

2026 Danube Water Forum – Session 5

Sofia, 21 May 2026

Wastewater Management in the Danube River Basin: Progress and challenges

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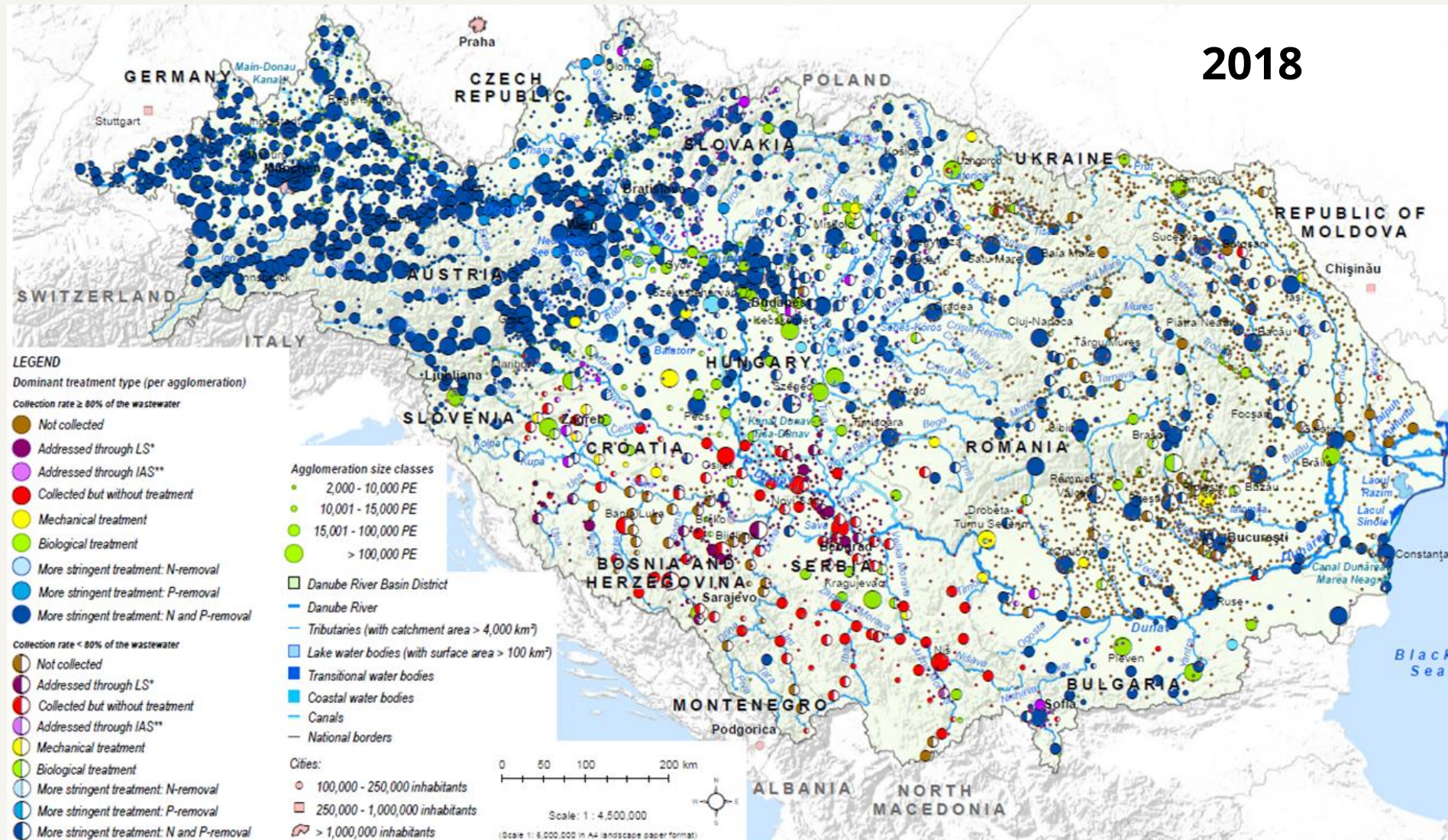
ICPDR **IKSD**

International Commission
for the Protection
of the Danube River
Internationale Kommission
zum Schutz der Donau

Progress in Wastewater Treatment



2018



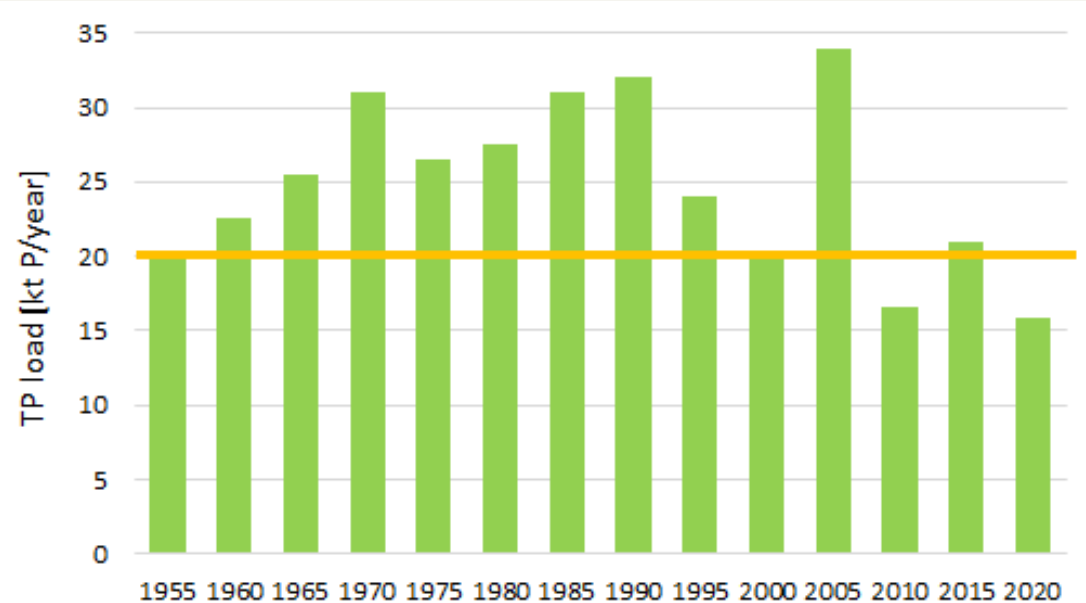
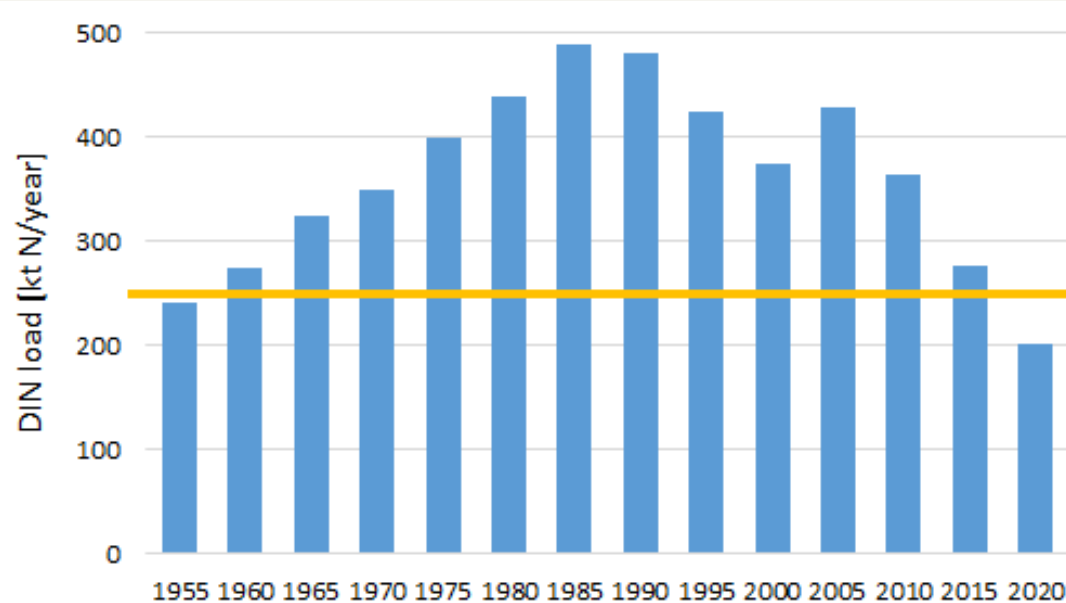
Water Quality Improvements



- **60%** organic emissions

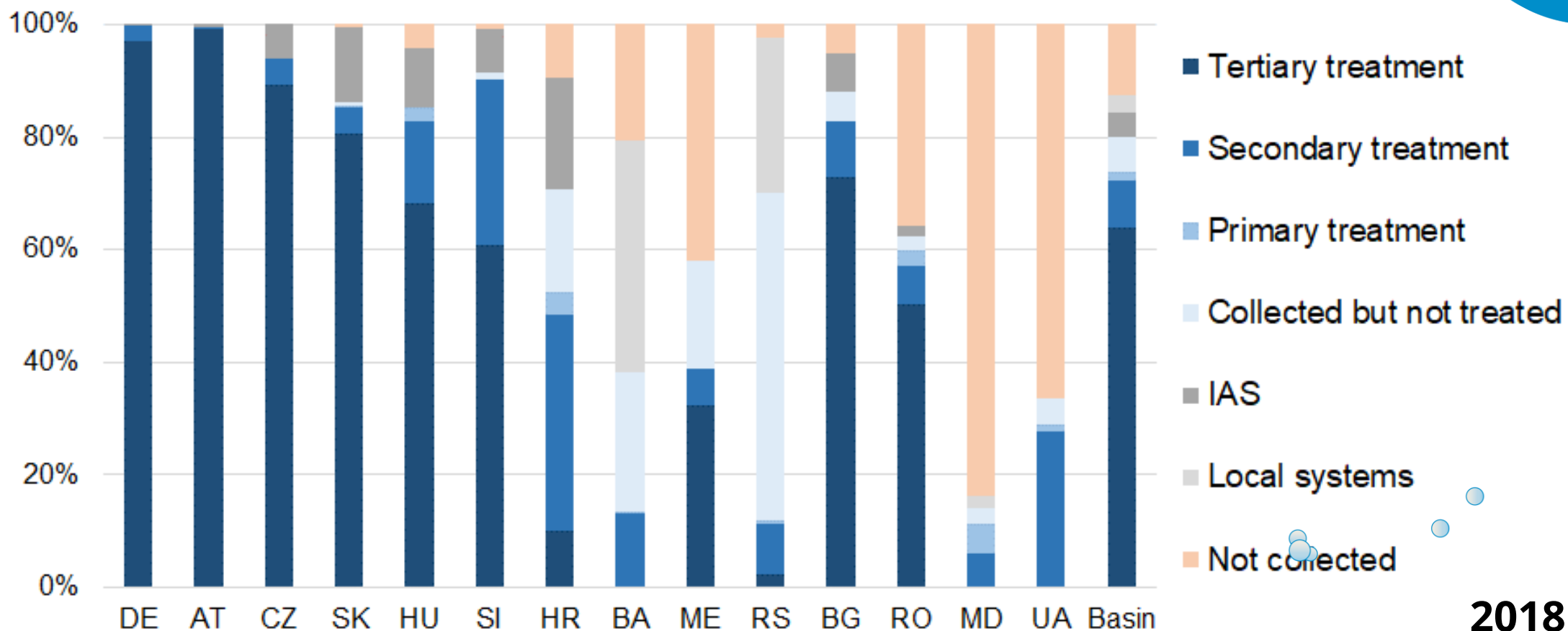
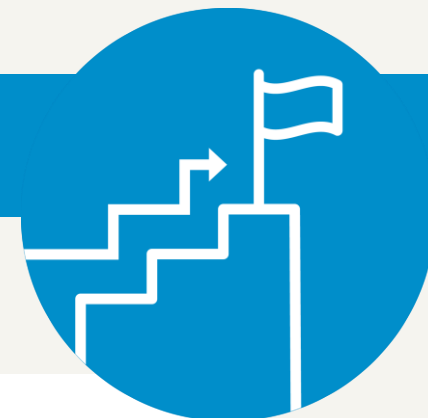
- **55%** phosphorous emissions

- **45%** nitrogen emissions



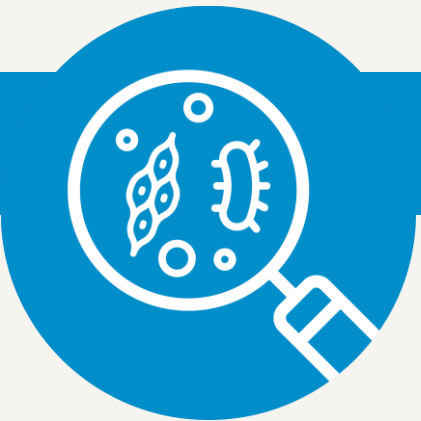
Nutrient loads to the Black Sea

Development Needs



2018

Challenge I: Removing Micropollutants



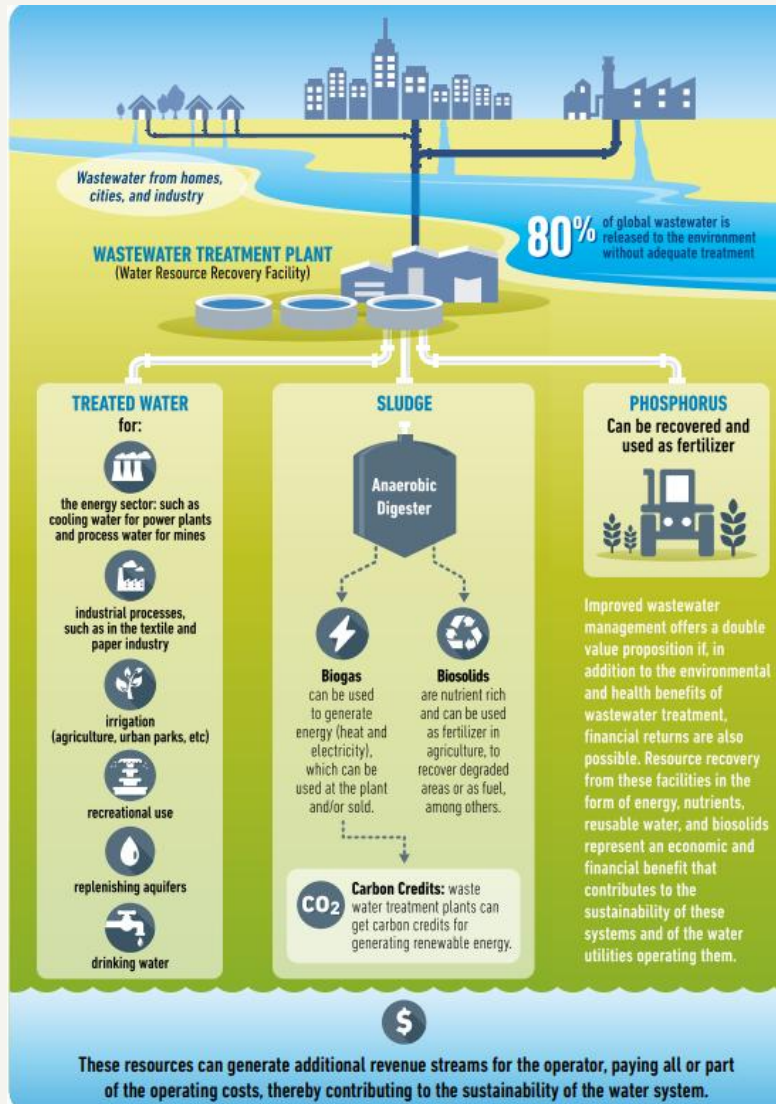
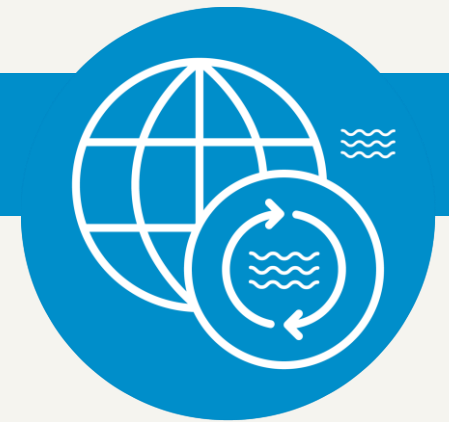
1. - 3. treatment (stage)
Reduction of
organics and
nutrients

4. treatment (stage)
Reduction of
micropollutants



ID	Name	Compound group
1	PFOS	Industrial Chemicals - Perfluorinated substances
2	Ofloxacin	Antibiotics - Quinolones
3	Telmisartan	Pharmaceuticals - Antihypertensive drugs
4	Diclofenac	Pharmaceuticals - NSAIDs
5	PFHxS	Industrial Chemicals - Perfluorinated substances
6	Dodecyl-benzenesulfonate (C12-LAS)	Industrial Chemicals - Surfactants
7	Carbamazepine	Pharmaceuticals - Antiepileptics
8	PFOA	Industrial Chemicals - Perfluorinated substances
9	Ibuprofen	Pharmaceuticals - NSAIDs
10	PFHxA	Industrial Chemicals - Perfluorinated substances
11	PFBuS	Industrial Chemicals - Perfluorinated substances
12	4-tert-Octylphenol	Industrial Chemicals - Phenols
13	Meclofenamic Acid	Pharmaceuticals - NSAIDs
14	Fipronil	Pesticides & Insecticides
15	Carbendazim	Pesticides & Insecticides
16	Venlafaxine	Antipsychotic drugs - SSRIs
17	PFDeA	Industrial Chemicals - Perfluorinated substances
18	Clarithromycin	Antibiotics - Macrolides
19	PFHpA	Industrial Chemicals - Perfluorinated substances
20	4-Hydroxy-Omeprazole	Pharmaceuticals - Antiulcer Drugs
21	PFNA	Industrial Chemicals - Perfluorinated substances
22	EDDP	Drugs of abuse, steroids and tobacco ingredients
23	Temazepam	Antipsychotic drugs - Benzodiazepines
24	Erythromycin	Antibiotics - Macrolides
25	Sertraline	Antipsychotic drugs - SSRIs

Challenge II: From Linear to Circular



ENERGY

Revenue:

- Sale of biogas or electricity
- Sale of carbon credits
- Tipping fees for the collection of organic matter (in co-digestion)

Savings:

- Using own-generated electricity in the plant
- Improving energy efficiency



BIOSOLIDS and NUTRIENTS

Revenue:

- Sale of phosphorus as fertilizer
- Sale of biosolids as compost

Savings:

- If the biosolids are given away for free (for agriculture, to restore degraded land, etc.) the utility saves transport costs and landfill fees

Many Factors Influence Energy Price Increases



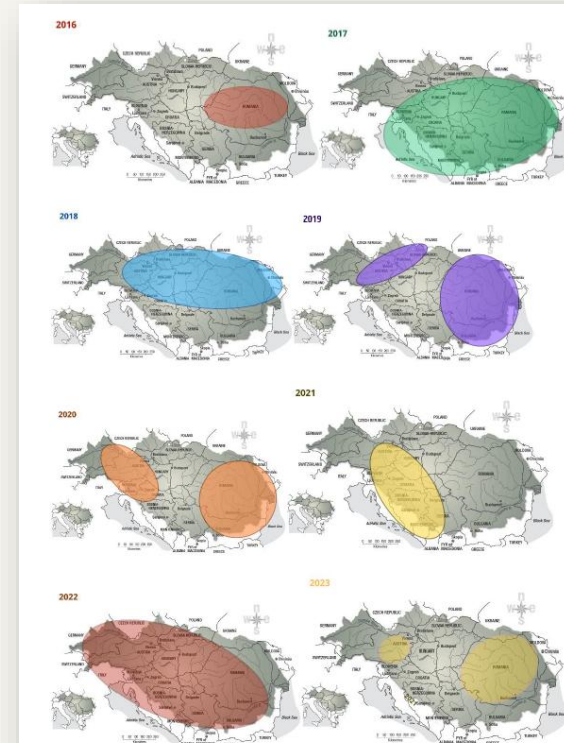
WATER

Revenue:

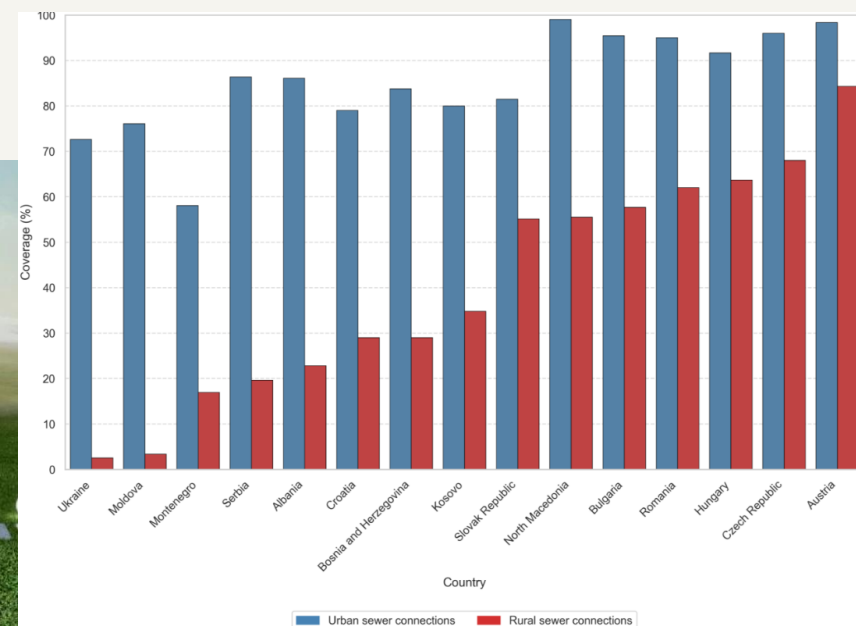
- Sale of treated wastewater, especially in water-scarce areas

Savings:

- Discharge fee/tax



Challenge III: Do not Forget the Smallest Ones



Challenge IV: Establishing an Enabling Framework

