

## Executive Summary

In recent years, a growing concern has been expressed throughout the EU regarding drought events and water scarcity. For an increasing number of EU Member States not limited anymore to Southern Europe as it was traditionally the case, the occurrence of seasonal or longer term droughts and water scarcity situations have become a noticeable reality in recent years.

In order to support the European Commission in the preparation of a Communication on water scarcity and droughts, a study was commissioned to assess the EU water saving potential.

The study addresses the savings that can be achieved via technical measures without major changes in human behaviour or production patterns. Furthermore, it looks towards instruments such as water pricing, drought management plans or labelling that can foster the implementation of these measures.

This report concentrates on the four main water users, namely public water supply (including households), agriculture, industry and tourism. It is based on a large literature review and data synthesis of existing studies and experiences of water savings in Europe but also outside Europe (e.g. Australia). This literature review is complemented by four detailed case studies in Spain, Greece, the UK and France that illustrate the feasibility of implementation and likely impacts of potential water savings measures.

The study has revealed high data gaps and data uncertainty in estimating today's water abstraction and consumption, current applications of water saving technologies or future trends in water consumption and withdrawals. Thus, results presented in this report provide an order of magnitude of the water saving potential at EU level but detailed figures should be used with caution. In addition, a detailed analysis at river basin level would be necessary to take into account the regional specificities of water uses.

### Key findings

Total water abstraction in the European Union (EU 27) amounts to about 247 000 million m<sup>3</sup>/year. On average, 44% of total water abstraction in EU is used for energy production, 24% for agriculture, 17% for public water supply and 15% for industry.

As regards **public water supply** (including households, public sector and small businesses), the reduction of leakage in water supply networks, water saving devices and more efficient household appliances have the potential for up to 50% water savings. These water saving technologies are easy to introduce and implement and they also have short payback periods, further enhancing their uptake possibilities. Applying the above mentioned measures would allow for a reduction in water consumption from 150 litres/person/day (average in the EU) to a low 80 litres/person/day. A similar reduction could be applied to public water supply, leading to an estimate of potential saving up to 33% of today's abstraction.

In **agriculture**, water savings can be carried out with improvements in irrigation infrastructure and technologies. Potential water savings resulting from improvements in the conveyance efficiency of irrigation systems ranges between 10 to 25% of their water

withdrawals. Water savings resulting from improving application efficiency are estimated at 15% to 60% of water use. Additional water savings can be expected from changes in irrigation practices (30%), use of more drought-resistant crops (up to 50%) or reuse of treated sewage effluent (around 10%). The potential water savings in the irrigation sector would amount to 43% of the current agricultural volume abstracted.

**Industries** that use large amounts of water include the paper & pulp, textile, leather (tanning), oil and gas, chemical, pharmaceutical, food, energy, metal and mining sub-sectors. Based on the examples found the application of technical measures (e.g. changes in processes leading to less water demand, higher recycling rates or the use of rainwater) can lead to estimated savings between 15 and 90% with an global estimate up to 43% of today's water abstraction. A particular sub-sector of industry is electricity production. Electricity production uses large quantities of water for abstracting fuel and for cooling purposes in thermoelectric power plants. However, as usually a large proportion of the water abstracted in the energy sector flows back to the local environment, the benefits of water saving in this sector is marginal; therefore the global estimate of the total EU water saving potential does not involve this sector.

The **tourism sector** can represent a key water user in some areas of Europe. Technical water saving measures for the tourism sector are similar to those for households. The sector has the potential to increase water use efficiency significantly by installing newer appliances in guest rooms, cafe areas, kitchens, etc. Since some of the measures identified in the report show a potential for a maximum of 80-90% savings, tourist accommodations could considerably reduce costs by buying more efficient appliances that only have payback periods of 3 years or less. In the case of irrigation of golf courses and sporting areas, more efficient irrigation techniques or rain water harvesting could provide additional savings up to 70%.

Clearly, the potential water saving volumes estimated are large and stress the potential for policy action at EU level.

Water savings will help addressing water scarcity and droughts. They will also deliver financial and economic benefits. Such benefits include delayed or avoided procurement of additional water supply infrastructures, reduction in sewage and wastewater treatment capacity or reduced water bills. Further water saving can also bring environmental benefits beside reduced stress in a river basins such as reduced fertiliser use, reduce soil erosion and leaching. It should be noted however that “net” water savings leading to environmental improvements in the status of aquatic ecosystems will only be achieved if all water saved in one sector is not used elsewhere by the same or another sector! Last but not least, water savings will also bring additional ancillary benefits, for example by reducing energy consumption, electricity bills and thus CO<sub>2</sub> emissions – thus contributing to climate change strategies and policy actions.