

## Water Pricing in Cyprus<sup>1</sup>

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### Brief summary of the case

Due to its semi-arid climate, Cyprus has a long tradition of domestic and irrigation water pricing. However, existing prices only reflect the financial cost of water supply. The EU Water Framework Directive has been the main driver for reforming the water pricing schemes in order to ensure that scarcity and environmental costs are also taken into account in water charges. Although the provisions of the Directive have been formally transposed to national legislation and the institutional framework for proper water pricing exists, implementation is still pending. Whilst environmental NGOs and some academics have supported this reform, policymakers, national authorities and consumer and farmer associations are not in favour of reforming water tariffs because of concerns for low-income households and farmers. Moreover, there is a widespread belief that water consumption is entirely inelastic to prices and hence a change in water tariffs will not have any water conservation benefits. The sections below explain that both concerns are unsubstantiated and offer some insights into future windows of opportunity for implementing this reform. Some thoughts are also offered on the important role of both civil society and authorities for providing the public and policymakers with well-informed policy recommendations.

### 1 Description of the design, scope and effectiveness of the instrument

#### 1.1 Design of the instrument

Cyprus has suffered from water scarcity for many decades. Therefore, the country has had a tradition of domestic and irrigation water pricing since the 1960s. Volumetric pricing started with the implementation of the first Government Water Projects (dams and convey schemes to transport water from wet to drier areas) and gradually became the usual practice for all water providers. The aim of water pricing was to recover the projects' financial cost. Drinking water pricing levels recovered the full financial cost, whereas for irrigation water the price did not exceed 40% of that cost, considering the importance of the primary sector for food security, preservation of rural landscape etc. Groundwater abstraction by individual farmers was not charged for – apart from the pumping costs paid by the well owner, which were considered to be high due to the depth of the wells.

With the accession of Cyprus to the EU in 2004, while drinking water prices remained essentially unchanged (in the order of EUR 0.50 to 1 per cubic metre depending on the location), irrigation water pricing was revised and the rates increased considerably, reaching EUR 0.15-0.34 per cubic metre depending on the type of user of this water. The above mentioned prices were meant to cover the financial cost of water provision only, and did not take into account the scarcity and environmental costs of water consumption. Aiming at compliance with the EU Water Framework Directive, as a next step the national water authority re-assessed the cost and pricing of water in 2010 in light of applying full cost recovery, i.e. in order to account for water scarcity and environmental impact. According to estimates made by external experts who performed the national river basin management

plan and pricing studies, water scarcity costs and environmental costs from water use in Cyprus amount on average to around €0.10 per cubic metre for domestic and industrial water users, and about €0.15 per cubic metre for farmers (irrigation water). Therefore, these are the additional rates expected to be imposed on water users if the full water cost recovery principle is to be implemented. This instrument had not been implemented by the time of drafting this case study (July 2016) because the government of Cyprus had not yet adopted a relevant decision.

## **1.2 Drivers and barriers of the instrument**

The island of Cyprus is located in the north-eastern Mediterranean Sea. With an average annual precipitation of around 460 mm, the climate regime is classified as semi-arid and makes Cyprus one of the EU Member States experiencing the highest levels of water scarcity (EEA, 2009). Droughts occur regularly as a result of large inter-annual variations in precipitation which seem to have intensified in recent decades (Zoumides et al., 2014). Over the past 50 years, significant efforts have been made by the authorities to provide domestic and agricultural sectors with adequate amounts of water, which was achieved mainly through supply-side measures such as the construction of numerous dams and conveyor schemes, desalination plants and sewage water treatment plants. Demand-side measures have rarely been considered – apart from some periods of interruption of water supply in emergency cases of severe water shortage.

In response to the worrying pressure on quality and quantity of water resources in Europe, EU Member States adopted the Water Framework Directive (WFD – Directive 2000/60/EC) which is considered the most important landmark in the history of the EU’s water policy. The WFD constitutes currently the main driver of national water policy in Cyprus: as the above mentioned supply-side measures have reached their maximum potential, the WFD has stimulated demand-side measures, especially those related to water pricing. This approach has helped Cypriot authorities realise that water charges – enabling recovery of the full cost of water use – is a key policy for sustainable water resource management.

The WFD was transposed to national legislation in 2004 (Law 13(I)/2004). The Directive’s detailed provisions about water pricing were included in Regulation 128/2014 (linked to the above mentioned Law) “on pricing and full cost recovery of water supply services”. This Regulation sets out rules for uniform water pricing across Cyprus and addresses all types of water use – residential and industrial water supply, irrigation water, and treated wastewater. Although the Regulation was adopted by the Government in 2014 and several aspects are already being implemented, provisions about charging for water scarcity (resource cost) and environmental costs of water have not been activated yet.

The main reason for non-implementation of appropriate water pricing is the political reaction to additional water charges. This had been evident already during stakeholder consultations at the time of preparation of the national Regulation – from 2009 onwards. Especially because of the economic downturn in Cyprus between 2013 and 2015, imposing an additional water charge was considered by policymakers – both the Government and members of the national parliament – to be politically costly. Even stronger reactions occurred from farmers and their associations during the consultations. Consumer associations were sceptical of domestic

water price increases, while environmental NGOs were also reluctant to support water pricing measures. Such reactions constitute the most serious barrier to the enforcement of this clearly beneficial environmental tax.

### **1.3 Revenue collection and use**

According to estimates of the project team (Zachariadis, 2016), if the level of additional water pricing mentioned in Section 1.1 is implemented, revenues will reach around €10 million per year - €6 million from water charges for domestic and industrial water and €4 million from charges for irrigation water. All households, firms and farmers are expected to pay this charge. Revenues will be collected through water bills. According to the national Regulation mentioned above, revenues from charges for the resource and environmental cost of water will go to the general government budget; no specific earmarking of any revenues is foreseen.

### **1.4 Environmental impacts and effectiveness**

Since water pricing had not yet been implemented at the time of drafting (July 2016), the environmental benefit (expressed mainly as savings in annual water consumption) can only be estimated with the aid of analysis of past data. Two recent studies can be utilised for this purpose for Cyprus: an econometric analysis of residential water demand in the three major urban areas of Nicosia, Limassol and Larnaca (Polycarpou and Zachariadis, 2013) and a simulation of long-term effects of water scarcity (Zachariadis, 2010). According to these studies, long-term price elasticity of residential water demand lies around -0.25 to -0.3; this could lead to potential water savings – if the water pricing measures mentioned in Section 1.1 are implemented – in the order of 1.5 to 2 million cubic metres per year of residential and industrial water. Another 1-2 million cubic metres per year could be saved through the enforcement of proper irrigation water pricing in agriculture in line with the full cost recovery principle. Such water savings would help enrich groundwater aquifers, especially those in coastal areas that are increasingly suffering from salinization. Moreover, these savings could help reduce the dependence on water from desalination plants, which may cause damage to marine ecosystems in their proximity; these plants also require large amounts of electricity to produce freshwater and, since most electricity in Cyprus is produced in thermal power plants burning fuel oil and gas oil, desalination is also the cause of substantial carbon and air pollutant emissions.

### **1.5 Other impacts**

The reduced use of desalination plants, apart from the above mentioned environmental benefits, would yield economic benefits too. The cost of freshwater produced by current desalination plants in Cyprus is higher than EUR 1 per cubic metre, markedly higher than the cost of provision of freshwater from dams. Although not directly visible to consumers, because these costs are paid by the government budget to the operators of the desalination plants, these are real costs to society. According to Zachariadis (2010), these costs are higher than the expected welfare loss of water consumers due to higher water prices that would comply with the full cost recovery principle – even without taking into account the cost of environmental damage mentioned in Section 1.4.

The major socio-economic concern of water pricing is related to the affordability of water for low-income households and farmers. With regard to farmers, no detailed analysis is available concerning the adaptation of agriculture due to higher irrigation prices. It is worth noting, however, that farmers who depend on their own – legal or even illegal – groundwater extraction (i.e. do not receive irrigation water from water authorities) are faced with high pumping costs that are closely linked with electricity/fuel prices. Coupled with an aging farmer population and gradual rural abandonment, these facts indicate the unfavourable social context that partly explains the scepticism of both farmers' associations and policymakers for environmentally appropriate irrigation water pricing.

As far as residential water consumers are concerned, Zachariadis (2010) conducted a preliminary (ex-ante) analysis of distributional impacts from the adoption of water pricing. According to the Family Expenditure Surveys carried out by the Statistical Service of Cyprus for the years 2003 and 2009 (Statistical Service of Cyprus, 2006; 2011), domestic water expenditures represent less than 0.5% of total household expenditures on average, and this fraction becomes somewhat higher – but still less than 1% – for the poorest 20% of households.

This means that water expenditures of Cypriot households are regressive but represent a low fraction of household income. If a water charge in line with Section 1.1 is imposed (i.e. €0.10 per cubic metre), the average household may have to pay €19-28 more per year for water; this may range between €12-17 for low-income households (or 0.1% of their income) and €27-40 for high-income households (or 0.05% of their income). Thus the concerns of consumer associations and some policymakers over social equity are somewhat exaggerated and should not necessarily deter authorities from adopting these water charges. Moreover, the equity issue is easier to be addressed, considering that volumetric block-pricing applies to household water prices – e.g. in the capital city of Nicosia, the first 10 cubic metres for a two-month period are charged at EUR 0.90 per cubic metre, and there are nine further blocks, the final one charging EUR 5 per cubic metre for consumption above 80 cubic metre per two months. However, these equity arguments were not supported strongly by national water authorities during the stakeholder consultation process that took place in earlier years: the commonly used (though simplistic) argument that access to water is 'a human right' was not countered by authorities with the solid evidence mentioned above.

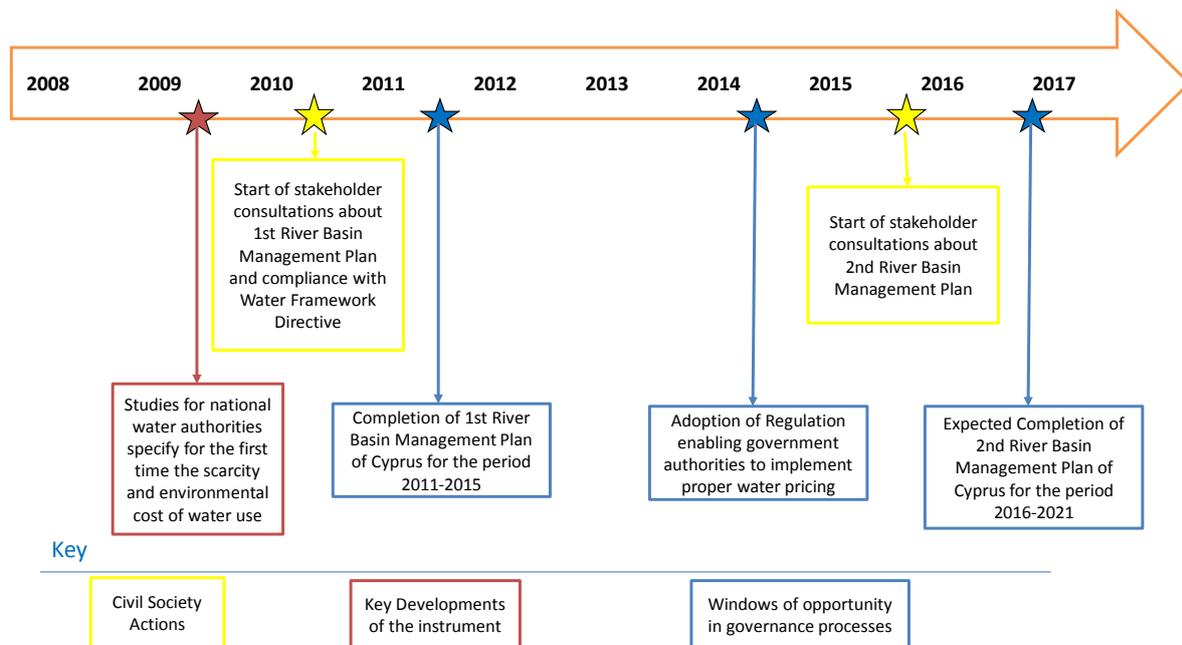
No effects on competitiveness or employment should be expected because the production costs of firms will be essentially unaffected by such modest increases in water tariffs, especially since there is hardly any water-intensive industry in Cyprus.

## **2 Stakeholder engagement**

There are a broad range of stakeholders involved in the discussions about water pricing in Cyprus. Consumer associations (interested in the effects of water pricing on the cost of living of households), farmer associations and co-operatives (concerned about the cost of irrigation water pricing on agricultural production and farmers' income), local authorities (whose

finances may be indirectly affected by the new water charges<sup>1</sup>), academics and environmental NGOs were involved during the consultation process that took place especially during 2010 in all geographical districts of Cyprus. The figure below illustrates the timeline of major developments for this instrument.

## Timeline of Key Developments for Efficient, Environmentally Appropriate Water Pricing in Cyprus



Most stakeholders apart from NGOs and academics - notably consumer and farmer associations and policymakers – were sceptical about the enforcement of environmentally related water charges that would increase the price of water. They were concerned about the impact on a) the agricultural sector in Cyprus and b) low-income households. They considered the environmental benefits to be minimal because, in their perception, the price elasticity of water demand is close to zero, hence they stated that the response of consumers to water prices (i.e. change in the amount of water used) would be negligible.

The scepticism of these stakeholders, along with the economic recession experienced by Cyprus in 2013-2015, has been primarily responsible for the delayed implementation of appropriate water charging to date.

<sup>1</sup> Large cities are served by Water Boards; towns and villages are provided with water by local authorities. If extra water charges are imposed and consumers respond by reducing water use, some of the revenues of these small local authorities from the sale of water may decrease.

### **3 Windows of opportunity**

As mentioned in Section 1.2, the main driver for appropriate water pricing in Cyprus has been the EU Water Framework Directive. Therefore, major windows of opportunity come from the requirements for implementation of this Directive – the transposition of the Directive to national law in 2004, the adoption of the Regulation “on pricing and full cost recovery of water supply services” in 2014, and the completion of the 1st River Basin Management Plan for compliance with the Directive. A further opportunity comes from pressure by the European Commission on national water authorities to implement the pricing measures foreseen in legislation; for example the need to proceed with pricing in line with the “full cost recovery” principle was formally repeated in 2013 (European Commission, 2013).

As for the near future, the next window of opportunity is associated with the 2nd River Basin Management Plan of Cyprus, which was under preparation at the time of drafting this case study (July 2016). The plan reiterates the need for implementation of pricing in line with the full cost recovery principle in all three sectors – households, industry and agriculture (LDK & ECOS, 2015).

As the instrument has not yet been implemented, it is not possible to describe the processes and windows of opportunity within a “policy cycle”, because major components of this cycle (implementation, monitoring and evaluation of the instrument) are still missing. Further stakeholder consultations – apart from those that took place in 2010-11 – are unlikely to put any significant pressure on authorities to implement the instrument. Only pressure from the European Commission towards full compliance with the Water Framework Directive may be effective.

The role of civil society in the formulation of this policy has been admittedly quite limited: only environmental NGOs and some academics have supported the ‘full cost recovery’ principle which leads to pricing water use based on its resource and environmental cost.

### **4 Insights into future potential/reform**

The main lesson learned from non-implementation of proper water pricing in Cyprus to date is that broad social acceptance is very important for most environmental tax reforms. Concerns about the potential adverse impact on social equity have been widespread around the world whenever discussions have been held about setting water charges so as to reflect the full social cost of water consumption. As these concerns are very often exaggerated (and the analysis mentioned in section 1.5 demonstrates this), NGOs, water authorities and experts have to take a leading role to explain to the public and to policymakers the real effects of such measures and provide examples of other countries that have adopted such measures and taken measures to compensate any adverse impacts. It is especially crucial to underline that, although water is a necessary good, its consumption is not entirely inelastic: people do respond to higher water prices and hence pricing can indeed lead to water conservation in a way that is less costly to society than other measures (such as water rationing or expansion of water supply through costly infrastructure projects like dams and desalination plants).

Although it is premature to judge the replicability of an instrument that has not been implemented yet, it is reasonable to state that charging other environmentally harmful activities by the same principle (i.e. to reflect the full social costs of their use) is an appropriate policy measure. This can be applied in the case of fertilizers and pesticides as well as for waste charges among other issues.

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