Neoliberalism and sustainable urban water sectors: A critical reflection of sector characteristics and empirical evidence

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Abstract
Urban water sectors in industrialised countries are increasingly facing a diverse range of challenges. Aging assets, environmental concerns and economic issues put pressure on the current governance and organisation of these sectors. In recent years, a plethora of neoliberal reforms have been initiated in various countries as efforts to counteract these developments. While rather successful in infrastructure sectors, such as energy or telecommunication, neoliberal reforms have proven difficult in many industrialised, urban water sectors. The article argues that this is related to distinct characteristics of the water sectors. Specificities include large-scale technologies, high externalities and the nature of the good. This article analyses these key characteristics of urban water sectors and shows their implications and challenges for neoliberal reforms by drawing on the privatisation of the English water sectors. The results show key trade-offs between economic and environmental issues, and less with social goals.

Keywords
Neoliberalism, urban water, water characteristics, sustainability, industrialised countries

Introduction
Urban water sectors in industrialised countries are confronted with key challenges that threaten their current and future sustainability (OECD, 2011; Pahl-Wostl, 2015).
Although the establishment of widespread water infrastructure in industrialised countries around the world has benefitted many people, the high connection rates and extensive infrastructure are also associated with substantial environmental, economic and social costs. Environmental challenges include groundwater depletion, surface and groundwater pollution, droughts and floods. With regard to economic sustainability, a central question relates to the financing of the upcoming reinvestments into the decaying infrastructure (Pahl-Wostl, 2015). An OECD report notes a ‘significant gap between the funding that is currently available and the investment that is needed [which] will require significant efforts by governments and the private sector around the world [to close]’ (OECD, 2009: 3). Such issues then raise questions regarding the social sustainability of water provision, e.g. in terms of affordable prices of the services for all households and industries.

The challenges faced by the water sectors in OECD countries are often construed as governance issues, rather than as technical or physical problems (OECD, 2011). Historically, infrastructure sectors such as water (supply and sanitation) have been governed publicly (Swyngedouw et al., 2002). The rise of neoliberalism since the 1970s has challenged the status quo of public service provision (Guthrie, 2006). Two dominant approaches to governing the public sector can be identified within neoliberalism: an external dimension involving liberalisation and an internal dimension of managerial reforms (e.g. New Public Management) focusing on making the state better at performing its tasks (Kuhlmann, 2008). For the purpose of this article, we focus on the former. Liberalisation questions the role of the state, focusing on a shift toward a retraction of protected state monopolies, which includes both deregulation and privatisation (Gray and Jenkins, 1995). Deregulation relates to initiating a competitive market via breaking up monopolies, which involves a shift in the legal framework to foster market competition (Considine and Lewis, 2003). Conversely, privatisation is linked to the transfer of operators or service providers from the public to the private domain (Hirst, 2000; Schouten, 2009).

The water sectors have experienced reforms such as privatisation in terms of a transfer of operational management within a primarily public ownership frame (Menard, 2009; Rothenberger and Truffer, 2004). While rather successful in infrastructure sectors, such as energy, railway or telecommunication, neoliberal reforms have proven limited and difficult in many industrialised urban water sectors (Prosser, 2005). In recent years, reforms have gained a high level of attention – often negative – in the media, civil society and the public administration, as their implementation has not consistently led to the intended achievement of social, environmental and economic goals (Araral, 2009; Bel and Warner, 2008; Perard, 2009; Renzetti and Dupont, 2004; Schouten and Pieter van Dijk, 2007; von Weizsacker et al., 2005). Indeed, since the turn of the century, anti-privatisation movements have increased in the water sectors (Luis-Manso et al., 2007). Liberalisation reforms and the conceptualisation of water as a marketable product have sparked public protests not only in developing but also in OECD countries (e.g. Germany, England and the Netherlands). Exemplary cases of ‘failed’ privatisation can be found in the Western European context: Berlin, Potsdam, Paris and Grenoble to name a few. This is notable, as it shows the challenges of privatisation within the frame of a functioning state – discounting (to a degree) dominant arguments that frictions are primarily found in developing counties where the state is weak (for a recent article on water privatisation and governance challenges in the Global South, see Rugemalila and Gibbs, 2015).

Tackling such issues associated with the neoliberal turn, research on water governance has become increasingly prominent. Recent studies have shown the importance of institutions for the performance of water sectors (Araral and Wang, 2013, 2015). These studies indicate that the design of water law (e.g. property rights), water policy (e.g. pricing policy) and water
administration (e.g. existence of environmental agencies or price regulators) have a considerable effect on water availability, quality and price. However, the query of why neoliberal reforms face many difficulties when applied to the water sectors has thus far been neglected. We argue that key reasons for this lie in the particular characteristics of water as a resource and the subsequent historical development of a particular sector rationality. This article aims to explore the relationship between the distinct characteristics of urban water sectors in industrialised countries and the nature of neoliberal reforms.

Sector characteristics include specific particularities of water itself, such as its availability, quality or transport possibilities. Unlike other infrastructure sectors like telecommunication, railway or electricity, water is a natural resource that is essential for life. The resource is furthermore very bulky, which makes its transportation costly (as opposed to, e.g. electricity, can be transmitted quickly and across long distances through electric wires). As a result, a large-scale centralised system of pipes, treatment plants and dams has diffused in urban water sectors in industrialised countries, which has led to natural monopoly structures that limit possibilities for competition in the market. Beyond this, the historically grown governance structures (e.g. public sector prevalence) as well as a diverse range of cultural aspects (e.g. water as a public good) may affect the successful implementation and outcome of neoliberal reforms.

To shed light onto the implications that these characteristics have in the context of neoliberalism, we illustrate our arguments with evidence from the English water sectors, an exemplary case of water liberalisation. We thus empirically show how challenges for sustainability may arise in the context of neoliberal reforms and due to specific water sector characteristics.

In the following, we first explain our methods, then we delineate the central water sectors’ characteristics and present the thereof resulting historic rationality and governance of the sectors. Next, the article addresses the diffusion and impact of neoliberalism in water sectors since the 1980s. Drawing on the neoliberal reforms in the urban water sectors in England, the specific challenges and trade-offs regarding social, environmental and economic goals that follow such a transformation are shown. On this basis, we discuss implications for future planning and policy-making.

**Methods**

The specific urban water sector characteristics of OECD states have been identified based on an extensive secondary analysis of relevant scientific literature in the realm of urban water service provision as well as public utility sectors in general. This includes accounts from various disciplines, such as political science, sociology, economics, history as well as engineering (cf. Fuenfschilling, 2014; Gleick, 2012; Kiparsky et al., 2013; Lieberherr, 2012).

We have selected the English water sectors as demonstrative examples of widespread and on-going liberalisation. As the English water sectors are exceptional in terms of their full privatisation, i.e. divestiture of water infrastructure and management from the public to the private sector (the only full-scale privatisation in Western Europe), they arguably serve as a ‘crucial case’ (Bennett, 2004: 37). We thus draw on these sectors to illustrate our arguments on the relationship between neoliberal reforms and urban water sector characteristics.

The findings are based on data from multiple sources, including (a) documentary information, (b) archival records and (3) in-person interviews (see Appendix 1 for a list of interviewees and their affiliations). The sampling method for selecting interviewees was purposive, i.e. interviewees were identified as those relevant for meeting the research
needs. The interview questions were semi-structured, asking questions about how the water sectors have performed in terms of social, economic and environmental goals since privatisation. The timeframe of analysis is from the point of privatisation in 1989 until 2012.

### Characteristics of urban water sectors

**Specificities of water sectors**

Urban water sectors have a striking similarity regarding their design and organisation (Menard, 2009; Shirley, 2002). Certain ideal-typical characteristics can hence be identified, which have been institutionalised over the past centuries, regardless of regional particularities (Espeland, 1998; Evers and Benedikter, 2009; Fuenfschilling and Truffer, 2014; Gottlieb, 1988; Molle et al., 2009). This homogeneity is partly due to some given physical characteristics of water sectors. Like other public utilities (e.g. electricity), the water sectors involve a **natural resource**. However, the role of the natural resource in the water industry is different than in other sectors, because fresh water is **essential** for life and human well-being, **irreplaceable** as well as **scarce**. Water resources vary regionally in their **natural quality and quantity**. Accordingly, the local production costs to extract and treat water are dependent on hydrogeological conditions. Moreover, due to the ‘bulky’ nature of the resource, it cannot be transported through thin electric wires but rather requires extensive, underground pipelines. Hence, water infrastructure is mainly invisible, as it is mostly underground, and cannot be used for other purposes than water services. Given these features, water sectors have developed as **network utilities** (Finger and Allouche, 2002; Markard, 2011). They are designed as centralised systems of treatment plants and waterworks with vast, integrated networks of water supply mains and wastewater pipes. The water sectors are considered to be **technology intensive**, where technologies and innovation play a crucial role. Large-scale engineering technologies, such as dams, pipes and treatment plants, represent common technological solutions. The water sectors are thus **highly capital intensive** with the fixed costs being the highest of the direct costs, from 70 to 90% (Rothenberger and Truffer, 2004). These high sunk costs make water costly to procure, treat and transport. The value of water in relation to transport costs (e.g. pipelines) is expensive (Garcia et al., 2007). Because of such **transportability issues**, water sectors are typically sourced and serviced locally. The infrastructure network is furthermore characterised by **high economies of scale and scope**. Accordingly, where there is a low ‘scale’ or network density, costs typically increase, which means that some segments, e.g. rural areas, may be non-profitable (Farsi et al., 2007).

Water services also have **high externalities** in terms of public and environmental health (Garcia et al., 2007). Aquatic ecosystems are highly vulnerable and directly affected by the extraction and treatment of water for human use. Contamination of water sources can have devastating effects on human wellbeing and the environment. The essential nature of water for many aspects of human wellbeing has thus made the resource inherently political and cultural. Sometimes also religious aspects of water uses are highly institutionalised, bringing about many different societal expectations. Water sectors typically service different industries – first and foremost agriculture in most countries – as well as households. These **competing uses** thus often lead to a conflict of interests. Additionally, overstraining water resources, such as the depletion of groundwater sources, or certain technological measures, e.g. damming rivers, have led to considerable environmental degradation that causes imbalances in the whole ecosystem.

Given these characteristics, the water sectors have historically been organised in a very particular way. The essential and political nature of water, the physical specificities of the
resource as well as the externalities associated with water provision have traditionally put water under public ownership, management and regulation (Massarutto et al., 2007; Palaniappan et al., 2007). In England, for example, centralised water supply and sanitation distribution systems were originally developed by public water companies. Investment in the extensive water infrastructure and their management was accomplished by the state, i.e. through the public budget. Specifically, in England and elsewhere in Western Europe, the municipal council was historically responsible for water service provision due to the dominant regional differences of water quality and sourcing options (Schouten and Pieter van Dijk, 2007). In contrast to many other Western European countries, however, the English water sectors were regionalised in the 1970s, which removed direct municipal control (Shaoul, 1997).

Furthermore, the technology intensiveness, along with the high economies of scale and scope have mostly led to natural monopolies, usually in the form of vertically integrated, state-owned organisations with a high engineering knowledge-base. Historically, the entirety of the water sectors has been considered a natural monopoly (Luis-Manso et al., 2007; Massarutto et al., 2007). A duplication of the water infrastructure is too costly and multiple providers might lead to market failure (Schouten, 2009). Accordingly, water consumers are captive customers who cannot choose between providers. In England, for example, the public companies were regional monopolies.

The most important values present in the sectors have accordingly been described as achieving security of supply, national welfare as well as an equitable and affordable distribution to all actors through potent technologies (Fuenschilling and Truffer, 2014). The primary mission of the sectors has been seen to provide water for consumption, irrigation and, sometimes, electricity generation. This overall rationality has developed over many decades. However, around the 1980s, a diverse range of challenges as well as newly emerging ideas such as neoliberalism put the organisation of water sectors under pressure.

The neoliberal turn: Current developments and debates

The water sectors’ specificities in combination with neoliberalism have led to key tensions between economic, environmental and social impacts. These are elaborated based on the different neoliberal developments and debates below.

Privatisation and re-regulation. Compared with such sectors like telecommunications, electricity or railway, the water sectors have undergone notably less neoliberal reforms or have been confronted with more challenges and resistance to such ambitions (Allouche et al., 2007; Prosser, 2005). However, the water sectors in many countries have been marked by various neoliberal reforms, including privatisation in terms of a transfer of operational management with varying degrees of private capital involvement (Menard, 2009; Rothenberger and Truffer, 2004). In England, for example, the 10 previously public water companies (called Regional Water Authorities) were floated on the stock market following the 1989 Water Act authorizing privatisation. The government transferred 100% of the equity in the state-owned companies to private owners (Shaoul, 1997). This exemplifies an extreme case of material privatisation, which remains rare around the globe, but is more common in developing than developed countries. A key reason for the whole-scale privatisation was that the central government was regarded as lacking the ability to invest to meet quality standards (Bakker, 2000; Renzetti and Dupont, 2004). Moreover, the logic was that private ownership would lead to a better deal for customers in terms of increased value for money than under the public system (Dassler et al., 2006).
Rather than experiencing deregulation, water privatisation has been coupled with re-regulation (Menard, 2009; Prosser, 2005). Re-regulation, which ensued in the English water sectors during the 1990s and early 2000s, can be interpreted as a reaction to the negative social and environmental impacts of the early privatisation years (Bakker, 2000). There has been a large increase in water prices above the rate of inflation (over 44% rise) since the beginning of privatisation in England (Ofwat, 2009). In the nascent years of privatisation, the companies began to disconnect households from the water network when customers could not or would not pay for their water services. Accordingly, the rate of household disconnections tripled in the first five years of privatisation. Moreover, companies cherry-picked profitable segments (Graham and Marvin, 1994). This was also found to lead to negative health effects in England (Bakker, 2001, 2003); there was a rise in dysentery and other waterborne diseases reported by the British Medical Association (de la Motte, 2005). At the same time, research found that the quality of surface water bodies deteriorated following privatisation (de la Motte, 2005). Specific cases of poor performance led to public discontent. For example, after the severe drought in 1995, 1 of the 10 privatised water companies, Yorkshire Water, made national headlines: the company’s reservoirs had been empty and the company had to take emergency measures such as bringing in tankers and providing public water taps in the street (de la Motte, 2005). Because of the near shortage of water supply, there were public protests (Bakker, 2000; Interview 3).

The re-regulation in England involved the following key laws governing the privatised water companies: the 1991 and 1999 Water Industry Acts, the 1991 Water Resources Act, the 1995 Environment Act, the 2003 Water Act and European legislation. The 1999 Water Industry Act specifically countered the high rate of disconnections by banning disconnections (de la Motte, 2005). The 1991 Water Industry Act, principally amended through the 1999 Water Industry Act and the 2003 Water Act, set up a pioneering system of economic regulation via semi-independent regulation (de la Motte, 2005). At the core of this regulatory system is a review process whereby the private water companies report to multiple regulators and statutory organisations: the economic regulator – Office for Water Services – responsible for setting and monitoring prices and investment mandates; the Environment Agency – responsible for regulating groundwater and surface water quality and quantity; the Drinking Water Inspectorate – regulating water quality for consumption; the Consumer Council for Water – representing water customers; the Competition Commission – an independent arbiter between the economic regulator and the water companies. In this regulatory process, the companies’ water price limits are set and their required amount of capital investment (asset expenditure) for maintaining, improving and complying with legal mandates is determined.

In sum, privatisation in the water sectors can lead to key tensions between environmental, social and economic goals, which have been manifested in the English sectors in terms of increased water prices, household disconnections, public health concerns and resource degradation. Hence, a central reason for the re-regulation in the English case was to try to ensure that environmental and social interests are met despite the profit-orientation of private actors.

Private and economic good debates. Another central debate that has emerged in the context of neoliberalism revolves around the question whether water is a public or private good. Because of its essential nature for life, water has historically been treated as a public and merit good. However, following economic principles, water services could also be categorised as private goods. They potentially entail excludability, i.e. people can be excluded from using the good via property rights or access licensing and rivalry, i.e. one person’s use may reduce the
availability of the good (Schouten, 2009). Water services could therefore be regarded as *economic goods*, because they are scarce (or can become scarce), have competing uses and, thus, arguably have an economic value that should be exploited via profit-maximisation by water providers (Schouten, 2009). In England, for example, water services are defined as services of general *economic* interest rather than as services of general interest, according to the 1998 Competition Act.

The economic focus can be seen in the English regulatory process. Data indicate that, typically, the economic interests have superseded the others in this process. Since the economic regulator has the responsibility for the final decision made in the negotiation process, it has ‘the trump card’ when there are diverging interests between the regulators (Interview 8). For instance, the Drinking Water Inspectorate concentrates on human health issues, regardless of the cost, and the Environment Agency is more interested in the quality of the resource and less in costs (Interviews 4, 5, 6.1 and 8). This contrasts with the economic regulator who focuses on economic efficiency and is more interested in infrastructure maintenance and national debt issues than resource degradation (Interview 3). The trade-off is often between environmental standards and customer bills, not with drinking water quality, because this is too close to human health issues to make compromises (Interviews 3, 6.1 and 8). There is a concern that the economic regulator has become too dominant (Interviews 7 and 8). An economic regulator representative notes that it may overstep its authority, as it does not always consult the national agencies and Parliament, because ‘[…] one of the points of privatisation is to try to move water out of the political [system]’ (Interview 4).

In terms of economic aspects, the regulatory system has enabled the privatised water companies to deliver and outperform the efficiency targets set by the regulator, investing over 90 billion pounds since privatisation and reducing operational costs (Gray, 2011). Findings show that the current regulatory system incentivises investment in terms of growth (Lieberherr, 2012). For example, an expert in the English water sectors criticises that the regulatory system has focused on investments to expand assets rather than to foster resource protection (Interview 1.3). Indeed, the regulatory structures may incentivise capital intensive solutions even though these might not be optimal in terms of actual needs (Ofwat, 2011). In other words, the infrastructure may be expanded simply to maintain financing, rather than to meet functional, environmental or social targets: the investment program ‘requires an increase in the operating surplus in order to maintain rate of return on an increasing asset base’ (Shaoul, 1997: 500).

In terms of social and environmental aspects, the economic-focused English regulatory system has only succeeded marginally. The investment programs can have negative effects on affordability. Setting high investment programs enables companies to increase their profit margin (rate of return). Moreover, they are allowed to increase their water prices with higher investment programs, which ultimately leads to higher water bills (Shaoul, 1997). Indeed, the return on investment, which is transferred to the investors, in the pricing structure is a significant portion of the water bill (Ofwat, 2011). Not only have water prices risen, despite the initial policy goal to decrease water prices via privatisation, but water poverty – households spending over 3% of their disposable income on water services – has increased (Bakker, 2001; Fitch and Price, 2002) and resource degradation has remained (Lieberherr, 2012).

Given these challenges, water services have been considered pivotal for the public interest regardless of users’ willingness to pay in order to ensure such common goods like resource protection and public health (Luis-Manso et al., 2007). Although water became declared as an economic good in the Dublin Principles adopted by the United Nations (UN) in 1992,
this seems to remain a contested subject (Rogers et al., 2002). For instance, in 2002, the UN recognised water as a public good and human right, but without making it a legally binding mandate. In 2010, the UN General Assembly voted on a resolution to make access to water a basic, legally binding human right. A more recent example of this debate, particularly in light of privatisation, is the 2014 successful European Citizens’ Initiative ‘Right2Water’, which was approved by the EU Commission. Moreover, water’s cultural and religious associations make it a sensitive topic with diverging ideologies, particularly in the context of liberalisation (Allouche et al., 2007).

In sum, the private and economic good debates bring the tension between economic and social interests to the forefront. This has been crystallised in the English case, where economic efficiency gains can be juxtaposed with affordability concerns and finally water poverty issues. As a countermeasure, public good arguments persist and seem to be gaining ground in the water sectors across Western Europe.

**Competition.** Privatisation and deregulation efforts have sparked a second vital debate in the sectors: competition. Competition measures have been proposed in the water sectors in the context of liberalisation to break up the monopolies (Allouche et al., 2007). Such proposals have advocated for the unbundling of integrated activities by separating infrastructure from service provision. These suggestions follow the logic that water services could potentially be broken into several segments that could be managed separately (e.g. bulk supply, local water distribution, sewage collection and treatment). Hence, there could be competition within these sub-activities of water services and only the distribution network and the storage systems would remain as true natural monopolies (Schouten, 2009). However, there seems to be limited potential for such competitive measures due to the need for strong coordination between the different segments as well as high prices to access the network (Allouche et al., 2007; Garcia et al., 2007). This mode of competition has had little success in the sectors given their natural monopoly characteristics. Instead, a limited potential for competition is considered in the water sectors, possible in terms of competition for the market, not competition in the market (Aubin and Varone, 2007; Luis-Manso et al., 2007). While both water supply and sanitation arguably have a limited competitive potential, the former is considered to be more competitive than the latter due to its clearer, consumable attributes. Competition in water supply is mostly regarded as stemming from bidding procedures to enter the market (Luis-Manso et al., 2007).

In England, the focus of the regulatory system has been on comparative competition and on cost–benefit analysis. The economic regulator compares water providers’ performance through benchmarking and yardstick competition (Aubin and Varone, 2007). The logic is that by focusing on efficiency, the private water operators will be able to provide the service to all (with affordable prices), while still making a profit. Indeed, the economic regulator says that customers’ bills are a third lower than without privatisation, despite their rise above inflation, due to efficiency savings since privatisation (Ofwat, 2010). This economic regulatory process has led the operators to focus on saving costs rather than optimizing output in terms of clean waterways. An interviewee from one company explains that if increasing the levels of wastewater treatment leads to unreasonable costs, the company ‘won’t do that. We’ll see if there are any other mitigation [besides means increasing the treatment level]...for example, might be able to augment the flows...dilute it a bit more...mitigate the impact [of pollution]’ (Interview 6.1). In other words, rather than upgrading a wastewater treatment plant’s technology, the English operator is more likely to dilute wastewater, by discharging it into larger waterways. This can lead to negative environmental effects, as resource protection might suffer with this approach (i.e. with
dilution, rivers may become more polluted). While the regulatory process focusing on costs and benefits may exacerbate this, it also correlates with the existing means of regulation: the Environment Agency does not set treatment level standards but rather issues consents for discharge based on the overall quality of the waterway and the level of dilution. The social challenges with regards to affordability have already been noted above in ‘Private and economic good debates’ section.

Because of the challenges with the current regulatory system and the lack of competition, there has been a push to change the regulatory system in the English water sectors. Since 2005, the economic regulator has been trying to promote competition via water supply licensing whereby entrants are able to use incumbents’ networks. This has had limited success. There are a few new appointments, but ‘these are essentially new licenses to monopolists...retail separation [is needed for competition...]' (Interview 10). Hence, today, the focus is on potentially separating retail from wholesale and unbundling the supply chain, where new bidders can provide certain parts. The 2011 White Paper (a pre-legislation phase) ‘Water for Life’ fosters competition by seeking to remove barriers to the trading of abstraction and bulk supply licenses. An objective is to drive innovation – via ‘developing competition and contestability in all aspects of the supply chain from abstraction through to retail services’ (Defra, 2008: 89). Questions regarding the design of the supply chain are especially pivotal when it comes to technological innovation. Currently emerging and potentially more sustainable technologies, such as on-site recycling schemes, for instance, will most likely require new actors (e.g. firms, households) to gain access to the network infrastructure as well as the wastewater itself (Truffer et al., 2012). A diffusion of these technologies therefore depends, among other things, on the design of the supply chain. As technological innovation is often seen as a major solution to environmental problems, questions of competition and environmental sustainability are directly linked (Lieberherr and Truffer, 2015).

The aspect of competition in the water sectors sheds light onto trade-offs between cost-optimisation (in the context of comparative competition), on the one hand, and resource degradation and negative social impacts, on the other hand. The English case again exemplifies this tension and shows how recent reforms aim to offset these challenges by rethinking the design of the supply change and turning towards technological innovation.

**Discussion**

The above delineation of water sectors’ characteristics and the empirical example of neoliberal reforms in the English water sectors have shown the frictions that can emerge in the context of liberalisation. These have created unexpected challenges, which led to an extensive re-regulation. This has involved key laws at the national level, which, on the one hand, specifically banned disconnections, and, on the other hand, set up a novel system of economic regulation with semi-autonomous regulators. Such re-regulation can be interpreted as an indication that the nature of neoliberalism is not (yet) reconcilable with the specificities of the water sectors. Indeed, ironically, but in line with other research, many neoliberal reforms have led to increased regulation (cf. Bakker, 2001; Menard, 2009; Peterson et al., 2009; Prosser, 2005; Rothenberger and Truffer, 2004). A key reason for this is to ensure that environmental and social interests are met (Peterson et al., 2009). Regarding the sustainability of water sectors, both positive and negative effects can be seen. On the one hand, the re-regulation led to a separation of power and clear accountability structures, which complemented the initial liberalisation (Lieberherr, 2012).
This is a key learning from the English case, from which water sectors in other countries that are (considering) undergoing privatisation could draw on. On the other hand, the economic regulator has been identified to dominate the regulatory process, which has had implications regarding the prioritisation of economic over social and environmental goals. Other countries could learn from the implications of the over-activity of the economic regulator in the English case, when implementing semi-autonomous regulators in the water sectors.

Both the challenges of the initial privatisation as well as the re-regulation activities presented above can be traced back to water sectors’ key characteristics – large-scale technologies, high externalities and the nature of the good – which are summarised in Table 1 and discussed in detail below.

### Large-scale technologies

The empirical analysis shows that given the specific production and distribution attributes (high economies of scale and scope), associated technologies and hence natural monopoly characteristics, privatisation simply led to a shift from public to private water monopolies. As such, customers remained captive and could still not choose between the now for-profit, private operators. That is, there has been no competition, which is typically a pre-condition for a privatised system that fosters market mechanisms. As a result, the monopoly structure remained, just in private hands, which led to problematic social issues, such as the disconnection of households that did not pay their water bills. Consequently, massive re-regulation was implemented in the English water sectors. While legislation now bans disconnecting households, certain water customers still face challenges due to water poverty, which remains a question of social equity.

### High externalities

In our empirical case, we found that without re-regulation, the initial privatisation led to negative externalities in terms of both public and environmental health. While an extensive

### Table 1. Urban water sectors’ characteristics and their implications.

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<th>Characteristics and effects before neoliberalism</th>
<th>Challenges for neoliberalism</th>
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<tr>
<td>Large-scale technologies</td>
<td>From public to private monopolies: captive customers, limited potential for competition</td>
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<tr>
<td>Bulky, capital intensive, sunk costs, asset durability, economies of scale and scope =&gt; natural monopolies</td>
<td>Re-regulation of private but tension between economic, environmental and social goals</td>
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<tr>
<td>High externalities</td>
<td>Introduction of profit and economic logic challenging: public vs. private debates, legislation forbidding exclusion and mandating equitable service distribution (non-profitable segments still need to be serviced)</td>
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<td>Public and environmental health =&gt; state intervention historically</td>
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<td>Nature of the good</td>
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<td>Essential, irreplaceable, natural resource, scarce, social equity concerns =&gt; highly political and high regulation</td>
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Source: own representation.
system of regulators and statutory organisations led to relatively clear accountability structures, these have not fully accounted for the environmental health externalities in England. The focus of the regulatory system has been more on economic and social (i.e. public health) goals than environmental; drinking water quality has been focal in the regulatory process, resource protection and the quality of treated wastewater less so. However, this cannot solely be attributed to the neoliberal reforms, as the Environment Agency, which existed prior to the privatisation, has not mandated certain treatment levels in the wastewater sector, despite EU legislation requiring at least two levels of treatment in urban areas (1991 EU Directive on Urban Wastewater Treatment). Additionally, research indicates that neoliberal reforms alone will not suffice to address environmental sustainability concerns, but that instead more radical changes of the current sectors’ structures as well as more specific approaches to environmental and technological issues in the water industry will be necessary (Gleick, 2012; Kiparsky et al., 2013).

**Nature of the good**

Privatisation in the English water sectors illustrates how introducing a profit logic into this industry can be very challenging due to high sunk costs and non-profitable segments. As user-fees must increase to compensate for the required profit margins, this has been found to lead to trade-offs with social aspects. The very nature of the good has led to high regulation in the past. In light of growing disconnections and health concerns in the early years of privatisation, water can be considered a quasi-public good when looking at the legislation in England: the laws now mandate non-excludability (through the ban on disconnections). Moreover, equitable distribution or affordability is mandated. Hence, through legislation, there is *non-excludability* and *non-rivalry* of water services (cf. Cashman and Ashley, 2008; Luis-Manso and Finger, 2009). However, the re-regulation has only addressed social sustainability to a degree, as water poverty remains. The question is also where the money generated in the water sectors is invested. If it goes to private multinationals, then this money can be invested anywhere in the world and not necessarily in the water sectors. However, if the revenue is earmarked and reinvested in the water sectors (and the very same sectors from which it was generated), then a higher degree of environmental and social sustainability could be achieved. This is especially relevant regarding the future re-investment needs in water infrastructure that are unlikely to be entirely subsidised by the state (as was mostly the case when they were first built). Whether economic sustainability can be achieved through private or public–private arrangements will heavily depend on these regulatory aspects. The merit good nature of water can also impact the trade-off found in the English case, i.e. that this often occurs at the cost of the environment. There is less of a trade-off with social goals in terms of drinking water quality and affordability, because these can be linked with more individual interests, than resource protection, which is a broader public interest. Given the nature of the resource water, our analysis above also shows how water became contentious and highly politicised when, for example, water shortages emerged in the context of a drought (e.g. the 1995 drought in Yorkshire County, England).

**Conclusions**

This article has analysed the relationship between neoliberal reforms in the urban water sectors and sustainability by addressing the role of the water sectors’ distinct characteristics in industrialised countries. Given the current challenges of aging assets, environmental concerns and economic issues in the water supply and sanitation sectors, the question of
reforming the governance and organisation of these sectors has come centre-stage. To address this query, we first presented the water sectors’ characteristics and the resulting historic rationality and governance of the sectors. We then shed light onto the neoliberal turn in water sectors since the 1980s. To illustrate our arguments empirically, we drew on an exemplary case of neoliberal reforms – the English urban water sectors. We thus have shown how privatisation and re-regulation relate to environmental, social and economic goals given the specific characteristics of the water sectors. Overall, we find key trade-offs between economic and environmental issues and less with social goals, as especially drinking water quality is closely linked to public health and hence makes compromises challenging. However, the case also illustrates a trade-off with social goals in terms of affordability concerns. The central specificities of the water sectors that have affected such trade-offs are large-scale technologies, high externalities and the very nature of the good itself.

Not all challenges are of course per se linked to neoliberal reforms, as such other factors as the ‘culture’ in a given context, e.g. the ideology of placing more or less value on resource protection, rather than economic goals may vary in different national (and even regional) contexts and may be decoupled from neoliberal reforms. For instance, England’s system of environmental regulation per se differs from that found in northern mainland Europe countries such as Germany and Switzerland, where more emphasis is placed on an environmental protection (Lieberherr, 2012). Moreover, the reason why neoliberal reforms such as privatisation have been more advanced in England than in any other Western European countries could potentially be linked to the general cultural openness toward these reforms in England. A key factor here may also be the fact that the local government was removed from direct influence on the water sectors prior to liberalisation in England, as the English water sectors were regionalised in the 1970s (Shaoul, 1997). This arguably made such a reform easier to implement than in countries where the municipal level retains control over the water sectors. Yet, this analysis has shown where the main frictions lie between water sectors’ characteristics and neoliberal reforms.

This article provides insight into how to potentially adapt neoliberal reforms in the urban water sectors, if they are to be a solution to sustainability issues. We show how addressing water characteristics in all kinds of policy issues related to social, environmental and economic goals is crucial. Taking such an integrative approach can help to emphasise the benefits of neoliberal reforms and potentially mitigate challenges. Indeed, employing a nuanced approach and developing privatisation or competition reforms by taking the specific characteristics of the water sectors into account ex ante in the regulatory design could ensure that the potential benefits of neoliberal reforms come to the forefront. Hence, rather than over-compensating with re-regulation in the context of privatisation ex post, lessons from this study can be drawn to take a more differentiated approach in designing and implementing liberalisation reforms in light of the large-scale technologies, high externalities and quasi-public good characteristics of the urban water sectors.

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Note

1. For an extensive discussion on the justification for regulation, see Araral and Wang (2013).

References


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sectors (e.g. water) by focusing on different aspects of institutions, actors and technology as well as their interrelatedness. Special attention is thereby devoted to the process of institutionalization of new, potentially more sustainable socio-technical configurations.

Appendix 1

List of interviewees

<table>
<thead>
<tr>
<th>No.</th>
<th>Institution</th>
<th>No. of people</th>
<th>Date</th>
<th>Interview type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>University of Leeds</td>
<td>5</td>
<td>June 2011</td>
<td>Five separate interviews, all in person</td>
</tr>
<tr>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1.3</td>
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<td>1.4</td>
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<td>1.5</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.1</td>
<td>Long-term experts in water industry, research and development</td>
<td>3</td>
<td>June 2011</td>
<td>Three separate interviews; two in-person and one via Skype</td>
</tr>
<tr>
<td>2.2</td>
<td></td>
<td></td>
<td>Aug 2011</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Yorkshire Water representative</td>
<td>1</td>
<td>May 2011</td>
<td>In person</td>
</tr>
<tr>
<td>4</td>
<td>Economic regulator (office for water services – Ofwat)</td>
<td>1</td>
<td>June 2011</td>
<td>In person</td>
</tr>
<tr>
<td>5</td>
<td>Consumer Council for Water</td>
<td>1</td>
<td>June 2011</td>
<td>In person</td>
</tr>
<tr>
<td>6.1</td>
<td>Environmental Agency</td>
<td>2</td>
<td>June 2011</td>
<td>Two people in interview; in person</td>
</tr>
<tr>
<td>6.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Competition Commission member</td>
<td>1</td>
<td>June 2011</td>
<td>In person</td>
</tr>
<tr>
<td>8</td>
<td>Drinking Water Inspectorate</td>
<td>1</td>
<td>June 2011</td>
<td>In person</td>
</tr>
<tr>
<td>9</td>
<td>Water UK (water industry organization)</td>
<td>1</td>
<td>June 2011</td>
<td>In person</td>
</tr>
</tbody>
</table>

Total 15 Interviews