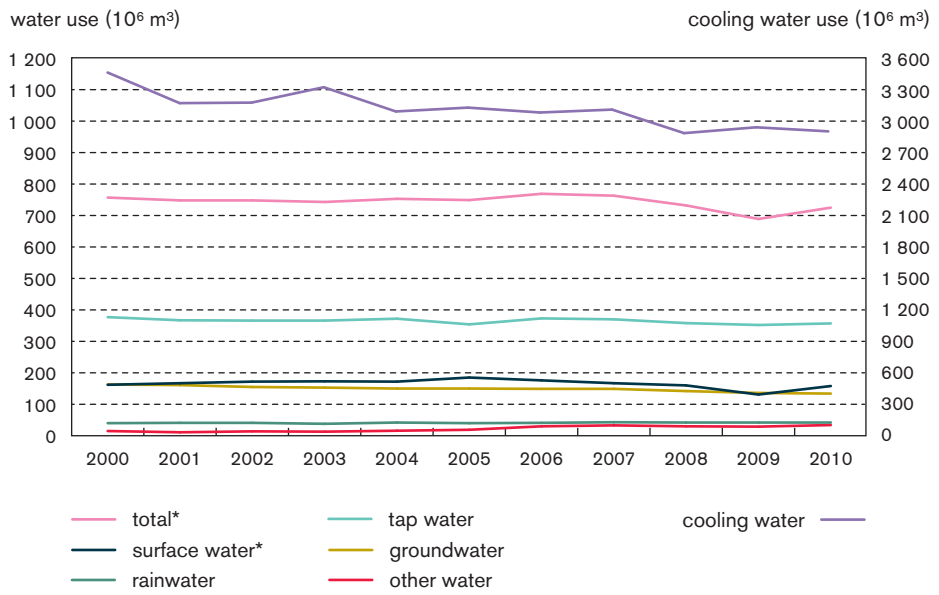
😐 Water use

DPSIR



* excluding cooling water. The ground and surface water that is used to produce tap water is not included in these figures.

Source: VMM

Water use decreasing, but ...

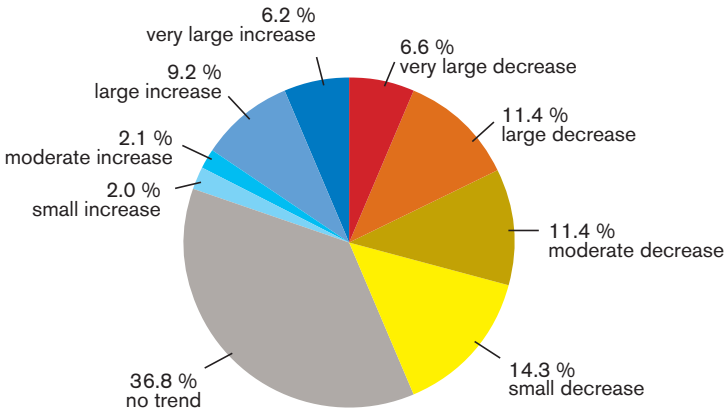
Total water use (excl. cooling water) over the period 2000-2006 showed little or no change. In the period 2006-2009 there was a clear decrease, which was not continued in 2010. The use of surface water (excl. cooling water) exhibits a very similar trend. In the period 2000-2010 the use of both tap water and groundwater decreased by 5 % and 18 % respectively. The government policy therefore appears to be successful. Through measures such as permits, levies and awareness campaigns, the government seeks to limit the total water use and especially the use of tap water and groundwater. Furthermore, the price of tap water has increased. The use of cooling water has also decreased, even though it stagnated somewhat in recent years.

Households mainly use tap water. In the period 2000-2010 the use of tap water fell from 110 l to 99 l per person per day. The total water use by industry remained more or less constant in the period 2000-2006, but decreased in the period 2006-2009 by slightly more than 20 %. Perhaps the financial-economic crisis also played a role in this. In 2010, it increased again. The energy sector is by far the largest user of cooling water. This use gradually decreased and in 2010 was almost 20 % lower than in 2000. This decrease was mainly caused by the shift from coal to gas-fired power plants, which have a higher energetic efficiency. Moreover, gas-fired power plants often use air cooling or hybrid systems (air + water). Total water use by agriculture showed no signs of any explicit trend and is estimated at almost 68 million m³ for 2010. Agriculture mainly uses ground water (55 million m³). The water use by agriculture is, however, only an approximation.

share 2010 (%)	tap water	surface water*	groundwater	other water	*total**	cooling water
households	63.3	0.0	14.9	0.0	*37.4*	0.0
industry	22.3	76.7	40.6	90.2	*40.6*	21.3
energy	3.7	21.8	0.0	6.3	*7.1*	78.6
agriculture	1.8	0.5	41.0	1.7	*9.4*	0.0
trade & services	8.8	1.0	3.5	1.8	*5.5*	0.0

😐 Groundwater level

DPSIR



The statistically significant trends are divided into classes: 0-0.05 m/year = small decrease/increase, 0.05-0.1 m/year = moderate decrease/increase, 0.1-0.5 m/year = large decrease/increase, >0.5 m/year = very large decrease/increase

Source: VMM

More falling than rising groundwater levels

Falling groundwater levels can cause problems for companies and drinking water companies, which then have to pump deeper or switch to other sources. A drop in ground water levels can also have a detrimental effect on the groundwater quality. A drop in the shallow groundwater levels can have negative effects on nature and agriculture.

Almost 37 % of the 747 analysed measurement series shows no statistically significant trend over the period 2000-2011, almost 44 % shows a decrease and almost 20 % an increase. There are some remarkable differences between the results from the phreatic and non-phreatic measurement wells. The phreatic measurement wells relatively more often show no statistically significant trend. This is because phreatic measurement wells respond more quickly to changing weather conditions. Of the phreatic measurement wells, only 6 % show a significant increase (as compared to 31 % of the non-phreatic measurement wells). Replenishment of the groundwater tables takes place mainly in winter and also depends on the amount of water that evaporates throughout the year. In the period 2000-2011, the amount of winter precipitation showed a decrease, whereas the annual average temperature showed no distinct trend.

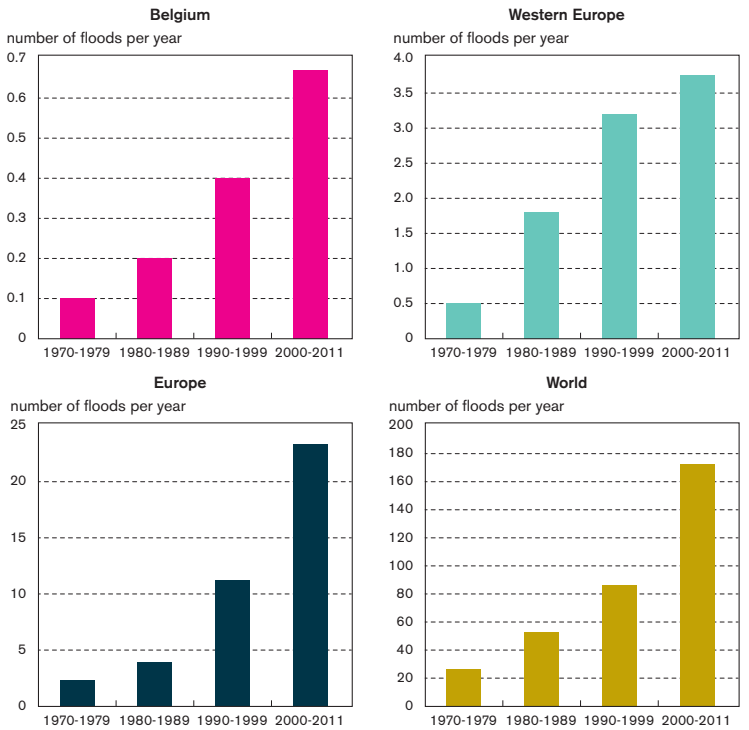
For the non-phreatic water layers, it is much more difficult to establish a direct link with changing weather conditions in general terms. On the one hand, the time interval between the moment of the precipitation and the actual replenishment of the deep groundwater layer can be very long and vary widely from layer to layer. On the other hand, it appears that the amount of winter precipitation has increased during the past century, as has the annual average temperature and, therefore, the evaporation. Both factors thus work against each other. Moreover, a changing land use could also have an impact in the long term.

The high percentage of decreasing measurement series in the non-phreatic groundwater levels illustrates that in many places too much groundwater is still being pumped up. The rising trends are probably the result of local measures.

Because the trends often differ greatly according to the layer and the area, a tailored approach by means of a differentiated policy of groundwater levies and permits is needed.

☹ Number of floods per decade

DPSIR



Source: The OFDA/CRED International Disaster Database - www.emdat.be - Université Catholique de Louvain - Brussels - Belgium

Number of registered floods increased

The Centre for Research on the Epidemiology of Disasters maintains a database with information on disasters worldwide. For a disaster to be entered into the database at least one of the following criteria must be fulfilled:

- ten or more people reported killed;
- hundred or more people reported affected;
- declaration of a state of emergency;
- call for international assistance.

Since 1970, the number of recorded floods per decade has increased markedly in Belgium, (Western) Europe and throughout the world. According to the report 'Mapping the impacts of natural hazards and technological accidents in Europe' (EEA, 2010), floods in Europe in the period 1998-2009 resulted in 1 126 deaths, affected more than 3 million people and resulted in economic damage in the amount of approx. 52 billion euros. Together with storms, floods are the natural disasters that cause the greatest amount of economic damage. The economic damage from floods has increased in the last decades. This increase is due to the increase in population and prosperity, but possibly also to better data collection. Although there is solid evidence for anthropogenic climate change in Europe, there is still no final proof that climate change is the reason for a trend in floodings on a continental scale. What has been demonstrated is that the anthropogenic increase in greenhouse gases has contributed to the intensification of heavy precipitation in the northern hemisphere in the second half of the 20th century.