

July 2017

Drinking Water Directive

Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption

This briefing is one in a series of 'implementation appraisals', produced by the European Parliamentary Research Service (EPRS), on the operation of existing EU legislation in practice. Each briefing focuses on a specific EU law, which is likely to be amended or reviewed, as envisaged in the European Commission's annual work programme. 'Implementation appraisals' aim to provide a succinct overview of publicly available material on the implementation, application and effectiveness to date of an EU law, drawing on input from EU institutions and bodies, as well as external organisations. 'Implementation appraisals' are provided by the EPRS Ex-Post Evaluation Unit, to assist parliamentary committees in their consideration of new European Commission proposals, once tabled.

Summary

The Drinking Water Directive (DWD) sets quality standards for drinking water and requires that Member States ensure monitoring and compliance with these standards. By and large, it has been successful, best exemplified by the high, and increasing, levels of compliance across the European Union (EU) with the microbiological, chemical and indicator parameters and values set in the DWD.

Notwithstanding this overall success, evidence collected over the past years, most notably through evaluation as well as public and stakeholder consultation, confirm the existence of challenges. These include an outdated list of parameters and parametric values; over-reliance on compliance testing at the end of the water supply chain (at the tap) and related lack of a risk-based approach to managing water quality; problems related to water quality in small water supplies; lack of connection to public water networks for many citizens; problems related to water contact materials; as well as a lack of information for citizens.

Although European Commission Directive 2015/1787 recently introduced elements of a risk-based approach, the current text of the directive does not appear to integrate the World Health Organization guidelines on drinking water quality sufficiently, both in terms of parameters and parametric values (which have not been updated in the DWD since 1998), as well as the lack of a comprehensive risk-based approach in water quality management that would systematically address potential risks throughout the water supply chain.

The European Commission is expected to make a proposal to amend the directive in late 2017.

1. Background

This briefing examines the implementation of the [Drinking Water Directive](#) (DWD)¹ in light of the upcoming proposal to modify the directive, announced for the fourth quarter of 2017. The DWD, and the related issue of the right to water (and sanitation) as a human right, have been discussed widely in recent years. This was in particular the case following the European Citizens' Initiative, [Right2Water](#), in 2012 (ECI R2W) which, by the time it was formally submitted to the European Commission in 2013, drew support from more than 1.6 million citizens. As a follow-up to this initiative, the Commission launched an EU-wide public consultation, followed by the evaluation of the directive and a stakeholder consultation.

With regard to planned future actions, the Commission Work Programme for 2017 announced that the proposal (see [CWP 2017 Annex I](#), item 2, p. 2), accompanied by an impact assessment, was expected in the fourth quarter of 2017. An [inception impact assessment](#) of February 2017 provides more detail on the Commission's planned

¹ [Council Directive 98/83/EC](#) of 3 November 1998 on the quality of water intended for human consumption. Throughout this briefing, this directive is referred to as the Drinking Water Directive (DWD).

actions and confirms the indicative timing. It is expected that the proposal will build on the REFIT evaluation of the DWD.

The Drinking Water Directive: an overview of current legislation

The DWD aims to ensure that water intended for human consumption is safe: its overall objective is 'to protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean'. It is applicable to all water intended for human consumption, with the exception of mineral waters and waters that are medicinal products.

Essential quality standards at EU level: The DWD sets minimum water quality requirements at EU level. It identifies 48 microbiological, chemical and indicator parameters that must be monitored and tested regularly.

Annex I Part A includes microbiological parameters and their parametric values (two parameters: *Escherichia coli* (*E. coli*) and *Enterococci* which must be absent from samples).² These two parameters were selected because they indicate the presence of human and animal excreta in water. Consumption of water contaminated by excreta is considered as the most significant and frequent (albeit not only) health risk through drinking water exposure.

Annex I Part B includes a total of 26 chemical parameters and their parametric values. These microbiological and chemical parameters are deemed to be of direct relevance to human health.³ Therefore, exceedences of the values of these parameters require Member States to take remedial action that might include restrictions in use (see Article 8 for details).

Annex I Part C includes indicator parameters – further microbiological, chemical as well as 'acceptability' parameters (colour, taste, odour, turbidity of water). Unlike microbiological and chemical parameters, most indicator parameters do not pose a direct threat to human health. Nonetheless, they have indirect relevance for the drinking water quality – they indicate that something has changed – either in the source water, in the treatment process or the distribution system. Exceedences of the values of indicator parameters require Member States to 'consider whether that non-compliance poses any risk to human health' (Article 8(6)).

Monitoring, remedial action, derogations: Member States must ensure that regular monitoring of the quality of water is carried out to check that the drinking water meets the requirements of the DWD. Annex II and Annex III provide minimum requirements as regards the monitoring programmes and specifications for the analysis of parameters. Samples of water for monitoring are taken at the end of the water supply chain, in line with Article 6 provisions, which state that point of compliance for water distribution networks is 'at the point [...] at which [water] emerges from the tap'. Article 8 includes provisions for remedial action and restrictions in use in cases where exceedences are observed. Article 9 covers derogations which may be granted to Member States in relation to their compliance with chemical parameters (Annex I, Part B) under certain conditions and for a period not exceeding nine years (three plus three plus exceptional final three-year derogation). Article 10 includes provisions related to quality assurance of treatment, equipment and materials in contact with water. The wording of Article 10, its interpretation and subsequent implementation is seen as problematic by many. The article is therefore included below. Issues related to Article 10 are elaborated in some detail in section 2.

Article 10

Quality assurance of treatment, equipment and materials

Member States shall take all measures necessary to ensure that no substances or materials for new installations used in the preparation or distribution of water intended for human consumption or impurities associated with such substances or materials for new installations remain in water intended for human consumption in concentrations higher than is necessary for the purpose of their use and do not, either directly or indirectly, reduce the protection of human health provided for in this Directive; the interpretative document and technical specifications pursuant to Article 3 and Article 4(1) of Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products shall respect the requirements of this Directive.

Review, information to consumers, reporting: There is no provision for a review of the DWD as such. However, Article 11(1) includes a provision requiring a review of Annex I: microbiological, chemical and indicator

² Parametric value of zero per 100 ml of water. Note that Annex I, Part A includes other microbiological parameters and parametric values, but these are relevant only to water offered for sale in bottles or containers.

³ Member States are allowed to set stricter standards or to introduce additional parameters and parametric values in their national legislation that they deem relevant within their territory.

parameters and parametric values. These parameters and parametric values are to be reviewed at least every five years 'in the light of scientific and technical progress'.⁴ In addition, Article 11(2) requires that the Commission adapts Annex II (minimum requirements as regards the monitoring programmes) and Annex III (specifications for the analysis of parameters) at least every five years 'to scientific and technical progress'.⁵ Finally, Article 13 on information and reporting includes requirements for Member States (ensuring up to date information on drinking water quality to consumers, publishing a report on the quality of drinking water once every three years, sending it to the Commission) and for the Commission (publishing a synthesis report on the quality of the drinking water at EU level once every three years).

EU Drinking Water Directive and the WHO Guidelines for Drinking-Water Quality

The parameters and parametric values in Annex I of the DWD are generally based on the second edition of the World Health Organization (WHO) Guidelines for Drinking-Water Quality (1993-1997) and on the opinion of the Commission's Scientific Advisory Committee.⁶ Since the adoption of the Drinking Water Directive in 1998, two further editions of the WHO guidelines were published, in 2004 and 2011, followed by the most recent [fourth edition incorporating the first addendum](#), published in 2017.⁷

The changes introduced in 2004 and 2011 editions of the WHO guidelines represent a major shift when compared to earlier editions, not only in terms of parameters and parametric values⁸ included but, more importantly, in terms of the overall approach in managing the risks related to drinking water.

An important reason for this 'paradigm change' was the realisation that over-reliance on end-point testing (at the tap) was insufficient to protect human health, especially related to microbiological parameters. The end-point testing approach is sometimes described as 'too little, too late'. Too little refers to the over-reliance on traditional microbiological indicators (*E. coli* and *Enterococci*), given that large waterborne outbreaks occurred in the past from water that was in compliance with these two parameters (e.g. viral illnesses, *Giardia*, *Cryptosporidium*). Too late relates to the fact that monitoring the microbial safety of drinking-water is 'reactive, in the sense that any incident or breakdown in the water supply system can occur many hours and sometimes days before it is detected by monitoring [...] The water has been consumed before the microbial test results are reported'.⁹

Moving away from the end-point testing approach, the [current WHO guidelines](#) recommend an 'integrated preventive management framework for safety applied from catchment to consumer'. This [framework for safe drinking water](#), described in some detail in Chapter 2 of the WHO guidelines, calls for a 'systematic assessment of risks throughout a drinking-water supply – from the catchment and its source water through to the consumer – and identification of the ways in which these risks can be managed.' This approach is commonly referred to as a 'risk-based approach'. The framework comprises of [health-based targets](#), [water safety plans](#) and a [surveillance system](#). Water safety plans are the core of the framework: they should 'address all aspects of the drinking-water supply and focus on the control of abstraction, treatment and delivery of drinking-water'.¹⁰

⁴ At the time of the adoption of the directive, review of Annex I would require the same procedure as the original act – cooperation procedure as per Article 189c of the Maastricht Treaty. Amending Annex I now requires the ordinary legislative procedure. There has been no change to parameters and parametric values (Annex I) since the adoption of the DWD in 1998.

⁵ The procedure for the revision of Annex II and Annex III is stipulated in DWD Article 12 (Committee procedure). Annexes II and III were amended once – via [Commission Directive 2015/1787](#) of 6 October 2015. Given that its provisions are yet to be transposed by Member States ('by 27 October 2017 at the latest'), this briefing does not pay particular attention to this Commission directive.

⁶ [Council Directive 98/83/EC](#) Recital 16.

⁷ WHO published four editions of the Guidelines for drinking-water quality (in 1983–1984, 1993–1997, 2004, and 2011). The WHO guidelines are kept up to date through a rolling revision process, regularly publishing addenda to the guidelines that may add to or supersede information in previous editions. The fourth/2011 edition has recently been updated to incorporate the first addendum, resulting in the [Guidelines for Drinking-Water Quality: Fourth edition incorporating the first addendum, World Health Organization, 2017](#).

⁸ For more on parameters and parametric values, see WHO Guidelines, Chapter 7 on [Microbial aspects](#) and Chapter 8 on [Chemical aspects](#). See also draft background papers [on microbiologically safe water and microbiological parameters](#), and one [on chemical and physical parameters](#), WHO Europe, September 2016 (available on the [CIRCABC](#) platform). These two papers provide a comparison in the WHO and DWD approach and parameters that is easily accessible to a non-expert.

⁹ Draft background paper on microbiologically safe water and microbiological parameters, WHO, September 2016, p. 6 (available on the [CIRCABC](#) platform).

¹⁰ A general overview of the WHO approach is presented in the [introduction](#) to the [fourth edition incorporating the first addendum](#), while more details on the conceptual framework, [health-based targets](#), [water safety plans](#) and a [surveillance system](#) are presented in chapters 2 to 5.

Related recent amendments to the DWD: The [Commission Directive 2015/1787](#) amended Annexes II and III of the DWD. These amendments introduced some elements of a risk-based approach in to managing water quality, in particular by requiring that monitoring must 'verify that the measures in place to control risks to human health throughout the water supply chain from the catchment area through abstraction, treatment and storage to distribution are working effectively and that water at the point of compliance is wholesome and clean'. However, the [evaluation](#) noted that that changes introduced were 'restricted to monitoring and thus likely not as effective as full water safety plan provisions in the body of the directive would be'.¹¹ The evaluation also noted that the need for a comprehensive risk-based approach was strongly supported by stakeholders consulted.

2. EU level reports, evaluations and studies

2.1 European Commission evaluation and reports

[REFIT Evaluation of the Drinking Water Directive, European Commission, December 2016](#)¹²

This is the first evaluation of the DWD by the European Commission. It is one of the follow-up actions to the ECI R2W in 2013, where the Commission committed itself to launching an EU-wide public consultation of the DWD. The results of the consultation, carried out from June to September 2014, highlighted several aspects of the DWD that called for improvement, such as: updating of parameters in Annex I on the basis of new scientific evidence, possible introduction of the risk-based approach to managing water quality, revision of the derogation regime, revision of Article 10 on materials in contact with drinking water, and provision of information to the public.¹³

The evaluation, published in December 2016, was supported with an [external study](#) completed in May 2016, and the triennial [implementation synthesis reports](#) (see below for details of the external study and synthesis reports). It also took findings from the 2014 public consultation mentioned above into account, as well as findings from the stakeholder conference of May 2015, and interviews with key stakeholders.

In line with the Commission Better Regulation Guidelines, the evaluation addresses five criteria: effectiveness, efficiency, coherence, relevance, and EU added value.

In terms of **effectiveness**, the evaluation confirms that the DWD achieves its objective to protect human health from the adverse effects of contamination by ensuring a high level of compliance with the parametric values for microbiological and chemical parameters defined in the DWD; with the caveat that some of the parameters and/or parametric values might be outdated, thus limiting the significance of the high compliance rates. The evaluation shows evidence of a clear positive trend towards improving water quality. As an example, in 1998 compliance rates averaged around 95 %, whereas in 2013, they reached between 99 % and 100 %. Although the evaluation finds monitoring at the tap to be 'a convenient method [since] control at the end of the whole supply chain can cover effectively all cause sources' of contamination (e.g. water source, treatment process, water distribution), it nonetheless points out that, in many cases, earlier action (e.g. source protection) might be more effective than monitoring the end of the supply chain. The evaluation also found Article 10 provisions on materials in contact with drinking water to be ineffective.

As regards **efficiency**, the evaluation estimates that total costs for supplying drinking water in the EU in 2014 at around €46.5 billion, out of which around 18 %, or some €8.3 billion, are attributed to the implementation of the DWD. However, the evaluation acknowledges methodological limitations related to assessing DWD related implementation costs, and even more with assessing the assumed health benefits.¹⁴ The evaluation notes that health benefits related to the DWD could not be quantified, but that it nonetheless finds that 'total attributable benefits could possibly outweigh total attributable costs quite significantly'.¹⁵ The evaluation presents two examples demonstrating that health benefits outweigh costs.¹⁶ Finally, the evaluation found no excessive

¹¹ [Evaluation](#), p. 35.

¹² SWD(2016) 428, [Part 1/2](#) (full evaluation report) and [Part 2/2](#) (3-pages Executive Summary), 1 December 2016.

¹³ [Analysis of the public consultation on the quality of drinking water](#); Final report for the European Commission by Ecorys, March 2015 (conclusions of the public consultation on pp. 59-61).

¹⁴ Section 4.2 of the [evaluation](#) covers methodological limitations (pp. 10-12).

¹⁵ [Evaluation](#), p. 25.

¹⁶ Two examples are presented, one related to lead pipes replacement and the other to an outbreak caused by microbiological pollution. See e.g. 'Box 3: Cost example lead pipes' estimating cost of the lead pipes replacement at €81 billion, compared to

administrative costs related to monitoring, reporting and information provision. However, it found 'significant unnecessary burden for industry' resulting from the Article 10 wording and implementation.¹⁷

The evaluation examined the DWD's **coherence** with other EU legislation, most notably the Water Framework Directive (WFD). Article 7 of the WFD requires Member States to identify and protect bodies of water for the extraction of drinking water (the DWD itself does not include provisions on the protection of water sources). Although the evaluation revealed that, legally, no discrepancies between provisions of the DWD and the WFD exist, there are indications that some provisions of the WFD are not well implemented. This might lead to a situation in which water suppliers have to solve 'upstream problems with downstream measures'.¹⁸ This is unnecessarily costly – the evaluation points to studies showing that prevention of water pollution at source costs considerably less than treatment after the pollution has already occurred. The evaluation also finds that more work is required to ensure full coherence with pesticides legislation and other agriculture related pollution. It further notes problems related to materials in contact with drinking water, noting that e.g. provisions on lead have been effective and efficient (through replacement of lead pipes and fittings) while 'leaching of other substances from pipes [...] continues to be found'.¹⁹ In this context, the evaluation notes an increasing use of plastic pipes, which sometimes may affect odour and taste of drinking water.

The **relevance** criterion assesses whether the DWD approach to protecting human health from the adverse effects of any contamination of drinking water is still appropriate and whether other approaches (and other parameters) could be important for human health. The evaluation found that overall, the DWD enabled a consistent regulatory framework compared to 20 years ago, guaranteeing an 'overall minimum level of drinking water quality within the EU'.²⁰ As one of the main strengths of the DWD, the evaluation points to the uniform application of the parameters and parametric values and systematic monitoring across the EU. However, the evaluation identified possible weaknesses: it finds that the parameters and parametric values, not updated since 1998, might be partly outdated and 'might not be appropriate anymore to protect human health'.²¹ It thus warns that the DWD's success in terms of effectiveness might be deceptive and that 'the observed high and increasing effectiveness [...] measured against criteria that are possibly not any more fully appropriate, would only be seemingly high. It could be lower or even decreasing if it were measured against other parameters'.²² Finally, the evaluation finds that the DWD's overall approach lacks 'preventative safety planning and risk based elements' recommended by the WHO, despite amendments introduced to DWD Annexes II and III through the 2015 Commission Directive.

The evaluation finds that the DWD's **EU added value** is that it ensures the same minimum level of protection of human health from the adverse effects of any contamination of drinking water equally throughout the EU. The DWD transposes WHO guidelines into an EU framework that is binding on Member States.

The evaluation concludes with a list of **four main areas for improvement**:

1. Microbiological, chemical and indicator parameters and parametric values have not been updated since 1998. Some of the parameters might no longer be relevant, they might not match emerging pressures, pollution pressure, and do not follow the latest scientific knowledge.
2. Preventative safety-planning and risk based approach to managing water quality are insufficiently considered in the DWD. Evaluation points to the concept of water safety plans introduced by the WHO in 2004, in particular related to waterborne infectious diseases. It finds that this approach has not been sufficiently incorporated in the DWD.²³
3. DWD provisions on information for citizens are deemed too imprecise, leading to vastly different practices in the Member States, whereby citizens in some Member States have access to detailed relevant information

estimated total lifetime health benefit at over €400 billion. The evaluation concludes that 'the DWD intervention on lead has high costs, but much higher benefits, and was therefore efficient', [Evaluation](#), p. 25.

¹⁷ [Evaluation](#), p. 27.

¹⁸ *Ibid.*, p. 32.

¹⁹ *Ibid.*, p. 31.

²⁰ *Ibid.*, p. 33.

²¹ *Ibid.*, p. 40.

²² [Evaluation](#), p. 34.

²³ Although [Commission Directive 2015/1787](#) introduced elements of risk-based approach, the [evaluation](#) finds that introduction of risk based approach elements in the annexes is insufficient. The changes introduced 'are restricted to monitoring and thus likely not as effective as full water safety plan provisions in the body of the directive would be. The finding that a comprehensive risk-based approach is missing in the current DWD is strongly supported by stakeholders', p. 35.

online, while others have none. Furthermore, reporting by the Member States once every three years is considered slow and missing the potential advantages of ICT and modern data management.²⁴

4. Vague wording of Article 10 provisions on materials in contact with drinking water and related use of derogations by the Member States to the mutual recognition principle, leading to multiple national approval systems for material in contact with drinking water and internal market obstacles.²⁵

Synthesis report on the implementation of the DWD, European Commission, [October 2016](#)²⁶

Article 13 on information and reporting requires that Member States publish a report on the quality of drinking water once every three years. Based on these reports, the Commission is required to publish synthesis reports on the quality of the drinking water at EU level. So far, four synthesis report have been published in response to Article 13 provisions, covering reporting periods 2002-2004, 2005-2007, 2008-2010 and 2011-2013. The [most recent synthesis report](#), published in October 2016, covers the 2011-2013 reporting period. Reports from the Member States which fed into this report are available on the webpage of the [Commission Directorate-General for Environment](#). Finally, earlier synthesis reports are available on the Commission's [CIRCABC](#) platform.

The DWD makes a distinction between large water supplies (LWS) and small water supplies (SWS). The Commission synthesis report is limited to presenting drinking water quality in LWS (Article 13 requires mandatory reporting on LWS).²⁷ It is important to note however that around 65 million persons in the EU are served by SWS and that compliance rates with DWD parameters and parametric values for SWS are generally lower in comparison to LWS.²⁸

The report shows that overall compliance in the EU for microbiological and chemical parameters is over 99 %. All Member States reported compliance rates between 99 % and 100 % for microbiological parameters. A similar situation is reported with respect to chemical parameters, with compliance rates between 99 % and 100 % in all Member States except Hungary, which reported a compliance rate just below 99 %. Furthermore, rates for indicator parameters increased and almost reached 99 % in the EU in 2013. At national level, this translates to 21 Member States with rates higher than 99 %, 3 Member States with rates higher than 98 % (DK, LV, SI) and a further 3 Member States with rates lower than 98 % (CY, HU, MT).²⁹ Finally, the report gives information on the main parameters that exceeded the parametric value and the different causes for these most frequently reported parameters, which occur at different points in the water supply chain – from catchment, through treatment and distribution to the end of pipe.³⁰

The 2016 report does not specifically identify challenges to be addressed, referring to the (at the time) forthcoming REFIT evaluation. It might be useful to read the 2016 report in conjunction with the [2014 synthesis report](#) which, in its conclusions, provides a list of challenges that need to be addressed.

Challenges identified in the 2014 synthesis report:

1. Supply of high-quality water in small water supplies, in particular in remote and rural areas, should be improved through specific risk-based management approach.
2. Risk-based approaches in relation to LWS would be both cost effective and provide better guarantees for the

²⁴ For more information on public access to environmental information, see the [Aarhus Convention](#) and [Directive 2003/4/EC](#).

²⁵ For more on this point, see Section 2.2.

²⁶ [COM\(2016\) 666](#), October 2016. The report includes 27 Member States (before Croatia's accession).

²⁷ It is worth noting that, while both large and small water supplies are covered by the DWD provisions (for exemptions, see Article 3), reporting is mandatory for large water supplies only (i.e. those that provide 1 000 m³ drinking water per day as an average or serve more than 5 000 persons). In addition to providing mandatory data on LWS, 15 out of 27 Member States (BE, BG, CY, ES, FR, GR, HU, IE, LU, MT, PT, RO, SE, SI, SK) provided data on SWS on a voluntary basis (attached as point 6 in their respective [country reports](#)). This data however was not included in the synthesis report, given that it is not representative of the EU.

²⁸ On this, see the 2014 [synthesis report](#), covering the 2008-2010 period, in particular figure 2 on p. 4 comparing compliance with microbiological parameters for LWS and SWS, showing 'significantly lower' compliance rates in SWS, as well as table 1 on p. 10 providing an overview of compliance with microbiological and chemical parameters in LWS and SWS by Member States. See also figure 3 on p. 5 of the 2016 [synthesis report](#), covering the 2011-2013 period, on resident population in LWS zones in Member States, showing that in as many as 10 Member States, less than 70 % of the population is supplied by LWS. For a general overview of issues related to SWSs, see the Commission document '[Framework for Action for the management of small drinking water supplies](#)' from 2014, and a [KWR study](#) from 2011.

²⁹ See [synthesis report](#), Table 1, pp. 12-13. Note that the indicator parameters referred to here do not include colour, odour, taste and turbidity which have no numerical values in Annex I or the DWD.

³⁰ See [synthesis report](#), Figure 7, p. 11 and Figure 8, p. 12.

protection of health.

3. Updating of parameters should be considered in line with new scientific information and WHO guidelines updates.
4. Better information should be provided for consumers by means of modern information technology, exploring links between monitoring data and consumer information.
5. Implementation timescales and derogation mechanisms should be updated.

2.2 External Studies for the European Commission

Study supporting the revision of the EU Drinking Water Directive: [Evaluation Report](#) with [Annexes](#), a report for the European Commission, May 2016³¹

Completed in May 2016, this external study carried out for the European Commission aimed at supporting the Commission [REFIT Evaluation](#), examined in some detail above.

The study finds that the DWD was effective in achieving a high compliance rate for the quality parameters set in Annex I. However, it finds that other legislation might have played an important role in increasing compliance with parameters that are mainly agriculture and/or catchment related.³² Overall, the study finds that the DWD provisions on setting parameters and parametric values, monitoring and reporting and remedial action have been effective. At the same time, it points to several problematic issues, in particular related to the outdated parameters and parametric values in Annex I, and incomplete information especially in relation to small water supplies, and the ineffective Article 10 provisions.³³

Study supporting the revision of the EU Drinking Water Directive: [Impact Assessment](#), report for the European Commission, November 2016³⁴

Completed in November 2016, this external study carried out for the European Commission builds further on the results of the 2014 public consultation and the findings of the external evaluation of the DWD of May 2016. It has two main objectives: identification of policy options that would help address existing challenges, and the assessment of economic, environmental, and social impacts of these policy options. It is expected that findings from this report would feed into the Commission's impact assessment report, to be published either prior to or in conjunction with the Commission's proposal expected in the last quarter of 2017.

Based on external evaluation and public consultation, the study identifies main problems, as well as direct effects and wider impacts that result from these problems. It further defines overall and operational objectives for addressing identified problems.³⁵ The study identifies 12 different policy options which should ensure safe drinking water for all EU citizens in the long term, improve cost effective implementation, strengthen its coherence with other related EU legislation, and provide better information to consumers.

These policy options fall under **five key areas**:

1. Updating the list of parameters and parametric values;
2. Promoting risk-based assessment in managing water quality and the establishment of water safety plans;
3. Proposing harmonised EU standards for materials and products in contact with drinking water;
4. Ensuring adequate information for drinking-water consumers;
5. Providing the right to safe drinking water for all EU inhabitants.

³¹ Study supporting the revision of the EU Drinking Water Directive: [Evaluation Report](#) with [Annexes](#): a report for the European Commission by a consortium Ecorys, Alterra, KWR, ACTeon and REC, May 2016. Reports and further background information available at www.safe2drink.eu (accessed 30 June 2017).

³² See [Annex](#) B.4 on p. 38.

³³ See [evaluation report](#) conclusions, Section 7, pp. 109-115.

³⁴ Study supporting the revision of the EU Drinking Water Directive: [Impact Assessment](#): a report for the European Commission by ACTeon with Ecorys, REC, Alterra and KWR, May 2016. Reports and further background information available at www.safe2drink.eu (accessed 30 June 2017).

³⁵ [Impact assessment](#), Figure 3, p. 25 and Figure 4, p. 30 respectively.

[Study on materials in contact with drinking water](#), report for the European Commission, March 2017³⁶

This external study, completed in 2017, looks at the existing situation with regards to the application of Article 10 of DWD, which has been identified as problematic in a series of studies, as well as during the consultation process.³⁷ The study provides an assessment of the problem from two perspectives – human health protection and the internal market. Health-related problems may occur, for example, when pipes through which water is conveyed are made of unsafe material.³⁸ This material³⁹ might leach impurities into the drinking water or the material itself can be conducive to microbial growth. Recognising this, the DWD includes provisions for regulating materials in contact with drinking water via its Article 10. However, it does not stipulate how this is to be achieved – it does not specify criteria which must be met in order to demonstrate that certain material in contact with water indeed does not 'reduce the protection of human health'. In contrast to parameters and parametric values, where the DWD sets standards, Article 10 does not contain similar 'standard setting' provisions.

The study notes that, in line with Regulation 764/2008 ([Mutual Recognition Regulation](#)), a product lawfully sold in one Member State should be acceptable in another Member State, in line with the principle of mutual recognition, even if the product does not fully comply with the technical rules of the other country. However, exemptions to the principle of mutual recognition are permitted on several grounds, including the protection of health and life of humans.

The study finds that overall, there is a 'belief that the [water contact material] sector is exempted from the mutual recognition principle'⁴⁰ and consequently also from the very restrictive application of the mutual recognition principle.⁴¹ Instead, separate national requirements and approval schemes aimed at ensuring Article 10 provisions have been developed,⁴² leading to a situation whereby 'effectively no single market within the EU for products in contact with drinking water' exists.⁴³ For producers and suppliers of materials and products in contact with drinking water, this means that they need to demonstrate compliance separately in each Member State in which they want to market their products, leading to delays in putting their product on the market, and extra costs.⁴⁴

The study concludes with a set of policy options in view of the forthcoming review of the DWD. Under the baseline scenario (the option of changing nothing), Member States would continue relying on their national legislation which they would develop and amend. Ongoing voluntary initiatives may lead to some mutual recognition among a small number of Member States.⁴⁵ Product harmonisation across different Member States would become increasingly difficult, leading to a fragmented market except for those few involved in a joint voluntary initiative. Correspondingly, costs for both manufacturers and consumers would increase. Against this

³⁶ [Study on materials in contact with drinking water](#): a report for the European Commission by Umweltbundesamt GmbH Austria with WRC, KWR, OIEau and IzVRS, March 2017.

³⁷ See, for example, the Commission [REFIT Evaluation](#) that finds Article 10 provisions 'permit too much legal flexibility' and 'do not work well', p. 42. See also the [analysis of the 2014 public consultation](#) that show that as many as 74 % of respondents choose harmonised regulation of contact materials as the most needed among several potential future regulatory measures, p. 49.

³⁸ Lead pipes are perhaps the most widely known example of how material in contact with drinking water can affect human health. For an overview of inappropriate materials that have been associated with adverse impacts on water quality and human health, see tables 4.3 to 4.6 in Chapter 4, p. 51-57.

³⁹ Three main types of materials in contact with drinking water are: organic (e.g. plastics, rubbers, silicones, etc.), metallic (e.g. copper, nickel, iron, etc.) and cementitious (e.g. mortar, concrete, cement, etc.). For further details, see pages 5 to 9 of the study, especially Table 1.1 on page 9.

⁴⁰ [Study on materials in contact with drinking water](#), p. 67.

⁴¹ It appears that majority of the exemptions to the mutual recognition principle in the field of goods are related to **Safety, Health, Environment or Consumer protection** (so-called 'SHEC' type regulations). On this point, see Pelkmans, J. (2012) '[Mutual Recognition: economic and regulatory logic in goods and services](#)', Bruges European Economic Research Paper No. 24.

⁴² See Table 2.1 on p. 20 of the [Study on materials in contact with drinking water](#). It indicates that 18 Member States have their national approval schemes and 'positive lists' for materials in contact with drinking water, while 10 Member States do not. However, it also notes that some users of products in the group without national approval scheme look for certification/approval given by one of the Member States with national approval scheme, with German approval being commonly accepted.

⁴³ [Study on materials in contact with drinking water](#), p. 67.

⁴⁴ See case studies on p. 47. For further information on the application of the mutual recognition principle in general (not limited to water contact materials only), see [2015 study](#) on the evaluation of the application of the mutual recognition principle in the field of goods. The study notes that there are indications that requirements for national testing in situations where mutual recognition principle should apply 'is sometimes done because the Member States do not trust the procedure in other Member States, and sometimes for market protection reasons', p. 97.

⁴⁵ In particular, the [Four Member States initiative](#) (DE, NL, FR and UK), see [study](#), section 2.2.4, pp. 19-20.

baseline scenario, the study puts forward four policy options, ranging from a regulatory option to provision of non-legislative guidance to MSs on the most appropriate way of testing contact materials.

2.3 Other EU-level reports

[European water policies and human health](#): Combining reported environmental information, European Environment Agency, 2016

This report provides an overview of EU water related legislation, in particular the Water Framework Directive (WFD), Urban Waste Water Treatment Directive (UWWTD), Bathing Water Directive (BWD), and Drinking Water Directive (DWD). Among other things, it notes that there is no direct link in the legislation between drinking water quality and the status of water sources (surface water or groundwater). It notes however that 'establishing a closer connection between the DWD and the WFD could enable a whole chain approach from catchment to tap'.⁴⁶ As to the causes of exceedences of the DWD-set parametric values, the report notes that some are caused by the contamination of the source water (these include discharge from waste water treatment plants or storm weather overflows), agricultural activities (use of fertilisers and pesticides). Others are caused by the treatment process (e.g. chemical dosing regiments) or by faults in the distribution systems (e.g. leakages, pressure changes) and the domestic distribution network (e.g. pipes and fittings containing lead).

Apart from the reports presented in this section, ample further relevant information exists, in particular at: Commission [Directorate General Environment/Drinking Water](#), the Commission's [CIRCABC platform](#) (including e.g. information on [Stakeholder and Drinking Water Expert Group meetings](#)), and [Safe2Drink](#) website.

3. European Parliament position/MEP questions

3.1 European Parliament resolutions

[European Parliament Resolution of 8 September 2015 on the follow-up to the European Citizens' Initiative Right2Water, 2014/2239\(INI\)](#)

In this resolution,⁴⁷ which followed the ECI R2W initiative, the Parliament calls on the Commission to recognise the importance of the human right to water and sanitation, and of water as a public good and a fundamental value for all EU citizens and not as a commodity. It further calls on the Commission to ensure a comprehensive water supply characterised by affordable prices, high quality and fair working conditions and subject to democratic controls. Among other issues, the Parliament highlights the importance of effective implementation and better coordination of the WFD and DWD directives. It notes that ensuring sustainable protection of natural areas is also crucial to providing drinking water supplies, and reduces costs for citizens and operators. On a more general note, the Parliament criticises the Commission's lack of ambition in its response to ECI R2W which, in Parliament's view, does not meet the specific demands made in the ECI and is limited to reiterating existing commitments.

In a [response](#) to the Parliament resolution, the Commission notes several actions related to the DWD, including 2014 public consultation, the ongoing evaluation of the DWD, and finalised Commission Directive 2015/1787, which amended parts of the DWD; as well as the related planned revision of the WFD.

3.2 Written questions by MEPs

During the current parliamentary term, over one hundred written questions related to drinking water have been submitted by Members of the European Parliament.⁴⁸ These questions cover a wide scope of issues, both those directly relevant to the DWD and those that fall outside of its scope. Topics include: quality of water (e.g. in relation to chemicals, pesticides), protection of water sources, water pollution, privatisation of water, monitoring water quality, materials in contact with water, price of water, climate change, water scarcity, diminishing water sources, environmental policy implementation, as well as questions related to the Right2Water Citizens' Initiative (access to water as a human right). A few questions are presented below.

⁴⁶ [European water policies and human health](#), European Environment Agency, 2016, p. 13.

⁴⁷ Resolution was adopted by 363 votes to 96, with 231 abstentions.

⁴⁸ Results of a search of parliamentary questions: written questions, parliamentary term: 2014-2019; political groups: all; [words in title](#): water (202 questions), drinking water (21 questions), [words in text](#): water (963 questions), drinking water (114 questions).

[Written question by Enrico Gasbarra \(S&D, Italy\)](#), April 2015

The question, related to R2W ECI, enquires about specific legislative proposals planned by the Commission that would recognise access to water as a human right, including a possible review of the Water Framework Directive and the Drinking Water Directive.

[Answer given by Commissioner Karmenu Vella on behalf of the Commission](#), June 2015

The Commission, in its reply, notes that it recognises the importance of the human rights dimension of access to safe drinking water and sanitation, and that it will continue to ensure that these principles remain at the heart of its policies. As to the plans for legislative revisions, the Commission notes that a review of the WFD is planned at the latest by 2019, and that an evaluation of the DWD is ongoing. Further action, including possible proposals amending the acts, will depend on the outcome of these processes.

[Written question by Werner Langen \(EPP, Germany\)](#), March 2015

The question relates to the materials in contact with drinking water and the observed legal uncertainty with regards the assessment criteria for water contact materials – does it fall under EU or national regulatory competence?

[Answer given by Commissioner Karmenu Vella on behalf of the Commission](#), June 2015

The Commissioner notes the ongoing evaluation of the DWD, on the basis of which the Commission may determine whether additional measures should be proposed in this particular matter. As to the existing legislative framework, the Commissioner explains that, since no harmonisation of products in contact with drinking water exists at EU level, it is for the Member States to regulate this area at the national level, considering the principles and provisions of the Treaty, in particular the principle of mutual recognition of lawfully marketed products.

4. European Economic and Social Committee/Committee of the Regions/European Court of Auditors

In 2014, the European Economic and Social Committee adopted an [opinion](#) on the Commission's reply to the ECI R2W 'Water and sanitation are a human right'. The EESC notes that the planned reviews of the Water Framework Directive and the Drinking Water Directive are an opportunity to integrate the principle of universal access to water and sanitation as a human right and to promote the provision of water and sanitation as vital public services to all. An [earlier EESC opinion](#) – a blueprint to safeguard Europe's water resources – likewise urged the Commission and the Member States to ensure that all citizens have access to water and sanitation.

In its [recent opinion](#) on an effective water management system: an approach to innovative solutions, the European Committee of the Regions calls for improvements in monitoring systems and parameters, better information for citizens, a regulatory framework for small water supplies, and better solutions to the issues regarding water contact materials, derogations and water leakages.

The European Court of Auditors plans an [audit in 2017](#) to assess whether EU actions improved the supply of drinking water in those Member States who joined the EU in 2004 or later, building on the findings of a similar [report from 2010](#).

5. European Commission public and stakeholder consultations

In its follow-up to the ECI R2W, the Commission carried out an EU-wide public consultation of the DWD from June to September 2014, including a general section on citizens' perceptions on access to and the quality of drinking water, as well as a separate section on the DWD provisions. The consultation received almost 6 000 answers (out of which respondents from DE and FR account for more than 50 %) and 136 position papers. Results of the consultation are presented in the [analysis of the public consultation on the quality of drinking water](#) of March 2015. As noted earlier, many of the consultations' findings fed into the REFIT evaluation of the DWD that followed and are included in section 2.1.

In addition to the 2014 public consultation outlined above, the European Commission consulted stakeholders, namely relevant experts in the water supply sector, including competent national authorities and regulators, utility representatives, industry representatives, consultants, researchers, universities and NGOs. According to the information available on the Commission's CIRCABC platform, three stakeholder meetings were organised.⁴⁹

⁴⁹ [25 May 2015](#) meeting was dedicated to the evaluation of the DWD. It is thus elaborated in some detail in the [Commission REFIT Evaluation of the DWD](#), see in particular pages 44 to 51. The second meeting, held on [8 December 2015](#), looked into possible

The participants' response to a series of statements during the May 2015 meeting on effectiveness, efficiency, relevance and coherence of the DWD revealed several potentially problematic areas. By way of example, responses to three statements are given below.⁵⁰

- Statement on relevance: 'The current approach of the DWD (combination of standard setting, monitoring and remedial actions) is sufficient for safeguarding water quality and protecting human health.' Responses: disagree with statement: 40; agree with statement: 9.
- Statement on relevance: 'The current DWD does not include all pollutants in the list of parameters.' Responses: agree with statement: 50; disagree with statement: 3.
- Statement on effectiveness: 'The current DWD does not guarantee that specific local problems with water quality will be resolved.' Responses: agree with statement: 45; disagree with statement: 1.

6. European Citizens' Initiative/Petitions/Citizens' Questions: AskEP

The European Citizens' Initiative 'Water and sanitation are a human right! Water is a public good, not a commodity!' ([Right2Water](#)) was the first successful European Citizens' Initiative, receiving the support of more than 1.6 million citizens. The initiative invites the Commission 'to propose legislation implementing the human right to water and sanitation, as recognised by the United Nations, and promoting the provision of water and sanitation as essential public services for all'. In February 2014, the organisers of the initiative took part in a [hearing](#) organised by the European Parliament. With regards to the DWD, the [Commission's follow-up to the R2W ECI](#) in March 2014 noted ongoing work on the adaption of the monitoring and analysis provisions (Annexes II and III) and announced the launch of the EU wide public consultation of the DWD (which took place shortly after).

With regards to petitions to the European Parliament, a search of the [EP Petitions portal](#) produced some 20 admissible petitions, depending on the search query.⁵¹ In general, these petitions relate to citizens' concerns about water quality, various water pollution factors (mentioning e.g. nitrate, microplastics, herbicides containing glyphosate), potential negative impact of various agricultural and industrial activities, as well as landfills in the vicinity of water sources, wastewater management, etc.

Finally, a total of 18 citizens' enquiries (AskEP) were received in the period 2015 to 2017. While no specific theme could be singled out as dominant, queries covered water privatisation, inadequate water services, rural water supply, water pollution, water contact materials, treatment process, etc. This relative silence was however broken in the period leading to the Strasbourg plenary session in September 2015, when more than 2 000 messages were received by Parliament's AskEP services, calling on the European Parliament to support in that plenary session the report on the ECI Right2Water that had been voted shortly before by the ENVI committee.

revisions of the DWD, while the third meeting, held on 23 September 2016, looked more specifically into the review of the DWD parameters. While no summary of this last meeting is available, several [background documents](#) are included on the CIRCABC platform.

⁵⁰ For an overview of participants' responses to all 12 statements, see [meeting summary](#), page 7-8. Selection of statements / responses presented above is based on two factors: either strong agreement or strong disagreement with the statement and a high response rate. The total number of responses differs from one question to another, the lowest being 15 and the highest 53. Presumably, the questions that resulted in fewer responses indicate that participants did not fully agree nor fully disagree with the statement and could be tentatively considered as neutral. Emphasis in bold added.

⁵¹ Results of a search of petitions in the 2015-2017 period; theme: environment; status: admissible, country affected: any EU country: 14 petitions for keyword 'water quality', 19 petitions for 'water pollution', and 22 petitions for 'drinking water directive 98/83'. Many of the identified petitions appear in more than one group.

Council Directive 98/83/EC 998 on the quality of water intended for human consumption (details)

EP committee responsible at time of adoption of the EU legislation: Committee on Environment, Public Health and Food Safety (ENVI) under the Cooperation Procedure.

Date of adoption of original legislation: 3 November 1998

Transposition deadline:

For the original act / Council Directive 98/83: 25 December 2000 (Article 17).

For the amending act / Commission Directive 2015/1787: 27 October 2017 (Article 2). This Commission Directive amended Annexes II and III of the original act, in line with the provisions from Article 11(2) of Council Directive 98/83.

Planned date for review of legislation:

No provision for a review of Council Directive 98/83 exists.

However, there are two provisions calling for a review of Annex I (Article 11(1)) and a revision of Annexes II and III (Article 11(2)). Each should be carried out 'at least every five years'.

Finally, Article 13 includes provisions for triennial reporting on the quality of drinking water by the Member States and for a corresponding 'synthesis' report by the Commission.

Timeline for new amending legislation:

A proposal for the revision of the DWD, to be accompanied by an impact assessment, is included in the Commission work programme 2017 and is scheduled for the fourth quarter of 2017 (see CWP 2017 [Annex I](#), item 2, p. 2). An [inception impact assessment](#) of February 2017 confirms indicative timing for the fourth quarter of 2017. Also, the [indicative planning of the Regulatory Scrutiny Board](#), a body that examines impact assessments (and major evaluations), includes impact assessment in connection with the revision of the DWD among the files that will be examined in 2017 (ENVI item 2017/ENV/014, p. 1). It is expected that the proposal will build on the REFIT evaluation of the DWD.

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