

Water resources fee in Portugal¹

Author: Luís Campos Rodrigues (ENT)

Brief summary of the case

The Water Resources Fee¹ (*Taxa de Recursos Hídricos – TRH*²) is an economic and financial instrument that aims to “compensate the benefits resulting from the private use of public water resources, the environmental costs associated with the activities that may cause a significant impact in water resources, as well as the administrative costs related to the planning, management, control, and the guarantee of the quantity and quality of water resources” (Decree-Law 97/2008 of 11 June – *Decreto-Lei nº97/2008 de 11 de Junho*). The TRH was established in 2008 with the previous Decree-Law and has undergone subsequent changes, notably with the Green Tax Reform (GTR) (*Reforma da Fiscalidade Verde*) of 2014. The TRH aims to cover different economic sectors under various components (see section 1.1). This instrument was, on various occasions, subject to some criticism (e.g. on aspects concerning its design and transparency), and has room for improvement (see, for example, sections 1.2, 1.5, and 4). The involvement of the civil society was mainly manifested during the process developed by the GTR Committee (see section 2). Finally, it is still difficult to produce a robust assessment of the socio-economic and environmental impact of this instrument. However, there are some signs that this instrument has not been able to promote relevant behavioural changes to date, and it also shows a potential lack of consideration of some social equity aspects and environmental impacts.

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

1.1 Design of the instrument

The National Water Law (*Lei da Água*) No 58/2005 of 29 December transposed the EU Water Framework Directive 2000/60/CE of the European Parliament and the Council of 23 October to the national legislation. In this context, it was later approved as the Decree-Law (*Decreto-Lei*) 97/2008 of 11 June, which developed the Economic and Financial Water Resources Management Regime, establishing the TRH together with the water tariffs for the water supply service, and the program contracts for the management of water resources. The value of the TRH is obtained from the sum of various components, i.e., $TRH = A + E + I + O + U$, which are presented as follows: **Component A:** Abstraction of public water for private uses (in EUR/m³); **Component E:** “direct or indirect discharge of effluents in water resources which may cause significant impact, and it is calculated by multiplying the base value of the effluent by the quantity of toxicity or pollution loads contained in the discharge, expressed in kilograms”; **Component I:** aggregate extraction of public water resources; **Component O:** “land occupation of the public water resources and/or the occupation and creation of water plans, and it is calculated by multiplying the base value of the respective use by the occupied

¹ According to Hogg et al. (2016), “all revenues from the Water Resources Fee are ring-fenced for environmental purposes and no component of it is therefore strictly a tax.” Nevertheless, it is worthwhile mentioning the fact that Statistics Portugal (*Instituto Nacional de Estatística – INE*) presents some components of this instrument as taxes and others as fees (INE, 2015).

² This instrument is commonly known in Portugal as TRH, which stands for “Taxa de Resíduos Hídricos”. This abbreviation will be used in the remaining sections of this document.

area, expressed in squared meters" (in EUR/m²); and **Component U**: "private use of water, whatever its nature or statutory regime, subject to planning and public management, which may cause significant impact; it is calculated by multiplying the base value of the respective use to the volume of water drawn, diverted or used, expressed in cubic meters" (in EUR/m³) (Souza d'Alte, 2010). Table 1 presents the values of the TRH for various sectors/categories.

Table 1. Base values of the TRH for the period 2008-2016

THR Components	Sectors/categories	Base values according to the Decree-Law 97/2008 of 11 June	Base values according to the Law No 82-D/2014 of 31 December	Base values for 2016 as defined by the Law No 82-D/2014 of 31 December
A ¹ (EUR / m ³)	Agriculture, fish farming, aquaculture, marine and biogenetic cultures	0.003	0.003	0.0032 (↑)
	Hydric energy production	0.00002	0.00002	0.0000215 (↑)
	Thermal energy production	0.0027	0.0027	0.0029 (↑)
	Public water supply systems	0.013	0.014 (↑)	0.014
	Other cases	0.015	0.014 (↓)	0.015 (↑)
E (EUR / Kg)	Oxidizable Matter ²	0.3	0.3	0.32 (↑)
	Total nitrogen	0.13	0.13	0.15 (↑)
	Total phosphorus	0.16	0.16	0.18 (↑)
I (EUR / m ³)	Aggregate extraction of public water resources	2.5	2.5	2.75 (↑)
O (EUR / m ²)	Electric power production and fish farming equipment located in the sea and water plans creation	0.002	0.002	0.0021 (↑)
	Agriculture, fish farming, aquaculture, marine biogenetic crops, infrastructure and support equipment to traditional fisheries, sanitation, public water supply and electricity generation	0.05	0.05	0.0525 (↑)
	Industry	1.5 - 2	1.5 - 2	1.575 - 2.1 (↑)
	Residential/dwellings	3.75 - 5	3.75 - 5	3.9375 - 5.25 (↑)
	Temporary beach constructions and casual occupations of commercial, tourist or recreational nature for profit purposes	5 - 7.5	5 - 7.5	5.25 - 7.875 (↑)
	Permanent beach constructions and lasting occupations of commercial, tourist or recreational nature for profit purposes	7.5 - 10	7.5 - 10	7.875 - 10.5 (↑)
Other cases	1	1	1.05 (↑)	
U ¹ (EUR / m ³)	Agriculture, fish farming, aquaculture, marine and biogenetic cultures	0.0006	0.0006	0.000645 (↑)
	Hydric energy production	0.000004	0.000004	0.0000043 (↑)
	Thermal energy production	0.00053	0.00053	0.0005697 (↑)
	Public water supply systems	0.0026	0.0028 (↑)	0.0028
	Other cases	0.003	0.0028 (↓)	0.0028

Notes: ¹ A shortage coefficient of water resources is applied for these two components according to specific water basin, notably the coefficient of 1 for the water basin of "Minho, Lima, Cávado, Ave, Leça, Douro", 1.1 for "Vouga, Mondego, Lis, Ribeiros do Oeste, Tejo"), and 1.2 for "Sado, Mira, Guadiana, Ribeiros do Algarve". According to the Law N0 82-D/2014, once the sub-water basins are defined, these will also be associated with shortage coefficients established between 1 and 1.5; ² Oxidizable matter is equal to (COD + 2*CBO5)/3, where COD corresponds to Chemical Oxygen demand, and CBO5 to Biochemical Oxygen demand; The symbols (↑) and (↓), indicate whether the value increased or decreased between the referred periods, respectively.

The Law No 82-D/2014 of 31 December establishes, *inter alia*, the potential reduction in the value of the component E in the cases where there is a reuse of residual waters (Article 8, 5. e)); and also a general exemption of the payment whenever the total value to be paid by the user is less than 25 EUR (Article 15).

1.2 Drivers and barriers of the instrument

The introduction of the TRH followed the transposition of the EU Water Framework Directive 2000/60/CE to the national legislation. This instrument was, on several occasions, criticised by various opposition parties which for example opposed the charging of a fee for a public resource, or considered it an additional burden on household and economic sectors in a

period of economic crisis.³ The GTR, which led to some changes in this instrument, was developed in parallel with the application of an Economic Adjustment Programme (EAP) for Portugal. The latter might have been a window of opportunity for the environmental fiscal reform. However, there were other previous initiatives in response to the situation of economic crisis that may have contributed to laying the ground for the GTR (e.g. Sustainable Growth Platform) (Hogg et al., 2016).

1.3 Revenue collection and use

Scale of revenues (total/annual)

Table 2. Total value of TRH revenue in 2012 by sector (in EUR)

Public water supply	Industry	Agriculture	Thermal energy production	Hydric energy production	Others	Total
18,626,338	3,613,961	1,209,535	1,313,370	251,993	5,068,483	30,083,680

Source: Henriques (2016).

Use of the revenues

The revenues are divided evenly between the Water Protection Fund (*Fundo de Protecção dos Recursos Hídricos - FPRH*), and the Portuguese Environment Agency (*Agência Portuguesa do Ambiente - APA*). According to the relevant legislation (Law No 82-D/2014 of 31 December; Article 18), the revenues are planned to support activities that aim to improve water-use efficiency, the state and quality of water resources and the corresponding ecosystems, and support the coverage of costs associated with water resources management. However, there is no clear information available to indicate whether revenues have been used for such goals in practice.

Who pays and collects

The TRH is paid by individuals and organisations that perform the operations indicated in components A, E, I, O and U. The TRH is collected by the water management organisations such as those responsible for public water supply, which consequently send the corresponding revenue to the Portuguese Environment Agency (*Agência Portuguesa do Ambiente - APA*) (Ministério do Ambiente, do Ordenamento do Território e do Desenvolvimento Regional - Instituto da Água, 2009).

1.4 Environmental impacts and effectiveness

To our knowledge, there is not enough information to produce a robust assessment of the environmental impact and effectiveness of the instrument so far. Available evidence (e.g. from Eurostat and the Statistics webportal of Portugal) suggests that the instrument has had a limited impact on changing behaviour, and that there has not been a clear impact on the amount of water used by domestic users. The TRH is just one of several components on water/waste bills paid by the end-users and it is possible that many individuals are unaware of the TRH and its effect on their water bill. One of the few available studies focusing on the

³ This analysis was based on the consultation of various parliamentary initiatives. In: <http://app.parlamento.pt/arsearch/>, accessed in 07/07/2016. One example is the development of the Draft Law No 155/XI/1 (*Projeto de Lei Nº 155/XI-1ª*) to repeal this instrument, which was not accepted due to the lack of majority consensus in the Portuguese parliament in 2011.

impact of the TRH in the industry sector suggests that various factors such as the low economic impact of the TRH in some sectors has limited its ability to change behaviour (Reigada 2014). In fact, in the agriculture and industry sectors, it is usually energy costs that motivate changes as they are a significant part of operating costs. For example, a recent increase in the VAT on electricity motivated changes in water management and use (information provided by Carla Graça, Zero, 04/07/2016).

In addition to the TRH, a Water Quality Fee is applied to the management entities responsible for potable water distribution which aims to compensate the inspection and control of water quality by the Portuguese entity responsible for the regulation of water and waste services (ERSAR). There is also a Water and Wastewater Services' Regulation Fee which is applied to water and waste operators to compensate the regulatory role of ERSAR (Souza d'Alte, 2010).

1.5 Other impacts

The TRH may not incentivise efficient management of public water supply systems by corresponding entities as it is passed on directly to the final user (Henriques, 2016). Moreover, the domestic users bear the highest burden of the TRH, which calls for a more equitable distribution among sectors (Henriques, 2016; information provided by Carla Graça, Zero, 04/07/2016). To give an example, the TRH value per m³ of water abstracted for the public water supply system in 2012 was sixty- and thirty-fold the value associated with the agriculture and industry sectors, respectively (Henriques, 2016). As noted above, the low economic impact of the TRH has limited its ability to change behaviour, however changes in other sectors (e.g. increased energy costs) have had impacts on water use (e.g. investments in more efficient irrigation systems as a means to reduce energy costs).

It is worth noting that some recent revisions to the TRH may lead to future behavioural changes (information provided by Carla Graça, Zero, 04/07/2016). One example is the reduction in the TRH value with the higher use of residual water treated for reuse. According to Article 8 (e) of the Law No 82-D/2014 of 31 December, the TRH associated with component E (discharge of effluents) is estimated according to the following equation when a reuse of treated residual water is observed ($TRH_{Residual\ water}$), and the measurement of the volume of water reused is assured.

$$TRH_{Residual\ water} = TRH \times [1 - 0.8 \times (\text{volume of residual water treated for reuse purposes} / \text{volume of residual water at the entrance of the treatment process})].$$

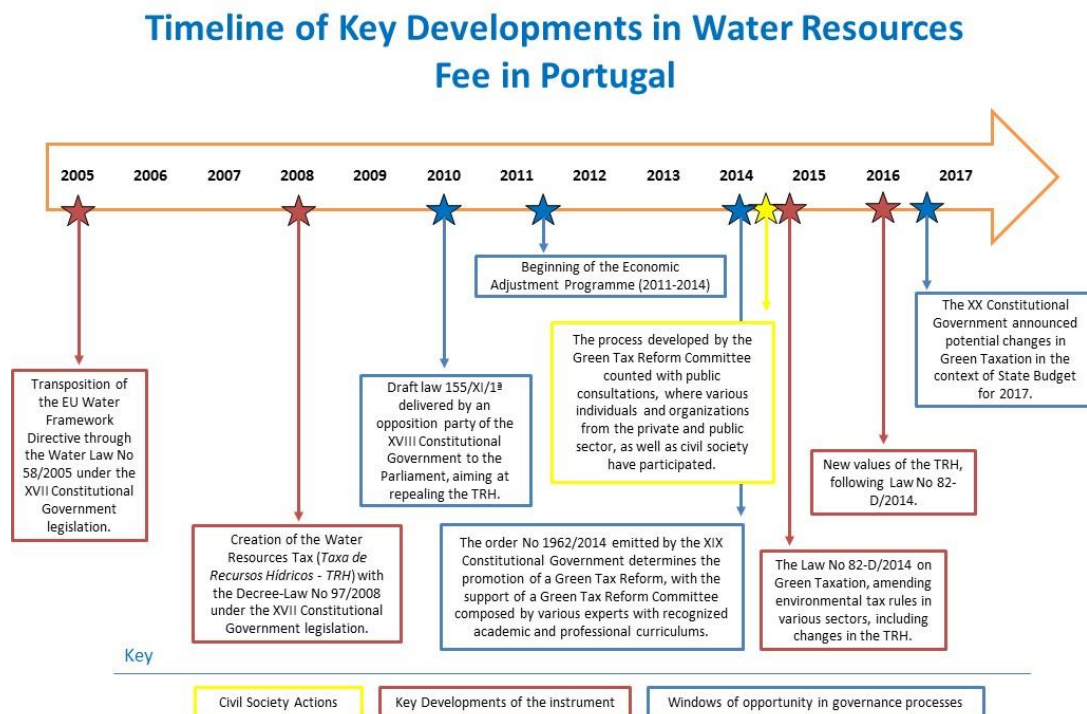
2 Stakeholder engagement

The TRH is considered to have been introduced without a process that involved different stakeholders (information provided by Carla Graça, Zero, 04/07/16). In addition to parliamentary sessions (see Section 1.2), the TRH was raised in discussions by academics or NGOs in the context of the National Water Council (*Concelho Nacional da Água*)⁴ (information provided by Carla Graça, Zero, 04/07/16). Furthermore, in 2014 a period of public discussion on GTR was launched which included the creation of a GTR Committee, composed of experts

⁴ This Council is composed by members of the national, regional, and local public administration; organizations from the academic and scientific, economic, non-governmental, sectors; and other experts in the field of water resources.

with academic and professional experience. During various stages of this process, the GTR Committee received opinions from various stakeholders, *inter alia* citizens, private companies, public entities, and civil society organizations (Governo de Portugal, 2014). The outcome of the GTR, embodied in the Law No 82-D/2014 of 31 December, included some revisions to the Decree-Law 97/2008 of 11 June such as the new base values for the TRH and new incentives for better use of water resources (e.g. the potential reduction in the TRH value with the higher use of residual water). However, numerous proposed changes of the GTR Committee, both in the context of the TRH and other areas such as waste management, were not adopted, meaning that the proposals were more ambitious than the final outcome (GTR Committee 2014a; 2014b).

Figure 1. Schematic view of the involvement of civil society (in yellow) and policy-makers (in blue) in the introduction and implementation of the instrument (in red)

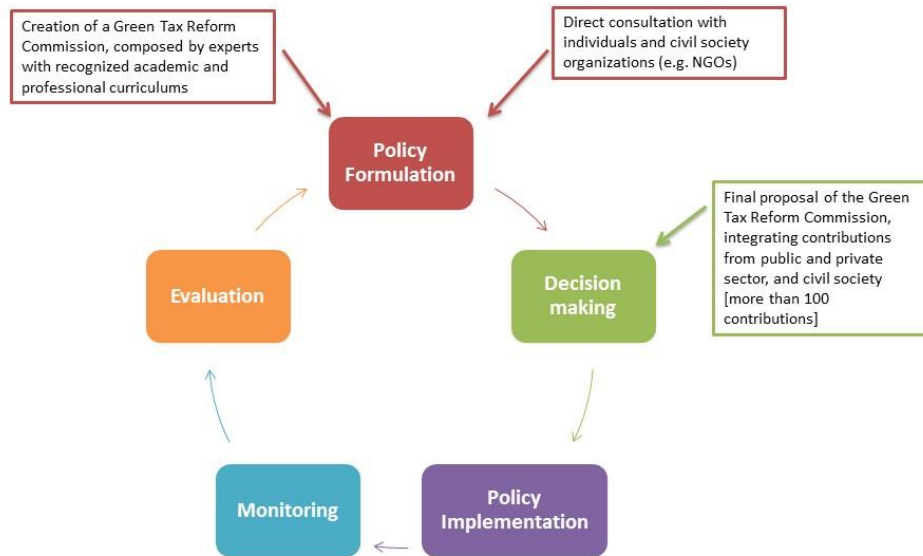


3 Windows of opportunity

The following figure aims to capture civil society engagement in the context of the GTR. Specific actions were mainly associated with the stages of “policy formulation” and “decision making”. As for the remaining stages, it is worthwhile mentioning the role of academics and other experts in the evaluation of the TRH, either through published articles on the topic (e.g. Henriques, 2016) or in the context of their participation in the National Water Council (information provided by Carla Graça, Zero, 04/07/16).

Figure 2. Schematic overview of windows of opportunity throughout the policy cycle of the Water resources fee

Civil Society Engagement with Water Resources Fee in Portugal



4 Insights into future potential/reform

4.1 Actual Planned reforms and stakeholder engagement

The XX Constitutional Government announced potential changes in Green Taxation in the State Budget for 2017. Some aspects directly or indirectly concerning the TRH include: the creation of a combined environmental fund (*Superfundo Ambiental*), integrating the Water Protection Fund together with other funds (e.g. Portuguese carbon fund – *Fundo Português de Carbono*) in order to increase the financial capacity for dealing with the conservation of natural resources, and risk prevention and restoration of ecological damage (Governo de Portugal, 2015); improve transparency regarding the TRH, and potential re-evaluation of the assumptions considered in the design of the TRH (Matos Fernandes, 2016).⁵ Despite the indication of a potential new GTR, it is still not clear how this process will involve the participation of different stakeholders (it also remains unclear what the timeline might be for a potential new GTR).

4.2 Suggestions for future reforms – instrument design and civil society engagement

- Expand the use of the shortage coefficient of water resources in different water basins of the territory to other components (e.g. E and I) (information provided by Carla Graça, Zero; 04/07/16);

⁵ The main source for this text section was the interview to the current Minister of Environment (Matos Fernandes 2016) Other sources referring to the potential future changes in terms of Green Taxation can be found on various in the press, e.g.

<https://www.publico.pt/economia/noticia/estamos-a-trabalhar-em-novas-taxas-no-dominio-da-fiscalidade-verde-1726205>; <http://expresso.sapo.pt/politica/2016-01-19-Superfundo-Ambiental-para-preservar-os-recursos-naturais>; <http://www.revistafrontline.com/grande-entrevista/joao-pedro-matos-fernandes/>.

- Integrate other environmental impacts in the TRH, *inter alia*, the retention of sediments, diffuse pollution, or the impact of thermal discharges (based on information provided by Carla Graça, Zero, 04/07/16; Henriques, 2016);
- Improve transparency of the TRH and the use of the Water Protection Fund (based on information provided by Carla Graça, Zero, 04/07/16; João Pedro Matos Fernandes, 2016);
- Assure the balance among sectors, reducing the burden for the public water supply (own elaboration based on various consulted sources);
- Evaluate the current approach of the instrument, where the value to be paid is often passed on to the final user, which does not have a direct role in the management of water resources (own elaboration based on various consulted sources);
- The base values for the components A, E, and U should not be the identical for all water areas within a river basin as these present differences in terms of water flows (based on Henriques, 2016).

4.3 Suggestions for replicability

Although is currently considered to being implemented in a biased way, the principle of trying to reflect the various components of the TRH in the various economic activities is considered as positive. Moreover, another positive aspect is the inclusion of potential incentives to changes in the use of water resources such as the possibility for users to be charged lower values of the TRH if they use residual water (information provided by Carla Graça, Zero, 04/07/16).

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ⁱ This case study was prepared as part of the study 'Capacity building, programmatic development and communication in the field of environmental taxation and budgetary reform', carried out for DG Environment of the European Commission during 2016-2017 (European Commission Service Contract No 07.027729/2015/718767/SER/ENV.F.1) and led by the Institute for European Environmental Policy (www.ieep.eu). This manuscript was completed in December 2016.