

# A local freshwater impact – proposing a groundwater indicator AGWaRe

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## A local freshwater impact – developing on the AWaRe indicator

Currently there are several world maps showing the water stress in regions or nations. They give a good indication of water stress on a larger scale, but do not have information on a local scale that may assist a water utility in their prioritization of well fields to lower the overall pressure on the water resource. Furthermore a local water stress indicator is necessary for benchmarking regional water supplies against each other.

AWaRe is the freshwater impact recommended by the Lifecycle Initiative (developed by WULCA). It is defined as the inverse function of Availability Minus Demand (AMD) which is compared to the world average AMD. The AMD represents the water remaining after human consumption and environmental requirements. This is done for a grid of 50x50km worldwide, but it does not give sufficient information on a local scale. Therefore we modified the AWaRe indicator so that it can account for differences at the local scale and termed it AWaRe*. We have applied AWaRe* on four different demarcations for three public water supplies of the largest cities in Denmark.

The results of the local scales will be presented and compared with the results from the AWaRe found for non agricultural water use (found by WULCA). The AWaRe* differs between different demarcations. For the four locale scales water supply C ranks as the most water stressed. This fits well with the water stress experienced by the three water supplies. For two out of four demarcations, the ranking between the cases are the same. As expected for the local scales we see the highest impact factor for the smallest scale. For the water stress found by WULCA, the water stress is lowest for water supply C and case A and B have similar water stress, which is opposite of the ranking from the local scales. For the AWaRe scale, we obtain results that do not comply with the expected outcome from the water supply. Further work should be given to increase resolution of AWaRe data.

Not only is the applied method crucial to the outcome, but also the scale applied and the data used. The locale scale shows the highest water stress at water supply C, which is the city with most inhabitants and a water supply that experience water stress. AWaRe* on the locale scale represents the expected water stress for the water supplies.