



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

The prospects for the water management framework in the Douro, Portugal

Citation for published version:

loris, AAR 2013, 'The prospects for the water management framework in the Douro, Portugal', *European Urban and Regional Studies*. <https://doi.org/10.1177/0969776412474588>

Digital Object Identifier (DOI):

[10.1177/0969776412474588](https://doi.org/10.1177/0969776412474588)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Publisher's PDF, also known as Version of record

Published In:

European Urban and Regional Studies

Publisher Rights Statement:

The final version of this article was published in European Urban and Regional Studies by SAGE Publications (UK). Authors retain copyright (2013)

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



The prospects for the water management framework in the Douro, Portugal

Antonio A. R. Ioris

Address for correspondence:

School of Geosciences,
The University of Edinburgh,
Drummond Street
Edinburgh EH8 9XP

This is the author's final draft as submitted for publication. The final version was published in *European Urban and Regional Studies* by SAGE Publications (UK).

Cite As: Ioris, AAR 2013, 'The prospects for the water management framework in the Douro, Portugal' *European Urban and Regional Studies*.

DOI: 10.1177/0969776412474588

Made available online through Edinburgh Research Explorer

The Prospects of the Water Management Framework in the Douro, Portugal

Abstract: The implementation of the Water Framework Directive (WFD) has represented a unique opportunity to enhance the regulatory capacity of public agencies and restore the ecological condition of water bodies in the European Union. This paper examines the experience of translating the new Directive into practical policy-making in the Douro River Catchment in the north of Portugal. Regional development and the evolution of water management are initially described, which then inform the assessment of the achievements and failures of the new regulatory regime. The higher level of concern for environmental impacts and the integration of responses that follow the WFD can be identified as positive steps in the direction of resolving lasting water management problems. However, the translation of the Directive into national legislation has also reinforced techno-bureaucratic practices and politico-economic centralisation, as well as led to various forms of contestation and protest. It is suggested that two main reasons account for those difficulties: the sociospatial rigidity (i.e. the fragmented and static understanding of ecological and social interactions) and the monotonic categorisation of water management issues (i.e. upfront decisions with limited scope for innovation and creativity at the local level). Overall, the success of the WFD seems to fundamentally depend on the ability to perceive the broader socionatural complexity of water management and on the pursuit of more effective forms of negotiation and social inclusion.

Introduction: The WFD Moment

After many years of intense negotiation, the Water Framework Directive (WFD) was eventually approved in September 2000 by the European Parliament and Council. It was received by European policy-makers and politicians as a major opportunity to enhance the regulatory capacity of national governments and public agencies, as well as a central tool for social learning and sharing responsibilities for water management. The broad range of activities related to the implementation of the WFD since then has represented a very emblematic chapter in the history of environmental regulation in the European Union (EU). The Directive is not only associated

with technical and administrative expedients, but also relies on the affirmation of new regulatory institutions, such as the realisation of the economic value of water, international river diplomacy and integrated management of water, land and biodiversity. The complex reorganisation that follows the introduction of the WFD entails a transition from the previous focus on hydraulic infra-structure works to a new phase based on the adaptive, co-evolutionary coordination of improved responses (Hedelin and Lindh, 2008). That means a shift from a focus on supply augmentation towards the management of water demand and a more comprehensive attention to individual water uses. For the purposes of the current analysis, the convergence of measures and discourses related to the implementation of the new water regulation can be synthetically described as the 'WFD moment'. The expression 'WFD moment' encapsulates a series of water management reforms and reflects a particular phase of environmental policy-making in the EU (i.e. the post-Maastricht Treaty period).

The WFD experience has also global repercussions as a practical example of multilevel governance, that is, the replacement of conventional government (typically hierarchical and centralised) with more flexible strategies of public administration and public-private interaction across local, national and regional scales. Multilevel governance is a dynamic process that subverts established administrative boundaries and predetermined rationalities in favour of joint initiatives and adaptive management. As a decentralised and responsive mechanism of policy- and decision-making, multilevel governance can be of great value for the solution of environmental management problems, especially because of the emphasis on public participation, open dialogue and voluntary cooperation between stakeholder sectors. It can be an integral part of the reorganisation of the state apparatus from the national realm to supranational, subnational and non-governmental spheres. In Europe, the notion of multilevel governance serves as a political action 'blueprint' for integrating the objectives of local and regional authorities, according to the responses of the individual EU member states and the negotiation ability of civil society (Van den Brande and Delebarre, 2009). A milestone of the agenda of environmental governance in the EU was the Fourth Environmental Action Plan (1987-1992), which acknowledged the shortcomings of previous, top-down approaches and aimed to enhance the harmony between the objectives of the internal European market and environmental

protection through more integrated policies. Those trends were enhanced even further in the last decade with increasingly complex and more holistic pieces of legislation, such as the WFD itself and also the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

However, despite the modernisation of environmental management according to the principles of multilevel governance, serious problems related to the justification, enforcement and implementations of the new institutional framework remains unresolved. For instance, there are pending difficulties in terms of territorial integration, strategic negotiation, cooperation and state-society networking (Oliveira and Breda-Vázquez, 2010). The very transition from government to governance has been a very ambiguous phenomenon, given that while the government tries to divest itself of the role of sovereign commander it ends up assuming the role of an uncertain, and often biased, mediator (Petersen et al., 2009). Rather than a complete transformation of the rationality of the state, the international experience of environmental governance has revealed a re-regulation of the conservation and use of natural resources in a way that combines state-oriented and market-oriented approaches (Mansfield, 2007). Notwithstanding the ambitious nature of governance, the bulk of the official measures seem still too centred on technical and bureaucratic procedures with limited consideration of the also important political and ideological dimensions of environmental management (Ioris, 2012). Local stakeholders have repeatedly found the vertical relationship associated with governance very problematic, particularly because of the tensions between the EU, the member states and civil society groups (Kokx and van Kempen, 2010). Those shortcomings of environmental governance have constituted significant questions for the implementation of the WFD, because at the same time that the new Directive encourages a more efficient allocation and the sustainable use of scarce water resources, the success of the new regime also necessarily depends on dealing with some thorny issues that influence the allocation and management of water, such as stakeholder inequality and environmental injustices (SurrIDGE and Harris, 2007).

The aim of this brief policy analysis paper is to investigate the achievements and challenges of the introduction of new regulatory institutions and multiscale relationships associated with the WFD. It will concentrate on a case study in the Portuguese section of the

Douro, which is the largest Iberian river basin (97,290 km²) and contains 15.6% of the Spanish and 19.8% of the Portuguese territory (Sabater et al., 2009). Because of its size and geographical complexity, the Douro (called Duero in Spain) is a challenging area for the reform of water management in southern Europe and provides a paradigmatic demonstration of the intricacies of the 'WFD moment'. The initial assessments concluded that the Douro catchment had, among all the Portuguese rivers, the highest proportion (namely, 57.1%) of surface water bodies at risk of not achieving WFD targets (INAG, 2005). The use of water in the catchment is dominated by agriculture and, secondly, by hydroelectricity (note that one quarter of Spanish and more than half of Portuguese generation are located in the Douro), with industries, cities, navigation and mines as also important user sectors. The various forms of water use are typically associated with low efficiency and high rates of waste, which contribute to situations of (relative) water scarcity and environmental degradation in both urban and rural areas (ARHN, 2011). There exist more than 50 large dams built for hydropower and irrigation in the river basin, with a particular concentration in the last 350 km of the river channel (Bordalo et al., 2006), what has caused the extinction of around 3/4 of the local fish species (Azevedo, 1998). Taken as a whole, the ecological condition of the river system has suffered the consequences of large-scale interventions, significant uses of water and the discharge of pollutants, specially because those activities were largely uncontrolled or only superficially regulated before the 'WFD moment'. The result is that, out of 353 surface water bodies in the Portuguese section of the river basin, only 71% are in good ecological status, whereas in 22% of the water bodies the condition is moderate, 6% is poor and 1% is bad (ARHN, 2011).

The institutional reforms associated with the WFD in the Douro serve as an entry point into the wider complexity of regional development and the multiscale integration of environmental policies in the EU context. If Portugal is now required to resolve eco-hydrological problems and broaden the agenda of water management more in line with the expectations of those social groups not previously involved in the decision-making process, the negotiation of policies and operational responses has reproduced exclusionary practices and hierarchical structures typically of the past of water management. To understand the tensions and conflicts related to the WFD, it will be necessary to consider the repercussion of official policies on different water user sectors

and also the interchanges between the lower Douro (around the city of Oporto) and what is generically defined here as the upper Douro (the middle and higher segments of the river basin within the Portuguese territory). The discussion is based on the results of two research fieldtrips in the year 2008 (March-April and October-November) as visiting researcher at the University of Oporto. Semi-structured interviews were conducted with water users, regulators, and NGO and campaign activists, and additional information in the following years was obtained from various Portuguese and Spanish organisations. The fieldtrips and further assessments coincided with the preparation and publication of the first river basin management plan for the Douro under the WFD (see ARHN, 2011). The text is organised as follows: the following section presents the institutional evolution of water management and regulation in Portugal and in the Douro. The subsequent section deals with the achievements and constraints of the WFD regime, exploring evidences of innovation and continuity. The final parts summarise the analysis and offer some general conclusions.

Socioeconomic development and the evolution of water management

The ongoing attempts to reform the management of water in the Douro embody some of the main difficulties to translate the WFD regulation into national legislation and policy-making. The debate about the decentralisation and modernisation of water management – some of the core tenets of the WFD regime – happens in tandem with a growing discussion about the transference of state duties to other spheres of public administration, as well as with broader claims for local autonomy, social inclusion and even economic development (Thiel, 2006). First of all, it is important to recognise that the use of water in the Douro catchment had, and still continues to play, a strategic role in terms of local and national development. The multifarious mechanisms of water use in the Douro have encapsulated the dynamic transformations of nature and society, in a way that water is seen as both a ‘locus’ of change and a medium for the externalisation of social and environmental trends (Ioris, 2008). For instance, in the 1880s, a new water treatment plant in the Sousa River, a tributary of the Douro, started to serve the metropolitan area of Oporto under the operation of a French concessionary company, which was

later nationalised in 1927 by the recently established dictatorship (Amorim and Pinto, 2001). The upper reaches of the Douro became the electric powerhouse of Portugal, due to the construction of large hydropower schemes since the 1950s, whilst the lower section of the catchment became associated with light-industrial production and the export of port wine. Some of the most strategic hydropower plants were built in this period, such as Picote (in 1958), Miranda do Douro (1960) and Bemposta (1964). Until the early 20th century, wine was transported to the city of Oporto in small boats (called 'rabelo'), but fluvial navigation started to decline with the inauguration of a railway line in 1887 and, more importantly, road transport in the early 20th century (Pereira and Barros, 2001). In 1985, the Crestuma-Lever reservoir, located at 21.6 km from the mouth of the Douro, became the main source of potable water for approximately two million inhabitants of the Oporto metropolitan area. The more recent changes in water use are closely related to the socioeconomic renovation in the north of Portugal, which has suffered the consequences of the aggressive pressures of market globalisation (particularly the import of cheaper industrial goods from Asia and the resulting deindustrialisation). Efforts to recover the regional economy have included actions related to increasing the use of freshwater resources, particularly in terms of new hydropower dams, fluvial tourism and the expansion of the water supply and sanitation network (CCDR-N, 2006).

The above milestones illustrate how the use and management of water in the Douro reflect the difficulty to cope with other regional, national and international demands (Figueiredo, 2008). The Portuguese society has strived to come to terms with the end of the colonial dictatorship (in the 1970s) and with the challenges of integration with other European countries (Santos, 1990; Vamvakas, 2010). Portugal started to intensify its economic and monetary integration with the rest of the continent in the 1960s (when joined the group of countries that founded the European Free Trade Association), which culminated in the full membership in the European Union (in 1986) and the adoption of the euro as the national currency (in 1999). As a result, the economic and cultural transformations that took place in the Douro after the entrance into the EU have largely operated under the influence of foreign investments (Roca and Oliveira-Roca, 2007), but such policies have had little effectiveness in promoting the changes require by small and medium-size enterprises (Bateira and Ferreira, 2002). On the contrary, European integration was

followed by an emphasis on liberalising policies and growing insertion into global markets, which has included utility privatisation and growing partnerships between the state and private investors (CCDR-N, 2007). Neoliberal reforms have neither guaranteed economic growth nor avoided the persistence of macroeconomic imbalances between the localities and sub-national regions of Portugal (Amador, 2003). It is not surprising, therefore, that the Portuguese society has expressed one of the lower levels of pro-neoliberal ideology in Europe and, for the majority of the population, ideas and practices associated with globalisation would appear to be much more threatening than alluring (Estanque and Mendes, 1997). Furthermore, despite important efforts in terms of state reorganisation, the Portuguese public sector still remains highly centralised and there is a conspicuous absence of elected regional administrations (in charge by the unelected Regional Planning and Development Commissions or CCDRs), as observed by Oliveira and Breda-Vázquez (2010).

It is important to note that the wider adjustments of socioeconomic policies and the (neoliberal) reconfiguration of the national state has been followed by a specific reorganisation of environmental regulation in Portugal and in the Douro. Portugal has made significant progress in establishing a revised environmental legislative framework (largely, but not solely, in response to European Union directives), strengthening its environmental institutions (including the Ministry of Environment, Spatial Planning and Regional Development) and developing national environmental planning (e.g. its first national environmental plan, in 1995), although it is yet an unfinished, insufficient reform (Queirós, 2002). The introduction of the WFD in Portugal has been an integral part of this institutional reorganisation and, in the words of a senior authority, but the crux of the matter is the persistent tension between the centenary tradition of the Portuguese law system and the formal requirements of the European legislators and politicians (Ambiente Online, 2005). The WFD was converted into national legislation in 2005 – the new *Lei das Águas* (Water Law) No 58/2005 – which was followed by a series of technical assessments, public consultations and management guidelines (Ioris, 2008). A few years later, in June 2008, the 'financial-economic regime' was approved with provisions for the payment of bulk water tariffs, that is, surface and groundwater abstraction now require a formal authorisation and attract a correspondent charge (which is calculated taking into account also the volume of

effluent discharge, extraction of inert material, land use area, public water projects and the level of regional water scarcity). Later in the same year, a new water regulatory agency was established, the North Portugal Hydrological Region Administration (ARHN), as the main authority responsible for overseeing water regulation in the Douro and for the elaboration and execution of the 2011 River Basin Management Plan.

In parallel with the implementation of the WFD in the Douro, the reorganisation of public water services also demonstrates the complex interface between social, economic and environmental demands related to water management. Water supply in Portugal was historically delegated to municipal and sub-municipal administration, which are still today the main providers of retail water services (described as 'low services') to households and commercial customers (Monteiro and Roseta-Palma, 2007). This business model has been regularly criticised for its fragmentation, high operational costs and limited investment capacity (Alves, 2005). To be sure, after the approval of a new legislation in 1993, there has been a gradual movement towards water abstraction and treatment at regional level ('high services'). In the Douro, there are two regional companies, the Águas do Douro and Paiva (in the Oporto metropolitan area) and the Água de Trás-os-Montes and Alto Douro (in the upper river basin). Such regionalisation of services was seen as a significant improvement in terms of improved drinking water quality, given that the municipalities could not adequately bear the costs of modern water and sanitation infrastructure, especially because of the scattered settlement patterns and the economic structure of the region. In parallel, and following the prevailing neoliberal economic policies, the reorganisation of the water industry also created novel opportunities for the involvement of private business, especially through the operation of municipal or multimunicipal concessionaries (in the form of public-private partnerships), outsourcing and operation or maintenance contracts (IRAR, 2008). However, the investment capacity and financial health of water utilities have deteriorated rapidly in recent years, especially because utility tariffs have increased below the rate of inflation, while the charging schemes continued to be characterised by significant levels of complexity and unfairness (Monteiro and Roseta-Palma, 2007). The end result has been the failure to universalise public services since the rates of water supply and sanitation are still 92% and 83% respectively (ARHN, 2011). The difficulty to respond to

socioeconomic demands and improve the water industry mirror the challenges associated with the implementation of the WFD in the Douro, which are discussed next.

The contested search for techno-economic efficiency

As described above, the introduction of the WFD in Portugal has accelerated the process of institutional changes initiated in the previous decades, particularly after the entry of the country into the European Union in 1986. Since the approval of the 2005 Water Law that translated the Directive into national legislation, open events and regular media coverage have helped to broaden the debate about the new water regulatory regime. Nonetheless, underneath an apparent convergence of public opinion, there exists a stream of continuities and uncertainties not yet adequately considered in the academic literature. The current examination builds on previous analyses that identified the overly ambitious goals of the Directive and the, often neglected, politico-ecological features of the Douro. The internal contradictions of the new regulatory landscape were earlier defined as a techno-bureaucratic 'shortcut', that is to say, a tendency to produce mainly superficial adjustments in practices and procedures whilst the overall trend of (bureaucratised and exclusionary) management remains largely unchanged (Ioris, 2008). Our specific goal here is to expand the discussion of the results and failures of the WFD regime in the Douro, as an entry point into the experience in the rest of Portugal and in the EU.

One difficulty associated with the implementation of WFD in Portugal is the cultural differences and contrasting expertise between northern and southern EU member states, in the sense that most northern countries had already put in place a fairly comprehensive institutional framework (although normally focused on water pollution control, as in the UK) and developed a comparatively detailed water regulation even before the 'WFD moment'. Related to that, there has also been a persistence of top-down, highly technocratic, assessments of water management problems, despite the discourse in favour of more holistic and adaptive approaches. A series of reports have been commissioned to estimate environmental pressures and impacts in the Douro, as required to inform the implementation of the Directive, but by and large these assessments constitute little more than a compilation of generic data gathered from fragmented sources of information. The claim that southern countries are doomed to fail to implement EU

environmental legislation because their institutional organisation and public-administrative culture do not fit with the general ethos of EU policies is described as the 'Mediterranean Syndrome' by La Spina and Scortino (1993). Moreover, although such claims may provide a logical explanation of the differences across EU countries, in the end there is an inclination among some authors to consider north-south differences as historically predetermined and almost insurmountable (vis-à-vis the consequences of the 2008 financial crisis that has affected the southern European countries particularly hard). It is therefore important to avoid mechanistic explanations of the supposed north-south dichotomy and try to address actual issues that prevent the improvement of water management.

Another significant problem related to the WFD regime has been the irregular and imbalanced opportunities available for the general public to influence water management and institutional changes in the Douro. If in the past public engagement in environmental issues was limited and badly organised, after the introduction of the WFD in Portugal the involvement of the public remained restricted to consultations and formalist activities that offer little transparency and produce limited impact on decision-making (Veiga, 2007). The official reports indicate that the main pressures on the river system are pollution from agriculture and untreated sewage discharges (e.g. INAG, 2005), although those initial estimates tend to focus on hydrological and biochemical modelling and have paid scant attention to precise ecological conservation needs (Moura, 2007) or to traditional forms of water use put in practice by local communities (Cristovão, 2006). The narrow involvement of the public and the precarious scientific understanding of the socionatural complexity of the Douro catchment have contributed to a single-minded focus on the aspects of the 'WFD moment' that more directly correspond to the broader political and macroeconomic targets of the Portuguese government. Above all, a great deal of the new regulatory regime has been associated with calls for higher levels of operational efficiency.

Technical and economic efficiency have actually represented some of the most emphasised aspects of the 'WFD moment' in the Douro so far and, more importantly, it has been portrayed as a consensual and politically neutral objective. The prevailing discourse, articulated by both ARHN and the National Water Institute (INAG), maintains that efficiency constitutes a 'win-

win' game, insofar as the environmental pressure on aquatic systems can be reduced – at least, in theory – by lowering the level of water demand and effluent discharge, which also represents economic savings to the water user (e.g. Cunha et al., 2007). That is illustrated by the ideas of the hydrology professor Francisco Nunes Correia – the Secretary of State for the Environment at the time of this research – for whom the WFD regime is essentially a matter of cost reduction, higher efficiency and economic rationality (Correia, 2000). Government guidelines have constantly reiterated that the main responsibility for improving water management rests in the hands of individual water users and that water management decisions should be made in the light of a utilitarian economic thinking (for example, making use of methodologies such as cost-benefit analysis). Those recommendations are coherent with the principles of environmental economics that permeate the 'WFD moment', in particular the requirement to calculate the economic value of environmental impacts (Article 5 of the WFD) and the monetary cost of mitigation measures (Article 11).

The exacerbation of the economic dimension of water management that follows the introduction of the WFD is also associated with the claim that water is getting increasingly scarce and, as a result, should attract a monetary charge equivalent to the level of shortage. The rationale is that the scarcity of water can only be universally perceived by the stakeholders if the resource is quantified in monetary terms. However, the introduction of bulk water charges (Article 9 of the Directive) happens to be the regulatory instrument that more concretely translates the (misleading) equivalence between water value and money value. What's more, the imposition of bulk water charges have represented the most controversial issue related to the WFD in Portugal, particularly in the period between 2005 and 2008 (Ioris, 2008). That was quite unfortunate because regular clashes between stakeholders and public authorities ended up giving the impression to the general public that the 'WFD moment' is ultimately about the calculation of monetary costs and the application of bulk water charges, rather than about expanding the agenda of environmental conservation and removing sociopolitical asymmetries related to the allocation and use of water. For most of the local population, the public image of new water management regime has been dominated by business expressions and the related commodification of water resources. The perception is that the water commodification advanced

by the WFD underpins the neoliberalising strategies adopted by the Portuguese government, such as the privatisation of water utilities (such as the operation of the Valongo Water Company, in the Oporto area, by the multinational Veolia since 2000) and the establishment of public-private partnerships (Portugal has the largest proportion among EU countries in terms of PPP spending as percentage of GDP, according to Cruz and Marques, 2011). The transfer of public water utilities to the private sector attracts constant criticism because of doubts about the actual motivations of private companies that are more accountable to the shareholders than to their actual customers.

Agriculture is probably the water user sector that best encapsulates the anxieties in relation to the new water charges and the WFD in general. According to the last river basin plan (ARHN, 2011), there are 104,670 hectares of irrigation in the Douro catchment, the great majority being small, intensive farming units located between Oporto and Vila Real. These farmers have long been blamed for the highest rate of water demand and the lowest rates of user efficiency, which imply that investments are needed for the development of backstage technical capabilities and adequate planning procedures (INAG, 2001). Such condemnation was reaffirmed in the first WFD report (INAG, 2005), which estimated that the tariffs paid by agriculture in some public agriculture projects in the Douro prior to the new Directive) only used to recover 9% of the operational costs of water supply (the report also state that the urban tariffs used to recover 82% of the equivalent costs [note that these costs did not yet include the bulk water charge under the WFD regime]). It means that the difference was paid in the form of government subsidies to the farming sector, which is something increasingly unpopular and unacceptable for the advocates of the WFD regime. Because of the 'financial-economic regime' introduced in 2008, as part of the 'WFD moment', farmers are now expected to pay the second higher bulk water charges among water users (€0.003/m³ in addition to other charging factors). However, the majority of farmers believe that the new environmental regulation is an extra-burden to a sector that is already under serious pressure due to declining governmental support (under the Common Agriculture Policy) and the transfer of public funds to the Eastern side of the European continent.

The fundamental problem with policies that attempt to induce higher efficiency through bulk water charges is the disregard for social and spatial inequalities. In our interviews, both

enterprise and small farmers were unanimous in criticising the charges and blaming the northern European countries, where irrigation is less critical, for imposing the new water regulation (what seems an understandable revenge against 'Mediterranean Syndrome' proposition...). In addition, sector representatives protested that the bulk water charges in Portugal are three times higher than equivalent figures in France and that it was adopted by the Portuguese government two years earlier than in Spain. Four months after the introduction of bulk water charges (which happened on 01 Jul 2008), members of the agribusiness argued that water has a huge 'value' for the farmers, but it should not have a monetary 'price'. In an interview on 21 Nov 2008, it was declared that "the farmers don't need to pay for water to use it more efficiently. (...) The main risk is that this charge becomes [merely] a new tax that will not contribute to improve the environment". Interestingly, such argument about the non-monetary value of water clearly subverts the rationale of environmental economics that underlines the WFD, that is, the notion that scarce resources should attract higher user charges. That indicates how the economic value of water, instead of a straightforward figure, is in effect a highly contested and contestable concept. To be sure, the opposition raised by the farming sector are not directly proportional to the financial burden caused by the bulk water charges, but other political and cultural factors also contribute to the uneasiness of farmers in relation the commodification of water promoted by the WFD regime.

If the introduction of bulk water charges has represented a major controversy among small and large farmers, an analogous situation has taken place among companies responsible for public water supply and sanitation (public utilities are now required to pay the correspondent bulk water charges and then transfer it to urban and rural clients, in addition to the usual operational costs). It has been repeatedly stated in official documents related to the WFD that public water services continue to be thwarted by inefficiency and that, consequently, the introduction of the new water regulatory regime should be associated with cost-recovery measures and higher water charges to be paid by domestic and commercial clients (including both bulk water charges and service provision fees). In particular, local water providers ('low' companies) are blamed for their backward thinking as a "hindrance to the development of water supply sector" (that is exactly the expression used in the cover page of the main magazine of

water services in Portugal, *Água and Ambiente*, June 2005). Nonetheless, rather than being politically neutral, those claims for cost recovery and higher charges have provoked tensions and uneasiness between the various water utilities that operate in the same geographical area (i.e. the ‘high’ and ‘low’ companies). As theorised by Tsakalotos (2004: 29), “...while the expansion of the market, and market-type arrangements, are often defended on the grounds of efficiency, they are also often implemented in a manner that goes well beyond the discourse of efficiency”. In our interviews with managers, engineers and politicians responsible for the water services, particularly in the cities and towns in the upper Douro, we detected a considerable level of resentment about the pressures exerted by the central government in favour of the regionalisation of the service. It was often mentioned in the interviews that the purchase of water from the regional company normally costs more than twice the local costs with abstraction and treatment. Part of this difference can be explained by the investments made by the regional company to comply with drinking water legislation, something that many local authorities often fail to observe or postpone indefinitely. At the same time, local water operators face major political barriers to transfer higher charges to the general population due to the closer proximity between utility managers and clients.

To some extent, the fierce reaction against WFD implementation strategies from both rural and urban clients of the water utilities in the Douro can be explained by the previous situation with very low tariffs or even no payment for water by many households and commercial enterprises. As in the aforementioned controversy about new charges for the agriculture sector, public reaction lacks proportionality with the additional financial burden (i.e. the impact of the WFD charges on each household is relatively low, estimate at around €0.20 per month, which corresponds to 2.5-3.0% of the average tariff). It suggests that the opposition expressed is not really about the financial levy per se but rather a deep antipathy toward the interference in long-established water use practices. Public opposition is not only about the charge, but it reacts against a vague, but palpable, sense of ownership loss or inopportune invasion of established forms of relation between society and nature. While the general population has largely reacted – in spontaneous and also organised ways – against additional charges to agriculture and urban water supply, more coordinated protests have arisen over the construction of large dams in the

Douro. The government announced that six (out of ten) new large hydropower schemes will be built in the Douro to increase electricity generation in Portugal, according to the National Programme of Dams with High Hydroelectric Potential (INAG, 2007). If in the past the dams were erected across the main channel, the focus of the construction of hydropower dams is in the tributaries, such as in the Rivers Tua and Tâmega. That means the spread of tensions and conflicts related to water management to the entire Douro catchment and, more importantly, the reproduction of some of the worst authoritarian practices of the pre-WFD period.

Discussion: The partial impacts of water governance reforms

The implementation of the Water Framework Directive has certainly represented a decisive moment in the institutional history of water management in Europe, Portugal and the Douro. The WFD regime, including methodological improvements and more stringent targets, constitutes what can be called a form of ‘metarregulation’, because of the significant repercussions and lasting consequences on many other areas of public policy beyond water management. The higher level of concern for environmental impacts and the reduction of the wasteful patterns of water use can be identified as positive steps in the direction of resolving lifelong problems. Even so, serious problems remain with the implementation strategy for the WFD in Douro. At face value, the detailed timetable of the new Directive seems to offer a robust mechanism for the assessment of ecological trends and the formulation of cost-effective solutions. However, the translation into actual policies has served to consolidate a management of problems that mainly favours a techno-economic rationale. Changes in water management practices in the Douro have encapsulated local and international dynamics, but unfortunately there has been almost no space to consider those issues that fall out of the technocratic ethos of the ‘WFD moment’. In particular, the prevailing regulatory approaches have systematically ignored that water institutional reforms are an integral part of broader social transformations in the mechanisms of production and consumption and in the evolution of interpersonal and intersectoral relations.

The new Directive is implemented by invoking an apparent consensus about the solution to water management problems, but under the surface remains a series of gaps and inconsistencies.

If the 'WFD moment' creates novel opportunities to debate old and new water management issues in the Douro, it has been characterised also by this recurrent tension between innovation and continuity. By making use of a universalising symbolism of 'common' challenges and 'shared' responsibilities, the practical implementation of the WFD in the Douro has been associated with a narrow, and largely predetermined, style of water management. Mainstream policies conceal the fact that the new WFD regulation has brought water further into the sphere of money circulation and contained the critical reaction of important user sectors. The 'WFD moment' has fostered improvements in many areas, such as the consideration of cumulative impacts and the cyclical (adaptive) response to environmental pressures. Despite that, many controversies persist in relation to the prioritisation of public policies and the actual commitments of the state apparatus. Under a hegemonic approach that is mostly centred on preordained responses, other pressing aspects of water management have received only secondary attention, such as catchment integration across stakeholder groups and between spatial locations.

Based on the points discussed above, it is possible to argue that the various problems related to the implementation of the WFD in the Douro have two main causes, namely, the sociospatial rigidity and the monotonic interpretation of water management issues. The first source of constraint – sociospatial rigidity – is related to the static understanding of how social and ecological processes interact and evolve. The Directive has been territorialised by ignoring the constant and perpetual remaking of the catchment's spatial configuration (i.e. the social and socionatural relations that produce space). The new regulation has progressed inflexibly across rigid geographical axes – above all, the nested spheres of governance of the EU – with limited opportunity for contesting established management strategies. Equally, the fixed timetable of the new water regulation is not helped by the slow reaction of the population and the gradual changes in the consolidated practices of water use. Under the basic assumption that all Europe requires the same form of water management and regulation, the national state is powerfully inserted in a dialectics of inertia and modernisation that is predetermined by the transnational centres of political power. In that context, the regulatory principles of water management emanate concentrically from the top (the EU apparatus primarily controlled by the stronger

groups of interest) to the member states and from that to catchments and locations. The result of this rigid management of water is a pressure for the homogenisation of water management and regulation, which happens, first and foremost, through a narrow set of scientific methodologies typically developed in the northern European countries and reproduced with almost no modifications in Portugal (e.g. Bordalo et al., 2006).

The challenges involved in that progression towards an Europe of interconnected localisms are yet more acute in semi-peripheral countries and sub-national regions, such as Portugal and the Douro, which are expected to breach the development gap with northern regions whilst also cope with democracy deficits and growing environmental threats. The complexity of the state apparatus is even greater in the contemporary world, where a multiplicity of goals and liabilities frequently create significant confusion among members of the general public. Statehood is being qualitatively reformulated according to a wild interplay between homogenisation and particularisation, which unfolds towards higher levels of business competition, market liberalisation and economic growth (Brenner, 2004). It should be pointed out that the state includes a range of government bodies, regulatory agencies, parliaments and courts, a large entity that extends from the local to the global with fluid boundaries and exposed to the disputes between groups, classes and geographical areas (Jessop, 2008). The hegemonic reorganisation of the European state system according to neoliberal demands constitutes a multifaceted, non-linear and multiscalar process that engulfs all areas of social action and, crucially, to reshape socio-natural relations according to the political and economic priorities of global markets (see Finlayson et al., 2005).

Second, the interpretation of water management problems and the formulation of possible solutions have followed the monotonic categories of the new European regulation, in particular the myriad of environmental economics tools that colonise the nucleus of the 'WFD moment', such as water charges, water markets and the payment for ecosystem services. Under this quest for technical and operational efficiency, local knowledge and the home-grown understanding of the hydrological system are being rapidly lost. The introduction of new basis for water management leads to the translation of local water issues into a technical vocabulary that is only shared by a relatively small number of stakeholders (i.e. regulators, professional activities,

engineers, and consultants). Because of this monotonic understanding of water problems, the direction of water management is decided upfront, with limited scope for innovation and creativity at the local level. It is true that the erosion of the more autochthonous knowledge did not start with the 'WFD moment', but it has been the outcome of larger processes of social and economic reform, in particular the abandonment of traditional agriculture practices and rural depopulation. Nonetheless, the new Directive accelerates those trends, given that the agencies of the state (INAG and ARHN) enjoy limited flexibility to decide about regulatory goals and implementation procedures. In the end, due to the sociospatial rigidity and monotonic assessments, there is a propensity to bypass the more time consuming steps of the new regulation, in particular, public participation, information sharing and environmental education. On the contrary, the great majority of the regulatory activities associated with the WFD in the Douro reflect the 'over-pragmatic' guidelines and narrow implementation strategies formulated elsewhere (i.e. in Lisbon or in Brussels).

Conclusions

The above case study in the Douro River Basin helps to uncover the persistence of old established practices that had marked the history of water management in the European Union. Attempts to improve water management in the catchment under the WFD regime have often revived long-established cleavages and the inconsistencies of public policies related to the allocation, use and conservation of shared resources, which have typically privileged certain groups of stakeholders and geographical areas. The result is that, notwithstanding legal and discursive improvements, the long-term causes of water problems – namely, political pressures for maximising the economic outcomes and minimising the investments in social equity and environmental conservation – have been left out of the regulatory changes. In addition, the limited availability of long-term monitoring data and detailed technical studies have contributed to reinforce the two fundamental hindrances of the 'WFD moment' (sociospatial rigidity and monotonic categorisation of problems), leading to an evasion of references about the political origins and the socioeconomic consequences of environmental impacts.

In the end, the ‘WFD moment’ remains a contested experience of environmental regulation that oscillates between efforts to commodify nature (e.g. bulk water charges, monetary valuation of ecosystem services, costing of mitigation measures etc.) and the affirmation of techno-bureaucratic mechanisms of law enforcement (i.e. that neglect the demands and needs of large proportion of water stakeholders). Such imposition of a particular interpretation of water management problems has prompted the emergence of some opposition, either at the local level or in coordination with other national and international forms of contestation (as the criticism of water privatisation and the campaigns against the new dams in the upper Douro), but such modest forms of resistance have proved unable to seriously challenge the hegemonic direction of institutional reforms. Yet, the genuine improvement of water management continues to depend, first and foremost, on the ability of regulators and water users to understand and incorporate the socionatural complexity of water management through more inclusive approaches to environmental governance.

Acknowledgements

The research was supported by the Royal Society of Edinburgh and by The Carnegie Trust for the Universities of Scotland. The author is grateful to an anonymous reviewer for the insightful comments that helped to improve the quality of this paper and, especially, to those who kindly agreed to take part in interviews, visits and meetings.

References

- Alves, J. F. (2005) *Águas do Douro e Paiva S.A.: Dez Anos 1995-2005*. Oporto: Águas do Douro e Paiva.
- Amador, J. (2003) 'The Path towards Economic and Monetary Integration: The Portuguese Experience'. *Finance a Uver - Czech Journal of Economics and Finance* 53 (9-10): 413–429.
- Ambiente Online (2005) *Águas de Portugal Caminha para Abertura de Capital a Privados*. Available at: www.ambienteonline.pt/noticias/detalhes.php?id=2597.
- Amorim, A. A. and Pinto, J. N. (2001) *Porto d'Agua: Serviços Municipalizados de Águas e Saneamento do Porto*. Oporto: ISEP.
- ARHN [North Portugal Hydrological Region Administration] (2011) *Plano de Gestão da Região Hidrográfica do Douro*. Oporto: Administração da Região Hidrográfica do Norte,
- Azevedo, J. (ed) (1998) *Entre Duas Margens: Douro Internacional*. Viseu: Tipografia Guerra.
- Bateira, J. and Ferreira, L. V. (2002) 'Questioning EU Cohesion Policy in Portugal: A Complex Systems Approach'. *European Urban and Regional Studies* 9 (4): 297–314.
- Bordalo, A. A., Teixeira, R. and Wiebe, W. (2006) 'A Water Quality Index Applied to an International Shared River Basin: The Case of the Douro River'. *Environmental Management* 38 (6): 910–920.
- Brenner, N. (2004) *New State Spaces: Urban Governance and the Rescaling of Statehood*. Oxford: Oxford University Press.
- CCDR-N [Commission for Coordination and Regional Development of the North of Portugal] (2006). *Norte 2015: Competitividade e Desenvolvimento: Uma Visão Estratégica*. Oporto: Comissão de Coordenação e Desenvolvimento Regional do Norte.
- CCDR-N [Commission for Coordination and Regional Development of the North of Portugal] (2007) *Programa Operacional Regional do Norte 2007-2013*. Oporto: Comissão de Coordenação e Desenvolvimento Regional do Norte.
- Correia, F. N. (2000) 'O Planeamento dos Recursos Hídricos como Instrumento da Política de Gestão de Água'. *Recursos Hídricos* 21 (1): 5–12.
- Cristovão, A. (2006) *Douro-Duero: Em Busca de Caminhos para o Desenvolvimento*

- Transfronteiriço. Paper presented at the Congresso em Homenagem ao Douro/Duero e Seus Rios: Memória, Cultura e Porvir (April), Zamorra, Spain.
- Cruz, C. O. and Marques, R. C. (2011) 'Revisiting the Portuguese Experience with Public-Private Partnerships'. *African Journal of Business Management* 5 (11): 4023–4032.
- Cunha, L. V., Serra, A., Costa, J. V., Ribeiro, L. and Oliveira, R. P. (eds) (2007) *Reflexos da Água*. Lisbon: Associação Portuguesa de Recursos Hídricos.
- Estanque, E. and Mendes, J. M. (1997) *Classes e Desigualdades Sociais em Portugal: Um Estudo Comparativo*. Oporto: Afrontamento.
- Figueiredo, E. (2008) 'Imagine there's no Rural: The Transformation of Rural Spaces into Places of Nature Conservation in Portugal'. *European Urban and Regional Studies* 15 (2): 159–171.
- Finlayson, A. C., Lyson, T. A., Pleasant, A., Schafft, K. A. and Torres, R. J. (2005) 'The "Invisible Hand": Neoclassical Economics and the Ordering of Society'. *Critical Sociology* 31 (4): 515–536.
- Hedelin, B. and Lindh M. (2008) 'Implementing the EU Water Framework Directive: Prospects for Sustainable Water Planning in Sweden'. *European Environment* 18 (6): 327–344.
- INAG [National Water Institute] (2001) *Plano de Bacia Hidrográfica do Rio Douro – Relatório Final*. Lisbon: Ministério do Ambiente e do Ordenamento do Território.
- INAG [National Water Institute] (2005) *Relatório Síntese sobre a Caracterização das Regiões Hidrográficas Prevista na Directiva-Quadro da Água*. Lisbon: Ministério do Ambiente, do Ordenamento do Território e do Desenvolvimento Regional.
- INAG [National Water Institute] (2007) *Programa Nacional de Barragens com Elevado Potencial Hidroeléctrico (PNBEPH)*. Lisbon: INAG/DGEG/REN.
- Ioris, A. A. R. (2008) 'Regional Development, Nature Production and the Techno-bureaucratic Shortcut: The Douro River Catchment in Portugal'. *European Environment* 18 (5): 345–358.
- Ioris, A. A. R. (2012) 'The Geography of Multiple Scarcities: Urban Development and Water Problems in Lima, Peru'. *Geoforum* 43 (3): 612–622.
- IRAR [Institute for the Regulation of Water and Solid Waste] (2008) *Relatório Annual do Sector*

- de Águas e Resíduos em Portugal – 2007*. Lisbon: Instituto Regulador de Águas e Resíduos.
- Jessop, B. (2008) *State Power: A Strategic Relational Approach*. Cambridge: Policy Press.
- Kokx, A. and van Kempen, R. (2010) 'Dutch Urban Governance: Multi-level or Multi-scalar?' *European Urban and Regional Studies* 17 (4): 355–369.
- La Spina, A. and Scortino, G. (1993) 'Common Agenda, Southern Rules: European Integration and Environmental Change in the Mediterranean States'. In J. D. Liefferink, P. D. Lowe and A. P. J. Mol (eds) *European Integration and Environmental Policy* (217–236). London: Belhaven.
- Monteiro, H. and Roseta-Palma, C. (2007) *Caracterização dos Tarifários de Abastecimento de Água e Saneamento em Portugal*. WP No. 2007/58. Lisbon: ISCTE.
- Moura, R. M. (2007) 'A Importância do Vale do Rio Douro na Conservação da Paisagem e os Problemas de Gestão Decorrentes'. *População e Sociedade* 13: 107–123.
- Mansfield, B. (2007) 'Articulation between Neoliberal and State-oriented Environmental Regulation: Fisheries Privatization and Endangered Species Protection'. *Environment and Planning A* 39 (8): 1926–1942.
- Oliveira, C. and Breda-Vázquez, I. (2010) 'Contradictory Rescaling: Confronting State Restructuring and the Building of New Spatial Policies'. *European Urban and Regional Studies* 17 (4): 401–415.
- Pereira, G. M. and Barros, A. M. (2001) *Memória do Rio: Para uma História da Navegação no Douro*. Oporto: Edições Afrontamento.
- Petersen, T., Klauer, B. and Manstetten, R. (2009) 'The Environment as a Challenge for Governmental Responsibility: The Case of the European Water Framework Directive'. *Ecological Economics* 68: 2058–2065.
- Queirós, M. (2002) 'O Ambiente nas Políticas Públicas em Portugal'. *Finisterra* 37 (73): 33–59.
- Roca, Z. and Oliveira-Roca, M. N. (2007) 'Affirmation of Territorial Identity: A Development Policy Issue'. *Land Use Policy* 24: 434–442.
- Sabater, S., Feio, M. J., Graça, M. A. S., Muñoz, I. and Romaní, A. M. (2009) 'The Iberian Rivers'. In K. Tockner, U. Uehlinger and C. T. Robinson (eds) *Rivers of Europe* (113–

- 149). London: Academic Press.
- Santos, B. S. (1990) *O Estado e a Sociedade em Portugal*. Oporto: Afrontamento.
- SurrIDGE, B. and Harris, B. (2007) 'Science-driven Integrated River Basin Management: A Mirage?' *Interdisciplinary Science Reviews* 32 (3): 298–312.
- Thiel, A. (2006) Institutional Changes in Water Management in the Algarve: Actors and Crises Due to Contradictions of Capitalism. Paper presented at the V Congreso Ibérico sobre Gestión y Planificación del Agua (December), Faro, Portugal.
- Tsakalotos, E. (2004) 'Social Norms and Endogenous Preferences: The Political Economy of Market Expansion'. In P. Arestis and M. Sawyer (eds) *The Rise of the Market: Critical Essays on the Political Economy of Neo-Liberalism* (5–37). Cheltenham and Northampton, MA: Edward Elgar.
- Vamvakas, P. (2010) 'Maastricht and the Death of Social Democracy: The Creation of a Consumer Culture'. *Mediterranean Quarterly* 21 (4): 77–92.
- Van den Brande, L. and Delebarre, M. (2009) *White Paper of the Committee of the Regions on Multilevel Governance*. Committee of the Regions, European Union: Brussels.
- Veiga, B. G. A. (2007) *Participação Social e Políticas Públicas de Gestão das Águas: Olhares sobre as Experiências do Brasil, Portugal e França*. PhD Thesis, CDS, University of Brasília.