

EUW
**Commission for Environment, Local Government and Regional
Planning**

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**Water - how to deal with (one of) our most precious resource(s) in a
sustainable manner?**

Background Paper

DRAFT

Water is a finite resource; less than 1% of global freshwater are accessible directly for human use. According to estimates, the water saving potential in Europe (just due to technological improvements) lies at around 40%. This could be further increased by changing consumer behavior and industrial production processes. The use of water-saving technologies in industry and agriculture could lead to savings of around 43%. Some EU Member States already suffer from Water Stress, such as Spain, France, Italy, Britain, Belgium, the Baltic states and Cyprus, and water scarcity impacts deeply on society.

The issue of “Water - how to deal with (one of) our most precious resource(s) in a sustainable manner? addresses a lot of current political discussions at EU and Member State level, while offering the possibility for EUW to influence the political opinion/ decision-making process.

The Commission presented its „Blueprint to safeguard European waters“ mid November 2012: It is meant to be a policy response to water related challenges on a European level and aims at developing measures to tackle in particular water availability and water quantity problems.

In its Blueprint the Commission calls for strengthened enforcement of the 12-year-old Water Framework Directive and puts forward a tool box member states can use to improve water management: improving efficiency, security of supply and enforcement and developing standards for water re-use in industries and households.

The European Environment Agency report (May 2012) “Towards an efficient use of water resources in Europe” gives, among others, the following recommendations (see executive summary):

- “Resource-efficient technologies in agricultural irrigation, water supply and treatment can deliver substantial water savings. In agriculture, for example, shifts to water-efficient irrigation techniques such as drip irrigation, altered crop patterns and wastewater reuse are particularly promising. Sustainable public and industrial water management depends more on innovative production treatments and processes, ecological design in buildings and better urban planning. “
- “Resource-efficiency measures in the urban and industrial areas often offer win-win situations, with technologies that cut water use also helping to reduce energy use (for example in drinking water and wastewater treatment) and achieve more efficient chemicals use.“
- “ Advanced wastewater treatment and treating or importing drinking water from remote (clean) sources is often energy intensive. Reducing nutrients and chemicals

at source in agriculture, households and industry is therefore an important efficiency measure.”

- “Water pricing and market-based instruments are essential for sustainable water management and should be applied consistently to support efficient water allocation within sustainability boundaries. Water prices and tariff structures have to reflect the true costs of water — internalising all externalities, including environmental and resource costs.”
- “In public water supply, volumetric pricing and metering need to go hand in hand and generate the revenues for utilities to finance resource-efficiency measures and upgrade aging infrastructure. Complete transparency in a utility's use of revenues and investments is a key element in communication with their consumers.”

Challenges regarding water are numerous and could be divided in three areas:

In **rural areas** main challenges are, among others, are turning around:

- Re-Use of water;
- Flood risks: Flooding contaminates by carrying pollutants;
- Enhance water quality.

In **industrial areas** the following issues, among others, need a solution:

- Minimization of energy and water use;
- Closed water cycles;
- Environmental impact of effluents; preserving water reserves from being contaminated;
- Recovery of raw materials from waste water.

In **urban areas** challenges with respect to water are in the first instance;

- Reduction of water consumption;
- Improve efficiency of distributions systems;
- Waste water treatment;
- Re-use of water;
- Rainwater runoff has devastating consequences in urban contexts (Rain and waste waters are often not separated or only apparently separated.)

The present paper deals in the first section with water problems in cities (Claudia) and possible solutions, and in the second section with political activities in a specific country, that is Denmark (Anine).

Regardless of the area considered the following points need to be taken into consideration:

- Water must be used efficiently.
- We must reduce overall consumption.
- There will never be a 'one-size-fits-all' water strategy for Europe as a whole.
- Measures need to be country and sector-specific.
- Member States should be free to choose suitable measures.

In the following the EUW Commission Environment, Local Government and Regional Planning aims at collecting various best- practice examples from various European Member States, regions, cities addressing the needs either in urban, rural or industrial areas (tbc).

Some suggestions for urban areas are already incorporated into the paper.

I URBAN AREAS

The EUW would like to create a vision where we set priorities for the design of cities in which the Whole Life Cycle of Water will be optimized while increasing the value.

What solutions can we imagine in urban areas to address Europe's water challenges taking into consideration the huge geographic differences between Southern and Northern Europe while the price of water remains affordable ?

Overall comment

- Water and energy efficiency are closely linked: However, existing EU initiatives are separated on the political level with DG Environment responsible for water and broader resource efficiency issues and DG Energy for energy efficiency initiatives.
- In the buildings sector separate initiatives exist in both energy efficiency and water efficiency policies. Certain EU initiatives point out the links between water and energy efficiency and highlight the synergies. However both issues should be addressed in a common political framework in order to best exploit synergies.

We need to address the Whole Life Cycle of Water in Cities. Future generations must have access to fresh water; waste or losses are not acceptable. Therefore we need a new approach/ culture in cities to make the most out of the "renewable dimensions" of water.

Talking to people active in water management in urban areas the following solutions could be envisaged:

Fix Used Water Locally / Local Water for Local Use:

- Drinking water must not be the only kind of water available! We need to have the appropriate quality water for different uses/appliances:
- Drinking water/ fresh water should only be used for drinking purposes.
- Recycled Grey Water should be used for non-drinking purposes (toilet flushing, irrigation...), Therefore recycling systems need to be in place locally.
- Efficient use of drinking water will reduce the overall demand.
- Heating and cooling systems, using the endogenous resources available (thermal / potential energy, nutrients...), need to be in place locally.
- Decentralized storage facilities will allow secondary water harvesting for non drinking uses during extreme periods.

Fix Rainwater Locally:

Rainwater run-off is a cost to society and a waste of this precious resource! We need

- To make the most out of Rainwater. It needs to be fixed locally so that it cannot evaporate, can be available when needed and stored for future needs.
- Green roofs and façades, underground storage capacity and urban landscapes are needed.
- Green Urban Surfaces (horizontal and vertical) contribute to:
 - Delaying surface rainwater runoff and thus fixing water temporarily in cities.
 - Mitigating the Urban Heat Island Effect.
 - Reducing the Risk of Flooding.

To fight water losses feel the pulse of the urban water cycle:

Water is present in many urban dimensions and has many different roles! We need to know the state of water in real time.

- Connected Monitoring Systems can provide information on supply losses, quality (pressure, chemical, biological...), soil infiltration and runoff, storage capacity, treatment.
- Real Time Monitoring Systems can help to minimize losses/ waste and change user behaviour.
- Real Time Monitoring Systems need to interact and connect: Civil Protection, Supply, Waste Water/ Rainwater Treatment. They can provide data on rainwater runoff and on Contamination.

Greece (Eva Koulourioti) has carried out some work on fracking and water and this and an addendum on this will be sent out at a later date.

Claudia Stuckman
International Commission Chairman

II: Country specific information (Anine Skov Hansen)

Denmark

1 The Danish Government's 10-point program on clean domestic water

Ground water is the main source for domestic use in Denmark.

If - in the future - we shall be able to have clean ground water as the main source for domestic water supply, we have to put emphasis on an extraordinary effort. Accordingly, in 1994 the Danish Government presented a 10-point program which focuses on how we can protect the Danish ground water and domestic water. The program states the basic principle on the fact that we have to control the contamination locally where it occurs and prevent the water to become even more polluted.

The 10-point program:

- 1 Specific environmentally damaging pesticides to be removed
- 2 Pesticide duty - the consumption of additional pesticides should be halved
- 3 Nitrate pollution should be halved within year 2000
- 4 Ecological farming should be promoted
- 5 Protection of specific domestic water areas
- 6 New soil pollution legislation - waste dumps should be cleaned out
- 7 Additional forest planting and nature restoration in order to protect the ground water
- 8 Additional effort within EU
- 9 Improved control of ground water and domestic water
- 10 Dialogue with the farmers' organization(s)

During the recent years the program has resulted in concrete actions:

- 170 pesticides being especially dangerous for the ground water have been prohibited
- The strict rules for acknowledged new pesticides have been further tightened
- The duty on pesticides has been increased in 1995 and in 1998
- The rules regarding livestock droppings have also been made more rigorous
- The work regarding cleaning up in places where the soil has been polluted by dangerous chemical substances has been speeded up
- A specific "domestic water committee" has presented new initiatives in order to ensure clean and appropriate domestic water resulting in a new legislation focusing on the preparation of overall plans for all areas where pollution threats regarding the ground water may occur

2 From ground water to domestic water

2.1 Background

In only a few places we use the "raw" ground water directly as domestic water. Prior to forwarding the domestic water to the consumers, the raw water will be aired and filtered. In the process most of the iron and manganese which performs a natural part of the groundwater will be released. As a main rule we do not need to take any further action regarding cleaning.

We use approximately 1 billion m³ domestic water on a yearly basis. Half of this is produced on the larger common water works. Nearly one third of the consumption goes into the households; the second third for farming and nurseries and the last third for industries and institutions. Since late 1980's households and industries have reduced the water consumption to about one fifth.

2.2 Threads

The ground water is mainly contaminated by nitrate, pesticides and organic solvents. Nitrate and pesticides relates e.g. to farming, nurseries, golf courses and roadsides. Organic solvents relates from old dumps or industrial areas.

Some Danish water works have started to clean the contaminating chemicals from the raw water. This is totally against Danish water politics! And it is costly. However, we have to face the fact that it may be necessary to do so during a short period until the remains of the old contamination have disappeared. We want to consume clean domestic water - not cleaned domestic water!

For domestic water the intended border value for nitrate is 25 mg per liter and the maximum limit is 50 mg per liter.

During the 1990's we started systematically to control the content of pesticides in the ground water. The pesticides found in the deep ground water reservoirs relate to the 1960's. However at that time we only used a little. During the mid 1980's we used 4-5 times more. Accordingly, in the years to come we may see even more pesticides in the ground water.

3 Cleaning up

Until mid 1980's we dumped waste in small ponds, old gravel pits and buried it in the soil. Also chemicals and different dangerous waste ended here. Then it was not visible and could not harm, we thought. We have revised our opinion! The dangerous substances are still here! In many places the rain water has "carried" them into the ground water. In other areas we know that they may occur at a later date. These old chemical areas, e.g. oil from the soil below petrol stations, solvents from old dry cleaners and tar at old gas works, perform a threat to our good domestic water.

All over the country initiatives are ongoing in order to clean the old contaminated areas and dumps - in total in more than several thousand places. The work is costly and difficult. The contaminator has gone, and the public must pay. Thus, we have to prioritize the effort and as the first step to clean in areas where there is the largest risk of contaminating the ground water.

Formerly, soil, which e.g. has been contaminated by heavy metals from timber impregnating factories, was removed and brood to a dump furnished with a tight bottom. But now the soil, contaminated with oil or solvents can be cleaned in specific soil cleaning plants.

We can also remove the contamination in the specific area. It is possible to remove oil and solvents by pumping or soughing air through the contaminated soil. This process provides oxygen to the bacteria which can decompose the materials. By heating the soil the materials will evaporate. New methods are constantly being developed.

The oil companies set aside a certain percentage of the petrol- and diesel sale for cars into an environment pool which will be used for cleaning the soil underneath the old petrol stations.