FOR OUR ANCESTORS NATURAL, FOR OUR DESCENDANTS NECESSITY – SUSTAINABLE WATER USAGE

EÖRDÖGHNÉ MIKLÓS MÁRIA,

PTE TTK Doctoral School of Earth Sciences, Pécs

The way people have related to water throughout the history, have greatly changed by the development of technology. Ever since we do not have to use buckets to carry water from the well, and the shower have been moved inside the house, we do not appreciate water as much as we should. Water is always available and it can be easily consumed, therefore we use it wastefully. This tendency was somewhat stopped by the increasing water prices (EÖRDÖGHNÉ 2010). Although even today there are certain places where we use expensively produced drinking water for purposes, that could be solved with reused water or with water from alternative water sources (*1. figure*).

Fig. 1. Structure of household drinking water consumption, replaceable and non replaceable water demand
(own picture, based on BDEW data)

To save enough suitable water for the next human generations, we must protect our water resources regarding both quantity, and quality. But our limited water resources are not the only one reason why water consumption should be lowered. Transporting the water uses energy, thus reducing the water-consumption will also reduce the energy that is used in pumping.

In the rapidly growing cities the water services cannot develop their infrastructure as fast as they would have to, in order to keep up with the consumers needs. This usually leads to the pollution of the underground waters and their use over the limits. Water

exploitation index shows the ratio of the available amount of water and the quantity that has been consumed, in a certain country or region (*2. figure*) If the WEI is over 20% that means the scarcity of water.

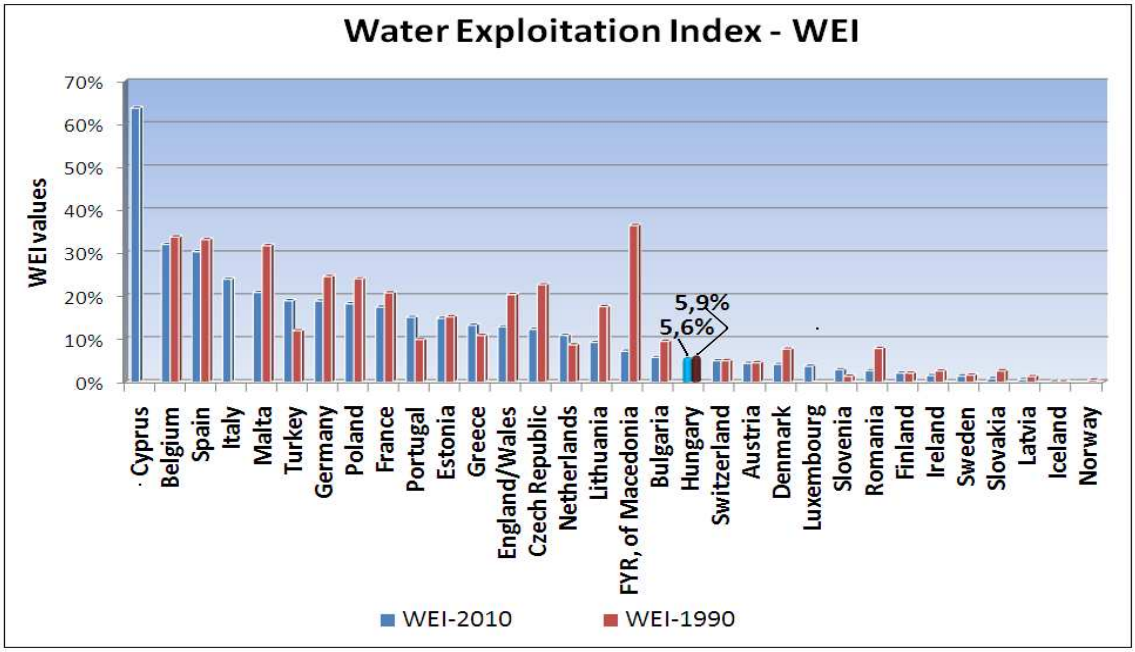

Fig. 2. Water exploitation index
(own picture, based on EEA data)

The sustainable water consumption should be achieved by handling ecological and economical issues together. The water supply -through pipelines- has become today as on of our essential needs. Despite the infrastructural development of the pipe system in Hungary was always behind the economic growth (*3. figure*). The development of the water supply and the canalisation was done in different speed this resulting a gap between the two area's development (*3. figure*). This gap have started to decrease in last couple years.

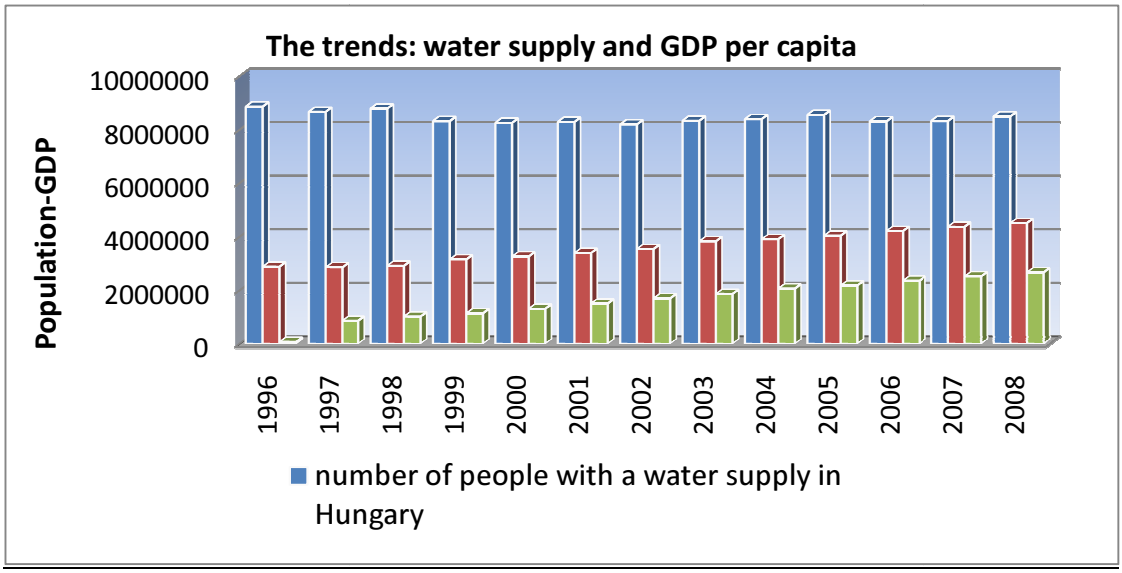

Fig. 3. The economic development compeared to the development of public water works (own picture, based on data from KSH and Papp Mária 1996-2008)

If the sewage gets back to the nature (soil, natural waters) even after filtration, it will disturb the balance of nature because of its large quantity and its pollutive ingredients. The flow of matter should be in a completed cycle, so the lack of canalisation will not result excess of certain elements, molecules and ions - primarily phosphate and nitrate – in unwanted places. The organic components of the sewage could be used to produce fertilizers thus reducing the amount that is made by synthesis. This closed cycle would be more beneficial from the water use's point of view (GAYER, J. LIGETVÁRI, F. 2007). If we could reuse the once used less polluted waters locally where they are produced (ex. gray-water, rainwater) the amount of water that needs to be exploited would be also less (primary water exploitation). The drinking water consumed per capita in Hungary is lower than the European average - in 2005: 157 l/cap., day (EWA, 2005) - (*4. figure*).

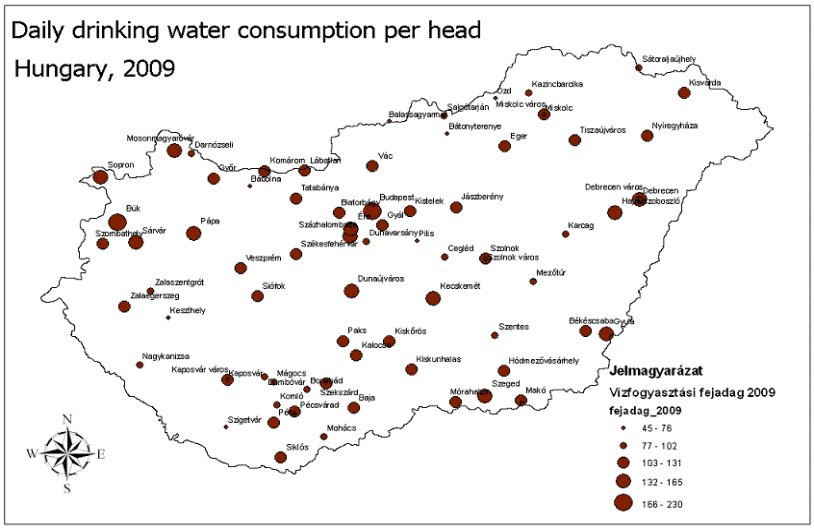

Fig. 4. Water consumption in a variety of different settlements in Hungary (own picture, based on data from Papp Mária 2010)

Although the amount of water could be even more reduced. The possible ways to reduce water consumption in the public area.

- changing habits of water consumption
- applying technical solutions that save more water
- using alternative water sources
- using alternative sanitary equipment

These possibilities can be especially effective if they are used together.

Couple examples:

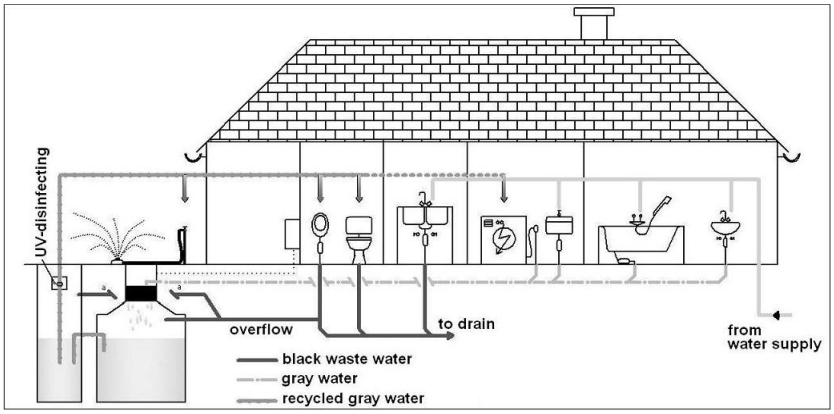

Fig. 5. Grey water utilisation in a family house
(own picture, based on BULLERMANN, M. et al. 2001)

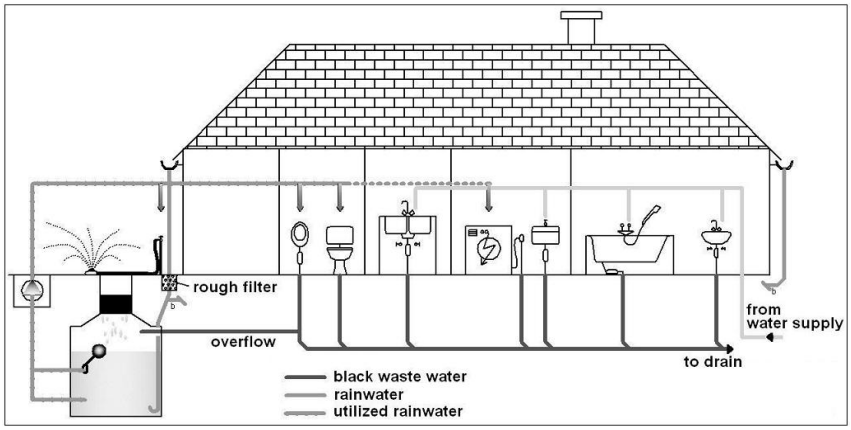

Fig. 6. Rainwater utilisation in a family house
(own picture, based on BULLERMANN, M. et al. 2001)

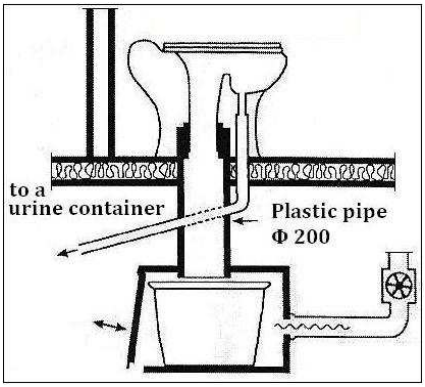

Fig. 7. WC with separated sewage disposal
(own picture, based on SAUER, S. et al. 2009)

REFERENCES

BDEW - Bundesverband-der-Energie-und-Wasserwirtschaft

BULLERMANN, M. – LÜCKE, F. K. – MEHLHART, G. – KLAUS, U. (2001): Grau- und Regenwassernutzung Kassel-Hasenhecke Hygienische und betriebstechnische Begleituntersuchungen, Band 7 Schriftenreihe der fbr e.V., Darmstadt http://www.aquaplaner.de/GW-Kurzfassung0503.pdf (utolsó letöltés: 2011. 03.10.)

EÖRDÖGHNÉ MIKLÓS MÁRIA (2010): A vízfogyasztás területi jellemzői Magyarországon, Geográfia 2010 Konferencia, Pécs

EWA YEARBOOK 2005 - European Water Association (EWA)

GAYER JÓZSEF – LIGETVÁRI FERENC (2007): Települési vízgazdálkodás –csapadékvíz elhelyezés - Környezetvédelmi és Vízgazdálkodási Kutató Intézet Kht. http://www.kvvm.hu/cimg/documents/0314_k_nyv_c_mlappal.pdf

GLATZ FERENC (1997): A 21. század stratégiai kérdése: a víz In. A hazai vízgazdálkodás stratégiai kérdései, Somlyódy László, MTA, Budapest 2002.

KOZIOL, M. – VEIT, A. – WALTHER, J. (2006): Stehen wir vor einem Systemwechsel in der Wasserver- und Abwasserentsorgung? Forschungsverbund netWORKS, Berlin, pp. 8-11

PAPP MÁRIA (1997-2010): Évkönyv(ek) 1996 –
2009 – Tények, adatok, a víz- és csatornaszolgáltatásról, Víz- és Csatornaművek Országos Szakmai Szövetsége, Budapest

SAUER, S. ET AL. (2009): Neuartige Sanitärsysteme – Lehrmaterial der Bauhaus-Universität Weimar, pp. 21-30.

statinfo.ksh.hu

http://www.eea.europa.eu/data-and-maps/figures/water-exploitation-index-wei-4