CONTRASTING ORGANISATIONAL RESPONSES AND THEIR IMPACTS ON DRINKING WATER QUALITY

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Abstract

This paper discusses the findings of a research project which explored the impact of organisational responses on drinking water quality in England and Wales, and the Republic of Ireland. The paper also focuses on advancing our understanding of how organisations can be understood as affecting the transposition of policy responses designed to regulate the quality of drinking water. To achieve this aim, the study draws upon three hypotheses to account for the impact organisations have upon the transposition of policy. In particular, the selected hypotheses focus attention on the impact of conflicting organisational interests, organisational policy traditions, and the role played by agencies that are supportive of policy goals. It is established that drinking water quality has been of a consistently higher standard in England and Wales in comparison with the Republic of Ireland. It is also demonstrated that the associated organisational responses in England and Wales have been more successful in tackling certain problematic drinking water quality parameters. The paper concludes by arguing that although the selected hypotheses have proven useful in focusing our understanding of how organisations affect policy transposition, greater consideration needs to be given to understanding the impacts adequate finance, organisational networks, organisational fragmentation, and organisational independence from government, have on policy transposition.

Keywords

Organisational behaviour; policy transposition; drinking water quality; Directive 80/778/EEC; England/Wales; and Ireland

INTRODUCTION

This paper establishes the quality of drinking water in England and Wales and the Republic of Ireland, and the organisational responses associated with it, for the period 1970 to 2002. It also aims to further our understanding of how organisations involved in the delivery of drinking water can be understood as having affected the transposition of policy responses designed to regulate the quality of drinking water. To achieve this aim, this study draws upon three hypotheses proposed by Winter (1990, 2003) to account for the impact organisations have on policy transposition and outcomes. In particular, these hypotheses focus attention on the impact of conflicting organisational interests, organisational policy traditions, and the role played by agencies that are supportive of policy goals. The standards laid down by the Drinking Water Directive 80/778/EEC are used to provide the analytical backdrop for evaluating the quality of drinking water.

In summary, the paper establishes the organisational provision of drinking water in England/Wales and Ireland to diverge in three broad areas; namely, with regard to the role of government in provision; the role of government in finance; and the role of government in regulation. From a general perspective, the quality of drinking water in England/Wales is shown to have been of a consistently higher standard than in

comparison with Ireland, which is subsequently revealed as having developed a less effective organisational response to the delivery and regulation of drinking water quality. Winter's organisational hypotheses are subsequently revealed as being useful, but limited, in helping us to understanding of how organisations have affected the quality of drinking water and its regulation.

To explore the quality of drinking water and the associated organisational responses in England/Wales and Ireland, this paper has been split into five main sections. The first section provides a brief overview of the methodology, the second establishes the quality of drinking water in England/Wales and Ireland; the third details the associated organisational responses, the fourth draws upon Winter's organisational thinking to help us understand the impact organisational responses have had on policy implementation and drinking water quality; and conclusions are drawn in the final section.

METHODOLOGICAL OVERVIEW

To allow an investigation into the quality of drinking water and the associated organisational responses, and their impacts to take place, data was collected from a series of semi-structured interviews conducted with senior civil servants and managers in England/Wales, Ireland and Brussels. Interviewees were selected to help generate a contemporary understanding for the period 1970 and 2002. The information collected was supplemented with information derived from reports and papers from parliamentary committees and proceedings, government departments, EU organisations and institutions, privately commissioned research, interviewee articles and conference presentations. The Times and Irish Times were also consulted to aid in the construction of a contemporary picture of implementation. The quality of drinking water was ascertained from analysis of published annual reports on the quality of drinking water.

Interviewees were selected to represent the organisations and individuals associated with the transposition of Directive 80/778/EEC. This directive was selected, and subsequently served to guide the timeframe of this project, because of the central and fundamental role it has played in drinking water regulation in the European Union (Breach, 1989; CEC, 1980; Collins, 1988; Kramer, 2000; NSCA, 2000; Semple, 1993). In Ireland, a total of 19 interviews were undertaken with individuals from the Department of the Environment and Local Government (DOELG), the Environmental Protection Agency (EPA). Individuals from the providers of water services were also selected for interview, which included Dublin City Council, Fingal County Council, Rathdown County Council, and South Dublin City Council. In England/Wales, a total of 33 interviews were undertaken with individuals from the Department for Environment Food and Rural Affairs, the Office of Water Services (Ofwat), the Drinking Water Inspectorate (DWI), and WaterVoice. Representatives of the providers of water services in the London area, namely Thames Water and Three Valleys Water, in addition to individuals from national representative groups such as Water UK, were also selected for interview. At the EU level a total of 12 individuals were interviewed, being drawn from the EC and the European Parliament (EP). Individuals were also selected for interview from the European Union of National Associations of Water Suppliers and Waste Water Services (EUREAU).

DRINKING WATER QUALITY AND THE DIRECTIVE

To ascertain the quality of drinking water the following analysis has been split into two main sections. The first section focuses on water quality in England/Wales and Ireland during the 1970s and 1980s. The second section focuses on the quality of drinking water in England/Wales and Ireland between 1990 and 2002. This split represents the two periods before and after data on drinking water quality were coordinated and published nationally on an annual basis.

Drinking water quality in England/Wales and Ireland 1970 to 1989

From 1970 to 1989, Ireland is notable for lacking nationally collated data on drinking water quality and exhibiting little public or media commentary on the quality of drinking water. This lack of data was commented on three years after Ireland was supposed to be compliant with standards in Directive 80/778/EEC. Hence, in 1988, an administrative circular issued by the Irish DOELG remarked that:

> *'The Department has relatively little information on the monitoring of toxic parameters […] insofar as drinking water is concerned'* (Circular L8/88 DOELG [Ireland]: 1).

Concern over contamination of surface and groundwater by organic and inorganic substances, like nitrate and pesticides, began to emerge in Ireland during the 1970s. Yet contamination was not believed to affect the quality of drinking water adversely (see Flanagan and Toner, 1972; IIRS, 1975; O'Donnell, 1980; Toner and Lennox, 1980; Daly and Daly, 1984; Water Resources Division, 1986). A lack of commentary on drinking water quality in the debates of the Dáil Eireann (i.e. Parliament in Republic of Ireland) provides further confirmation of low levels of concern amongst Members of Parliament during the 1970s and 1980s. Where concern was identified, its appears to have been limited to one-off phenol contamination in North Dublin, which was not taken to be indicative of wider quality problems (see DE Debs., Vol. 346, 22-11-83). Only toward the end of the 1980s did direct questions and data relating to the quality of drinking water begin to emerge, in particular with regard to the level of nitrate contained in ground water (see DE Debs., Vol. 392, 02-11-89). It appears that during the 1970s and 1980 drinking water quality in Ireland was of little concern, or was perceived not be a concern. In a sense there are parallels here between Ireland and England/Wales, for in the latter the debate surrounding the quality of drinking water similarly focused on contamination by one or two substances. Thus, in the 1970s and 1980s, an emerging concern about contamination by lead and nitrate was identified (Pearce, 1982).

In 1976, a UK survey on lead in drinking water revealed contamination to be far more widespread than previously thought (DoE, 1977; Atkinson, 1978). The report highlighted that while lead rarely occurs as a widespread natural contaminant, it tends to be present in drinking water due to the plumbosolvency of drinking water supplies (Nicolson, 1993). Prior to this survey, it was believed that only soft water dissolved lead from water pipes made from the metal. As a result of taking 2,600 samples, it was revealed that both soft and hard water had a plumbosolvency effect, and that the contamination of drinking water was more widespread that previously thought. During the course of the 1970s, concern also began to be attached to the level of nitrate in drinking water. In particular, nitrate contamination became of increased concern following the 1976 drought. This caused a sharp increase in concentrations in

surface waters, with rising nitrate levels detected in groundwater in years following the drought. This caused suppliers of drinking water to consider other sources of groundwater supply (Atkinson, 1978). A further indicator of variable water quality was a 1984 government reply to a parliamentary enquiry on the number of suppliers breaching microbiological standards in Directive 80/778/EEC. It was reported that 90 water supply areas, out of an unspecified number, were falling *'marginally short of the EC drinking water directive's microbiological standards at present'* (HC Debs., Vol. 84, 21-1-85, Col 551). The above information appears to indicate that problems relating to drinking water quality were isolated to a series of specific parameters and sources. However, the reported 1982 comments of Dr John Cuthbert, the then Director of the Water Research Centre's Stevenage process engineering laboratories, appears to indicate a more dire picture. He reported to the National Water Council and to Government ministers that 50 per cent of all British water supplies failed to meet some part of the Directive (Pearce, 1982: 114).

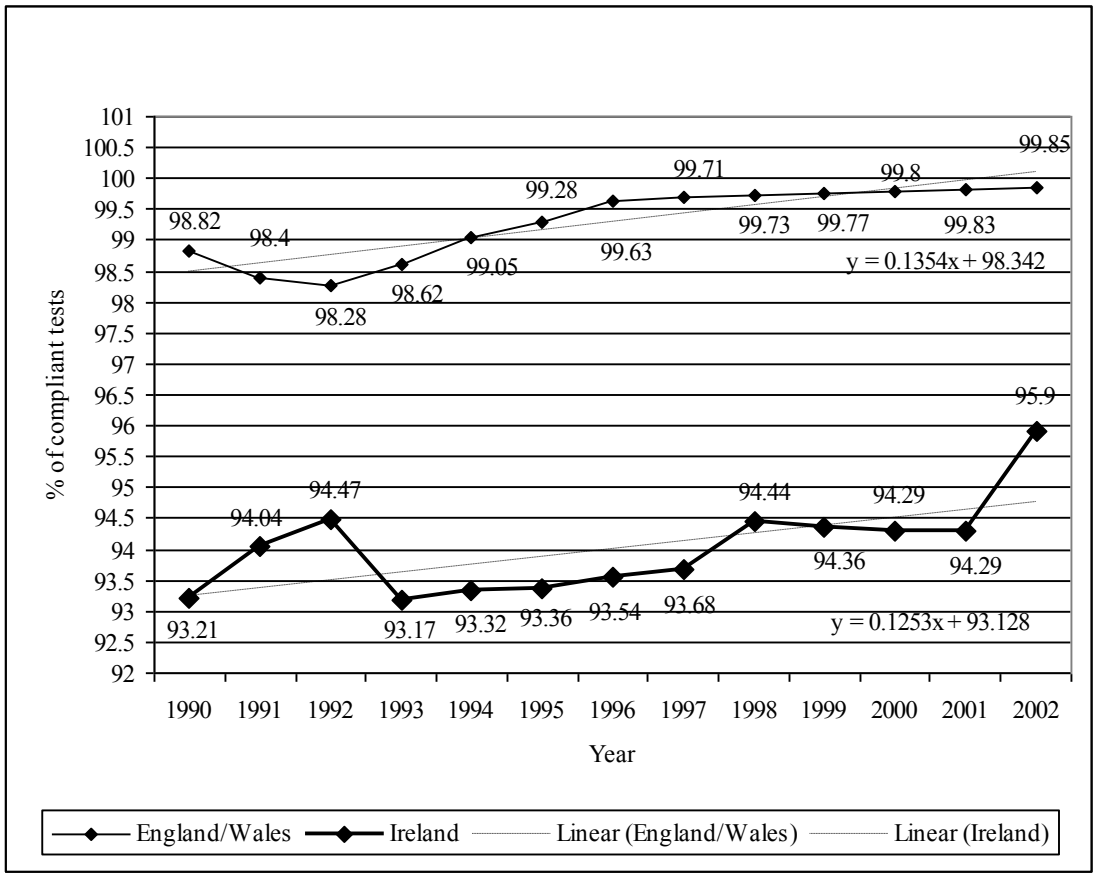
Drinking water quality in England/Wales and Ireland 1990 to 2002

This section presents the results of a comparative analysis of drinking water quality in England/Wales and Ireland for the period 1990 to 2002. It draws upon publicly available reports on drinking water quality. The starting point of 1990 represents the year data first become available in both national contexts. The end point of 2002 is the end point for data analysis as it represents the end of the data collection phase for this study. Overall compliance levels and levels for the individual standards relating to lead, nitrate, total coliforms, aluminium, iron, and pesticides are examined. As Figure 1 illustrates, the overall quality drinking water quality is higher in England/Wales than in Ireland.

Between 1990 and 2002, the percentage compliance ratings for drinking water quality in England/Wales and Ireland improved, with England/Wales exhibiting a consistently higher overall compliance. As Figure 1 demonstrates, the overall compliance in England/Wales increased from 98.82% to 99.85% (an increase of 1.03%). While in Ireland it increased from 93.21% to 95.90% (an increase of 2.69%). In both cases, the overall improvement was relatively small in percentage terms, yet overall compliance masks important and dramatic improvements in non-compliance failures for certain parameters.

Figures 2 through 5 illustrate a pronounced rise in the percentage of tests in England/Wales meeting the Directive's prescribed standards for nitrate, total coliforms, aluminium and iron. In particular, between 1990 to 2002, the percentage of tests not meeting the standard for nitrate fell from 0.77% to 0.11% (see Figure 2); for total coliforms it fell from 2.00% to 0.52% (see Figure 3); for aluminium from 0.90% to 0.07% (see Figure 4); and for iron from 3.00% to 0.83% (Figure 5).

Figure 1. Drinking water quality in England/Wales and Ireland between 1990 and 2002[1,2,3]



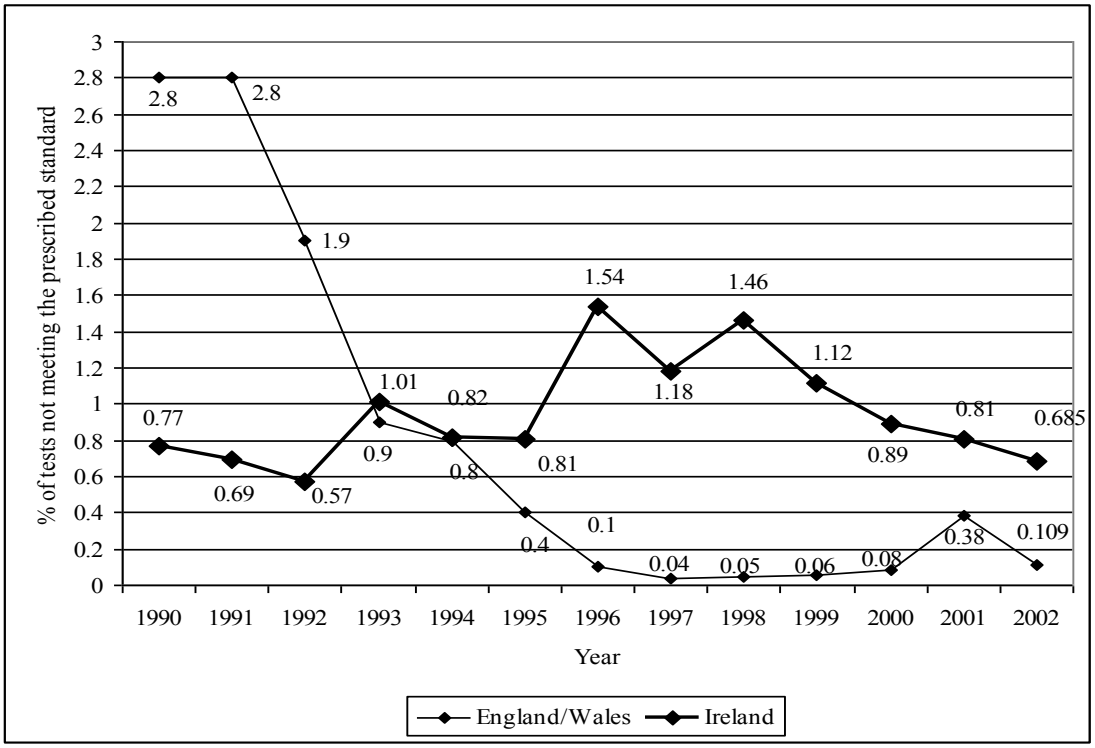
(Source: DWI, 1991-2003; EPA, 1991-2003)

[1] The percentage rating for overall compliance was calculated in relation to parameters reported in annual reports. In the case of England/Wales, the parameters reported include: total coliforms; faecal coliforms; colour; turbidity; odour; taste; hydrogen ion; nitrate; nitrite; aluminium; iron; manganese; lead; PAH (polycyclic aromatic hydrocarbons); trihalomethanes; total pesticides (all pesticide sampled for); individual pesticides (e.g. simazine; atrazine; propyzamide); all others (refers to 38 other parameters regularly tested for but rarely found at non-compliant levels [e.g. copper; zinc; temperature]). In relation to Ireland, the parameters reported upon include: aluminium; ammonium; total and faecal coliforms; colour; fluoride; heavy metals (e.g. copper, zinc, cadmium; lead); iron; manganese; nitrate; nitrite; odour; taste; pH; trihalomethanes; turbidity; cryptosporidium (EPA, 2003).

[2] It is acknowledged that use of a linear trend line is not ideal for 13 observations. The line has only been used to highlight the overall trend in the data presented.

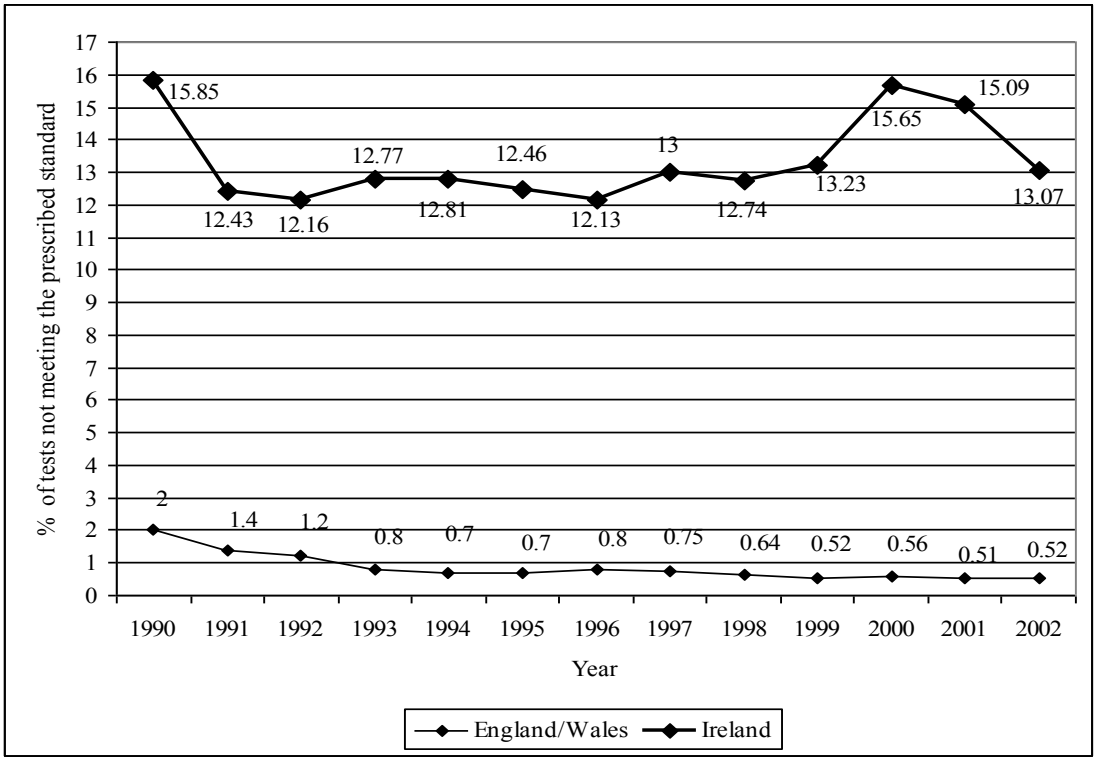
[3] In 2002 the EPA decided to discontinue calculating an overall compliance rating for drinking water quality in relation to the parameters detailed in footnote 10 (EPA, 2003). Discussion by the EPA of parameters would either make sole reference to the overall percentage compliance rating for a parameter, or break it down with regard to group and public water schemes. No data were then provided on the number of samples passed or failed in group and/or public water schemes. As a consequence, it is not possible to calculate overall compliance because the number of samples analysed in group and public water schemes is not known.

Figure 2. Drinking water quality in England/Wales and Ireland in relation to nitrates, 1990-2002



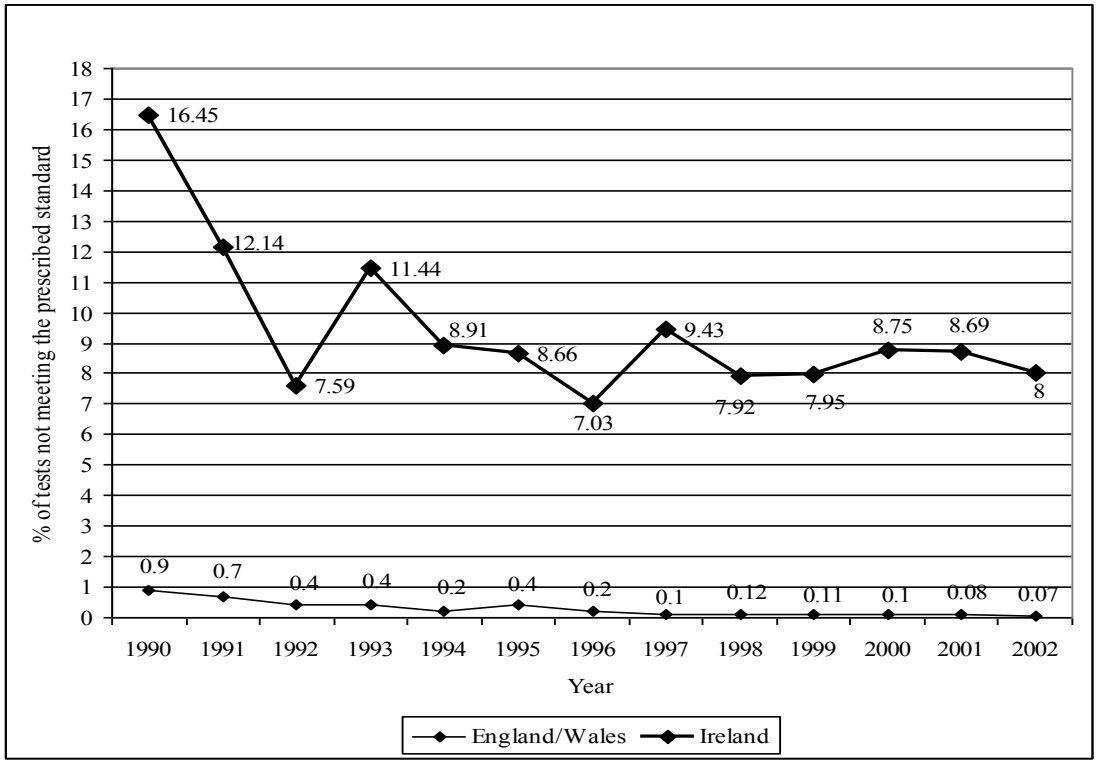
(Source: DWI, 1991-2003; EPA, 1991-2003)

Figure 3. Drinking water quality in England/Wales and Ireland in relation to total coliforms, 1990-2002



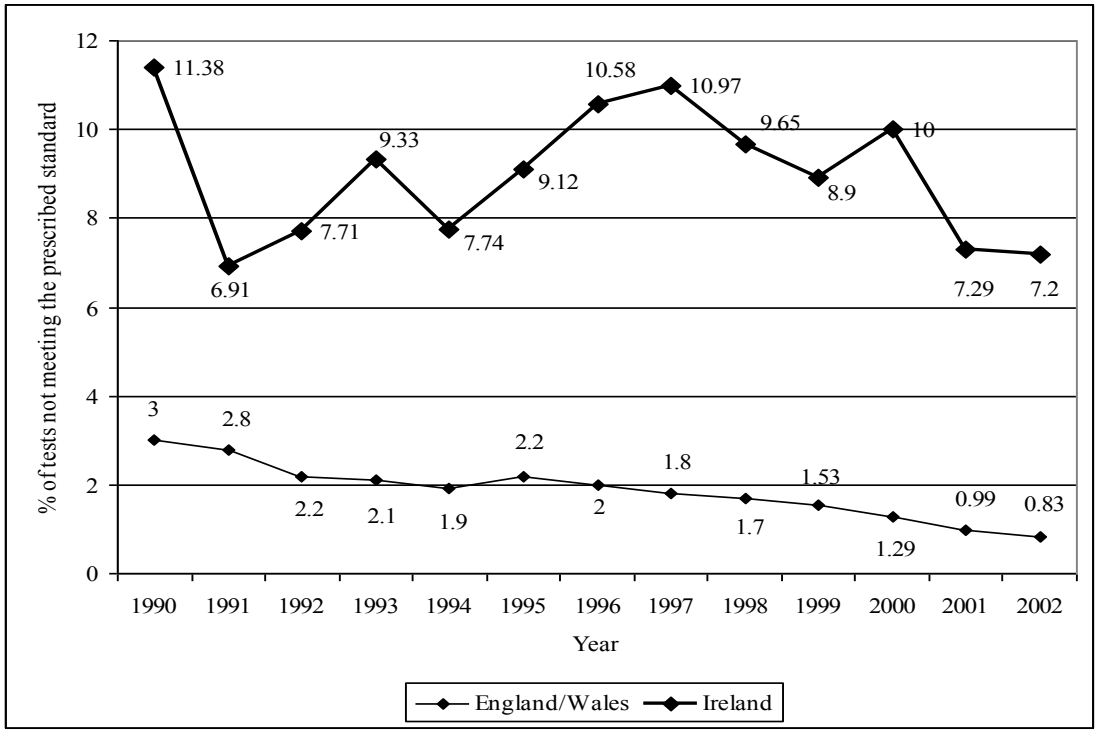
(Source: DWI, 1991-2003; EPA, 1991-2003)

Figure 4. Drinking water quality in England/Wales and Ireland in relation to aluminium, 1990-2002



(Source: DWI, 1991-2003; EPA, 1991-2003)

Figure 5. Drinking water quality in England/Wales and Ireland in relation to iron, 1990-2002

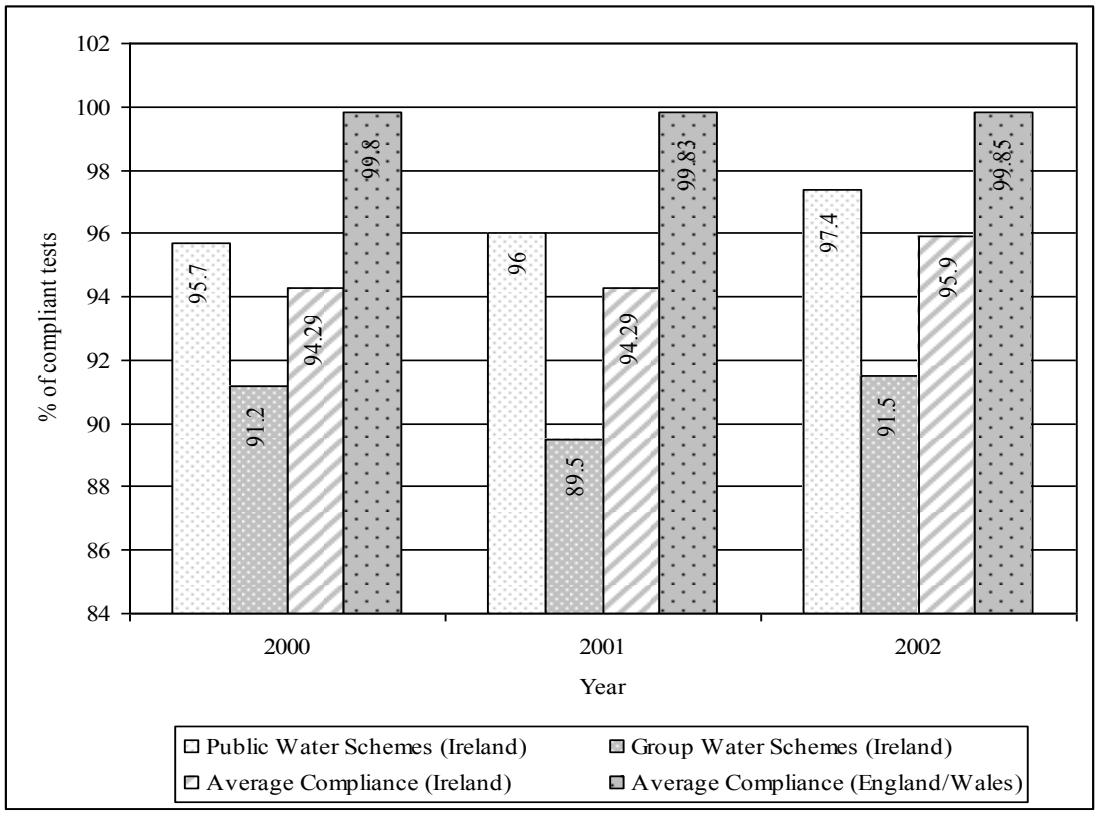


(Source: DWI, 1991-2003; EPA, 1991-2003)

As noted previously, Figure 1 reveals clearly that Ireland has achieved a consistently lower overall compliance rating for drinking water quality, when compared to England/Wales. The annual drinking water reports, and the action plans for rural drinking water in Ireland, highlight that the overall quality of drinking water is lowered due to the poorer quality of water produced by group water schemes. In the context of Ireland, group water schemes refer to drinking water distributed by privately owned schemes that source and distributes their own supplies of drinking water (NFGWS, 2003). According to the Irish Environmental Protection Agency (EPA), group water schemes supply water of a lower quality because of contamination with animal and human waste and a lack of chlorination (EPA, 1999).

Assessing the effect of group water schemes on the overall quality of drinking water in Ireland has proved difficult, as annual reports have not always broken down quality data by group and public water schemes. As Figure 6 illustrates, the data available only allows assessment of overall quality supplied in relation to group and public water schemes back to 2000. What is notable is that drinking water from both group and public water supplies in Ireland is of a lower quality than in England/Wales (see Figure 6), suggesting that while group water schemes have had a negative impact on the overall result for drinking water quality in Ireland, their presence does not account for differences across the two national contexts.

Figure 6. Overall drinking water compliance in relation to public and group water schemes in Ireland, 2000-2002



(Source: DWI, 2001-2003; EPA, 2001-2003)

THE ORGANISATIONAL RESPONSE

To enable the organisational response of governments in England/Wales and Ireland to be established and discussed, the following discussion is split in two. The first section covers the organisational response of government in Ireland to water services with the second section detailing the organisational responses in England/Wales from 1973 to 2002.

Drinking water provision in Ireland

Between 1973 and 2002, drinking water provision in Ireland was the responsibility of 88 local authorities[4] and a growing number of group water schemes (European Communities [Quality of Water Intended for Human Consumption] Regulations, 1988). The delivery of water services is currently the responsibility of 88 local authorities, which supply approximately 90% of the population, and approximately 5,500 group water schemes, which supply approximately 10% of the population (EPA, 2003; EPA, 2005; Oasis, 2006; Scannell, 1995; 2005). Despite their 'independence', the group water schemes are under the statutory management of the local authorities who are responsible for monitoring and enforcing the quality standards contained within the Directive. Local authorities are then overseen by the Irish Department of the Environment (DOELG), who are responsible for Directive 80/778/EEC (Scannell, 1976; 1982; Quinn, 1992; Coyle, 1994; McGowan, 1999; OECD 2000; Taylor, 2001; NFGWS, 2003; 2004).

Following the 1988 European Communities (Quality of Water Intended for Human Consumption) Regulations, the Environmental Research Unit of the Irish environment department began to produce an annual, publicly available, report on drinking water quality. Prior to 1988, the enforcement of drinking water quality regulations rested with the local authorities themselves (Coyle, 1994; Scanell, 1995; Taylor, 2001). In 1993, this responsibility passed to the Environmental Protection Agency (EPA) (EPA Act 1992). In addition to monitoring and reporting on the quality of drinking water, the EPA is also responsible for monitoring and reporting on the quality of the wider water environment, and enforcing regulations with regard to waste and air pollution. The EPA is reliant upon water providers for data on the quality of drinking water (EPA, 2003b).

Between 1973 and 2002, the funding of water services underwent a series of notable changes in Ireland. Prior to 1978, water services provided by local authorities were funded via a mix of central government grants and revenue generated by domestic rates, which included a charge for water services (Ridge, 1992; Collins and Cradden, 1993). In relation to private group water schemes, users pay a subsidised rate for the services that are provided, with local authorities subsidising such schemes with the aid of central government grants (Collins and Cradden, 1993). However, domestic rates for water services, and thus the contribution of domestic users to the cost of water services in urban areas, were abolished[5] in 1978. To replace the loss in revenue, central government allocated an increased grant to local authorities in the form of a domestic rate grant (Ridge, 1992; Collins and Cradden, 1993). However, in 1982-1983 central government stopped making up this financial shortfall by decoupling the domestic rate grant from the locally determined domestic rates. This situation allowed

[4] Also known as public water scheme providers.
[5] County councils in rural areas retained the right to charge for domestic water supplies until 1997.

the Treasury increasingly to determine what was spent at the local level (see Ridge, 1992).

In 1982, an Irish government circular enabled local authorities once again to charge for water services (Ridge, 1992; Collins and Cradden, 1993). In the context of a national fiscal crisis, the central government announced a decrease of eight per cent in the central grant levels to local authorities. Yet local authorities were allowed to mitigate the effects of this decrease somewhat by levying specific charges for the services they provided, such as water; although the national government did restrict the amount that local authorities could spend on local services, so as to manage the national fiscal crisis. As a consequence, expenditure on water services fell (see Ridge, 1992; Taylor, 1998, 2001). This decrease occurred because the national government sought to bring about economic stability by reducing inflation via a reduction in expenditure on public services (see Collins and Cradden, 1993; Coakley and Gallagher, 1999).

In response to their newly acquired revenue raising authority, by 1996 all but two local councils in Ireland (Dublin and Limerick) had developed some form of charging for water services, via the development and specification of an actual charge for water services in the annual rates bills sent to domestic householders (Collins and Cradden 1997). Despite the calculation and specification of charges for water services, in 1997 domestic user charges were once again discontinued, even though the direct billing and metering of business users has become increasingly commonplace (OECD, 2000; DOELG, 2004). Serving to complicate the funding of water services in Ireland further, group water schemes that are supplied with drinking water by local authorities also had their service charges abolished in 1997. However, users of private group water schemes still have to pay, albeit they are subsided by the relevant local authority. As consequence of the above changes, the DOELG has become responsible for financing the provision of water services via revenue generated from income tax. For the period 1994 to 1999, EU cohesion and structural funding also contributed to the funding of water services in Ireland, with this funding substantially decreasing between 2000 and 2006. This decrease occurred because of Ireland's improving financial situation relative to the rest of the EU (DOELG, 2002; 2004; Oasis, 2006).

Drinking water provision in England/Wales

For the period 1973 to 1988, water services in England/Wales were delegated to Regional Water Authorities (RWAs) and Statutory Water Companies.6 The RWAs were responsible for the delivery and regulation of sewerage and drinking water services. They were created as a result of the 1973 Water Act (Severn Trent Water Authority, 1980; Hassan, 1996; Summerton, 1998, Richardson, 2002), which brought about a marked rationalisation and regionalisation of water services in England/Wales (Parker and Sewell, 1988; Hassan, 1996). Prior to 1973, 157 water undertakings, 29 river authorities and 1,398 sanitary authorities existed in England/Wales. As a consequence of the 1973 Water Act, the responsibilities and functions of these various bodies were transferred to just 10 RWAs (Parker and Sewell, 1988; Hassan, 1996).

[6] The term statutory water company refers to companies that were established via a UK Act of Parliament to provide drinking water only.

This rationalisation shifted control of water resources away from the above authorities to large multi-regional service and regulatory management bodies (Hassan, 1996; Summerton, 1998). These RWAs took the form of nationalised industries in an organisational and constitutional sense. For instance, they were managed by a board appointed jointly by Ministers and local authorities (Summerton, 1998). Although each authority was legally distinct from central government and could determine their own spending priorities, Ministers were able to 'constrain' the actions of RWAs via the issuing of general and special directions, and the imposition of cash limits on new capital investment (Summerton, 1998). According to Saunders (1985), further government attempts to improve the efficiency of RWAs were driven by a belief that greater central bureaucratic control of public services was best able to help Britain respond to a period of economic decline and readjustment.

In 1989, the delivery of water services in England/Wales underwent major reform, passing entirely into the hands of the private sector as a consequence of the 1989 Water Act. The ten RWAs, created as a result of the 1973 Water Act, were floated on the London Stock Exchange (OECD, 1994, van den Berg, 1997; Richardson, 2002). In addition, 29 statutory water supply-only companies were allowed to float themselves on the stock market, if they so desired. As a consequence, a series of water company mergers took place, resulting in 19 statutory water companies by 1996 (OECD, 1994; Richardson, 2002)7. Currently, the privatised water industry is responsible for supplying approximately 99% of all drinking water in England/Wales (DWI, 2003)8.

In England/Wales, Section 60 of the 1989 Water Act empowered Secretaries of State for the Environment to appoint technical assessors to act on their behalf in the assessment and regulation of drinking water quality. Prior to this Act, the DoE was itself responsible for monitoring the quality of drinking water at the national level. This was done through sampling data supplied to it by the providers of water services, who were also responsible for the enforcement of drinking water quality standards. As a consequence of the 1989 Water Act, the Drinking Water Inspectorate (DWI) was established and charged with the task of monitoring and reporting on the safety of drinking water (DWI, 2004: 1).

Between 1970 and 1988, water services in England/Wales were funded via a changing mixture of charging of water users in relation to the rateable property value, RWA cross subsidisation, and funding from the Treasury (Parker and Sewell, 1988; WAA, 1988; Summerton, 1998). Following the reorganisation of the water industry by the 1973 Water Act, the Rate Support Grant from central government was removed. This meant that, for the first time, consumers began to pay more realistic water supply costs, albeit varying slightly due to the historic debts the RWAs had inherited (Parker and Sewell, 1988). Domestic customers were charged for water services according to the 'rateable value' of their properties, which continues to this day, with water charging still loosely related to rateable value (Parker and Sewell, 1988). Central to

[7] The duties of the water service companies and the water only companies are the same with regards to drinking water (Water Act [England], 1989).

[8] Approximately 1% of the population in England/Wales has its water needs met via private water supplies. The source of such supplies can include water drawn from a well, borehole, spring, stream, river, lake or pond (DWI, 2000).

this funding arrangement is the ability of government to control expenditure and borrowing within the water industry, with both subject to the external finance limits:

> *'(the) external finance limit (EFL) is the amount the authority can raise from external sources. The overall limit for the industry is allocated as part of the Governments public sector borrowing requirement' (WAA, 1988: 27)*

In England/Wales, as a consequence of privatisation, the Government no longer considers the financing of the water industry to be part of the public sector borrowing requirement (Hassan, 1995; Bakker, 2005). This has paved the way for the application of 'direct cost' recovery with regard to the delivery of water services[9]. To oversee the effective application and functioning of economic principles in a monopoly dominated market place, and in similarity with previous network utility privatisations, government established the Office of Water Services (Ofwat) was in 1989 to act as an economic regulator (Bakker, 2001; Ofwat 2004).

BRIEF INSIGHTS INTO THE IMPACTS OF ORGANISATIONS

Winter (1990, 2003) suggests that policy responses will fail if organisations that are responsible for transposing policy have institutional interests and incentives that conflict with the policy goals ascribed to them. With regard to drinking water quality in England/Wales and Ireland, and its regulation via Directive 80/778/EEC, Winter's organisational focus is useful in focusing the researchers attention on particular aspects of the organisational response and why these may have had an impact on drinking water quality and transposition of associated policy. In particular, he draws attention to three key areas, namely: conflicting organisational goals, conflicting policy traditions, and the positive role played by supportive organisations.

During the 1980s, in comparison to today, the economies of England/Wales and Ireland were subject to greater inflationary pressures than is the case today. As the providers of water services in both cases were then under state control, such macro-economic pressures resulted in expenditure on water services being limited by government treasury departments. This management of the macro-economy delayed the implementation of water directives, as the providers of water services were not able to adequately finance the infrastructure necessary to ensure the quality standards of EU water policy were met. Commenting upon this situation, a former senior civil servant in England/Wales recalled that:

> *'Whilst the government did not directly finance the water authorities, their borrowing was subject to Government control, and the total amount of public sector borrowing was strictly limited for macro-economic reasons. At a time when concern for the environment was rapidly increasing, and new Directives from Brussels were imposing the need for massive investment in water services, the Government was forced for economic reasons to apply limitations to capital expenditure that prevented the environmental objectives being achieved –objectives to which the Government was committed and for the achievement of which it was responsible. This is a classic dilemma, but was nevertheless clearly embarrassing and indeed unacceptable'* (Semple, 2001, speech given at ENGREF University).

[9] Direct, within the context of this thesis, serves to imply that consumers of drinking water are directly billed for the full cost of the volume of water services they consume.

In the specific context of implementing the Drinking Water Directive (80/778/EEC) in England/Wales and Ireland, it has been said that such macro-economic management of the economy did lead to the implementation of the Directive being affected, as the following interviewee remarks substantiate:

> *'There was under-investment in the 1980s due to the poor state of Ireland's economy. This would have had an impact upon meeting the demands of the Drinking Water Directive…Remember though, there was work going on but not enough'* (Senior Civil Servants DOELG [Ireland], per. comm.).

> *'You have to remember that during the 70s the UK was in a bad shape economically, it had to go to the IMF twice. This resulted in public expenditure constraints that were felt throughout the 1980s, since water companies' expenditure was considered part of public expenditure they were not immune to cutbacks…and yes, this did affect the Directive'* (Senior Civil Servant V DoE [England/Wales], per. comm.).

This situation clearly supports Winter's assertion that conflicting organisational interests can impact upon the effectiveness of how policy objectives are responded too.

In discussing the impact organisations can have upon the implementation of policy, Winter (1990, 2003) draws attention to the negative impact policy traditions can have upon implementation, particularly if they are in conflict with the policy goals. Departments of the environment in England/Wales and Ireland initially adopted Directive 80/778/EEC via departmental circulars which were not legally binding, with the standards of the Directive viewed as 'aspirational'. This somewhat informal non-legalistic approach to the adoption of Directive 80/778/EEC clashed with the regulatory approach of the Directive, which was setting water quality standards that had to be achieved and were legally binding. In particular, for senior civil servants in England/Wales and Ireland the standards contained in the Directive were viewed in an *'aspirational'* light:

> *'During the early 1980s the UK thought that EU environmental policy legislation was purely aspirational…This view changed as a result of a European Court of Justice ruling in early to mid 1980s, which ruled that European Union environmental measures were legally binding…This in context of the government of the day, brought about a sea of change in attitudes towards EU environmental legislation'* (Senior Civil Servant IV DoE [England/Wales], per. comm.).

> *'The standards embodied in the Directive were seen as aspirational and not as hard and fast objectives to be met'* (Senior Civil Servant I DOELG [Ireland], per. comm.).

This *'aspirational'* view was not confined solely to England/Wales and Ireland, but was prevalent amongst other Member States:

> *'To begin with, Member States in general did not take the Drinking Water Directive seriously…They considered the Directive to just be establishing standards that Member States may like to work towards'* (Senior Environment Commission Official I, per. comm.).

In response to legal actions by the Environment Commission and the ECJ, national departments of the environment were forced to change their organisational regulatory attitudes. However, while this change in attitudes was being brought about delays and failures of implementation were occurring, resulting in problems with the quality of drinking water. As a consequence of the legal actions taken by the Environment Commission, the transposition response of environment departments in England/Wales and Ireland has become more legalistic and formal over time, much in the same way it has in relation to other areas of EU water and environmental policy implementation (see Gouldson and Murphy, 1998; Lowe and Ward, 1998; Weale *et al.*, 2000; Taylor, 2001).

Winter's 'integrated' model suggests that implementation is improved if assigned to supporting agencies. In both national contexts, the state in England/Wales and Ireland has acted to create state sponsored agencies charged with implementing the Directive. As discussed previously, Ireland established the EPA in 1993, with one of its core responsibilities being the monitoring of drinking water quality in relation to the Directives' standards. In England/Wales, the DWI was established in 1989 with the sole responsibility of monitoring and reporting on the quality of drinking water. While it would be incorrect to say that the creation of such regulatory agencies solely brought about improvements in drinking water quality, their creation supports Winter's assertion that implementation is improved if assigned to supporting agencies. Interviewees in England/Wales believed that:

> *'The existence of the Drinking Water Inspectorate has undoubtedly had a considerable impact on the attitudes of the industry to water quality, and the strict but fair policies give it a high degree of credibility all round'* (Jack Jeffery [former chairman of Three Valleys Water], 1992: 4,).

Similar views were forthcoming in relation to the role played by the EPA in Ireland:

> *'The EPA has been useful in policing drinking water and facilitating comparisons of council performance with regards to the quality of drinking water supply…it has helped provide a coherent focus'* (Senior Representative Dublin City Council, per. comm.).

DISCUSSION AND CONCLUSIONS

To enable the findings of this study to be summarised and appropriate conclusions drawn about drinking water quality and associated organisational responses in England/Wales and Ireland, this section has been split into three sections. The first section summarises the study's finding with regard to water quality. The second section details the key organisational differences in relation to the provision of drinking water and its regulation. The final section discusses the usefulness of Winter's organisational focus in furthering our understanding of the impact organisations have had on drinking water quality and its regulation.

Drinking water quality. This paper has established that the quality of drinking water in England/Wales and Ireland to have been a problem of growing concern in the 1970s and 1980s. In England/Wales, available historical data indicates the role of government-sponsored research in helping establish the extent of drinking water quality problems. However, in Ireland there was little public reporting and concern over the quality of drinking water. From the data identified, major problems relating

to drinking water revolved around contamination by lead and nitrate, particularly in England/Wales. In Ireland, this issue was particularly poorly documented. While reports highlighted a growing risk of contamination by nitrate, there were no specific reports on the contamination of drinking water, as occurred in England/Wales.

Between 1990 and 2002, the drinking water quality data contained in the annual national monitoring reports for England/Wales and Ireland demonstrates England/Wales to have obtained a higher overall level of compliance with standards laid down by Directive 80/778/EEC. The data also served to show that England/Wales have managed to bring about far more significant improvements in drinking water quality with regards to particular parameters. Within Ireland, group water schemes have been found to have a significant impact on the overall quality of drinking water nationally, as their compliance record is poorer than that for public schemes. However, it is of note that these water schemes do not account sufficiently for Ireland's lower overall compliance rating and higher compliance failures with 'problem parameters'. Both public and group water schemes demonstrate higher failure rates in comparison with England/Wales.

Organisational responses. The provision of drinking water in England/Wales and Ireland diverges in three broad areas; namely, with regard to the role of government in provision; the role of government in finance; and the role of government in regulation.

Firstly, they differ with regard to the role government has come to play in the provision of drinking water. In Ireland, the national government has remained responsible for the delivery of drinking water via local authorities (in the main), and, to a not insignificant extent, through group water schemes. In contrast, since 1989, drinking water supply has been the responsibility of the private sector in England/Wales. This aside, the provision of drinking water in Ireland is significantly more fragmented than in England/Wales. So, while only 29 companies are responsible for the provision of drinking water to a population of 52 million in England/Wales, in Ireland drinking water is supplied to a population of just 3.9 million by some 88 local authorities and approximately 5,500 group water schemes. Industry and government officials in Ireland note that the organisational fragmentation of drinking water caused by group water schemes has hindered achievement of the Directive's quality standards. This is due to the operators of such schemes lacking an awareness of current treatment techniques and to the limited funds government was able and willing to allocate to tackling problems of non-compliance by such schemes.

The second key difference concerns the financing of drinking water supply by national government. Since 1989, water services in England/Wales have been subject to the principle of full cost recovery via application of the user pays principle for all users, meaning that the consumer pays the full costs associated with receiving services. By contrast, since 1997, the Irish state has stopped charging domestic consumers for water services. Ireland has instead preferred to finance the provision of water services via general taxation. Therefore, it can be argued that the actions of government in England/Wales have allowed the provision of water services, for example drinking water, to be treated more as a commodity in comparison to Ireland. In Ireland, the removal of domestic charges has prevented the commodification of domestic water services because such consumers do not pay for what they use or are perceived as using.

Water services in Ireland have been the recipient of substantial EU funding since the early 1990s. This contrasts markedly with the provision of water services in England/Wales, which have been entirely financed by the consumers of water services (overseen by Ofwat, a non-departmental, state sponsored economic regulator). Despite these differences in funding arrangements, both countries, since 1990, have witnessed increased investment in water services. Also, as highlighted by Figure 1, drinking water in England/Wales and Ireland has, since 1990, become increasingly compliant with the quality standards of the Directive. In both national contexts, when the water industry was under the ownership of national government during the 1970s and 1980s, public expenditure on water services decreased as a consequence of government limiting public expenditure. This was part of a wider government economic strategy to control inflation and restore economic stability. This had a detrimental impact upon the ability of water providers to meet the quality standards of Directive 80/778/EEC.

The final key difference is related to the role played by national government in enforcing the Directive's standards. Since 1989 the enforcement of the Directive's standards in England/Wales has been the principal responsibility of the Drinking Water Inspectorate (DWI), a state sponsored regulatory agency. Lagging some four years behind England/Wales, the Irish Government established the EPA with the task of monitoring the quality of drinking water. Both these agencies produce annual reports on drinking water quality based upon sample data supplied by the providers of water services. However, in England/Wales, the DWI is responsible for regulating the compliance of privately owned water providers with the standards of the Directive, whereas in Ireland the EPA is responsible for regulating compliance by government-owned and funded providers of water services, notably local authorities. In relation to any effect this has had on the impetus to achieve the quality standards of the Directive, the DWI in England/Wales has been found to have brought legal proceedings against water providers if they fail to meet the quality standards of the Directive. For example, in January 2002, Yorkshire Water was fined a total of £23,261 following legal proceedings brought by the DWI for failing to supply water fit for human consumption (DWI, 2002b). Such prosecutions aim to encourage the providers of drinking water in England/Wales to meet the quality standards of the Directive. In contrast, the EPA in Ireland has not prosecuted local authorities for failing to achieve the quality standards of the Directive. When EPA employees were asked why the EPA had not brought any legal proceedings against local authorities who breached the Directive's standards, they argued that such enforcement action was not conducive to maintaining a good working relationship with local authorities. In effect, the EPA was unlikely to prosecute because such action would result in one section of government publicly criticising another, which was to be avoided:

This above situation draws attention to a fundamental difference in the regulatory approach to how the standards of the Directive are enforced. In particular, the willingness of the DWI, in England/Wales, to bring legal proceedings to enforce the standards of the Directive is indicative of a more fixed and legal approach to the regulation of drinking water. Whereas in Ireland, the approach of the EPA towards regulatory enforcement appears to be more flexible and less legalistic, due to the unwillingness of the EPA to take enforcement actions against the providers of drinking water.

Exploring the impact of organisations. Analysis of the role played by organisations is shown to support Winter's hypotheses that conflicting organisational priorities affect the attainment of policy goals. In particular, it is established that problems of drinking water quality and transposition occurred in England/Wales and Ireland because of the wider economic management of the economy resulting in cuts in expenditure on water services, which in turn prevented attainment of the standards of the Directive. Since privatisation, the providers of drinking water in England/Wales are established as having been able to achieve higher rates of improvement than water providers in Ireland. This corresponds with privatisation having accorded water providers in England/Wales more independence from government in relation to funding, whereas in Ireland the funding of waters services remain firmly under the control of central government.

The implementation of the Directive in England/Wales and Ireland is also established as having exhibited conflicting policy traditions that negatively impacted upon transposition, supporting the contention that conflicting organisational traditions lead to failures of implementation. Evidence is forthcoming for Winter's (1990) suggestion that implementation is improved if delegated to supporting institutions. In the context of England/Wales, the establishment of the DWI, and the EPA Ireland, are found to have had a positive impact upon the implementation of the Directive.

Despite the above insights, due to the similarity of the initial policy traditions in government environment departments and the supporting role played by government drinking water quality regulators, Winter's hypotheses do not to explain the impact of differing transposition responses of England/Wales and Ireland on drinking water quality. Although Winters' organisational analysis is useful, it does not help to explain how groups of organisations interact and collectively impact upon implementation, which is potentially important in understanding the outcomes of implementation. As a result, attention should also be focused on exploring the impact organisational networks can have on transposition and water quality. From the perspective of this paper, Winter appears to overlook apparently major organisational issues, most notably organisational fragmentation, which appears to have had a significant impact upon the ability of policy responses to succeed. Also, with the funding of organisations being found to be crucial in enabling the achievement of policy goals, Winters organisational focus does appear to be somewhat simplistic. For instance, do organisations become more effective when they are accorded more independence from government and are assigned clearly defined aims and objectives that are support by appropriate and consistent levels of finance? These are important issues for future research on drinking water quality and its regulation to consider. Indeed, is the secret to good quality drinking water, and its effective protection, as straight forward as the previous question indicates?

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