Impact of the Regulatory Framework on the Bioeconomy

WASTE

The linear economy results in a wasteful system.

Considering the large waste streams of the EU and its environmental and economic impact, it's not surprising that waste management (WM) is an active and vast field of the EU's policy, regulated by numerous strategies and directives [2,13].

Large quantities of materials are being wasted in the European Union in the last decades which indicates the limited ability to use primary resources and the lacking capacity of managing them properly. The status of the current EU economy remains far from being circular or sustainable [13].

Waste in Germany



This **fact sheet** discusses waste as a part of the bioeconomy, its **regulatory framework** and **obstacles** which result it.

Recommendations to foster a better use of waste are collected from scientific literature and evaluated.



Houshold waste

 Waste resulting from the extraction, treatment and storage of mineral resources Mixed waste (especially commercial and production waste)

Wastes from waste management facilities

The volume of waste in Germany

decreased slightly since 2000 until 2015, but still, Germany's statistics attest a huge quantity of waste. The German *Waste Prevention Programme*, adopted in 2013, outlines (existing and potential) waste prevention and awareness-raising measures [5].

The waste intensity indicator which measures the link between waste volumes and economic output indicates that at least the correlation of both has been severed in part due to prevention efforts and the economic crisis, although it started rising again after 2012 and the exact influence cannot be quantified to date [5].



Source: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)



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The Waste Framework:

INTERNATIONAL LAW	EU LAW			NATIONAL LAW		
International Agreements	Strategies & Programmes	Directives & Regulations		Strategies & Programmes	Acts	Ordinances
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1992 + further amendments)	Circular Economy Package (2015, 2018)	Waste Framework Directive 2008/98/EG	Hazardous Waste Directive 91/689/EEC	Waste Prevention Programme (requested by Directive 2008/98/EG Art 28, 29 and Closed Cycle Management Act § 30, 33) (2013)	Circular Economy Law (2012) KrWG	Regulation on bio waste (1998, 2017) BioAbfV
	Circular Economy Action Plan (2018)	Extractive Waste Directive 2006/21/EC	End of Life Vehicles Directive 2000/53/EC		Waste Shipment Act (2007) AbfVerbrG	Regulation on Waste Shipment Charges (2003, 2013)
	Strategy for Plastics in a Circular Economy COM(2018)28	Hazardous Waste Directive 91/689/EEC	Regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (EG) Nr. 1907/2006		Electrical and Electronic Equipment Act (2015) ElektroG	Commercial Waste Ordinance (2003, 2017) GewAbfV
	7th Environment Action Programme / Decision on a General Union Environment Action Programme to 2020 Decision No. 1386/2013/EU	Waste Shipments Regulation (WSR) (EG) No. 1013/2006 (EU) No. 1234/2014 (EU) No. 660/2014 Marine Strategy Framework Directive (MSFD) 2008/56/EC	Regulations on the end-of- waste criteria for iron, steel and aluminium scrap (EU): No.333/2011 glass cullet: (EU) No.1179/2012 copper scrap: (EU) No.715/2013		Batteries Act (2009) Battery Register of the German Environment Agency (2009)	Sewage Sludge Ordinance (1992, 2017) DüMV
Decision of the Council concerning the Control of Transboundary Movements of Wastes destined for Recovery Operations (C(2001)107)	Resource Efficiency Roadmap COM/2011/0571	Packaging and packaging waste Directive 94/62/EG 2004/12/EG 2018/852	Directive on the disposal of PCB/PCT 96/59/EC		Packaging Act Packaging Register LUCID (2019) VerpackG	Packaging Regulation (1998) VerpackV
	EU Raw Materials Initiative COM(2008) 699 final	Plastic Bags Directive 2015/720	Waste Oil Directive 75/439/EEC	Resource Efficiency Programme II ProgRess, 2012, ProgRess II, 2016		End-of-Life Vehicles Ordinance (2002) AltfahrzeugV
	Strategy on the prevention and recycling of waste COM(2005)666	Landfill Directive 1999/31/EG	Classification Labelling Packaging (CLP) Regulation			Landfill Regulation (2009, 2017)
		Directive 2000/76/EC	(EC) 1272/2008			
Stockholm Convention on Persistent Organic Pollutants (2004 + further amendments)	Green Paper "European Strategy on Plastic Waste in the environment" COM(2013) 123 final	Waste electrical and electronic equipment (WEEE) 2002/96/EC 2012/19/EU	Seveso III Directive on the control of major-accident hazards involving dangerous substances 2012/18/EU			
	Bioeconomy Strategy and Action Plan (2012, 2018)	Directive on the common system of value added tax 2006/112/EC				
	and others	and others		and others		

Which are regulatory obstacles of the Waste Framework that hinder the realization of the Bioeconomy? Which are possible solutions?

Obstacles

The legal definition of "waste"

Waste regulation has become more and more stringent. In Europe, **the legal classification of some residues** or by-products as "waste" hinders potential initiatives, e.g. for biorefineries. Qualifications may impose **administrative and financial burdens** that discourage investments.

• example: bio-waste

However, the classification of a substance as being a "product" or "waste" can differ from one region to another which has implication on compliance with legislation and on further processing.

It is reported that the current **definition of 'End-of-Waste'** favours the export of postconsumer plastics (mainly to China) and lowers its recycling rate within Europe. Therefore, it is not possible to track End-of-Life plastics in a clear way.

[3,9,14].

The implementation of the main principle "prevention" is still weak

Prevention is one of the main principles of the EU Waste Framework, but , upstream measures are yet to dominate the taken measures. Waste prevention means a reduction of consumption, a decrease in manufacture and use of primary resources.

If the regulatory framework for waste would attach greater importance to the prevention of waste in terms of avoidance and reduction rather than re-use, resource efficiency could be improved and the environmental impact of waste could be reduced. Of course, there is a policy contradiction in-between the minimization of waste and the use of second-generation raw materials, especially in the context of Bioeconomy.

[10,12]

The Waste Hierarchy lacks implementation

Waste prevention and re-use are the priorities of the EU Waste Hierarchy. However, even if European legislation seems to proceed in the right direction, a clear reduction in waste generation has not yet occurred.

For instance: Most of postconsumer plastics waste ends up in energy recovery and landfilling instead of being recycled, half of it is exported. The post-consumer plastics waste recycling quote is 13% in Europe (2016), still far from EU targets (50% by weight in 2020).

Possible solutions



Align and define the product- and the Waste-Directives



Revision of the 'End-of-Waste' criteria and definitions



Greater importance to prevention

Identify main sources of inefficiencies in collection systems in EU and establish clear requirements for those systems (e.g. mechanisms to separate plastics to recycle and incinerate)



Ban landfilling of plastics

The Waste Hierarchy needs greater flexibility

The Waste Hierarchy entails a conceptual centralization of waste management approaches around a single top-down idea of Circular Economy. In this context, material re-use and recycling are theoretically treated as the dominant mode of waste management, even if the type of waste management that should be preferred in a specific case depends on circumstances which might change from product to product and moment to moment (e.g. price volatility of recycling markets, complexity of products).

Legislation should always aim for the highest possible waste hierarchy option, but still be flexible enough to stimulate new and better possibilities as soon as they become available and are economically feasible.
[14]

Discrepancies in implementation

There are different enforcements of the Waste Framework among the Member Countries. Occurrences of non-compliance have been reported.

Non-compliance and different enforcements are obstacles to the Bioeconomy whose development depends on the integrity of law. **Cross-border avoidance**, thus legal or illegal shipments of waste impedes adequate recycling of materials. Furthermore, waste trafficking causes severe environmental and health problems and increases inequalities. [2]

More flexible legislation

Allow the diversification and decentralization of waste management

ANSIA MASSA



Curtail the trade and traffic of waste

^[1,14]

Obstacles

The EU waste law is complex & fragmented. It's implemented in different ways across Member States. Waste codes are not the same (Basel, OECD, EU).

At EU level it is observed:

- micro-management
- different implementations

<u>risk of:</u>

- complicated application (SMEs, new entrepreneurs)
- incoherence
- laws in conflict with each other

The regulatory arrangements can be part of a complex system that may not be modified easily or may be too expensive to change.

Presumably, Waste Law will remain complex & fragmented, despite the upcoming overall review of the legislation which supports a harmonized, but flexible, approach [2].

Legislations that conflict each other due to conflicting values

In a complex and vast legislative framework it is unavoidable that **laws enter in conflict with each other**:

- Hygiene rules vs. food waste
- National implementation of the VAT Directive vs. donations of otherwise wasted food
- Stringent material contamination limits vs. the usage and uptake of secondary materials

[14]

Possible solutions

Discussion: Should the consumer protection level decrease to support the Bioeconomy?

Data problem of the waste sector

A lack of coherent data and different standards in-between EU Member States hampers the work of research and policy. There are still **no binding definitions on EU level** for the gathering of data.

► If calculations would be harmonized and would take the quality and quantity of recycling into account, the Bioeconomy might gather importance as the request of innovative and qualitative recycling strategies would rise. Although reliable data are lacking, some case studies make it clear that the economic potential of removing regulatory barriers is significant in terms of economic and environmental performance [2,7,8,9].

Conclusion & Forecast:

Waste Management is regulated by numerous laws and regulations, the **EU waste law is complex**. Implementations and the interpretation of definitions differ in-between Member States. That system may not be modified easily or may be too costly to change.

A future Waste Law which enables the development of the bioeconomy could be still normative but more flexible; it would harmonize, but still be able to allow diversification of Waste Management systems. Especially innovative products of the Bioeconomy need a **case-by-case-analyses**. For instance, products of biorefineries can't follow the ranking of the Waste Hierarchy.

Speaking about changing the legislative framework raises new questions:

Harmonize calculations of data, take quality & quantity of recycling into account







- Should the **consumer protection** level be decreased to support the bioeconomy?
- What about equality in a global perspective (environmental and health problems caused by waste treatment)?
- Could the European Union foster the Circular Economy by keeping its waste within its borders?

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