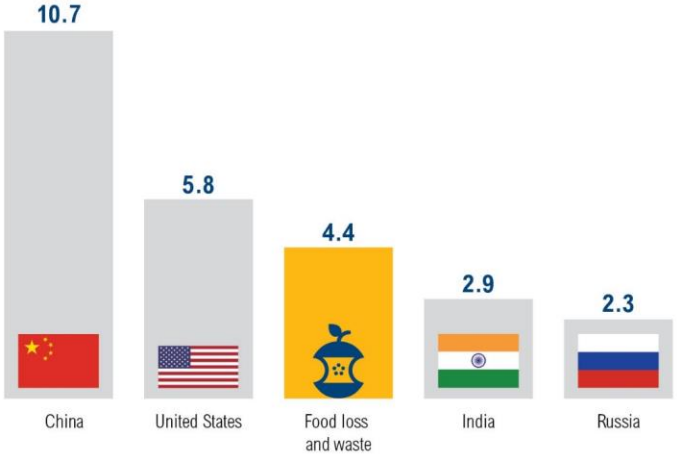
If Food Loss and Waste Were its own Country, it Would Be the Third-Largest Greenhouse Gas Emitter



GT CO_2E (2011/12)*

* Figures reflect all six anthropogenic greenhouse gas emissions, including those from land use, land-use change, and forestry (LULUCF). Country data is for 2012 while the food loss and waste data is for 2011 (the most recent data available). To avoid double counting, the food loss and waste emissions figure should not be added to the country figures.

Source: CAIT. 2015; FAO. 2015. *Food wastage footprint & climate change.* Rome: FAO.

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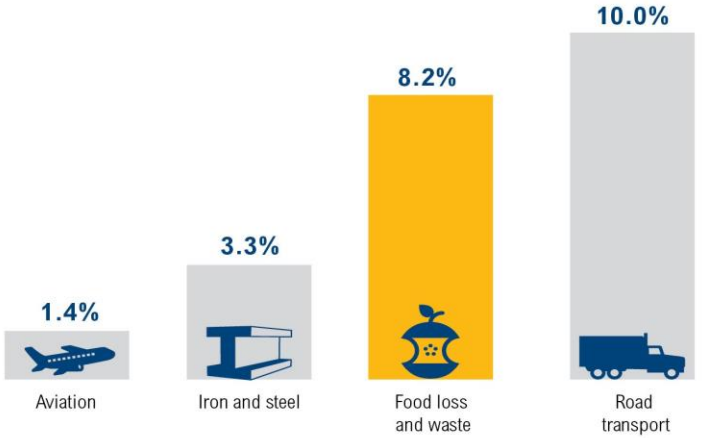
Greenhouse Gas Emissions from Food Loss and Waste Approach the Levels from Road Transport



SHARE OF GLOBAL GREENHOUSE GAS EMISSIONS (2011/12)*

* Sector data is for 2012 while the food loss and waste data is for 2011 (the most recent available). Since the food loss and waste data combines emissions from various lifecycle stages of the food that is ultimately lost or wasted (e.g., road transport, landfills), the food loss and waste figure should not be added to the sector figures in order to avoid double counting.

Source: International Energy Agency (IEA). 2014. *CO_2 Emissions from Fuel Combustion* (2014 edition). Paris: OECD/IEA; WRAP. 2014. *Strategies to achieve economic and environmental gains by reducing food waste.* Banbury, UK: WRAP; FAO. 2015. *Food wastage footprint & climate change.* Rome: FAO.

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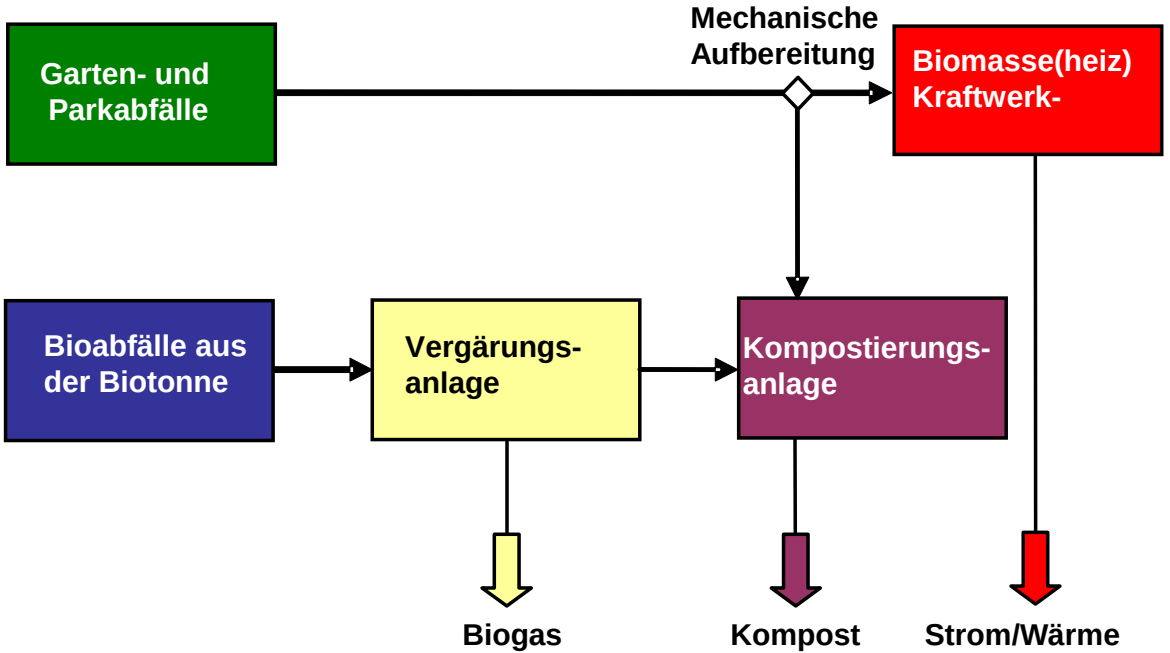
Ressourcenschutz durch Dünger sowie Strom und Wärme aus Bio- und Grünabfall



Quelle: © Kern, 2008

Threshold values in the biowaste ordinance (BioAbfV) and in the fertilizer ordinance (DüMV)

		Treshold values		
		Compost according DüMV and BioAbfV		Product quality of compost Germany 2013; n = 2,834)
		20 tons DM per ha within 3 years	30 tons DM per ha within 3 years	
Arsen (As)	mg/kg DM	40	40	
Blei (Pb)		150	100	**33.97**
Cadmium (Cd)		1,5	1.0	**0.42**
Chrom (Cr-Total)		100	70	**23.5**
Chrom (VI)		2,0	2,0	
Nickel (Ni)		50	35	**14.7**
Mercury (Hg)		1,0	0,7	**0.11**
Thallium (Tl)		1,0	1,0	
Copper (Cu)		100	70	**42.3**
Zink (Zn)		400	300	**173**
Perfluorinated surfactants		0,1	0,1	
Dioxins/Furans (PCDD/ PCDF) and dl-PCB	ng/kg DM (WHO-TEQ)	30	30	

Bundesgütegemeinschaft Kompost e.V. (BGK)

Quality requirements for compost

Impurities (limit values)	▸ Max. 0.5 weight-% in DM selectable, species-inappropriate material › 2 mm diameter ▸ Total surface area of impurities ‹ 25 cm²/l FM (if more impurities than 0.1 weight-% DM were found) ▸ Stones › 10 mm: max. 5 weight-% in DM

Impurities were sorted out of a 1 liter digestate test sample

production of good-looking compost and digestate is an essential task of composting and digestion plants

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Smart Bioenergy – Innovationen für eine nachhaltige Zukunft

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