
Can process water be used as an alternative for groundwater?

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Summary

In West-Flanders (Belgium), only a limited amount of groundwater can be found in large quantities. Five aquifers can be distinguished. The most important one is a deep aquifer, named hardrock basement aquifer.

The exploitation of groundwater, mainly by industry, from this aquifer has risen substantially after world war II. In the 1930's, there was almost no depression cone to be seen (-10 m piezometric head). In 1965, the depression cone was down to -40 m below sealevel, in 1975 to -80 m, in 1985 to -100 and nowadays sometimes to -200 m. On top of that, the recharge into the hardrock basement aquifer is very slow (minimum 80 years).

The Water department is very much aware of this problem. Certain instruments are being put into place, or will be improved: taxes on groundwater, permits (stand still on short term, less permits on the long run), sensibilisation of different target groups, etc.

To make sure that the -economically important- industry will have access to water in the future, the Water department wrote out a study to look for alternative watersources. Navigable rivers, preliminary treated surface water and effluent of waste water treatment plants were selected.

In a first step, a survey in the area was done to get a picture of the demand for water. In a second step, the resources of water were investigated. In a third phase, the modalities for distribution are listed. Taking into account the industrial zones, the possible trajectories of distribution of alternative water sources were determined. Lastly, suggestions for the policy and further research were made.

The demand for water in the future will be higher than present time. As a result of the survey, the hypothesis of future demand was determined as to be the current permits, increased with 25%.

After allocating the costs of treatment and distribution, it was clear that an alternative supply of water could be done by distributing water from the canal Bossuit-Kortrijk, pretreated water from the same canal or effluent water from waste water treatment plants (depending on the location of the companies). The quality of the distributed water would be basic quality. The costs for further treatment would be too high.

After evaluation of the criteria operational safety, price and sustainability, three out of the possible trajectories were selected as feasible.

Increase of taxes on hardrock basement water, subsidies, a review of the permit system, negotiations with the drinking water companies and an evaluation of wateraudits of the companies involved are

possible instruments for the government to make the implementation of the alternative water supply possible. Research on juridical, economical, planological and technological aspects on one hand and on the qualitative and quantitative limiting conditions on the other hand are also necessary.

Only a combination of these instruments would lower the pressure on the hardrock basement aquifer.