



Evaluation of the Urban Waste Water Treatment Directive (91/271/EEC): The challenge of Individual or Appropriate Systems (IAS)

Wastewater management in the Member States is being regulated by the Urban Waste Water Treatment Directive (UWWTD) that was in 1991 by the European Commission (EC) in order to protect the environment from the adverse effects of waste water discharges. Almost 30 years after its publication, the Directive is subject to evaluation, for instance, in the form of an analysis demonstrating whether the policy is still fit for the purpose and still meets today's challenges. Despite the generally high level of implementation of the UWWTD, a number of challenges remain, including the need for further investments in the waste water sector to increase or maintain implementation, operating costs optimisation, individual or appropriate systems (IAS), storm water overflows, as well as improving coherence with other European Union water policy.

Article 3 of the UWWTD specifies that *"where the establishment of a collecting system is not justified either because it would produce no environmental benefit or because it would involve excessive cost, individual systems or other appropriate systems which achieve the same level of environmental protection shall be used."*

Discharges of wastewater, originating from areas outside agglomerations and agglomerations with less than 2,000 p.e. without a collecting system, should comply with the relevant quality objectives and the relevant provisions of other Community Directives for receiving waters, such as Directive 2000/60/EC and Directive 2006/118/EC. A range of wastewater disposal arrangements is excluded from the scope of the UWWTD because they occur outside agglomerations covered by Article 3(1) (i.e. agglomerations of less than 2,000 p.e.). Nonetheless, it is important to remember that there are considerable challenges to ensure that existing practices (such as the use of septic tanks, cess-pits, etc.) do not cause water pollution.

Considering the application of IAS as an alternative to the centralised collection, the Commission is investigating whether the conditions for applying IAS (registration, permits, monitoring and inspection, types and related environmental protection) are in line with UWWTD requirements. It should be noted, however, that the UWWTD does not specify the characteristics of these systems, nor the design specifications.

As a result, and in view of the evaluation process of the UWWTD, the IAS are currently being vividly discussed and further justification for their adoption by the Member States is required by the DG Environment. It is anticipated that IAS should be framed by specific regulations in the future. Specifically, the requirements for designing, constructing and maintaining IAS must be defined and environmental protection must be ensured on the same level as a collecting system followed by centralised wastewater treatment.

The key challenges for their adoption are linked to specific regulations: framing or specifically defining the application of IAS, technical standards for eligible IAS technologies, setting minimum requirements for their design, structure and performance. In this framework, HYDROUSA project endorses an integrated, decentralized approach of wastewater treatment linked to sustainable development, water resources and energy conservation and environmental protection. HYDROUSA state-of-the-art implemented practices promote IAS and can highly improve the previous efforts made in the past by the EC (Guide on extensive wastewater treatment processes adapted for small and medium-sized communities, 2001) and for instance the Greek case (Guide related to wastewater systems for small communities, 2010).



The main approach in the HYDROUSA project is to utilise nutrients present in residual streams. In this sense, the nutrient-focused or resource-oriented approach suggests to start thinking in nutrients rather than contaminants. In the HYDROUSA case, wastewater is used after effective treatment to overcome the big trade-off of conventional recovery systems, where energy or chemical input is exchanged with nutrient recovery. The nature-based systems, which are applied within HYDROUSA are characterized by very low energy footprint.

Moreover, with concern to the EC proposal for a regulation that defines minimum quality standards for reclaimed water to be used for agricultural irrigation, HYDROUSA will demonstrate how IAS can deliver safe water for irrigation and fertigation. In addition, we, the HYDROUSA team, will address the risk management that is more critical for smaller systems. Finally, HYDROUSA digital solutions will increase transparency in water reuse by potentially allowing public access to online information about water reuse practice in small and decentralized systems and potentially even in bigger systems.