

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

Supporting implementation through monitoring: the WFD- Programme of Measures (PoM) – Surface water

Presented by:

Ms. Katharina LENZ, PhD

**SWIM and Horizon 2020 SM - REG 11 – regional on-site training
Good water governance, focusing on regulatory aspects and the design,
monitoring and enforcement of policies**

3rd October 2018, Brussels, Belgium

This Project is funded by the European Union



umweltbundesamt®

ATKINS

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

Agenda

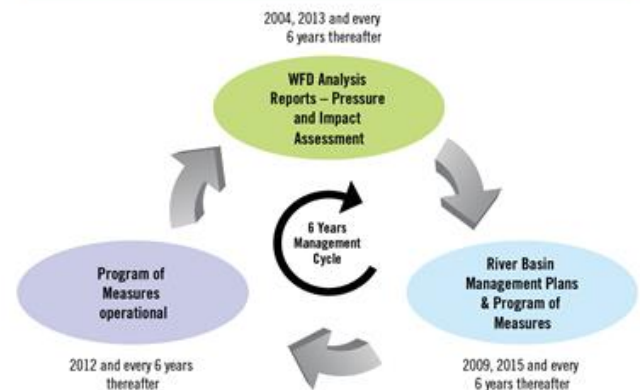
- **Presentation** of the WFD Programme of Measures and monitoring mechanisms to support WFD implementation
 - ✓ Programme of Measures – purpose
 - ✓ Monitoring mechanisms in the context of WFD
 - ✓ Example: nutrient pollution (nitrogen, phosphorus) in the Danube catchment river (2nd Danube River Basin Management Plan¹ published by the International Commission for the Protection of the Danube River - ICPDR)
- **Interactive session:** Analysis of national (programmes of) measures and monitoring mechanisms to prove their efficiency
- **Presentation and wrap-up of interactive session**

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

The WFD Programme of Measures and its monitoring

- **Environmental objective of WFD** for surface water: good ecological and chemical status
- WFD requires PoM composed by the Member States (MS), in order to achieve its environmental objectives
- **General approach** of WFD
 1. Definition of main pressures to water bodies
→ risk of failing to achieve good status
 2. Monitoring to proof the risk
 3. assessment of status of surface waters: good status or failing to achieve good status
 4. Definition of measures to mitigate these pressures
 5. Monitoring to assess, whether measures were appropriate

Main implementation steps for the EU Water Framework Directive *FIGURE 1*



Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

Monitoring mechanisms in the context of the WFD

Monitoring = Measurements in order to proof, whether quality criteria are met

Surface waters: Quality standards

- ✓ Surveillance monitoring
- ✓ Operational monitoring
 - Establish the status of those bodies identified as being at risk of failing to meet their environmental objectives
 - Assess any changes in the status of such bodies resulting from the PoM
- ✓ Indicative monitoring

(Waste)water streams: Emission limit values (ELV)

- ✓ Monitoring in different relevant (waste)water streams, e.g.:
 - Effluent of wastewater treatment plants
 - Effluent of industrial plants
 - diffuse water pathways

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

1) Nutrients - Definition of main pressures to water bodies

Urban wastewater treatment – point sources

Industrial and agricultural point sources

Diffuse sources

Nutrient pollution of surface waters via urban waste water in the Danube (reference year: 2011/2012)

Type of treatment	Collected and treated load		Discharge TN (tons per year)
	PE		
Tertiary treatment (NP removal)	39,782,835		30,105
Tertiary treatment (P removal)	2,171,779		4,226
Tertiary treatment (N removal)	2,450,930		3,330
Secondary treatment	15,212,530		23,175
Primary treatment	1,110,746		2,286
Collected but not treated	8,313,329		24,959
Total	69,042,149		88,081

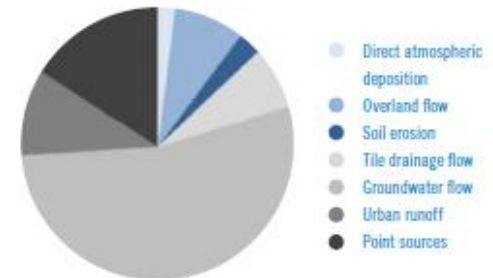
Small amounts of wastewater without treatment/ with secondary treatment produce similar N-loads as big amounts of wastewater treated by N-removal

Nutrient pollution of surface waters via direct industrial waste water discharges (reference year: 2012)

Type of treatment	Releases to water TN (tons per year)
Energy sector	2,956
Production and processing of metals	206
Chemical industry	3,316
Waste and industrial waste water management*	64
Paper and wood production and processing	267
Intensive livestock production and aquaculture	140
Products from the food and beverage sector	375
Total	7,324

* excluding urban waste water treatment plants

Share of pathways and sources in the overall TN emissions in (2009–2012); on the left: pathways, on the right: sources



605 kt/a N- emissions into the Danube river

16% from point sources

- urban wastewater treatment

- industrial and agricultural point sources

} **monitoring**

84% from diffuse sources → modelled/ **monitored**

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

3) Nutrients: Definition of PoM to mitigate the pressures to water bodies

✓ Urban wastewater treatment plants (UWWTP)

More stringent treatment (N- and/or P-removal) in UWWTPs located in nutrient-sensitive areas (in EU-MS: implementation of UWWTD)

- Definition of general emission limit values for UWWTPs in legislation
- Application of combined approach (§10 of WFD): in case general emission limit values are not sufficient to mitigate the pressure, stricter emission limit values can be demanded for single UWWTPs in individual permits
- **Consequent monitoring of both, ELV of UWWTPs and quality standards in surface waters**

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

3) Nutrients: Definition of PoM to mitigate the pressures to water bodies

- **Point source pollution – phosphorus**

Application of phosphate-free detergents in laundry and in automatic dishwashing (EU-MS: Implementation of the Detergents Regulation)

- **Consequent monitoring of both, ELV in UWWTPs and quality standards in surface waters**

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

3) Nutrients: Definition of PoM to mitigate the pressures to water bodies

- **Industrial and agricultural point sources**

General definition of emission limit values for different industrial branches (in EU-MS: Implementation of Industrial Emission Directive and its related Best Available Techniques, which define the State of the Art of production techniques and achievable ELV)

- Definition of general emission limit values for industrial branches in legislation
- Definition of specific emission limit values in individual permits
- **Consequent monitoring of both, ELV of industrial/ agricultural plants and quality standards in surface waters**

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

3) Nutrients: Definition of PoM to mitigate the pressures to water bodies

- **Diffuse pollution (agriculture)**

Limit the amount of nitrate that is applied on agricultural fields in fertilizer and manure and strictly regulate its application in individual nitrate-vulnerable zones (in EU-MS: Implementation of Nitrates Directive)

- Reduce the maximum applicable amount of manure
- Define time periods where manure/ fertilizer application is prohibited
- Define the required storage capacity for manure
- Define, where the application of fertilizers is banned (e.g. on high slopes, in buffer strips and under unfavourable weather conditions)
- Agricultural measures, e.g. modified cultivation methods, land use changes, soil conservation, natural water retention measures
- **Consequent monitoring of quality standards in surface waters and ground water**

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

Conclusion:

- ✓ Nutrients: Monitoring of measurements mitigating diffuse pollution is much more difficult than measurements mitigating point source pollution
- ✓ Nutrients: Besides monitoring quality standards in surface waters, the sources have to be monitored (e.g. tonnage use of fertilizers, fate and retention of nutrients in soil and (ground)water, etc.)
 - requires modelling, specific monitoring in different compartments (e.g. soil, groundwater, etc.), source apportionment

Monitoring strategies should be tailor-made to the source of pollutants (e.g. human pharmaceuticals in surface waters will probably not originate from agriculture → no first priority for monitoring)

Session 3: Supporting implementation through monitoring: the WFD – Programme of Measures (PoM) – surface water

Interactive session (2 groups)

Please select one pressure to the aquatic environment in your country and define relevant measures and the monitoring strategy.

Which measures can be easily monitored for their efficiency and which not?

Time frame: 15-20 min

Please briefly present your findings on a flip-chart after the interactive session.

SWIM-H2020 SM

For further information

Website

www.swim-h2020.eu

E: info@swim-h2020.eu

LinkedIn Page

[SWIM-H2020 SM LinkedIn](#)

Facebook Page

[SWIM-H2020 SM Facebook](#)

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

Thank you for your attention.

This Project is funded by the European Union

