

Urban Waste Water Treatment Directive (UWWTD)



Stakeholder Conference on the revision of the UWWTD
DG ENV, JRC, Wood

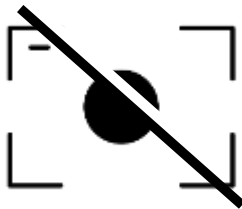
26/10/2021

The policy options in this document do not represent the European Commission's views and are only preliminary ideas for discussion.



European
Commission

Please use
slido
for questions
during the
meeting and
vote questions
to the top



No Recording

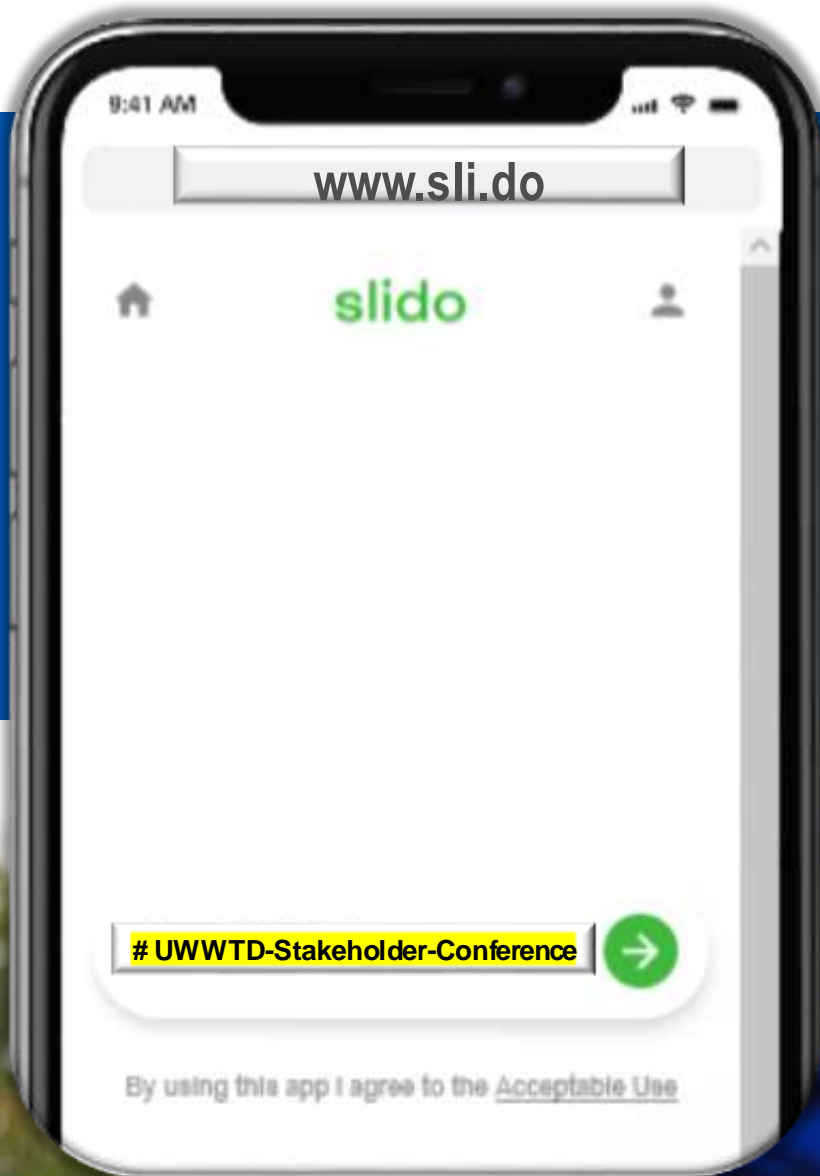


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Summary &
Slides on
CIRCABC after
the conference





How to join slido

www.sli.do

UWWTD-Stakeholder-Conference

Use sli.do on your phone to type in your questions.

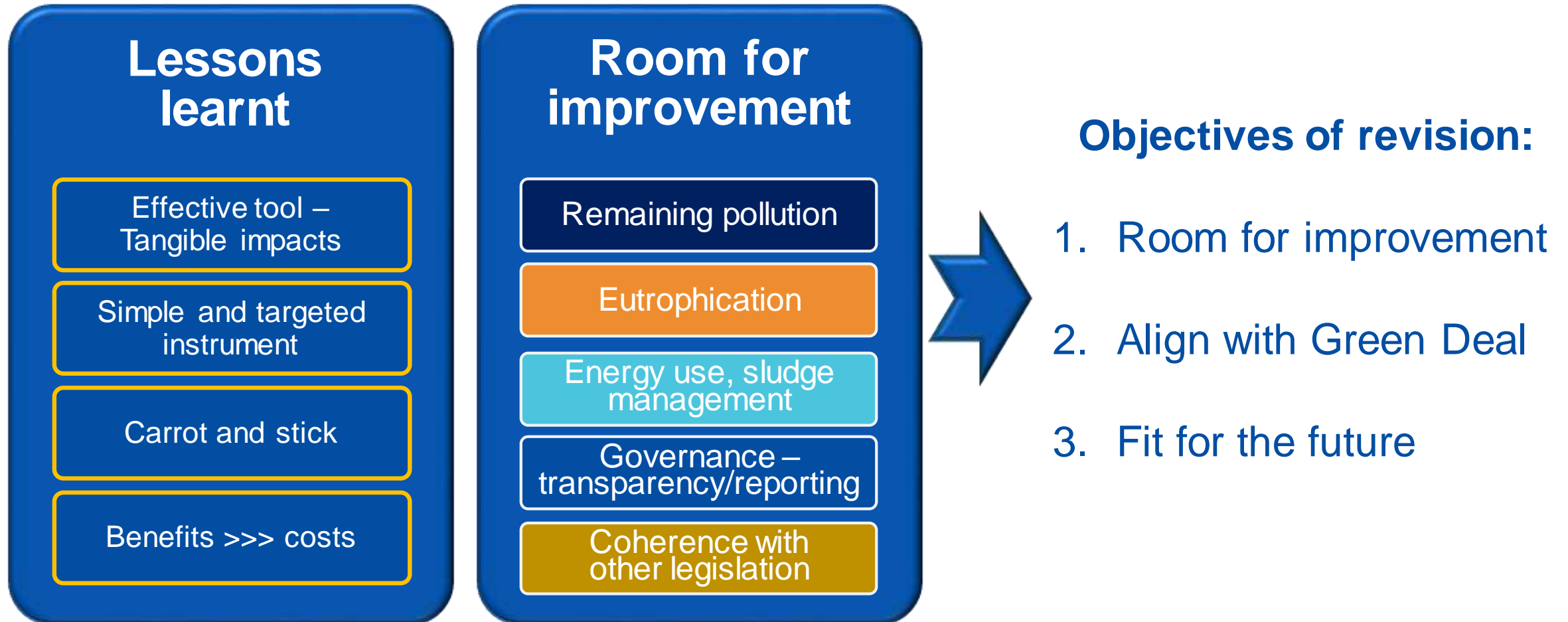
We will answer the questions in each session.



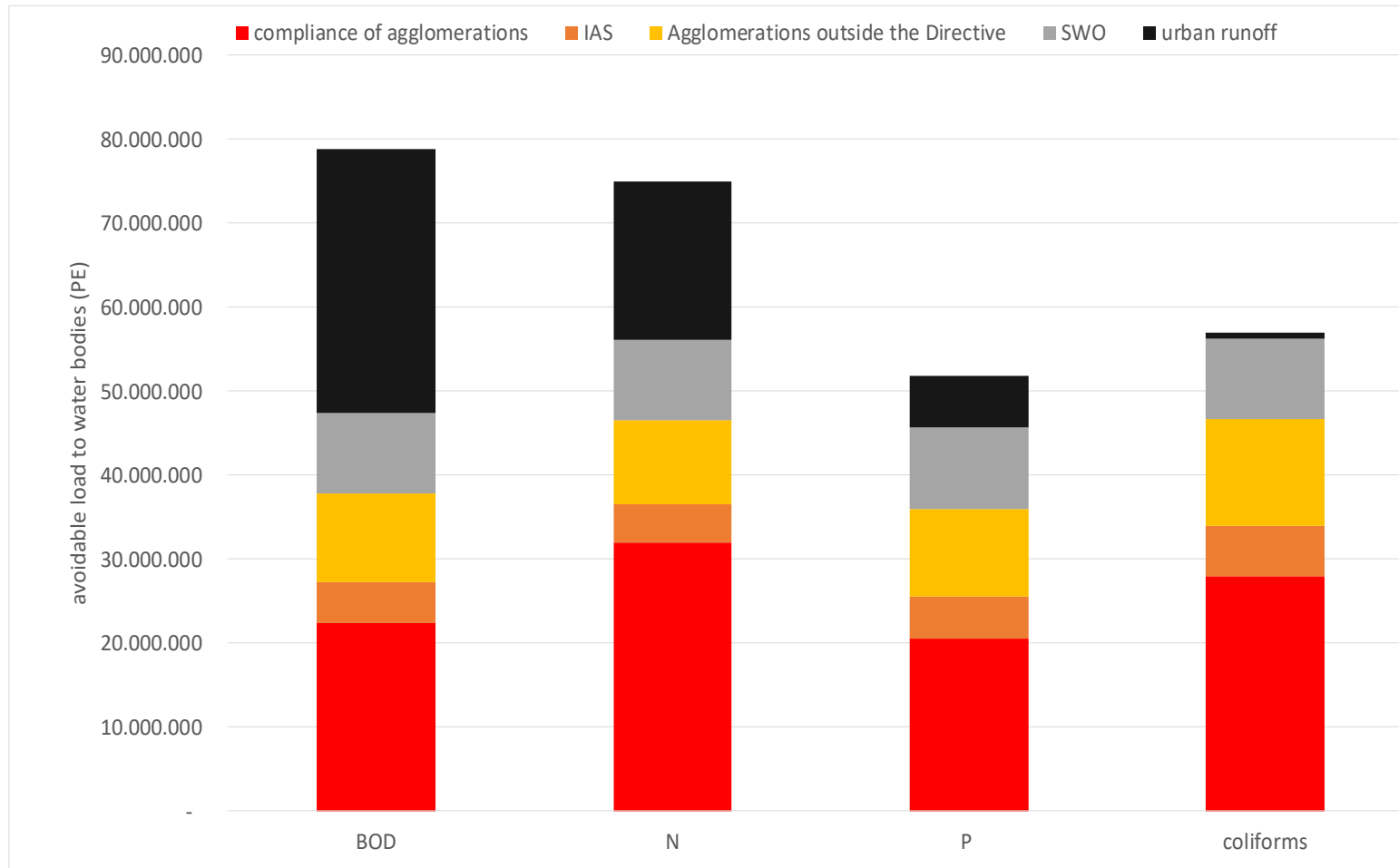
Revision of the Urban Waste Water Treatment Directive



Launch of the UWWTD impact assessment



Remaining pollution – what do we mean?



Shortcomings leading to pollution that could be significantly reduced:

- **Urban runoff**
- **Storm water overflows**
- **Small agglomerations < 2000 p.e. unconnected population**
- **Badly managed individual systems**
- **Non-compliant agglomerations > 2000 p.e. (late implementation, governance)**

Remaining loads that can be avoided (SD=agglomerations <2 000 p.e., CSO=combined sewer overflows, IAS=individual or other appropriate systems);
The total urban waste water generated is about 612 mio p.e.

Approach to the impact assessment

Methodology

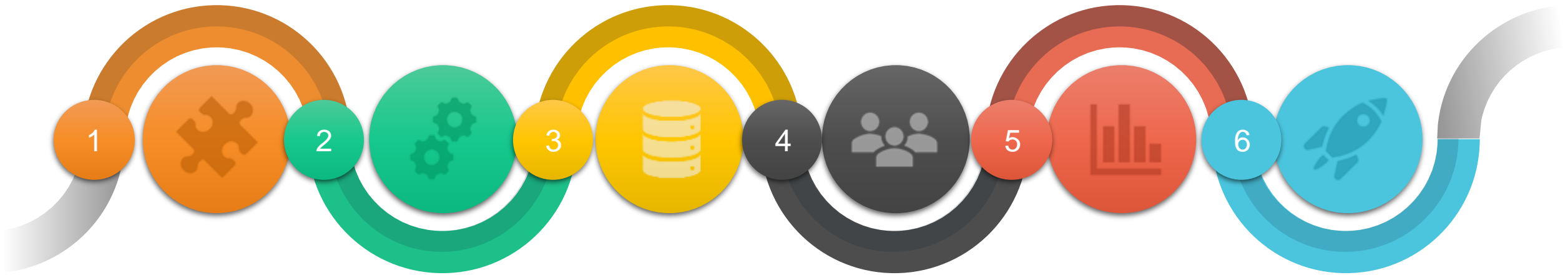
- **OECD**
- Established models for impacts & costs
- 2 baselines: 2016 + full compliance
- **Expert engagement**

Stakeholder consultation

- Web-meetings
- Speed dates
- Stakeholder workshops
- Conference with DE presidency
- Online public consultation

Drafting

- In line with Better Regulation Guidelines
- Clarity regarding certainty of findings



Preparation

- **Draft policy options inspired by workshop in Dec 2019**
- Consultation strategy
- Roadmap
- Externalized studies

Data collection

- Evaluation
- Information from **Member States & operators** + consultation on modelling assumptions
- Literature review

Analysis

- Quantification/modelling by **JRC**
- Triangulation of evidence

3 key angles for the review

Remaining pollution

Compliance

Small agglomerations

Individual Appropriate Systems

Urban run off, stormwaters

New challenges

Micro pollutants

GHG, Energy

Sludge

Health

Governance

Transparency

Better use of funds

Affordability, producer responsibility

Access to sanitation

Some over-arching considerations...



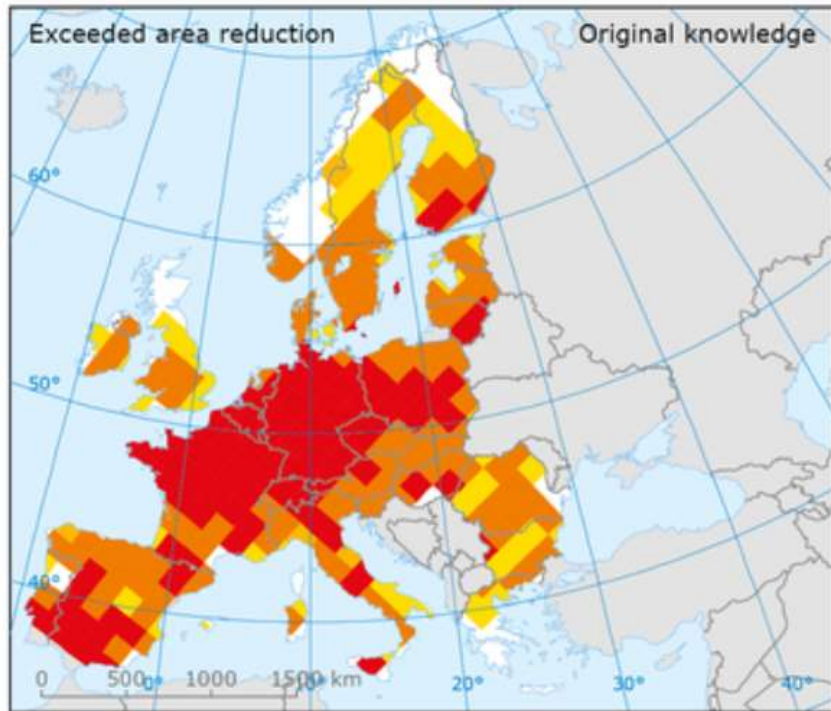
Thank you

Coffee break

Session 1

Addressing urban waste water pollution

Current pollution resulting from current practices for urban waste water treatment and collection

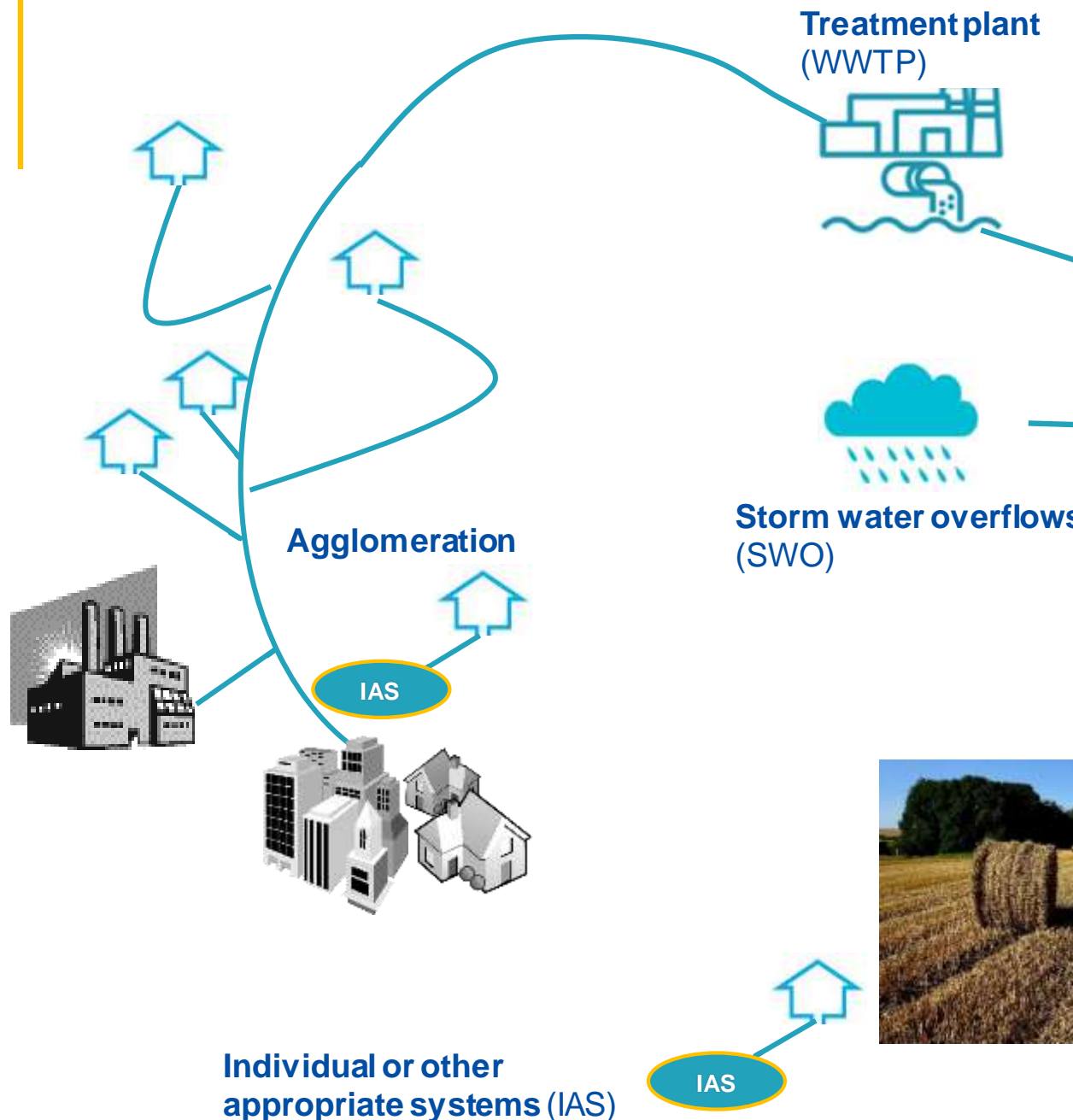


Eutrophication in 1990

Source: EEA

Requirements of the current Directive date back to 1991





Receiving area
Sensitive area (and catchment) or Normal area



Individual or other appropriate systems (IAS)

What are the levels of treatment?



Secondary treatment

Biodegradable organic matter

e.g. Escherichia coli and Faecal Coliforms



3rd level treatment

Nutrients
(N&P)



4th level of treatment

Micropollutants

UWWTD - Council Directive from 1991 91/271/EEC

Objective: "Protection of the environment from the adverse effects of the discharges of untreated waste water"

Collection

Agglomerations
> 2,000 p.e.
population equivalent

Alternative: Individual or
other appropriate systems
(IAS)

Treatment

Secondary
(biological)
treatment
as a rule

Agglomerations >
10 000 p.e. discharging into
sensitive areas =
nutrient removal
(More Stringent Treatment)

Monitoring and reporting

Treatment plants level of
treatment and
performance

Biennial reporting
to the European
Commission

Who are the stakeholders?



**Operators
(water companies)
& treatment plants**



Agglomerations



Member States



**European
Commission**

Introduction

Areas of improvement

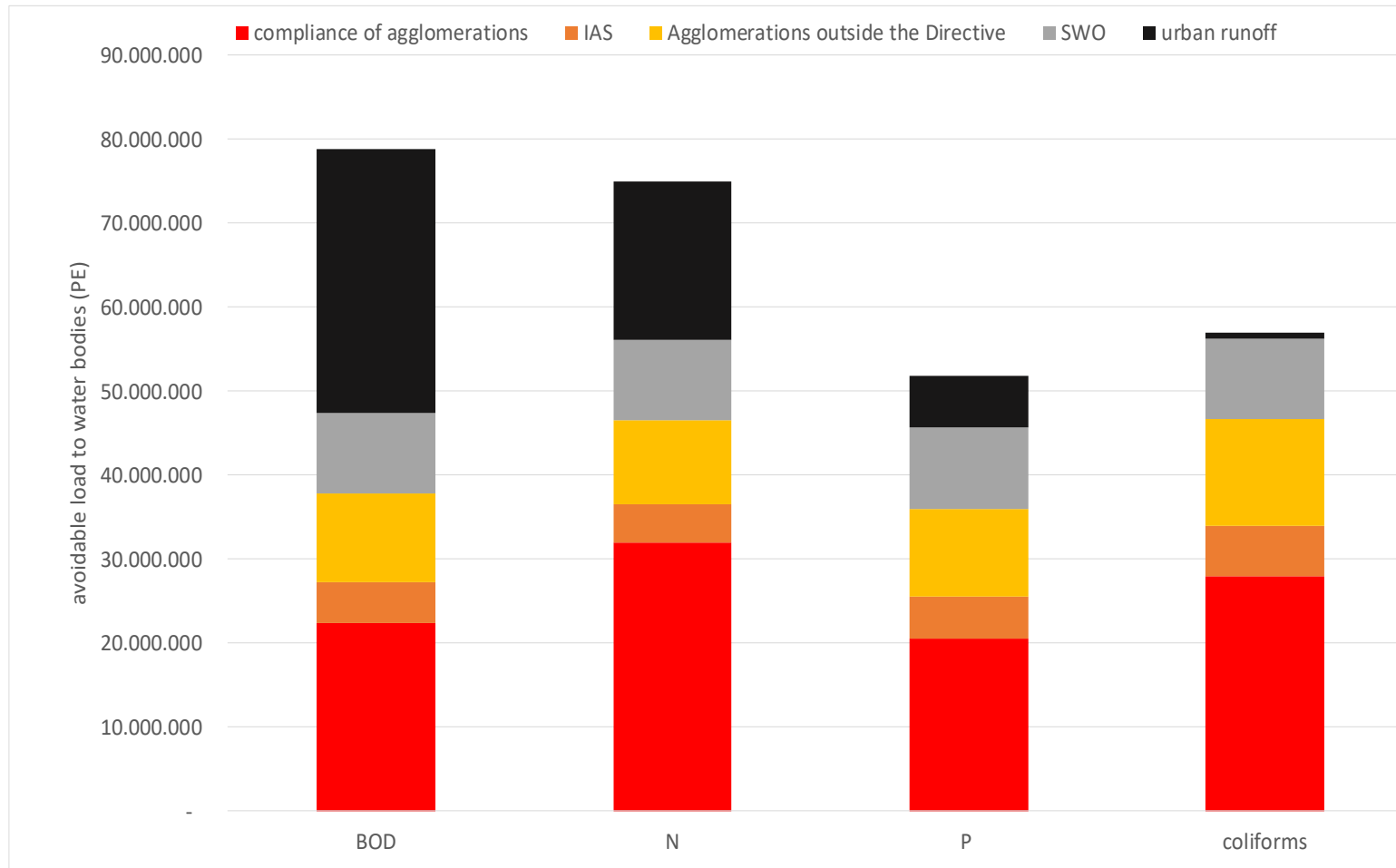


Policy option 1: EU soft guidance for local response	Policy option 2: Mix of policy responses	Policy option 3: Centralised responses setting EU requirements
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Option packages are mutually exclusive even if at the end the final package combines **measures** of the 3 approaches depending the results of the impact analysis.

Disclaimer: The measures and possible options are included to support conversations and exchanges of views. They should not be considered as the final position of the European Commission. The thresholds and other numerical values given here are not final values. All thresholds mentioned in the slides are indicative – the final decision will depend on the results of the costs/benefit analysis.

Remaining pollution – what do we mean?



Shortcomings leading to pollution that could be significantly reduced:

- **Urban runoff**
- **Storm water overflows**
- **Small agglomerations < 2000 p.e. unconnected population**
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Remaining loads that can be avoided (SD=agglomerations <2 000 p.e., CSO=combined sewer overflows, IAS=individual or other appropriate systems);
The total urban waste water generated is about 612 mio p.e.

Reduce pollution from smaller agglomerations not covered by the UWWTD (below 2 000 p.e.)



Option 1

Member State decides if the UWWTD applies to a small agglomeration based on a **risk-based approach**

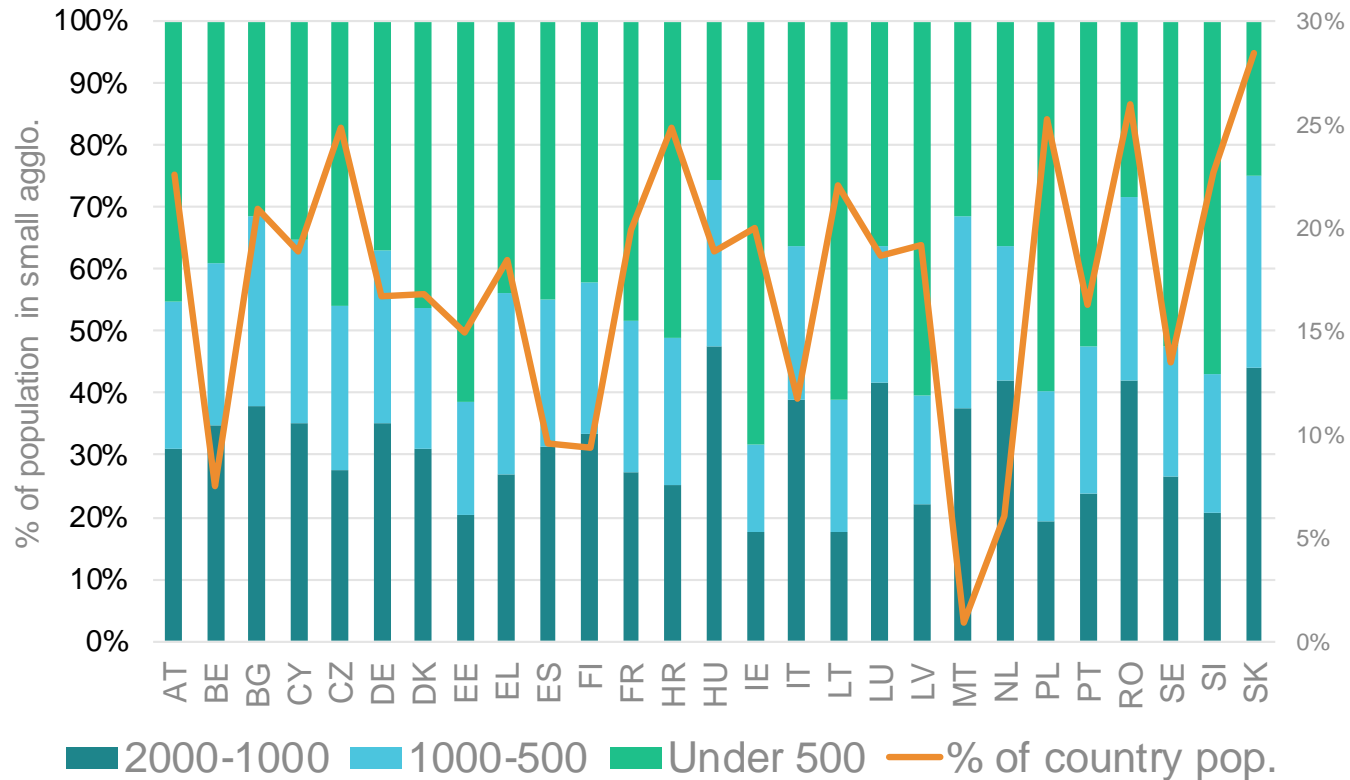
Option 2

Collection, treatment and reporting **required** for **agglomerations >1 000 p.e.**

Option 3

Collection, treatment and reporting **required** for **agglomerations > 500 p.e.**

Reduce pollution from smaller agglomerations



Agglomerations under 2 000 p.e. and their size

(Source: JRC model estimation, 2021)

Additional requirement for treatment of waste water in smaller agglomerations than 2,000 p.e.



Additional requirement for collection of waste water in smaller agglomerations than 2,000 p.e.



0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

■ Yes ■ No

Conclusion: Load from agglomerations <2000 p.e. can be high in some Member States. Many MS already go beyond the requirements of the Directive

Reduce pollution from small scale treatment in agglomerations (IAS)



Option 1

Commission to provide **guidance** on IAS technologies, registration, monitoring and inspections

Member State to apply **risk based approach** to reduce IAS use

Option 2

Member State must have a national inventory of IAS and implement a strategy for inspection & management

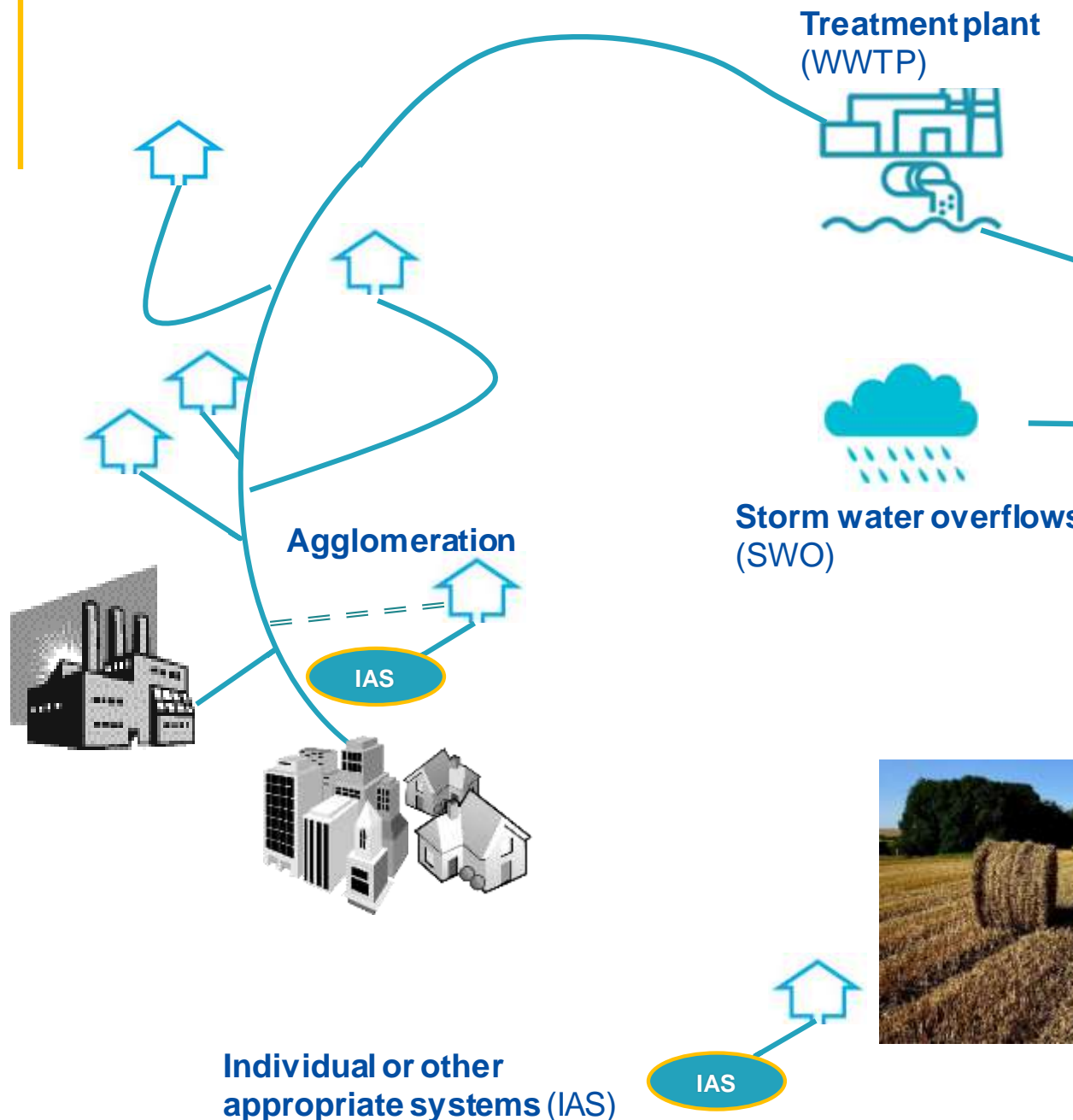
Commission to revise the EU standards on IAS

Member State to ensure that households connect to public networks if already possible

Option 3

Member State must report to the Commission IAS monitoring data if >5% of the country's load is treated by IAS

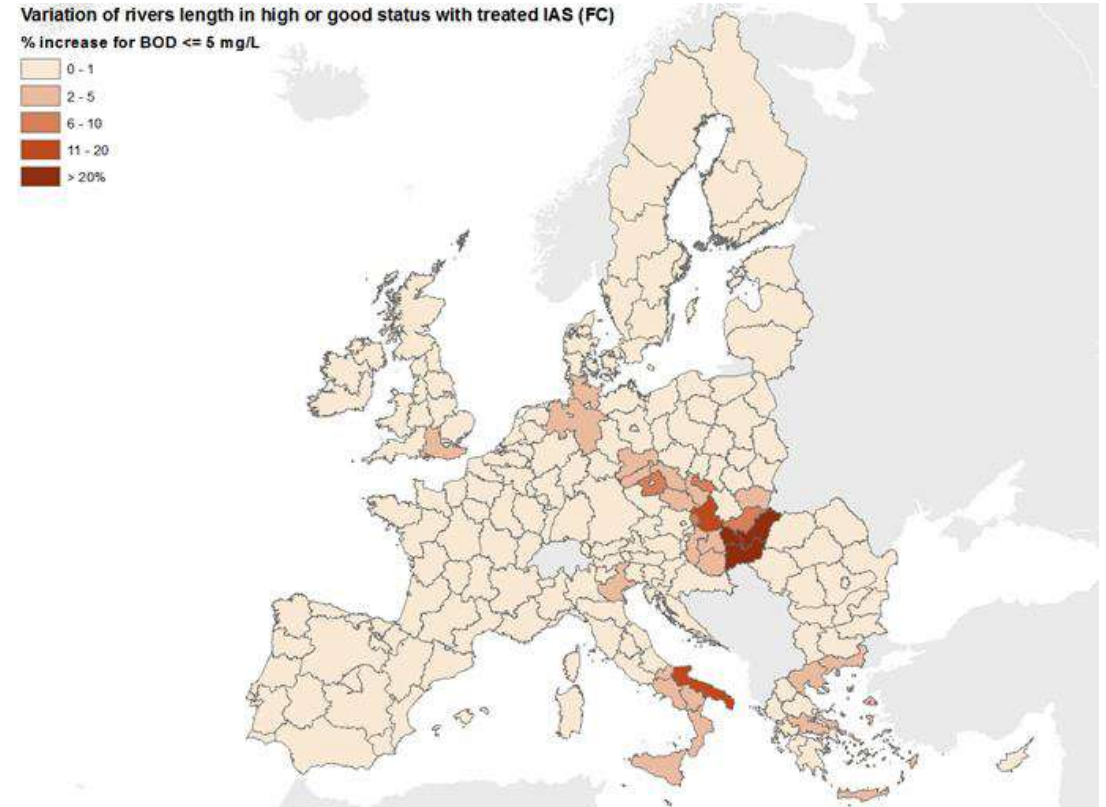
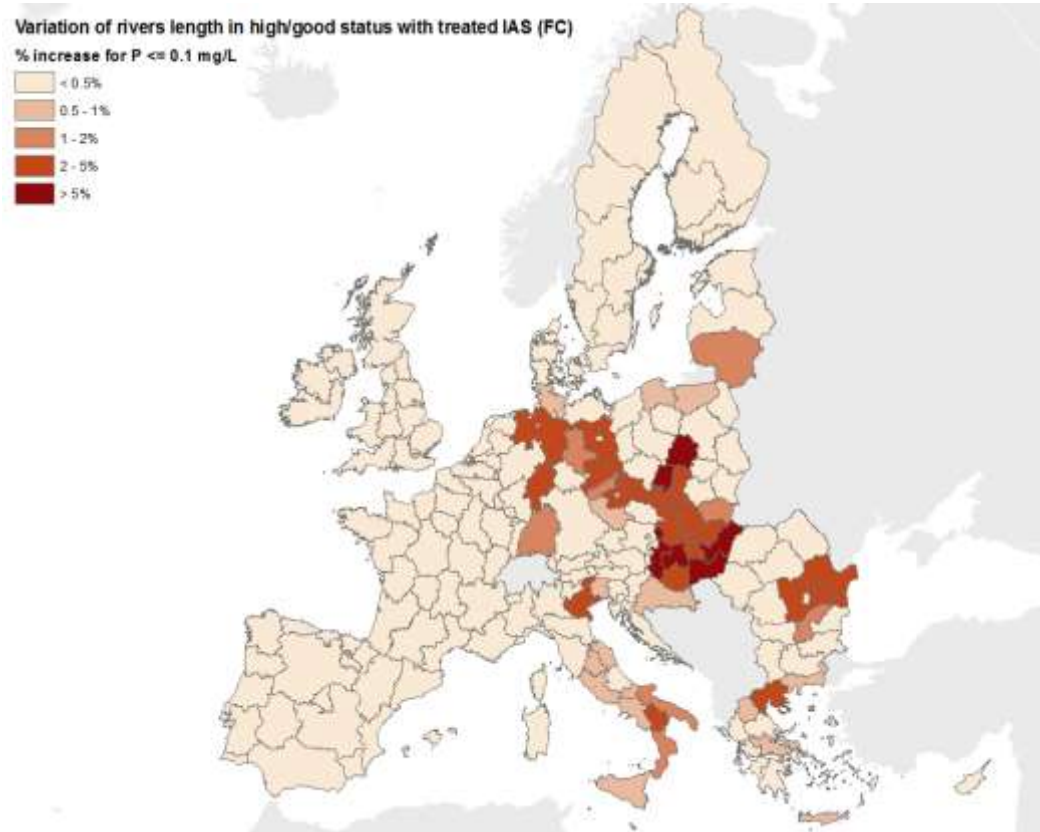
Member State to ensure that a maximum of 2% of load in any agglomeration is addressed by IAS



Impacts of IAS on good water quality for BOD (left) and Phosphorus (right)



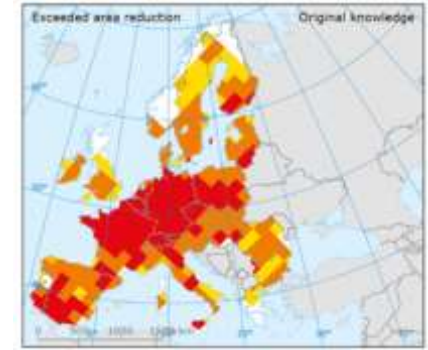
IAS



Conclusion: potential impacts are small but visible.

If IAS do not perform properly, some water bodies may fail to achieve good ecological status.

Reduce nutrient pollution in sensitive areas – addressing eutrophication



Option 1

Commission to provide **guidance** on designation of sensitive areas

Member State to decide if nutrient removal by treatment is needed in a particular plant

Option 2

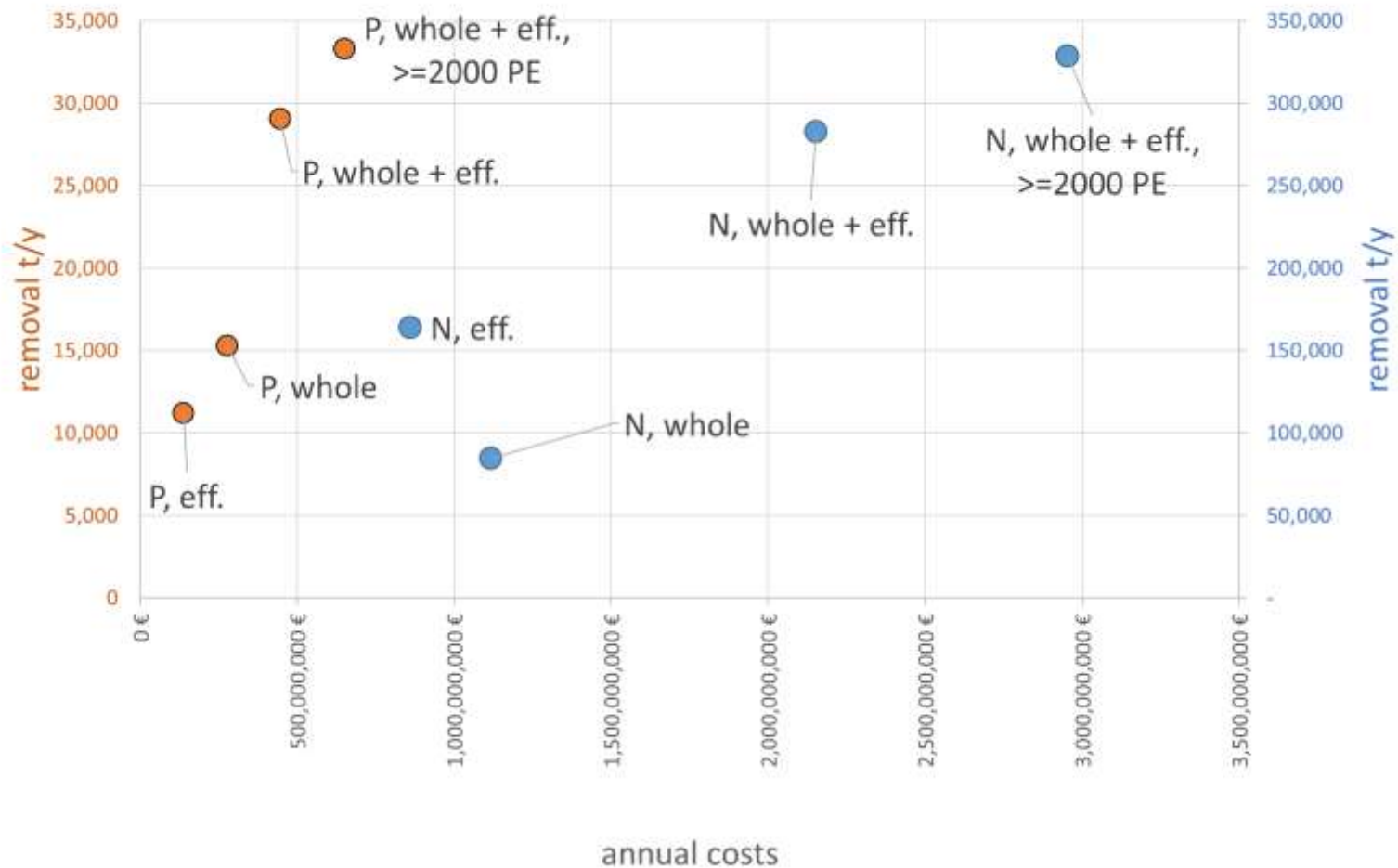
Commission to set higher nitrogen and phosphorous removal thresholds in the Directive

Member State to increase efficiency of nutrient removal in treatment plants

Option 3

All **treatment plants** >10 000 p.e. must remove nitrogen and phosphorous from waste water

EU total



Cost-effectiveness of nutrient removal

Expanding scope

All treatment plants >10 000 p.e. discharging into sensitive areas	All treatment plants >10 000 p.e. discharging in any area	All treatment plants >2 000 p.e. discharging in any area
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Improving removal efficiency

Current removal efficiency (80% for N, 90% for P)	Baseline, full compliance	N, whole P, whole	
Improved removal efficiency (90% for N, 95% for P)	N, eff. P, eff.	N, whole+eff. P, whole+eff.	N, whole+eff., >=2000 PE P, whole+eff., >=2000 PE

Conclusion: removing P is usually cheaper than removing N.

Best is combining high efficiency of nutrient removal and expanding the requirement to the whole territory and not only sensitive areas.

Reduce pollution from storm water overflows (SWO)



Option 1

Commission to provide **guidance** on strategies for storm water overflows and urban run-off

Member State to apply **risk based approach** to reduce storm water overflows

Option 2

Commission to adopt EU targets for **big** agglomerations, e.g., >1% of annual sewage volume overflows

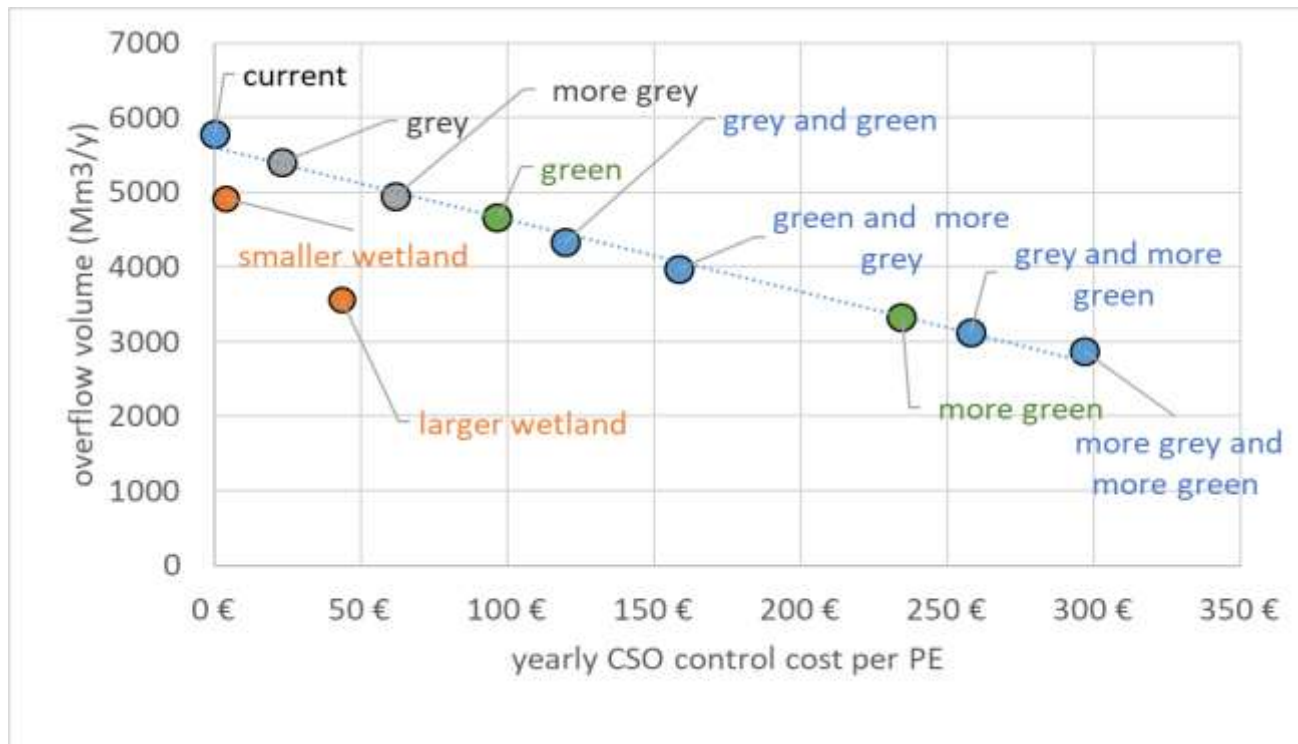
Agglomerations >100 000 p.e. must have a strategic plan to manage overflows and run-off based on prevention/green infrastructure

Option 3

Commission to adopt EU targets for **all** agglomerations

Agglomerations >50 000 p.e. to have a strategic plan to manage overflows and run-off

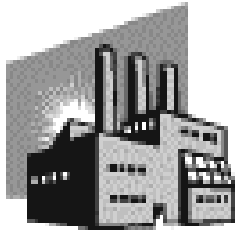
Grey and green infrastructure for SWO management



- **Smaller wetland** = sized on the median event
- **Larger wetland** = sized on the 95%ile event
- Grey = 50 m³/ha storage
- More grey = 100 m³/ha storage
- **Green** = 12% of urban areas greened
- **More green** = 28% of urban areas greened

Conclusions: SWO control is expensive. Any co-benefit (e.g. greening) helps substantially. Optimal solutions are case-specific. Treating overflow before discharge may be more cost-effective than retrofitting.

Reduce pollution from industrial discharges



Option 1

Commission to provide **guidance** on track and trace requirements

Member State to reduce pollution at source based on **risk based approach**, e.g. when sludge is used in agriculture

Option 2

Operators must monitor and track industrial pollution in the public networks and at the inlet of the treatment plant

Member State to ensure that agglomerations control pollution at source at industrial site

Option 3

Commission to impose monitoring & reporting requirements on small and medium-sized businesses connected to the public networks

Member State must establish a discharge permitting systems for industries not covered under Industrial Emissions Directive



Reduce pollution from industrial discharges

% of industrial sites that discharge into UWWTPs	Number of Member States	Member States
=<20%	4 (15%)	France, Portugal, Romania, Spain
>20-35%	2 (7%)	Croatia, Finland
>35%-50%	1 (4%)	Slovenia
=>50%	8 (30%)	Austria, Belgium, Czech Republic, Germany, Lithuania, Luxemburg, Malta, Netherlands
Unknown	12 (44%)	Bulgaria, Cyprus, Denmark, Estonia, Greece, Hungary, Ireland, Italy, Latvia, Poland, Slovakia, Sweden

Conclusion: Load from industrial sites discharged to the public network can be high in some Member States. Monitoring and reporting requirements would mean information for better decision making and control.

Discussion

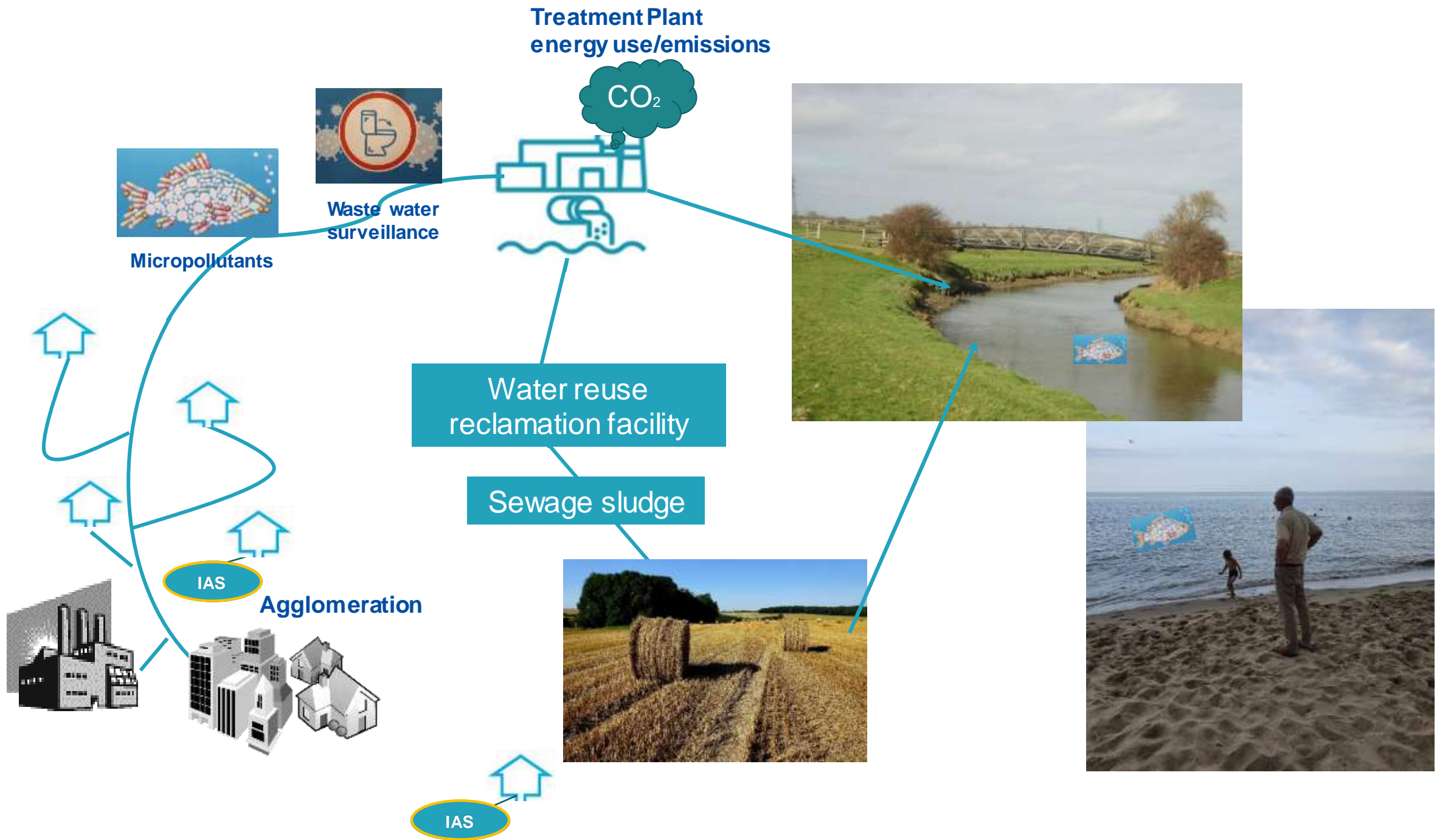
When addressing pollution from urban waste water, which of the following areas is, according to you, the most urgent one?

- Pollution from smaller agglomerations (<2000 p.e.)
- Pollution from individual or other appropriate systems (IAS)
- Pollution from storm water overflows (SWO) and urban runoff
- Pollution from industrial waste water discharge to the public networks
- Nutrient pollution of water bodies

Lunch break

Session 2

Acknowledging and responding to emerging concerns



Reduce micropollutants



Option 1

Commission to provide **guidance** regarding micropollutants removal and monitoring the presence of microplastics in waste water and sewage sludge

Member State to decide if micropollutants removal by treatment is needed in particular plant

Option 2

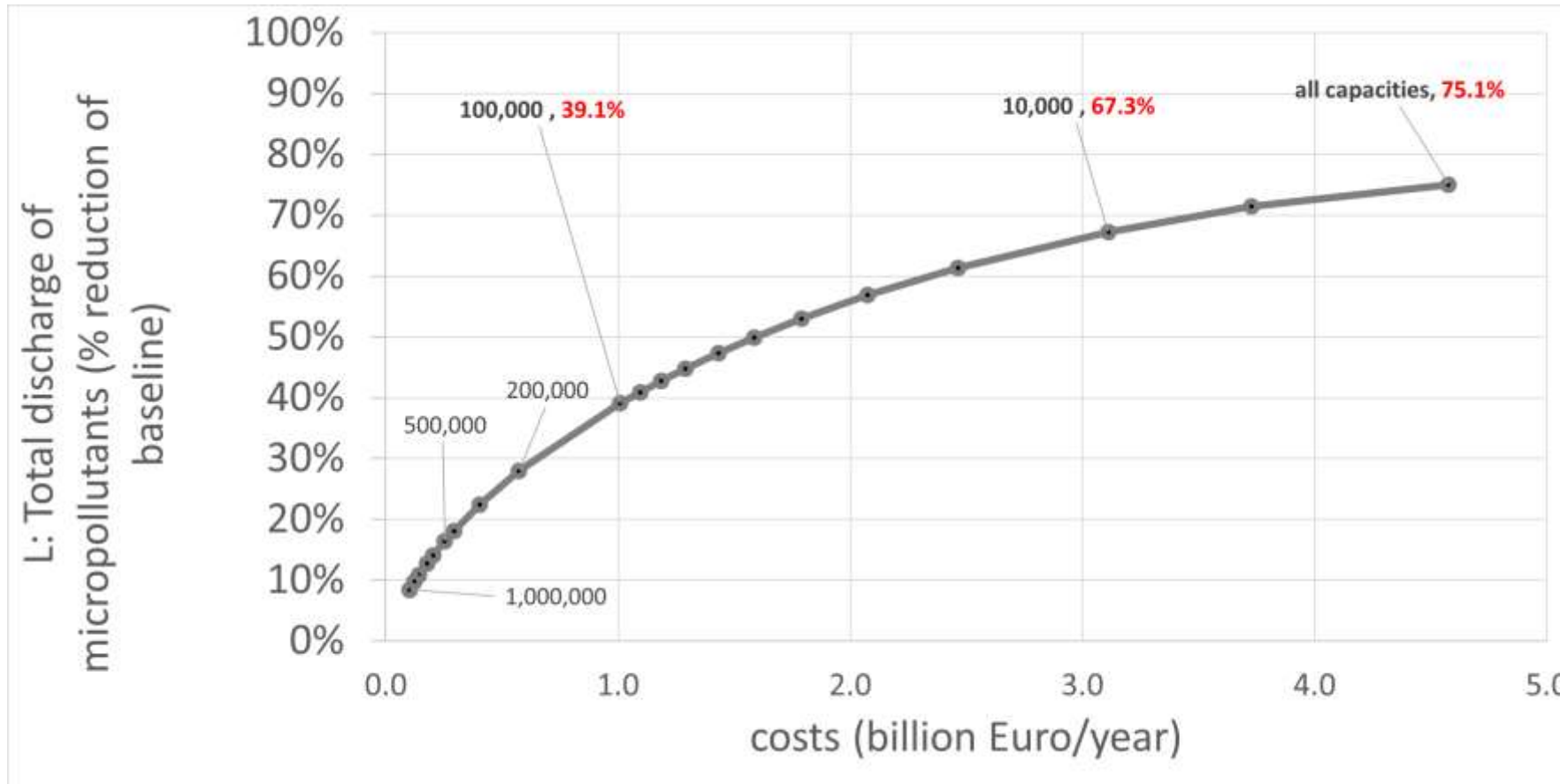
Treatment plants >100 000 p.e. must monitor and remove micropollutants

Operators of remaining **treatment plants** must monitor micropollutants level in effluent and treat, where necessary

Option 3

Treatment plants >10 000 p.e. must monitor and remove micropollutants

Costs & effectiveness of removing micropollutants [size of treatment plant in p.e.]



Conclusions: treating micropollutants at all treatment plants >100 000 p.e. caters for about half of the toxic load that can be avoided. Beyond 100 000 p.e., cost-effectiveness decreases.

Circular economy

Water reuse
reclamation facility

Sewage sludge



Option 1

Commission to provide **guidance** on phosphorous recovery and evaluating potential for water reuse by treatment plants

Option 2

Treatment plants >100 000 p.e. must recover phosphorous

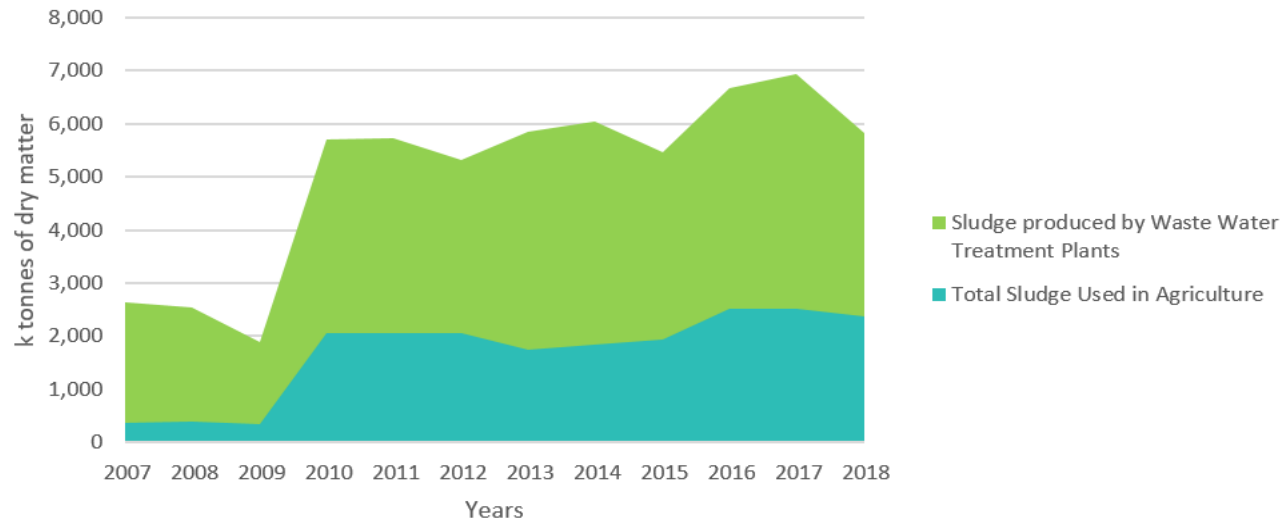
Commission to provide minimum levels for phosphorous recovery

Option 3

All treatment plants must recover phosphorous

If **sludge is incinerated**, phosphorous recovery is mandatory for min 80% recovery rate for phosphorus

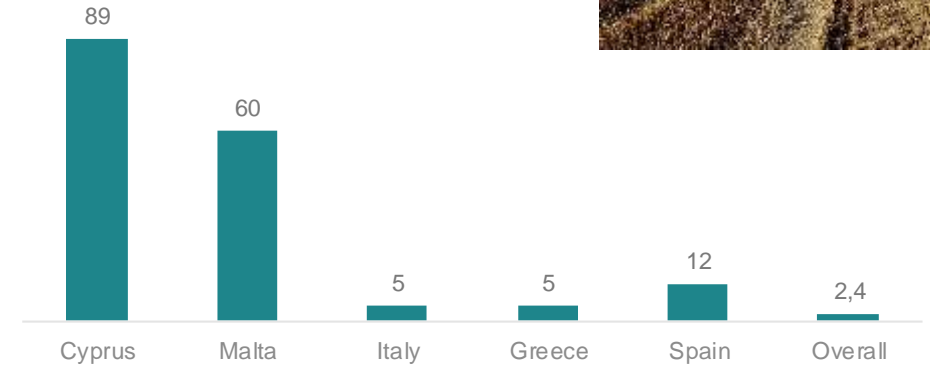
Circular economy



Use of sewage sludge in agriculture as reported under the Sewage Sludge Directive

Water reuse
reclamation facility

Sewage sludge



Level of water reuse in 2017 (prior to adoption of Water Reuse Regulation)

Conclusions: More action is necessary to ensure the UWWTD supports the ambition of the Circular Economy Action Plan

Increase energy efficiency



Option 1

Commission to provide **guidance** on energy audits of treatment plants, including monitoring and reporting of energy use.

Member State to decide which treatment plants need to be more energy efficient

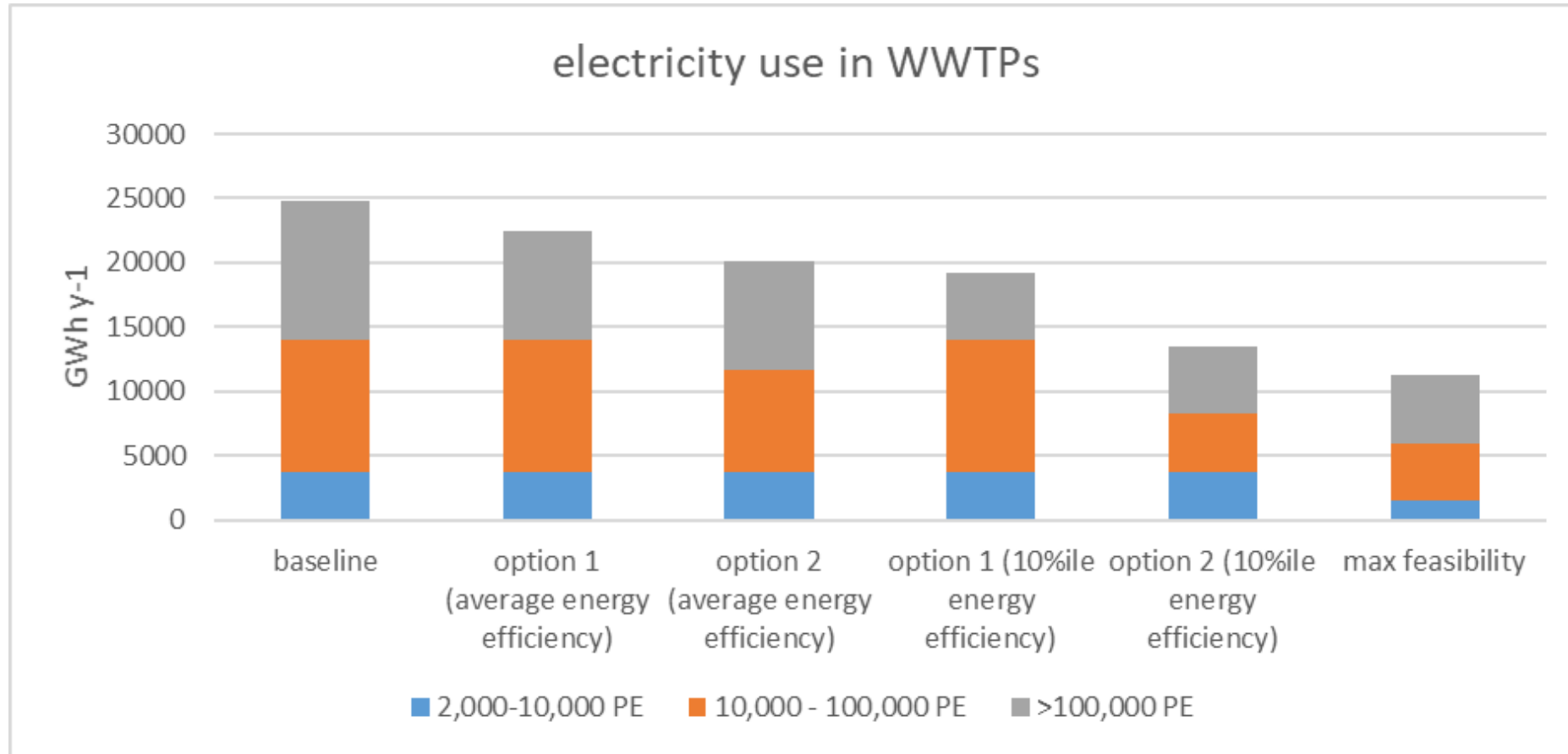
Option 2

Treatment plants >100 000 p.e. must improve energy efficiency including regular energy audits for their plants and public networks

Option 3

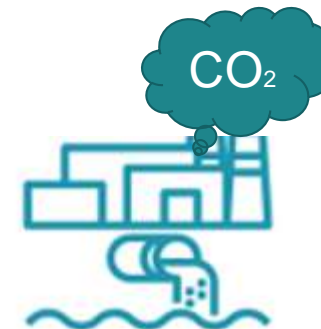
Treatment plants >10 000 p.e. must improve energy efficiency including regular energy audits for their plants and public networks

Saving electric energy in treatment plants



Conclusion: Quick wins may reduce energy use by >20%, “optimal” interventions by >50%

Reduce greenhouse gas emissions



Option 1

Commission to provide **guidance** regarding reporting of GHG emissions from treatment plants.

Member State to decide how and to what extent treatment plants reduce GHG emissions

Option 2

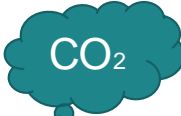
Member States must report to the Commission levels of GHG emissions from treatment plants

Member States must reduce GHG emissions to reach climate neutrality by **2050** for the sector

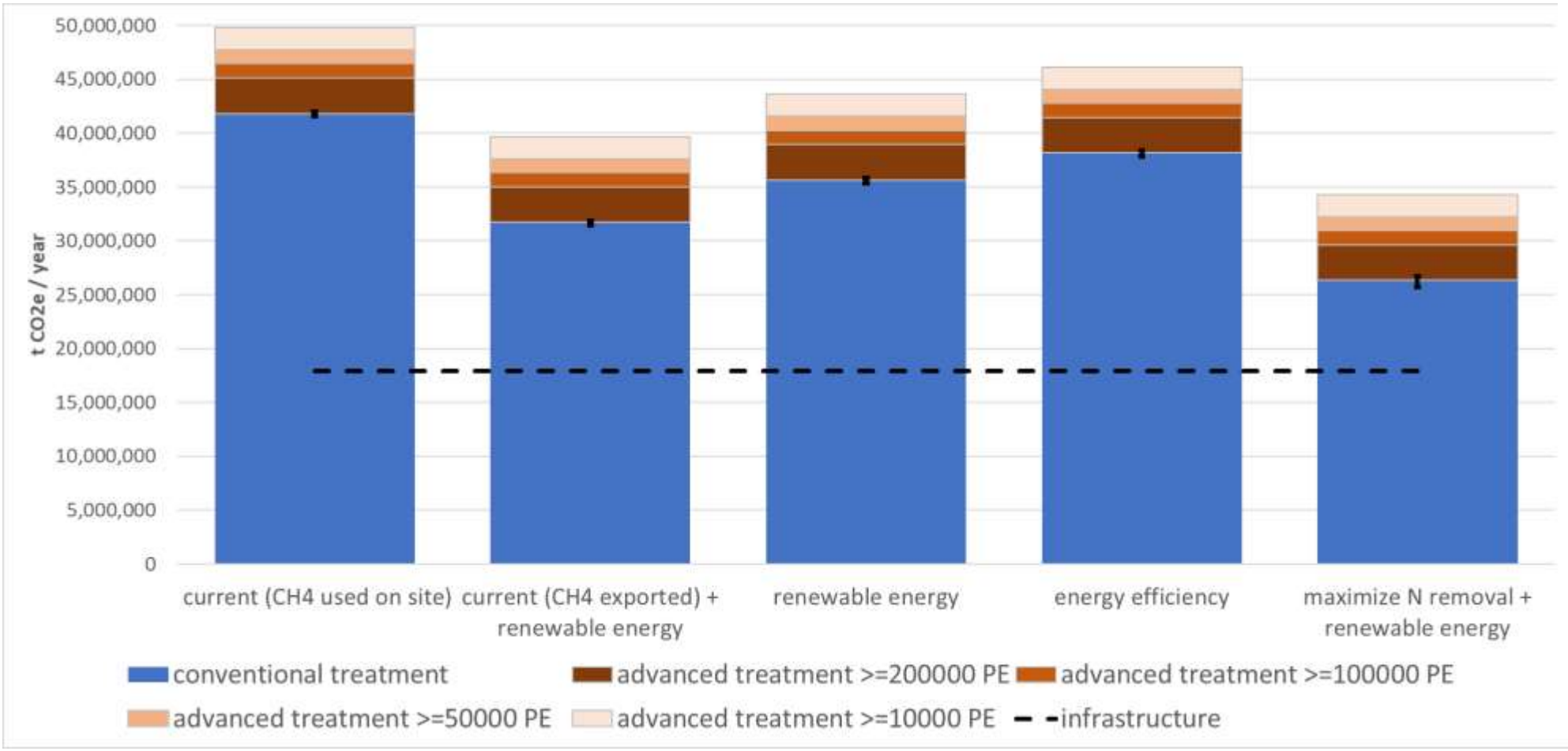
Option 3

Member States must reduce GHG emissions to reach climate neutrality

- by **2035** for treatment plants >100 000 p.e.
- by **2040** for the sector



Emissions of GHG by treatment plants



Conclusions: (1) Operational emissions can be almost halved with today's technology; (2) N removal and energy measures most important; (3) infrastructure causes high emissions; (4) more treatment requirements may offset the gains.

Waste water surveillance



Option 1

Commission to provide **guidance** for surveillance system for viruses and other pathogens present in waste waters

Option 2

Treatment plants >100 000 p.e must have a permanent surveillance system for viruses and pathogens

Option 3

Treatment plants >50 000 p.e must have a permanent surveillance system for viruses and pathogens

COMMISSION RECOMMENDATION

of 17.3.2021

on a common approach to establish a systematic surveillance of SARS-CoV-2 and its variants in wastewaters in the EU



Waste water surveillance

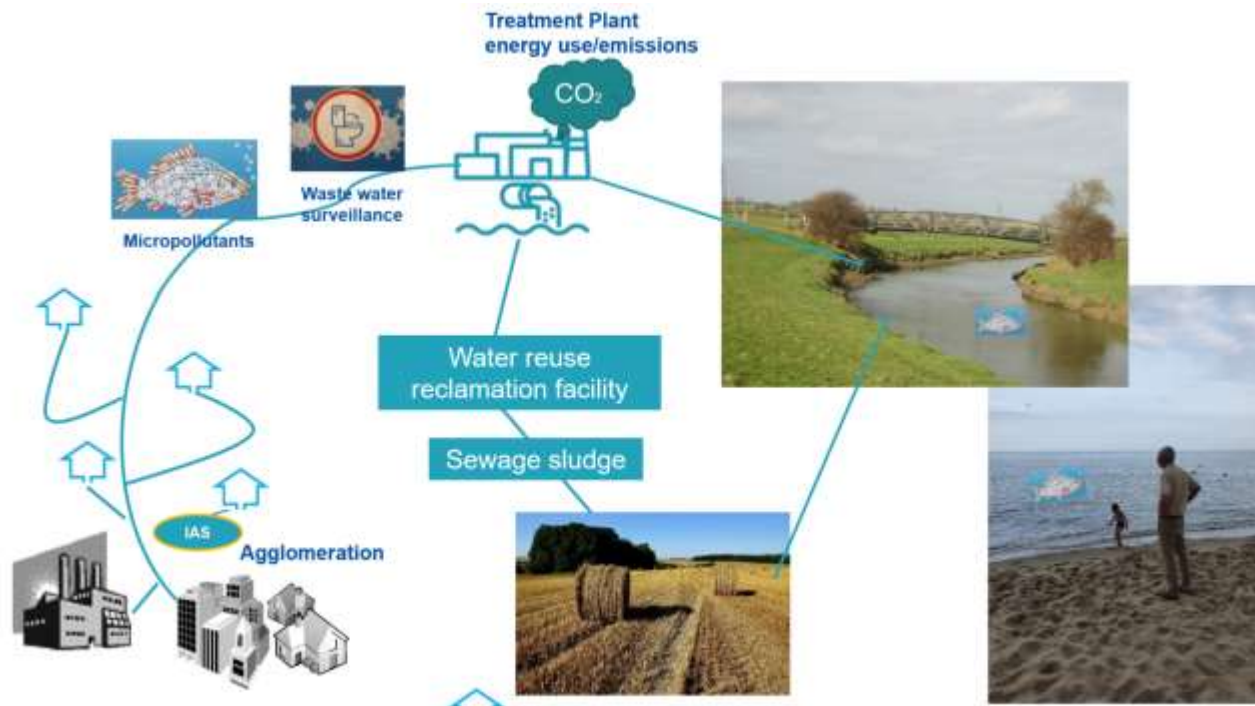
- Current waste water based surveillance covers app. 650 treatment plants in agglomerations >150 000 p.e.
- Public health sector, which is the primary beneficiary of the extracted information
- €100-250 per sample, sampling twice a week
- increasing willingness to pay from public health sector



Conclusions: waste water carries information for which research has developed necessary tools use of. There is a need of a supporting framework to encourage widespread use of these tools

Discussion

Which of the measures presented during this session do you support most?



Coffee break

Session 3

Raising the ambitions of the Directive and improving governance

Raising the ambitions of the Directive and improving governance



Spending money on infrastructure

- Better investment planning
- Funding 4th level treatment (EPR)



Better data

- Digitalisation
- Better monitoring & reporting



Citizen's rights

- Access to clear and useful information
- Access to sanitation

Extended producers responsibility (EPR) to fund micropollutant removal



Option 1

Commission to provide **guidance** regarding Extended Producer Responsibility

Member States to decide whether to fund upgrades of treatment plants by EPR

Option 2

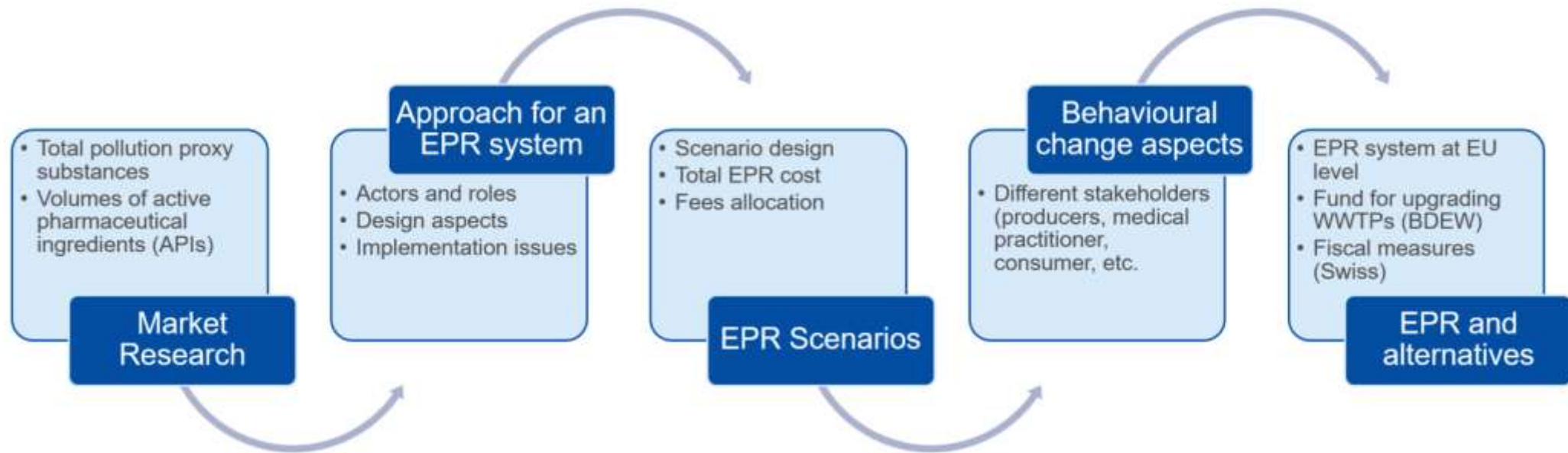
Member State must establish an Extended Producer Responsibility Scheme for **pharmaceuticals** to fund upgrades of treatment plants to remove micropollutants

Option 3

Member State must establish a fund for upgrading of treatment plants to remove micropollutants

Obligation for Extended Producer Responsibility Scheme for **pharmaceuticals** and **personal care products**

Extended producers responsibility (EPR) to fund micropollutant removal



Supporting investment planning to avoid noncompliance



Option 1

Member States are **encouraged** to develop a **national investment plan**

No reporting obligation under Article 17

Option 2

Member States must regularly submit a **national investment plan** to the Commission if

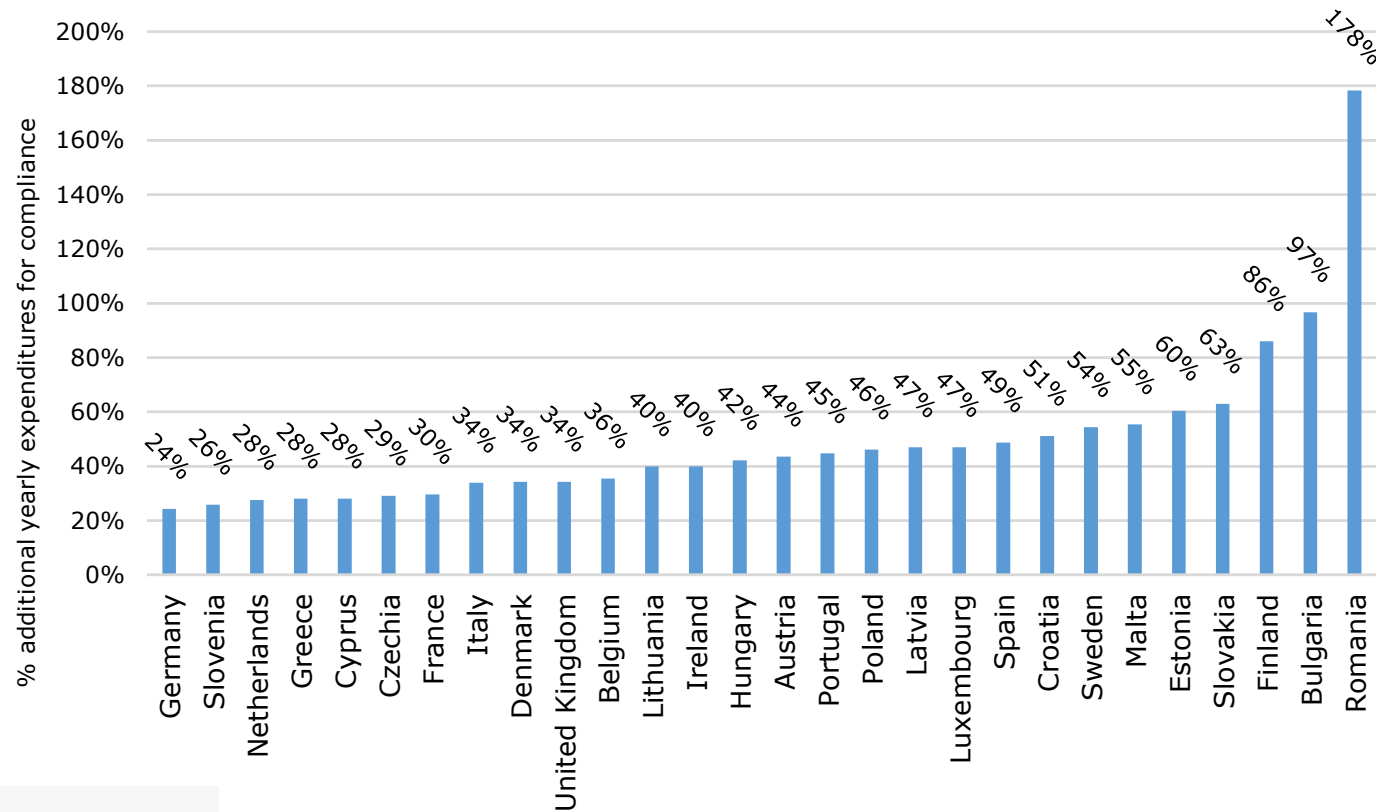
- they benefit from EU funding
- and/or are non-compliant

Remaining Member States report voluntarily

Option 3

All **Member States must** regularly submit a **national investment plan** to the Commission

How much do Member States need to increase their yearly investment?



Monitoring and reporting



Option 1

Commission to provide **guidance** on methodology, sampling conditions and frequency

Member States to ensure that key information is available at national level

Option 2

Member States must set up/ host UWWTD **data sets** and ensure access to them for the Commission/EEA

Member States must update the data sets annually

Key information from data sets to be **published annually** on EEA website

Option 3

Commission to

- improve current reporting system and update parameters (e.g. micropollutants, COD)
- improve requirements on sampling conditions, methodology, frequency

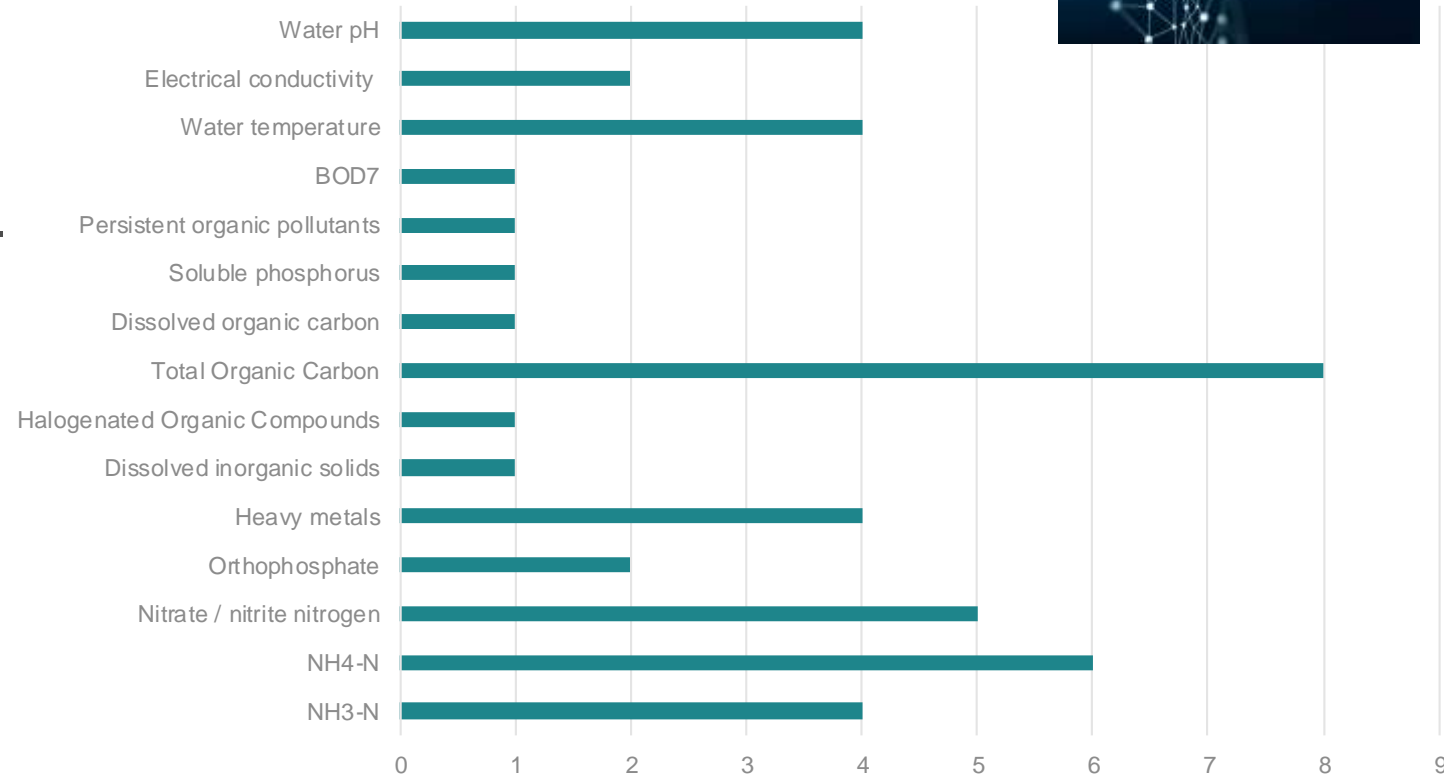
Member States must report to the Commission annually (increased frequency)

Parameters



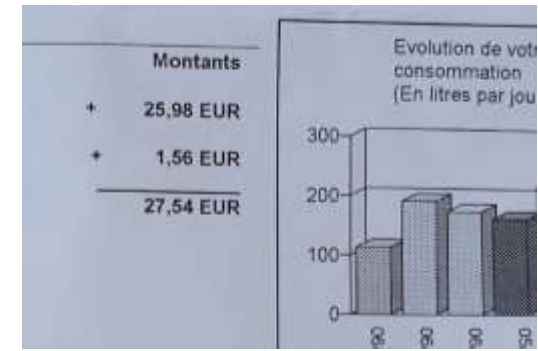
Parameters required to be monitored under the current UWWTD:

- Biochemical oxygen demand (BOD 5).
- Chemical oxygen demand (COD).
- Total suspended solids.
- Total phosphorus.
- Total Nitrogen.



Conclusions: Many Member States already go beyond the UWWTD requirements on monitoring and reporting. Technical progress means possibility for improved reporting and sampling.

Information to the public



Option 1

Operators are **encouraged** to make key information available on invoices to customers & on websites

Information on **treatment plants** readily available online

Option 2

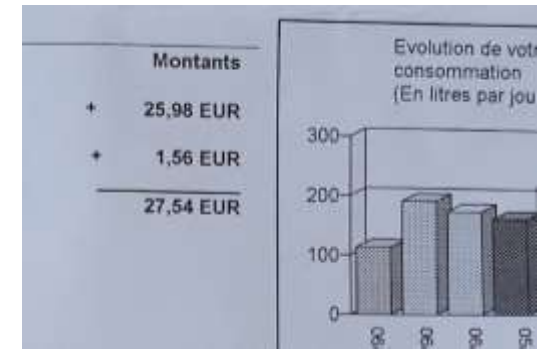
Operators must make key information available on invoices to customers & on websites including **treatment plants** discharge information

Option 3

Member States must host an up-to-date **website** with

- key national information
- links to websites containing local information

Transparency of service providers' performance



Rationale:
transparency can enhance performance

- Characterising performance
- Multiple co-benefits of transparency

Contribution to the IA: making the case

- The very heterogenous performance of service providers in Europe
- Expected costs and benefits of transparency

Contribution to a legislative proposal: a list of indicators to support transparency

- KPIs
- The context where indicators are most relevant
- Communication channels

Access to sanitation

Option 1

Commission to provide guidance on **minimum EU targets** for access to sanitation in agglomerations.

Option 2

Member States must take measures to ensure access to sanitation for vulnerable and marginalized groups and in public spaces.

Option 3

Commission to adopt of **EU minimum targets** for access to sanitation.



UN target on access to sanitation



Discussion

How do you rank these objectives that set out what the revised Directive would be seeking to achieve? (1 MOST important and 4 LEAST important)

- Contribute to the Green Deal objectives. i.e., to achieve the transition to circular economy and the aim of climate neutrality by 2050.
- To encourage innovation in waste water sector
- To improve access to information for the public
- To improve governance by better planning of investments in the sector

Links for further information

- **Urban Waste Water Treatment Directive (1991):**

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0271>

- **Website for the UWWTD review:**

https://ec.europa.eu/environment/water/water-urbanwaste/evaluation/index_en.htm

Including information about stakeholder consultations:

<https://ec.europa.eu/environment/water/water-urbanwaste/pdf/UWWTD%20IA%20consultation%20strategy%20final.pdf>

- **Evaluation of the Directive (2019):**

<https://ec.europa.eu/environment/water/water-urbanwaste/pdf/UWWTD%20Evaluation%20SWD%20448-701%20web.pdf>

- **Roadmap for the launch of the Impact Assessment of the Directive (2020):**

<https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12405-Revision-of-the-Urban-Wastewater-Treatment-Directive>

- **Joint Research Centre Modelling Report supporting the Evaluation (2019):**

https://ec.europa.eu/environment/water/water-urbanwaste/pdf/Evaluative%20study_final.pdf

- **OECD study on investment needs + Member State factsheets (2020):**

https://ec.europa.eu/environment/water/water-framework/economics/OECD_study_en.htm

Thank you!