

Why

Irrigation water usually comes from rainwater or groundwater, that, in general, meet the water quality requirements for irrigation. However, sometimes these water sources are not sufficiently available (sufficiently) to meet water needs. By applying treatment techniques, certain other water streams can be upgraded until they are of sufficient quality for irrigation. The reuse of treated domestic wastewater can in that case offer an interesting alternative. In southern Europe, this water source is already widely used. Europe also encourages the circular use of (water) sources. In recent years, several research projects in Flanders have explored the feasibility of utilizing this water source.

[EU Regulation 2020/741](#) has been in force since June 2023. It sets minimum requirements for using effluent from a sewage treatment plant for irrigation in agriculture and horticulture. These include standards for microbial quality and the obligation to conduct a risk assessment. [The European directive has been transposed into Flemish legislation through the Decision of the Flemish Government of July 14, 2023 concerning regulations on the quality and production, delivery and use of reclaimed water.](#) This decree applies to the use of both effluent from a sewage treatment plant and treated industrial wastewater.

It outlines obligations for irrigation in agriculture and horticulture, for irrigation in other situations and other public uses. This decree combines requirements concerning water quality and the requirement to conduct a risk assessment in the application for a water reuse permit. All details on the water reuse permit (what is it, how to apply, etc) [can be found here](#).

Purified wastewater from sewage treatment plants is a common good. To ensure that the allocation of water is fair, [Aquamarkt](#) was created. This platform brings together supply and demand in an open and fair way, with transparent procedures and objective criteria.

What

Sewage treatment plants (WWTPs) treat household wastewater according to VLAREM standards so that the water may be discharged into the watercourse. In Flanders, they are all managed by Aquafin. This practice is about using the treated wastewater for irrigation. However, additional treatment is necessary.

How

Construction

Retrieved from <https://waterradar.be/> you can find the nearest WWTP near your plot.

On [Aquamarkt](#) you can find a list of WWTPs and how much water it has available.

Distribution: In the past, farmers were allowed to collect water from certain WWTP's, typically through ad hoc road transport in periods of drought. Under the new legislation on the use of treated wastewater for agricultural purposes, additional treatment is required before it can be used for crop irrigation. Given the high costs of road transport, developing an irrigation network around the WWTP appears to be an interesting option in some locations. This would enable the structural use of treated wastewater for irrigation."

Purification: Disinfection of the water is required to ensure microbial water quality is in line with the new European standards. For E. coli, the regulation defines four classes, depending on crop type and irrigation method. Besides achieving the European standards, a risk assessment must also be conducted. The decision of the Flemish government combines the obligations concerning water quality requirements and risk assessment within the application for a water reuse permit. Detailed information on the water reuse permit (what is this, how can I apply for it, etc) can be found at [LINK\[Water reuse permit\]](#).

It is required to apply for exclusive use of treated sewage through [Aquamarkt](#). This platform brings together supply and demand in an open and fair way, with transparent procedures and objective criteria..

Maintenance

A cooperative partnership is recommended to establish a fee structure to allow cost recovery for the water reuse system. This compensation guarantees a fair distribution of water among the partners, proper maintenance of the network and the provision of required ad hoc services by third parties. Currently, examples of such collaborations for the use of treated wastewater do not exist in Flanders. However, inspiration can be drawn from other European initiatives, or irrigation cooperatives such as Inero or CIRO.

Cost

Target price

The various cost items are:

1. **Cost of additional treatment:** This consists of an investment cost and an operational cost.
2. **Cost to the transportation network:** This consists mainly of an investment cost and to a lesser extent an operational cost.

3. **Cost for permits and monitoring:** This consists of a study cost at the beginning of the project and an operational cost for monitoring

The total cost, of course, depends very much on the scale of the project

The strong dependence on project size and effective water use complicate providing a generic cost estimate. Therefore, an example cost calculation based on a reference situation is explained below, in order to compare the different cost items.

For the reference situation, a consumption of 25m³/h during 3 months a year and 10 hours per day is assumed. The target water quality class is Class C, as defined in European Regulation 2020/741. This corresponds to an annual consumption of 22,500m³. For a study area serving 16 hectares of water-intensive crops, this results in a water requirement of 1,400 m³/ha. Investment costs of the pipeline network are amortized over 30 years, the remaining investment costs over 10 years, considering the uncertainty of climate change. The reference situation assumes a pipeline network of 2 km, with collection points every 250m.

Based on these assumptions, the gross water price in the reference scenario is estimated at 0.90 – 2.00 €/m³, excluding costs for the permit or assessment. This cost for the reference situation can be reduced by measures such as:

- Partial subsidies
- Lower investments in the pipeline network (e.g. through farmer participation in construction)
- Amortization over a longer period than 10 years in case of more stable local conditions.
- ...

Depending on the required level of detail of the risk assessment and the obligations included in the permit and risk assessment, costs can increase by up to 0.65 €/m³. It is therefore advisable to assume a reference price of 1.50 – 2.70 €/m³. The requirements resulting from the risk assessment can vary significantly by situation. Clearly, such a water reuse project is difficult to realize without financial support. If actual consumption is lower than the forecast, the water price will increase significantly. If actual consumption is higher than the forecast, the cost will decrease. The same applies to project size (designed capacity and scope). The relation between price and project size or actual consumption follows an exponential trend.

More details on the economic calculations can be found [here](#).

Subsidy

A small fee is charged by Aquafin for the use of effluent to cover the cost of facilitation.

In 2021, the Department of Agriculture & Fisheries the VMM launched project calls to support investments in effluent reuse for agriculture. It remains unclear to what extent such projects will continue to receive funding under the revised legislation.

Blue deal and Green deal websites contain interesting information on ongoing projects and/or calls.

Benefits

Ecological

Reduced use of groundwater for irrigation applications, reuse of freshwater source.

What to look out for

Legislation

EU Regulation 2020/741 has been in force since June 2023. This directive imposes minimum requirements for the use of effluent from a sewage treatment plant for irrigation in agriculture and horticulture. These include requirements around microbial quality and the obligation to prepare a risk analysis.

[<https://eur-lex.europa.eu/eli/reg/2020/741/oj/eng>] The European directive was transposed into Flemish Legislation via LINK[decree of the Flemish Government of July 14, 2023 regulating the quality and production, delivery and use of reclaimed water]. This decree applies to the use of both effluent from a sewage treatment plant and treated company wastewater. There are obligations when applying either source for irrigation in agriculture and horticulture, for irrigation in other situations and other public uses. This decree combines the obligations concerning water quality and a risk analysis in the application for a water reuse permit. All info on the water reuse permit (what is it, how to apply, etc) can be found at [Water reuse permit](#).

Useful links

- [Nearest WWTP](#)
- [Existing initiatives in Europe](#)
- [Operational group around use of wastewater](#)
- [Research project irrigation 2.0](#)
- [Research project Irricoli](#)
- [Aquamarkt](#)
- [Blue Deal](#)
- [Green Deal](#)

- [Water admission website](#)

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Examples

Discover some examples of this measure at <https://www.lifeaclima.eu>

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