

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

SWIM-H2020 SM Regional Activities REG 8 EU Regulatory Framework for Wastewater Reuse

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Regulatory framework for implementing WHO standards

WHO Guidelines

- represent the UN position on wastewater use issues
- provide guidance on policy formulation, harmonization on regulatory and institutional measures such as monitoring, standards, risk analysis and assessment procedures; good practice examples
- Policy formulation is based on:
 - Definition of objectives
 - Analysis of the situation, existing policies and needs incl impact of hazards and risks
 - Definition of measures
 - Policy and institutional integration
 - Establishment of policy dialogue mechanisms

Objectives

- Promote sustainable water demands, efficient water use, together with availability and quality
- Ensuring protection, regeneration and restoration of water resources and ecosystems

Regulatory framework for implementing WHO standards

WHO Guidelines are linked to the 17 Sustainable Development Goals

Goal 6 "Ensure **availability and sustainable management of water** and sanitation for all"

By 2020:

6.6 protect and restore **water-related ecosystems**, incl ... wetlands, rivers, aquifers and lakes.

2.4 achieve **environmentally sound management of chemicals** and all **wastes** and significantly reduce their **release to water** and soil to minimize their adverse impacts on human health and the environment;

By 2030:

6.1 achieve universal and equitable access to safe and affordable drinking water for all.

6.3 improve **water quality by reducing pollution** and minimizing release of hazardous chemicals, materials

- halving the proportion of **untreated waste water**, and increasing recycling and **safe reuse**.

6.4 increase water-use efficiency, ensure sustainable use & supply of freshwater to address **water scarcity**.

6.5 implement **integrated water resources** management at all levels.

6.A Expand international cooperation and capacity-building.

6.B Support and strengthen the participation of local communities for improving water management

3.9 substantially reduce the number of deaths and illnesses from hazardous chemicals and water, and soil pollution and contamination;

Regulatory framework for implementing WHO standards

WHO Guidelines Implementation

EU level

- Environmental protection is a policy goal in most countries and it is an EU policy objective under Articles 191-193, TFEU
- In the EU: environmental protection requirements must be integrated into the definition and implementation of the Union policies and activities, in particular with a view to promoting sustainable development (Article 11 TFEU)
- Integrated management is promoted in secondary legislation:
 - WFD: identification of hazards, monitoring and assessment, planning, public consultation
 - UWWTD: assessment, planning
 - MSFD: risk assessment; public information
 - Habitats Directive (Art 6 and 11): assessment, public participation, monitoring
 - EIA Directive (Art 6 and 8): assessment and public participation
 - SEA Directive: assessment and public participation
 - Aarhus Convention: Public participation

Wastewater reuse and water resources planning

EU legislation often requires integrated planning of water resources promoting environmental sustainability

Existing planning processes under EU legislation

- WFD: River Basin Management Plans, National Programmes of measures
- MSFD: National marine strategies, monitoring programmes, programmes of measures
- Nitrates Directive: Action programmes for nitrates vulnerable zones & fertilizers plans
- UWWTD - National implementation programmes and indicators, monitoring programmes
- Landuse planning
- Rural Development Plans

If water reuse- EIA and SEA may be required

Other

- National plan for water reuse in Spain: promotion of water reuse, objectives, public awareness

Wastewater reuse in EU legislation

Reuse of treated waste water needs to be undertaken in compliance with EU legislation requirements

WFD - objectives

- Sets objectives for quality and quantity of surface water bodies and groundwater bodies
- Aims at the protection of surface waters, coastal waters and groundwater to
 - prevent further deterioration and protect and enhances the status of aquatic ecosystems
 - promotes sustainable water use based on protection of available water resources;
 - adoption of measures for the progressive reduction of discharges of priority substances and the cessation or phasing-out of discharges of priority hazardous substances;
 - ensures the progressive reduction of pollution of groundwater
- Special attention to the protection of water bodies that are sources for drinking water (Art 7 WFD)
- Combined approach: point sources and diffuse discharges – BAT, ELV consistent with IED, Nitrates Directive and Drinking water Directive (Art 10)

Wastewater reuse in EU legislation

Reuse of treated waste water needs to be undertaken in compliance with EU legislation requirements

WFD – environmental objectives

Surface waters

- Non deterioration of the existing status
- Good surface water status (good ecological status and good chemical status)
- Reducing pollution from discharges/emissions of priority substances
- Phasing out emissions from priority hazardous substances
- Specific quantitative objectives: over abstracted water bodies with low flows cannot achieve biological quality and good ecological status

Groundwaters

- Non deterioration of the existing status
- Good groundwater status and good chemical status
- Reducing pollution from discharges/emissions of priority substances
- Phasing out emissions from priority hazardous substances
- Specific quantitative objectives

Wastewater reuse in EU legislation

Reuse of treated waste water needs to be undertaken in compliance with EU legislation requirements - WFD

Measures

- To define of RB districts, ensuring administrative coordination
- To identify pressures (impacts of human activities) on waterbodies affecting achievement of objectives – Art 5 WFD
- To monitor surface waters and groundwater status
- To adopt River Basin Management Plans (Art 13)
- National Programmes of measures to achieve env objectives, good ecological status and good chemical status include the following basic measures
 - Control of abstraction of freshwater and groundwater: authorisations and register
 - Control of artificial recharge of groundwater bodies: authorisations
 - Point source discharges that cause pollution require authorization and ELV for pollutants
 - Diffuse discharges require prior regulation and authorization
 - Quantitative control measures regarding hydromorphological conditions
- Public participation and consultation in decisions (Art 14) to ensure public acceptance
- Common Implementation Strategy: Guidelines on Integrating Water Use into Water Planning and Management in the context of the WFD

Wastewater reuse in EU legislation

Reuse of treated waste water needs to be undertaken in compliance with EU legislation requirements - WFD

Wastewater reuse in Surface and Groundwaters

- Programmes of measures – Annex VI refers to UWWTD, Nature Directives, IED, EIA Directive, Nitrates Directive...
- Wastewater treated to an appropriate standard for its use: WFD prohibits discharges of pollutants into groundwater if not based on authorisations
- The direct or indirect reuse of treated wastewater should not lead to pollution of surface water through changes in the chemistry – risk to the achievement of the WFD objectives
- The following requirements for reuse of treated wastewater in aquifer recharge
 - Prior to authorization
 - Quality of the reused water does not affect the quality objectives for groundwaters
 - Associated controls of pollutants and their impact should be reviewed and updated
- The introduction of reuse of treated wastewater should not negatively affect the hydrological characteristics of the receiving waters

Wastewater reuse in EU legislation

Directive 91/271/EEC, UWWTD

Aims at protecting environment from adverse effects of wastewater discharges requiring:

- Collection, treatment and discharges of urban waste water
 - Agglomerations of 2000 population equivalent (pe) or more must have collecting systems - Requirements Annex I A (BAT)
 - Agglomerations of 10000 pe or more must ensure secondary treatment before discharge - Requirements Annex I B (BOD, COD SS, minimizing adverse effects)
 - Agglomerations of more than 2000 pe must ensure secondary treatment of water discharged to freshwater and estuaries
 - Individual or other appropriate systems (IAS) for collecting - no environmental benefit or excessive costs
- Discharges to sensitive areas (Annex II - subject to eutrophication) - more stringent treatment
 - Annex I B – (adding Phosphorus and Nitrogen, minimizing adverse effects)
 - Alternatively, minimum percentage of reduction of the load - 75% of N and P reduction
- Discharges to less sensitive areas (Annex II)
 - Discharges to coastal waters from agglomerations of 10000 pe; to estuaries, agglomerations of 2000pe
 - Less stringent treatment and appropriate treatment (freshwater, estuaries, coastal waters)
 - Assessment – discharge does not adversely affect the environment or adjacent areas with detrimental environmental effects
- Discharge to waters shall comply with more stringent requirements of other directives

Wastewater reuse in EU legislation

Directive 91/271/EEC, UWWTD

Aims at protecting environment from adverse effects of wastewater discharges requiring:

- Discharges of waste water from certain industrial sectors to collecting systems or waste water treatment plants – (Art 11)
 - subject to authorisations/prior regulations and conditions - Annex IC - pre-treatment
- Discharges of waste water from certain industrial activities with treatment plants, to receiving waters (reuse)
 - prior authorization (Art 13)

Treated wastewater and sludge shall be reused (Art 12)

- Whenever appropriate
 - Subject to prior regulations or authorisations
 - Respecting the conditions and requirements under Annex IB
-
- 4 main principles are laid down in the Directive: Planning, Regulation, Monitoring, Information and reporting
 - National Implementation programmes
 - Monitoring and publication
 - Member States shall minimize adverse effects on the environment when planning disposal routes

Wastewater reuse in EU legislation

Directive 91/271/EEC, UWWTD

Monitoring (Art 15)

- Discharges to ensure compliance with requirements, including reuse - Commission Guidelines
- Information collected to be made available to Commission – reporting through WISE

Reporting every two years (Art 17)

- Decision 2014/431 simplified reporting
 - Format of national implementation programmes
 - New elements: reasons for not compliance, measures foreseen to reach compliance and expected date for completion, expected dates for works and date for achieving compliance

Improved Governance

The Structured Implementation and Information Framework (SIIF) & Questionnaire

- European Platform linked to 28 platforms
- Improve reporting and dissemination of information
- National implementation programmes and indicators
- Gathering data on compliance, good environmental status and economic activities

Water Reporting System for Europe

- Reportnet – new deadline 23/07/2018

The Questionnaire-2017 information requests include:

- Designated sensitive areas
- Aggregated information on waste water reuse and sewage sludge management
- National implementation programmes
- Investments needed to achieve / maintain compliance

Wastewater reuse in EU legislation

Directive 91/271/EEC, UWWTD

Inconsistent implementation and legislation across Member States on wastewater reuse

- Only 8 Member States have notified regular reuse of treated waste waters:
 - BE, CY, EL ES, FR, IT, MT, UK –
 - HR, HU, SK and RO intentions to future use.
- No data collected on systematic basis
- Average 2% of reuse of treated waste water in the EU (0.08% the UK – 97% CY)
- Potential uses:
 - Environmental objectives
 - Industrial
 - Agriculture
 - Municipal, recreational

In Spain 64% of total reused water is for irrigation followed by recreational uses/aquifer fee
- Treatment levels (primary, secondary, tertiary)
- Definition of responsibilities and liabilities between parties
- Demarcation between reused water distribution systems and drinking water systems (public health protection)

Investment needs

- Collection & treatment systems (Fitness check of EU Freshwater Policy, 2012)
- EU Funds (Cohesion and Structural Funds) provide co-financing

Wastewater reuse in EU legislation

Nitrates Directive 91/676/EEC

Objectives

- Protection of waters by reducing or preventing water pollution caused or induced by nitrates from agriculture sources
- The reuse of wastewater in agriculture may contain nutrients (nitrogen) – it therefore applies to reuse for agriculture purposes

Obligations

- Designation of Nitrates Vulnerable Zones according to criteria Annex I –
 - surface water bodies which are (at risk of) eutrophic or exceed limit values of the Water Drinking Directive for nitrates or
 - Groundwater exceeding 50mg/l of nitrateswould be affected by the reuse of wastewater in agriculture
- Alternatively, mandatory measures in the whole territory
- Member States must develop Codes of good agricultural practices (use of fertilizers)
 - Mandatory in Nitrate vulnerable zones
 - **Fertilizers plans** for each farm keeping records of their use – should include wastewater from agriculture sources that is reused
 - Annex III – periods when fertilizer is prohibited or limited – would apply to wastewater reused
 - Treated wastewater containing nitrogen can be defined as fertilizer under the Directive
- Action programmes for nitrates vulnerable zones should take into account wastewater from agriculture sources that is reused

Wastewater reuse in EU legislation

Marine Strategy Framework Directive 2008/56/EC

Objectives

- Protect and preserve the marine environment, prevent its deterioration, restore marine ecosystems
- Prevent and reduce inputs in the marine environment to phase out pollution affecting marine biodiversity, marine ecosystems, human health or legitimate uses of the sea
- Achievement of good environmental status and ensure marine ecosystems' capacity to respond to human-induced changes
- Sustainable use of marine goods and services by present and future generations
- Integration of environmental concerns into other policies and legal measures

Obligations

- Development of National Marine Strategies
- Development of a Plan of Action to ensure coordination within the marine region/sub-region
Mediterranean Sea
 - Western Mediterranean Sea ; Adriatic Sea; Ionian Sea and Central Mediterranean Sea; Aegean Sea
- Assessment of environmental status and environmental impacts of human activities
- Definition of good environmental status
- Establishment of environmental targets and indicators
- Establishment of monitoring programmes
- Adoption of programmes of measures to achieve or maintain good environmental status
- Public consultation and information

Wastewater reuse in EU legislation

Reuse of treated waste water needs to be undertaken in compliance with EU legislation requirements

Others:

- **Bathing Water Directive**
- **IED** for emissions and the requirement in BAT
- **EIA Directive** for building a treatment plant or for artificial groundwater recharge schemes where the annual volume of water recharged exceeds 10Million m³
- **SEA Directive** regarding a plan including treatment plants for reuse of treated wastewater and its distribution
- **Nature Directives:** construction of a treatment plan likely to affect a Natura 2000 area should be consistent with the conservation objectives for the site.

Wastewater reuse in EU legislation

Legislative approach to Pollutants – WHO recommendations

- **REACH Regulation (EC) No 1907/2006 Annex XVII –**
 - PFOS in list of restricted substance of Annex XVII;
 - PFOAs added through Commission Regulation (EU) 2017/1000 amending Annex XVII
- **Directive 2008/105/EC on environmental quality standards in the field of water policy**
 - List of priority substances
- **POPs Regulation 850/2004** regulates PFOS now but
- **No existing legislation - The proposal for Drinking Water Directive**
 - To regulate the group of substances substituting PFASs or PFOS (shorter chains). Sweden has done intensive research on PFASs –
 - To regulate Endocrine Disruptor (EDCs) known to be present in surface water sources impacted by treated sewage effluent and other discharges.
Beta-estradiol (is a natural oestrogen);
Bisphenol A (widely used in plastics);
Nonylphenol (a building block)
 - Stricter values for chromium and lead

The need for an EU coherent legislative framework

The need for a coherent legislative framework at EU level:

Inconsistencies:

- Implementation
- Legislation does not cover reuse for specific uses: agriculture or discharge to groundwater aquifers

Gaps:

- Pollutants

Initiatives:

- Guidelines on Integrating Water Use into Water Planning and Management in the context of the WFD
- Proposal for a Directive on Drinking water
- Proposal for a Regulation on minimum requirements for water reuse

Wastewater reuse in EU legislation

Drinking water Directive – proposal 1.2.2018 to revise existing Directive

Objectives

- Answer Right2Water citizens initiative -
- REFIT evaluation of the Drinking water Directive 98/83/EC
 - Effective but not relevant (list of parameters)
 - Coherence with WFD
- Increasing access to water
 - equipment for access to drinking water in public spaces,
 - information campaigns
 - encouraging administrations and public buildings to provide access to drinking water
- Improve quality of drinking water – protecting citizens' health
 - new risk-based approach
 - adding new and emerging substances to the list: legionella and chlorate.
 - take account of the latest scientific knowledge and recommendations WHO
- Facilitate transition to circular economy:
 - resource-efficient (energy and water)
 - Confidence on tap water
 - Reduction of plastic use
- Increase transparency:
 - empower consumers with clearer information on water consumption, cost structure and price

Wastewater reuse in EU legislation

Drinking water Directive – proposal 1.2.2018 to revise existing Directive

Obligations/measures

Parameters

- Maintains those parameters WHO recommends removing
 - Benzene, cyanide, mercury ...
- Maintains those parameters WHO recommends updating
 - Antimony, boron
- Adds new parameters recommended by WHO
 - Chlorate and chlorite
 - Perfluorinated compounds (PFOA and PFOS in groundwater primarily are persistent, bioaccumulative and toxic)
 - Endocrine disruptors

Risk-based approach

- Risk based approach
- Risk assessment rules
- Hazard assessment of bodies of water used for drinking water &
- Monitoring programmes

EU Legislative framework for wastewater reuse

Draft Regulation on minimum requirements for water reuse

Published on 28 May 2018

Facts:

- As part of the integrated water management approach, including water efficiency measures, **water reuse is a reliable and less expensive alternative water supply for agriculture irrigation or aquifer recharge**
- 1/3 of EU territory suffers from water stress;
- Water scarcity is a major concern in Med countries
- Climate change impacts weather patterns and water quantity/quality

Objectives:

- The Regulation aims to ensure reuse of water is safe
- address water scarcity in the context of climate change,
- while ensuring the protection of environment and human and animal health
- More efficient management of scarce water resources – efficient functioning of internal market
- Implements Circular Economy Action Plan, CAP and climate change, UN SDG in the EU

EU Legislative framework for wastewater reuse

Draft Regulation on minimum requirements for water reuse

Published on 28 May 2018

Scope:

Minimum quality requirements for **water reuse in irrigation** and **groundwater recharge**

Procedural steps:

- Internet-based public consultation: July – November 2014
- Announced in the new circular economy package of 2015
- Internet-based public consultation on policy options: end October 2016 - end January 2017
- Inception Impact Assessment published on April 2016 for stakeholder and citizen information
- Full Impact Assessment published on January 2018
- JRC technical report with scientific basis for the proposal on January 2018
 - Consultation to the European Food Safety Agency – May 2017
 - Consultation to the Scientific Committee on Health, Environmental and Emerging Risks - June 2017

EU Legislative framework for wastewater reuse

Draft Regulation on minimum requirements for water reuse

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Requirements:

- Minimum requirements for water quality - complying with Annex I and permit
 - cover microbiological elements (e-coli, legionella, turbidity, BOD and SS)
- Minimum requirements for monitoring
 - routine and validation targets
- Water risk management in consultation (operator of treatment plant, end-user, other party)
- Adoption of Water Reuse Risk Management Plan based on key risk management principles prior to permit identifying additional hazards, risks and preventive measures
- Obligation to get a permit for any supply or reused water
- Obligations in the permitting procedure (incl content of the application, risk management plan)
- Compliance checks of the conditions set out in the permit: on – spot checks and monitoring data
- Public access to information made available online
- Information on monitoring of implementation (compliance checks, data...)
- Penalties effective, proportionate and dissuasive

EU Legislative framework for wastewater reuse

Draft Regulation on minimum requirements for water reuse

Published on 28 May 2018

Options analysed:

- Legal instrument ensuring safety of agricultural products to ensure protection of local public health and the environment
- Directive or Regulation on quality requirements for water reuse for agriculture irrigation or aquifer recharge
- Guidance document on safety of agricultural products and protection of public health and the environment

Wastewater reuse and water resources planning

Current examples of wastewater reuse regulatory framework - Spain

- Law 10/2001 of the National Hydrological Plan (last amended in Dec 2015)
- Water Law 1/2001 (Royal legislative decree)
- Royal Decree 1620/2007 sets up quality criteria for water reuse + Guidelines
 - Authorisation / permit
 - Content requirements for permit: volume, use, risk management measures
 - Maximum acceptable values (intestinal microbiological, e-coli, SS, turbidity)
 - Parameters according to the type of water use - Uses regulated:
 - Urban irrigation
 - Agriculture irrigation: water quality criteria (e-coli, legionella, suspended soils, turbidity, compliance with EQS)
 - Industrial irrigation
 - Recreational uses
 - Environmental uses (aquifer recharge): water quality criteria add nitrogen and NO₃;
 - Uses forbidden:
 - human consumption, food industry (except processes/cleaning) hospitals, bathing waters for recreational use, cooling towers, public fountains, ...

Wastewater reuse and water resources planning

Current examples of wastewater reuse regulatory framework - Spain

- Planning: Adoption of the National Water Reuse Plan (national or local level)
 - Subject to SEA
- Other plans: National Hydrological Plan; RBMP
- Monitoring: Minimum sampling and testing frequencies for each parameter

Facts Agriculture irrigation:

- 77% from surface sources, 21% groundwater and 2% desalination and reuse

Facts Aquifer recharge

- Groundwater abstraction – 22% of water demand
- 66% of groundwater chemical status was good and 71% of quality status was good
- Examples of Managed Aquifer Recharge:
 - Llobregat aquifer in Barcelona: injection wells, infiltration ponds
 - Aiguamolls de l'Empordà National park – to restore wetland and aquatic ecosystems
 - Marbella
- Types: Aquifer Storage and Recovery, Aquifer Storage, Transfer and Recovery (ASTR)

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Further information on EU law

Proposal for a Directive on Drinking water:

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2017:0753:FIN>

Proposal for a Regulation on minimum requirements for water use:

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A337%3AFIN>

Water Framework Directive:

<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02000L0060-20090625>

Urban Waste Water Treatment Directive :

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

Spanish Legislation on waste water reuse:

<https://www.boe.es/buscar/pdf/2007/BOE-A-2007-21092-consolidado.pdf>

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