Increasing water supplies – reuse of treated wastewater

Reusing wastewater, particularly for agricultural purposes, plays an increasingly important part in water management, particularly in areas of low rainfall. A recent study of the Apulia region in southern Italy shows that wastewater can be used to meet agricultural water needs.

The Apulian water agency (AQP) runs the largest aqueduct system in Europe, importing water from neighbouring regions and delivering over 300 million cubic metres of drinking water per year through a 19,635 km distribution network to over 4.5 million inhabitants. Demands on water resources are increasing in the region from both agriculture and tourism. Nearly 80 per cent of land in the Apulia region is used for agriculture, despite an average regional rainfall of around just 660 millimetres per year. Nearly a quarter of this land requires irrigation.

Changes in agricultural practices, an expanding economy and over-use of groundwater, combined with climatic conditions, have caused a scarcity of water in the region; researchers estimate that a further 700 million cubic metres of water is needed for agricultural purposes per year. Over-exploitation of the groundwater in the region, through the excessive drilling of wells, has enabled salt-water to encroach on the freshwater aquifers, especially along areas close to the coastline. Regional authorities plan to curtail borehole drilling and to reuse treated municipal wastewater for agricultural and industrial purposes and in the process, protect the aquifers as sources of good-quality drinking water.

Currently, the 215 treatment plants managed by the AQP have the capacity to process around 250 million cubic metres of treated wastewater per year. Not all these plants are appropriate for efficient wastewater recycling, as they do not have the appropriate technological features, size or connections to the distribution infrastructures, however, the regional plan has identified plants that are suitable. These plants are also close to agricultural areas. During the first stage of development, it is envisaged that approximately 50 per cent of the reclaimed volume of treated wastewater (92 million cubic metres per year) from these plants will be used.

Reusing wastewater has other benefits for the region, such as the need to halt the discharge of wastewater into subsoil which has been common practice in the Apulia region. The plan was developed to comply with European Union Directives on the treatment of urban wastewater (91/271/EEC)\(^1\) and protection of water from agricultural sources, especially nitrate pollution (91/676/EEC)\(^2\).

Researchers suggest that other European authorities, seeking to increase the supply of water through the reuse of municipal wastewater, could study the model adopted by the AGP authorities, as a viable strategy to combat increasingly scarce water resources.


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