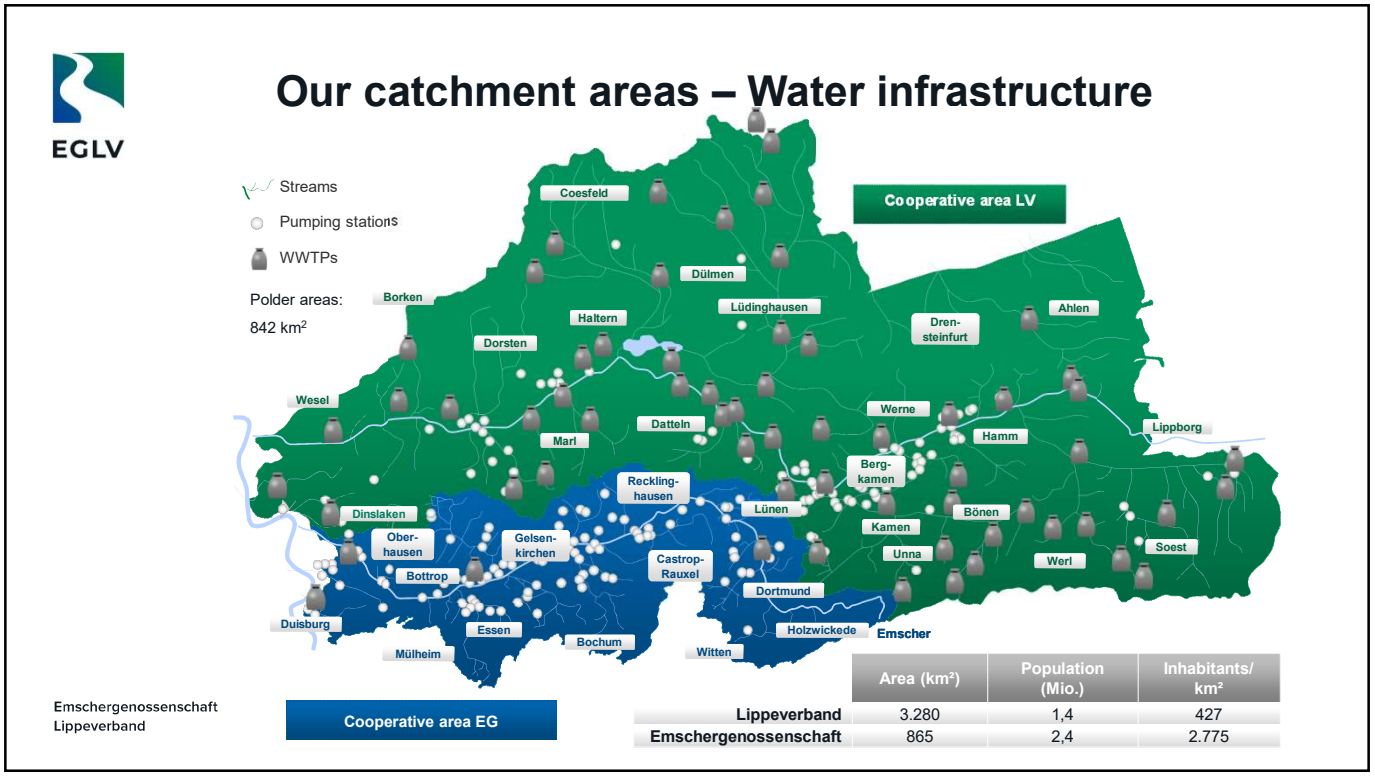

	Area (km²)	Population (Mio.)	Inhabitants/ km²
Lippeverband	3.280	1,4	427
Emschergenossenschaft	865	2,4	2.775

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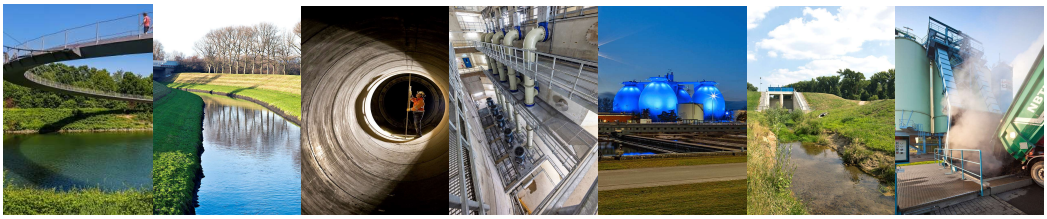
Water and wastewater infrastructure

Stream network	782 km
Sewer network	1.507 km
Stormwater treatment facilities	514
Dykes	193 km

Energy demanding!

Pumping stations	546
Wastewater treatment plants	59
Solar thermal sludge drying	1
Sewage sludge incineration plant	1



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Status 2022

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The German water sector – key facts (status 2019)

Almost full implementation of EU-UWWTD since the late 1990s

- 97% connection rate ot public WWTPs
- 8,891 public WWTP – 98% advanced nutrient removal
- 9.05 bill. m³ annual wastewater volume

UBA, 2019

Übersicht über die Größenklassenverteilung der öffentlichen Kläranlagen in Deutschland

Größenklasse	Ausbaugröße (EW)	Anzahl	Anlagenkapazität (EW)	Anteil (%)
5	>100.000	230	74.450.000	49,6
4	10.001 – 100.000	1.888	61.070.000	40,7
4 (teilw.)	80.001 – 100.000	97	9.059.000	6,0
4 (teilw.)	50.001 – 80.000	198	13.122.000	8,7
4 (teilw.)	10.001 – 50.000	1.593	38.893.000	26,0
3,2,1	<= 10.000	7.473	14.585.000	9,7

Quelle: Datenlieferung der Bundesrepublik Deutschland an die EU-Kommission zur Umsetzung der Kommunalabwasserrichtlinie, Stichtag 31.12.2010

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Datenquelle: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/Wasserwirtschaft/Tabellen/oeffentliche-aba-7k.html; Zugriff 18.08.2024

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Revision of the EU-UWWTD – finally

A success story and a new milestone for water protection

Adaption of the legal framework

- Removal of nutrients (3rd treatment step)
- Removal of micropollutants (4th treatment)
- Extended Producer Responsiblity (EPR)
- *Energy neutrality, Management plans, …*

Impacts on the German water sector

- 3,380 → 4,700 WWTPs covered by UWWTD
- 690 WWTPs with 4th treatment
- Federal Ministry of Environment is in charge.
- Scope for federal states?

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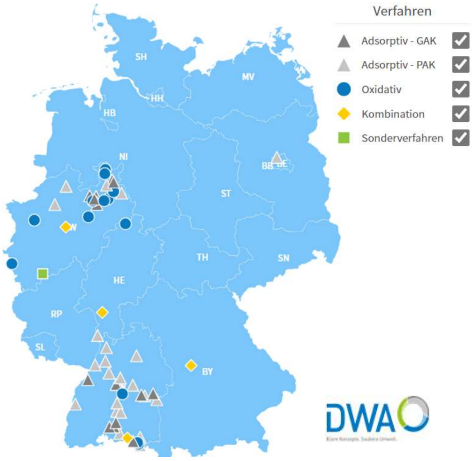
Advanced micropollutant removal in Germany

70 WWTPs in operation



Technology-open and voluntary

- NRW and Baden-Württemberg als First Mover
- NRW included the 4th treatment in the WFD management plan
- Full- and partial treatment

UWWTD is expected to support the standardization

DWA coordinates the technical activities of the water sector

- Participation in the Stakeholder dialogue on micropollutants
- Support of the Dialogue process on the National Water Strategy
- Integration in the work on technical rules and regulations

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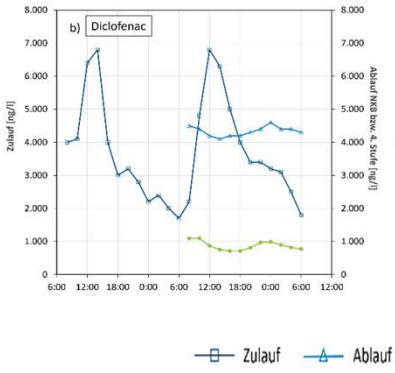
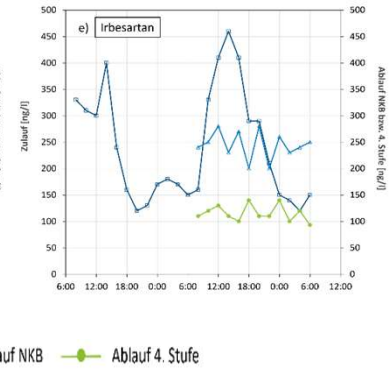
Technology-open approach for the 4th treatment

Complex definition of the treatment efficieny

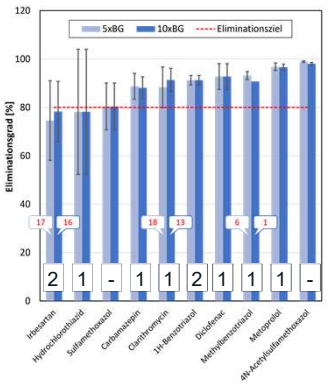
Category 1



Category 2



Basis for calculating the mean



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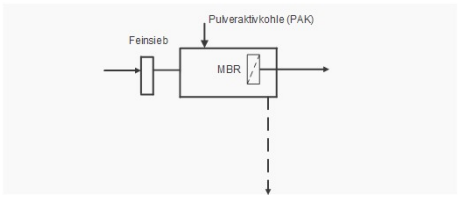
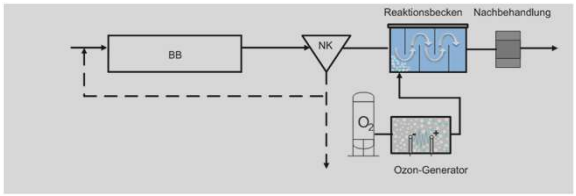
Overview Technologies

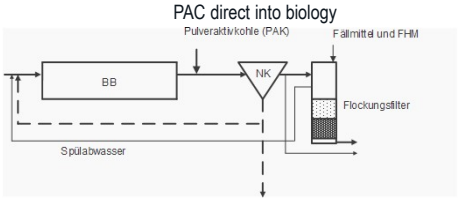
MBR + PAC



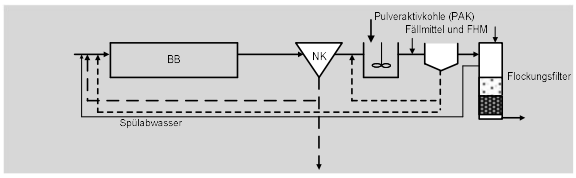
Ozonation



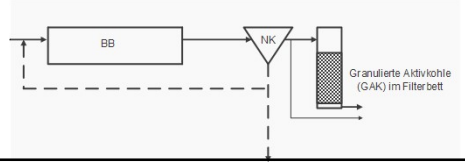
PAC direct into biology



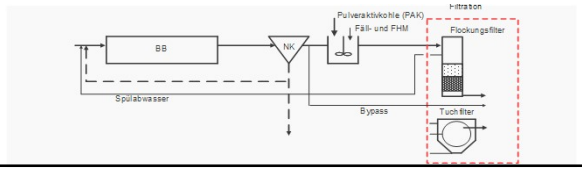
PAC in contact reactor with sedimentation and filtration



GAC in existing sandfilters



PAC in contact reactor without sedimentation and with filtration



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Financing of micropollutant removal

Extended Producer Responsibility (EPR)

Introduction of the polluter-pays-principle

- Cost coverage of the by manufacturers of (human) pharmaceuticals and personal care products
- At least 80% of the costs (investment and operating costs)
- Costs of existing plants should be included (First mover)

Implementation of EPR is still open

- Implementation within 3 years seems ambitious.
- Many questions (e.g. only 26% of the API are produced in the EU)
- Established dialogue processes are a platform for the responsible parties

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Findings and questions from an operator's perspective

Findings after 20 years of development on micropollutant removal

- Successfull integration of advanced techniques in full-scale WWTPs
- Different efficiency of the technologies (profound assessment only with legal requirements)
- Conflict of objectives (energy demand, carbon footprint, footprint)
- Positive effects on water quality and ecology

Open questions for the implementation into German legislation

- 1:1 or more ambitious? Flexibility for federal states?
- Monitoring approach for N and P?
- Implementation of the EPR (First Mover included?)

→ Pragmatism, a sense of proportion and learning from other countries

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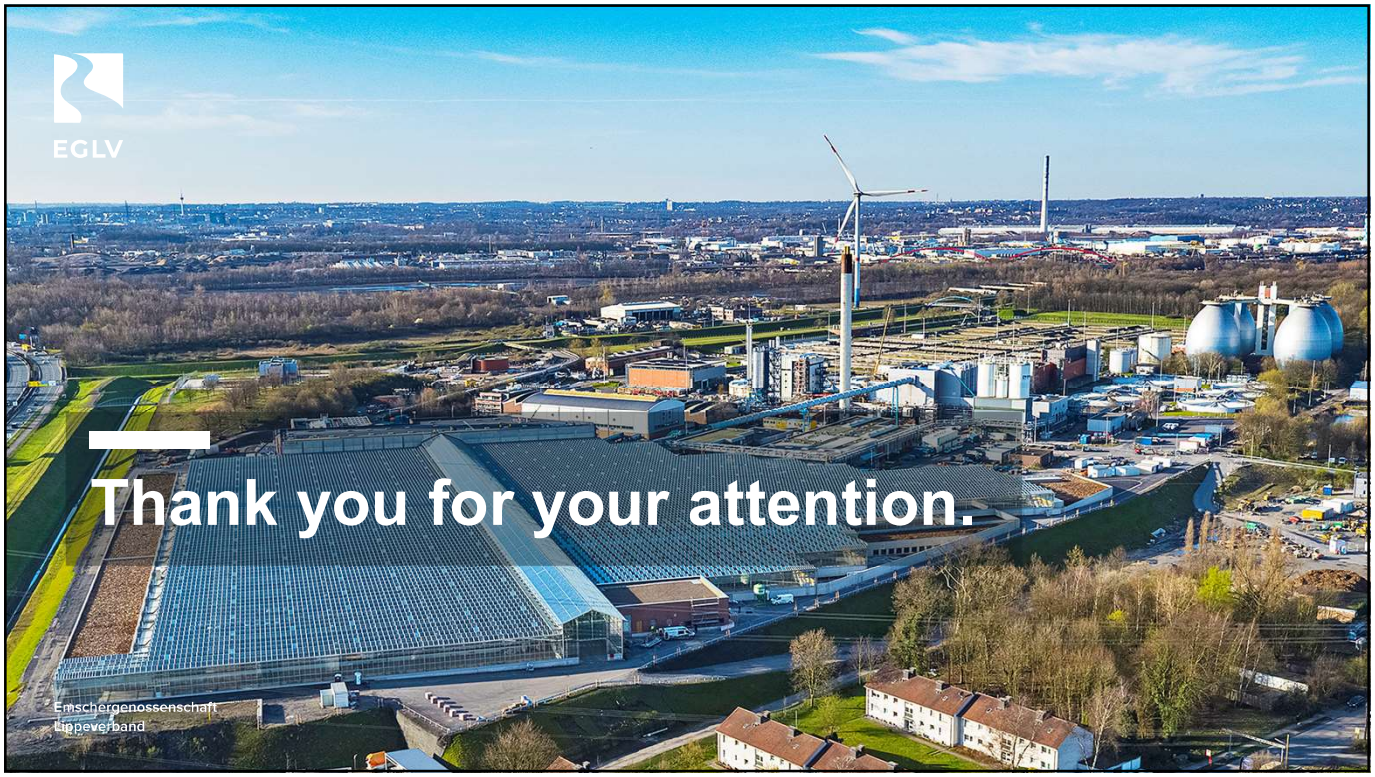
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Thank you for your attention.
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