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Study supporting the revision of the EU Drinking Water Directive

http://www.safe2drink.eu

Background Document

Second stakeholder's consultation workshop

Brussels - December 8, 2015

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I. Note to the reader:

This background document has been developed as preparatory document to the second Drinking Water Directive stakeholders' workshop organized in Brussels (Belgium) on December 8, 2015. The document is divided into 4 sections along similar lines as the different sessions of the workshop. In particular, it follows a series of logical questions linked to the current and forthcoming implementation of EU policy on drinking water:

- **Which areas of current DWD are in need of improvement?** This section presents contextual information and the main results of the *ex-post* evaluation of the current Drinking Water Directive (DWD) carried out since the first stakeholder's consultation which was held in May 2015.
- **Looking ahead: how is drinking water quality and the DWD likely to evolve in the future?** This section provides a forward looking view of the implementation of the DWD within what is defined as "baseline scenario" or reference scenario. It identifies key drivers that will or might impact the DWD implementation and its performance. General in nature, this information helps identifying how current problems might evolve over time (be solved, remain, or increase) and new problems that might emerge as a result of the implementation of the current DWD.
- **What could be changed – and how?** Building on the current and forthcoming challenges linked to the implementation of the DWD, a series of areas for improvements (or policy options) are identified and presented.
- **What could be the impacts associated with the policy options identified?** This section identifies in general terms potential positive and negative social, economic and environmental impacts one might expect as a result of the implementation of the policy options identified. In some cases, potential impacts identified might help thinking of adaptations in proposed options (e.g. providing exemptions, or targeting specific water supply services or social groups) to limit or eliminate negative impacts.

To facilitate the preparation for the workshop, the document provides a series of consultation questions (presented in boxes). These questions, along with additional questions raised by workshop's participants, will be addressed during and after the workshop as basis to developing sound assessments that will contribute to effective future drinking water policy in Europe.

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II. Overall context : which areas of current DWD are in need of improvement?

Safe drinking water is a European heritage. Its high quality is essential for public health and human well-being. Water is not a commercial product like any other. However, it is economically important. Every citizen uses up to 150 liters of drinking water per day, and the total abstraction of freshwater for drinking water purpose across Europe is around 250 billion m^3/year. The existing drinking water supply infrastructure is also a locational comparative advantage that can support economic growth. Defects in the supply of drinking water, in terms of quality or quantity, cause high social and economic costs. To avoid such costs, the preservation and further improvement of a safe drinking water supply is of vital importance for the EU, contributing to its overall socio-economic development.

The main piece of EU legislation, the Drinking Water Directive (DWD) 98/83/EC[1], introduced in 1980 and revised in 1998, has led to the availability of high-quality drinking water across the EU. The diagramme below summarises the main components of the drinking water system that are targeted by the requirements and obligations of the DWD.

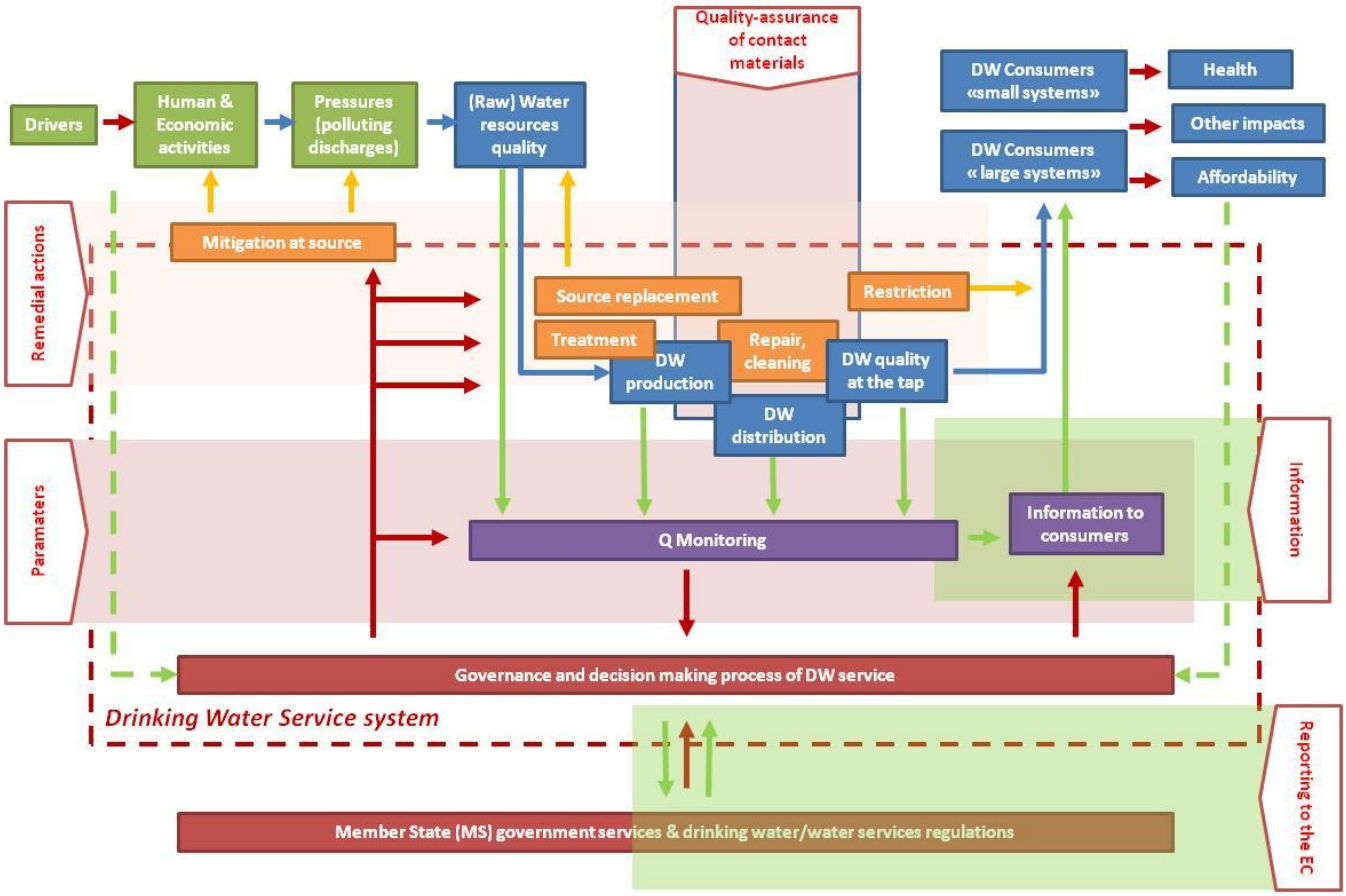


Figure 1. The main components of the Drinking Water Directive

Joint efforts from EU institutions, Member States and drinking water service providers have resulted in high compliance rates with the drinking water standards proposed by the DWD. To keep these high quality standards and to address new challenges, it is essential that the implementation of the DWD is

[1] Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, OJ L 330, 05/12/1998, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31998L0083

carefully reviewed so possible adaptations in the current legislative framework that would address new challenges are identified. As the DWD is indirectly linked with many other EU policies, in particular those related to the ecological quality of water bodies, pollution prevention, chemicals – including those used in agriculture (pesticides, fertilizers…), agriculture production and food products, etc., a comprehensive ex-post assessment of the DWD is therefore not an easy task that is further complicated by the fact that drinking water human health risks have never been systematically assessed and understood.

To assess the performance of the EU DWD, the EC has launched a specific study structured into two parts: Part I focuses on the *ex-post* assessment of the current DWD; building on the outcome of Part I, Part II aims at identifying and assessment policy options that would enhance the performance of the EU drinking water policy. The *ex-post* evaluation of the DWD was carried out in 2015 to assess whether the legislation is "fit for purpose" and achieves its objectives. This *ex-post* evaluation covered the key performance dimensions of a policy evaluation, including: effectiveness, efficiency, EU value added, coherence and relevance[2].

The latest implementation report of the DWD[3] already identified key challenges faced by the DWD, including: quality problems in small water supplies in remote and rural areas; inflexible and not cost-effective monitoring provisions; parameter list that has not been up-dated and capacity to consider emerging pollutants; and untapped potential to provide easier access to up-to-date information for consumers and citizens in general. In addition, the EU-wide public consultation launched by the EC on the current state of the DWD implementation raised many additional issues beyond the scope of the drinking water policy including the issues of human right to water or access to safe water and sanitation for all. The consultation identified also some issues calling upon the EC to improve or to maintain the current drinking water policy, in particular: to enhance the information to the public; to improve monitoring and control systems; or to address contamination from materials in contact with drinking water.

Building on the outcome of the public consultation, complemented by experts' interviews and the review of available literature, the *ex-post* assessment of the DWD has led to the following preliminary conclusions (briefly presented in Box 1 below).

Questions for workshop participants

1. *Which additional issues would you see as problematic t with regards to the current implementation of the Drinking Water Directive? And why?*

[2] Interim report. ECORYS 2015

[3] The final report will be available here: http://www.safe2drink.eu/dwd-evaluation/

Box 1. Preliminary conclusions from interim report on ex post assessment of DWD [1]

Setting parameters. By setting values for microbiological substances, the DWD has contributed to the reduction of microbiological outbreaks, as reported in a few well documented cases. Since the Directive came into force, countries have enforced considerable treatment actions. The number of incidents of E.coli contamination of water supplies has been reduced significantly. Improvements, however, may also be linked to the increased powers conferred to (environmental) protection agencies and the overall improvement in the quality of European aquatic environment.

Monitoring. Monitoring can be considered an effective way of collecting information on drinking water quality. It is the first and essential step towards the protection of human health from the adverse effects of any contamination of drinking water. Although monitoring systems and analytical laboratories have been set up in all MS, the frequency of monitoring is often below requirements, undermining the quality of the synthesis reports sent to the EC. The recently revised Annex II and III provide more freedom to MS in monitoring frequencies and substances to monitor when Water Safety Zones (WSZ) are established. This revision also addressed the call for a minimum monitoring frequency in small WSZ.

Remedial actions. The period 2005-2013 has recorded an increasing number of remedial actions implemented in MS. Most of these actions were related to microbiological parameters (E Coli and Clostridium perfringens) and to a lesser extend to chemical parameters (lead, nitrate and arsenic). It is not clear, however, whether the remedial actions implemented have been the most cost-effective ones – in particular when treatment of drinking water has been chosen as opposed to treating pollution at source.

Information to consumers. Informing the wider public is seen as an essential element of the DWD, especially in the case of non-compliance to the DWD requirements. The EU-wide public consultation, however, stresses the general dissatisfaction with (a) the information received on drinking water quality and the performance of drinking water services on one side, and (b) the provisions of the DWD dealing with information to consumers, on the other side. Also, the information provided by MS is not sufficient to support a sound EU drinking water policy review. In addition to information related to drinking water quality, consumers would like to receive information related to water losses in networks, cost of supply and profit margins, investments made, information obtained from monitoring programmes, etc.

Materials in contact with drinking water. Article 10 of the DWD applies to the treatment and distribution of drinking water, a phase in which considerable contamination of drinking water can occur. Article 10 asked MS to take actions in order to comply with the quality requirements in the directive. But many MS experienced implementation challenges with this article as no further guidance for its implementation was provided.

Derogations. The provision of derogation has been an effective mean of guiding MS towards applying parameter values as defined in Annex I without having to resort to other means. However, it is also noted that the effectiveness of derogation may reduce over time. Alternative solutions for dealing with exceptional or new circumstances and pollutants need to be identified.

Reporting. National authorities provide general information on the quality of the drinking water. In most of the cases, MS make their national Drinking Water Directive report publicly available. However, great differences exist between MS in terms of the quality of reporting. Overall, consumers' satisfaction on the information provided is barely more than 20% of total consumers. Consumers' preferences for the type and level of detail of information that should be provided are mixed. Whereas two-third of the respondents would like to see more simplified information, the same percentage asks for more detailed information. Providing (detailed) information is needed to ensure higher transparency and is therefore important for maintaining and improving public confidence. The compliance with reporting requirement to the EC is high. This information is specific and can be used in any legal action. This requirement balances water suppliers' practice to make positive average data publicly available instead of short term operational data on non-compliance. The high compliance of reporting to the Commission and consumers' demand for detailed information raises the question whether reporting to the EC and information to consumers should not be jointly considered.

Review process. The DWD revision procedure is lengthy and time-consuming, a situation that is justified by the likely importance of implications any proposed change might imply. The decision for more rapid adaptation of technical requirements of Annexes II and III, through a Committee procedure, has introduced flexibility for responding to scientific and technical progress. This is seen as a positive development of the directive's review process. It is important to stress that the provision in Article 11(2) has not been used since the coming into force of the Directive.

III. Looking ahead: how is drinking water quality and the DWD likely to evolve in the future?

A wide range of factors and future trends will affect the supply of safe drinking water to EU population by 2030 and 2050. Some of these trends are likely to address current shortcomings of the Drinking Water Directive and the problems identified above. The following paragraphs present some of the key trends in factors that are expected to affect the quality of drinking water and the implementation of the DWD in Europe[4].

The implementation of the EU Water Framework Directive (WFD), combined with changes in sector policies such as the continuous greening of the Common Agriculture Policy, the increasing demand for products with low environmental footprint (including in terms of impacts on the quality of water resources), the search for strategies for reducing CO_2 emissions/enhance energy efficiency and land use changes driven by climate change, will directly or indirectly lead to reduction in polluting pressures on water resources. However, **water resources used as source for drinking water will continue meeting pollution problems**:

- To respond to the overall socio-economic development and to the increasing demands for a wide range of products, **new pollutants** will continue to be invented at a growing rate and be disposed into the natural environment. Despite the risk-based protocols existing for their approval and the increasing risks of combined effects between different pollutants, it is only progressively that their full impacts will be known. Also, technologies for monitoring new pollutants will take time to be developed and might be expensive during some period, limiting the taking up of these technologies. This implies that pollution by emerging pollutants in areas with intensive economic activity (agriculture, industry) and population density will take time to be identified, posing potential health risk to local population.

- When problems of water pollution at source are identified, **water treatment or displacement to existing cleaner resources, will continue to be selected as priority remedial measure** in particular for smaller water service operators. Indeed, it is considered as safer and with faster impact – in particular when groundwater resources are at stake (longer time-lag between treatment at source and improvements in water quality). And it requires lower "organizational engineering" skills (e.g. as compared to establishing voluntary agreements with polluters). When treatment at source is a more cost-effective solution, this might lead to higher drinking water supply costs and thus water tariffs (and potentially affordability problems with socially-vulnerable groups). Water service providers serving larger agglomerations, that have larger technical teams with diverse areas of expertise and/or that can rely on stronger political support, are expected to progressively put their efforts on controlling water pollution at source. The political drive to such practice will build on a diversity of policy objectives such as access to agricultural products with low environmental footprint (voluntary agreement with "clean water for Bio-product" between farmers and service suppliers/local authorities) or reduce energy consumption in water industry operations that will put more emphasis towards prevention of contamination at source.

Independently of the implementation of the DWD, dual water supply systems, with high potable water and lower-quality/grey water, will be more commonly used in new developments and in urban regeneration projects. And new optimal ways of using low-quality local sources such as rainwater, grey-water or water contained in Sustainable Urban Drainage Systems (SUDS) will be developed by water service operators. This trend will be driven partly by energy efficiency/CO_2 emission reduction

[4] These elements are part of the baseline or reference scenario against which potential impacts of policy changes that would be seen as relevant would need to be assessed.

objectives: to make a large reduction in carbon use associated with water, it will be necessary to lower the quality of water used for non-potable applications. Some water service operators will then treat water to a lower "general use" quality (lowering their energy use and CO_2 emissions) combined to additional "end of tap" treatment (at household or group of households levels) that will ensure high drinking water quality for potable water use.

No **major breakthrough is expected in monitoring technologies** and thus in monitoring costs. While some new pollutants considered as having significant health risk will be integrated into drinking water monitoring, it is likely that monitoring frequencies will remain overall as (low as) they are today. In some cases, advanced water service suppliers will move to risk-based assessments for complementing compulsory monitoring. This will reduce risks of not complying with the threshold values imposed by the DWD, and thus health risk.

Significant **changes in information** technologies will affect communication in societies.

- By 2050, many household appliances will be e-connected, with information on their functioning and performance being available automatically on-line or via mobile applications by households so they can take rapid decisions (to stop or delay the use of the appliance, to replace or maintain it, etc.).

- This "information revolution", however, will have limited implications in the drinking water sector. It is expected that it will be limited to the quantitative dimension of water consumption, as better and timely information on water consumption might be a mechanism for reducing the overall household water bill. It can help optimizing the use of household appliances (washing machines, dishwashers, automatic garden irrigation system, …) and their reliance on water supplied by the (public) drinking water network and other household sources (e.g. rainwater harvested), or identify household members that could improve their behavior (adapting the length of showers, etc.).

- It will however not be used to obtain "timely" information on the quality of drinking water at your tap, as this has limited "financial" benefits for consumers that often do not have any alternative choice – apart for some pilot drinking water services in the EU and more widely in Northern MS at the forefront of wider use of innovative information solutions;

- Overall, because of the need to enhance financial performance and to respond to budgetary constraints, **changes in monitoring and information reporting** (to consumers) will not be modified drastically in coming years.

Public participation is promoted at different scales, be it as a general policy principle (Arhus Convention) or as part of specific directives and regulations (see for example Article 14 of the EU WFD). In many cases, however, consultation and not participation is put in place – leaving limited role of the public in decision making. In the field of water, public participation and consultation is dedicated to the management of water resources and aquatic ecosystems in general (as part of the WFD obligations). In the drinking water service sector, consumers are regularly informed about the service they receive, be it via their water bill, the annual reports of water companies or the assessment made by water service associations or government services that benchmark the performance of water services. If not satisfied by the level of service received, they have the possibility to fill a claim that might (depending on the claim) be followed by actions and improvements in the service delivered. However, there is no trend in strengthening the involvement of drinking water consumers into the decision making of drinking water service operators, be it public or private or managed as part of public-private partnerships.

Questions to the workshop participants

1. *What are the key drivers and factors that are likely to affect – positively or negatively, directly or indirectly – the quality of drinking water and related health risks in coming years?*

2. *What are the main 2 factors which will "matter the most" in influencing the implementation of the DWD in the future? And why? Which component of the DWD - the implementation of a specific DWD article, the choice of remedial measures, the quality at a given point of the Drinking Water system, health impacts, etc. - are likely to be affected in priority?*

3. *In recent years, there have been many forward-looking studies focusing on future changes in water resources (water supply and water demand) at different scales. Would you know of specific forward-looking studies that have investigated the future of the "drinking water system"? What are the main conclusions of these studies?*

IV. Which adaptations in the DWD or alternative policy options could be considered?

Building on the results of the *ex-post* evaluation, and accounting for views from stakeholders associated to this process (via interviews and participation in the first stakeholder workshop organized by the EC[5]), different adaptations in components of the DWD have been identified for addressing current and future challenges with the implementation of the EU drinking water policy. The focus of proposed adaptations, along with key underlying policy principles (presented in blue boxes), are shortly presented below:

- **Risk based assessment** – The focus is on the mechanisms established for identifying drinking water quality problems and taking actions for solving these problems: from existing drinking water quality monitoring at different locations within the drinking water service and with given frequency (potentially increased as compared to current practice) to a wider risk-based assessment investigating all potential sources of pollution and leading to early identification of problems and subsequent actions, including for emergency and accidental situations. It is expected that the application of risk-based assessment leads to prioritizing remedial actions that are cost-effective in addressing situations with pollution levels higher than, fixed thresholds, including priority given to "mitigation" at source versus additional drinking water treatment.

Improving health and ensuring swift and cost-effective remedial actions

- **Parameters (pollutants) monitored and their threshold values.** Parameters (the substances to be regulated) could range from a core list of parameters causing problems to human health to a wider list of parameters, including emerging pollutants, for which uncertainty in their risks to human health might remain (following the precautionary principle).

Improving health and and applying the precautionary principle

- **Controlling the risk of pollution from material in contact with drinking water**. This implies controlling the risk of pollution from material in contact with drinking water from water abstraction, treatment and conveyance to final drinking water consumers. Materials in contact with drinking water will need to comply with specific standards limiting the migration of polluting substances to drinking water - and thus to final drinking water consumers.

Improving health

- **SMART information to consumers and citizens.** The access to information on drinking water by citizens and drinking water consumers is the focus here. Information provided could vary in terms of content (drinking water quality only, wider information on the management of the drinking water supply system including in terms of conveyance efficiency, water tariffs….), coverage (your own drinking water or any drinking water supply in Europe) and timeliness (from the publication of data in annual water suppliers' reports to instantaneous information available via innovative information technologies). Involvement of drinking water consumers into decision making could also be considered in this context.

Enhanced transparency and consumer involvement in decision making

- **Ensuring efficient management of (drinking) water supply services**. The focus is on mechanisms that would improve the overall performance and efficiency of water services, be it privately or

Resource efficiency and enhanced performance of water services

[5] http://www.safe2drink.eu/dwd-evaluation/

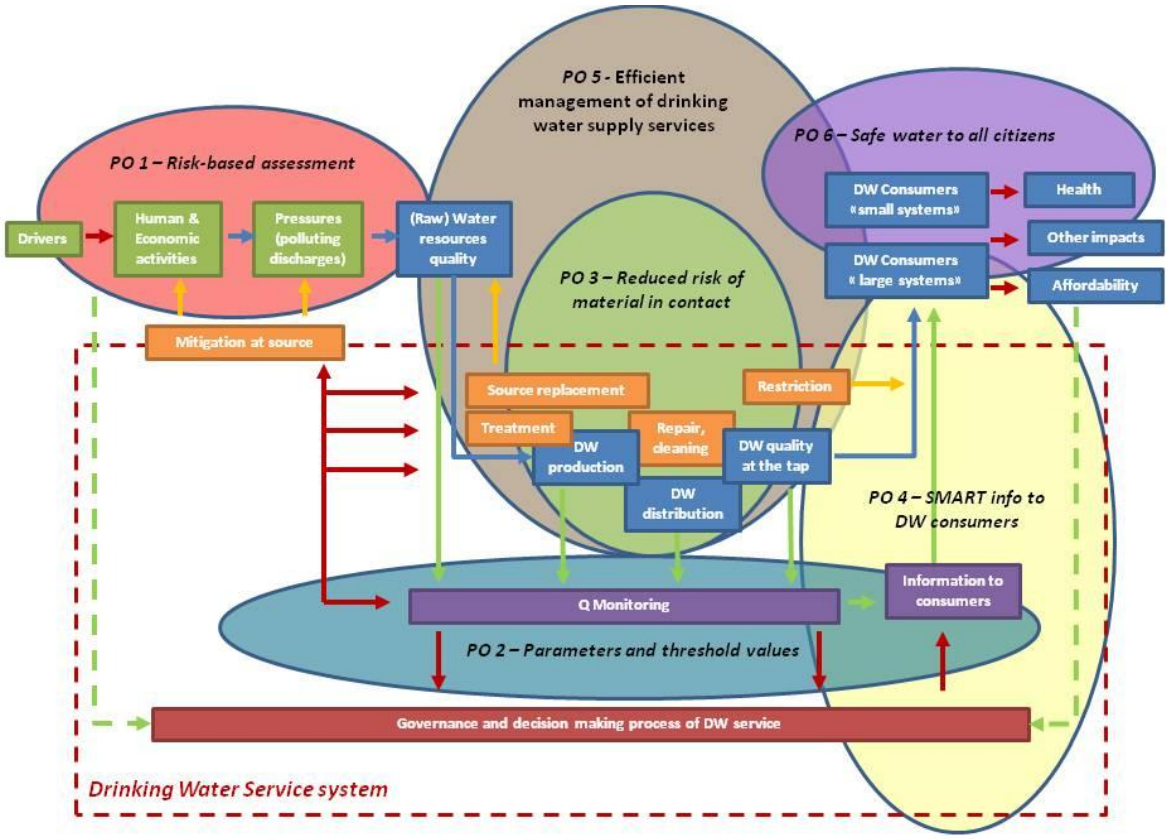
publicly managed including in the framework of public-private partnerships. These might focus on drinking water services alone, or promote a wider “water service approach” combining drinking water and sanitation/sewage collection and wastewater treatment.

- **Safe drinking water for all EU citizens.** The focus is on the application of the DWD standards to groups of the population that do not benefit today from these standards. For example, households connected to small drinking water supplies (below a certain limit in terms of daily water abstraction, annual abstraction or number of households/persons connected – e.g. above 100 or 50 or 10) or any European citizen or person living in Europe even temporarily (migrants).

Improving health and ensuring fair treatment to all EU citizens

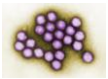
The following figure presents the focus of adaptations and policy options that could be proposed for individual components of the drinking water system.

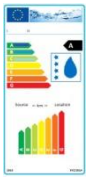
Figure 2. Focus of the policy options on components of the drinking water service system



Individual policy options representing different levels of ambition in the adaptations proposed for each component of the DWD are presented in the following table (Table 1).

Table 1. Identified policy (sub)-options

1. Risk based assessment – beyond compliance at the tap	
Policy Option 1.1. Water Safety Plan Risk Based Approach This policy option will require the establishment of a Water Safety Plan for specific Water Safety Zones (WSZ) building on a rigorous risk-based assessment and monitoring accounting for all pollution sources and solutions. This option will have certain flexibility for the MS.	
Policy Option 1.2. Fully-fledged Water Safety Plan Risk Based Approach This policy option will further extend policy option 1.1 with wider responsibilities of the drinking water service provider including control of abstraction, the implementation of catchment area measures, and obligations on treatment. It will define minimum requirements on the process for establishing the Water Safety Plan, on its content (including methods such as cost-effectiveness assessment for selecting remedial measures) and on how to control/approve/implement the plan. The requirements in this option will be made EU wide.	
2. Selection of parameters and threshold values	
Policy option 2.1: A core list of parameters with threshold values Common regulation of quality standards (compliance & monitoring) following World Health Organisation (WHO) values for a limited number of core parameters posing high risks for human health	
Policy option 2.2 A longer list of parameters with strict threshold parameters and accounting for the precautionary principle Parameters with strict threshold values, expanding from the WHO list by including more microbiological parameters and reduced threshold values for key chemical parameters	
Policy option 2.3: A wider list of parameters including emerging substances Regulation of a wide number of parameters (20-50% more ambitious) and a higher safety distance between monitoring values of individual pollutants and total values for groups of pollutants, including emerging pollutants as soon as these are identified even if risk unknown (wider application of the precautionary principle)	
3. Controlling the risk of pollution from material in contact with drinking water	
Policy option 3.1 Regulation for products in contact with drinking water Controlling the risk of pollution from material in contact with drinking water. Development of a separate product regulation for materials in contact with drinking water – similar to the existing regulation on materials in contact with food products	
4. SMART information for consumers	
Policy option 4.1. Access to information for reporting threshold values using IT tools Transparency on drinking water quality driven by MS. General obligations on access to up-to-date information on (a) water quality (once analyses area approved) and (b) actions taken and mobilization of other authorities if exceedance of threshold values. Building on the wider use of IT tools for easy access developed and maintained at the MS level, closely linked to MS reporting obligations (considering provisions similar to those proposed under the Environmental Impact Assessment Directive 2014/52/EU and its arrangements for informing the public; requires a a wider reporting system with larger set of indicators reported to the EC, considering SIIF.	

Policy option 4.2. The "Safe Drinking Water Label" of water service suppliers Driven by the drinking water service sector, this option aims at developing a "drinking water label" given to water service providers based on their performance in providing safe drinking water. It includes: the establishment of the label; its application by individual water service providers and its monitoring by an independent body; regular benchmarking between water service providers for identifying service providers that are performing well/bad, along with factors that might explain good/bad performance…. The label will be displayed at specific internet sites and reported in annual reports of water service companies. It will be accessible via a mobile phone application. Yearly information campaign on drinking water quality and the performance of drinking water service suppliers will be also implemented.	
Policy option 4.3. Smart water information systems The establishment of smart water information systems will provide a wide range of up-to-date information to (actual and potential) consumers linked to: water quality, leakages, investments, water tariffs and pricing, etc.. It will include an on-line system/ mobile App and yearly information campaign. The 'Smart system' will have an online processing of aggregated up-to-date water quality data for any given location (via GPS & Copernicus) allowing to see online the most recent water quality data per water service provider/street/plot/household. National and EU reports will be made readily available via easily accessible internet sites ("push of a button" approach).	
5. Ensuring resource efficiency and the efficient management of water services	
Policy option 5.1 High performance to deliver safe drinking water This option proposes to develop a wider performance system for monitoring the performance of water service operators in delivering safe drinking water in compliance with the objectives of the DWD. The performance system will address a range of issues, including: delivery of safe drinking water quality, cost-efficiency in delivering safe drinking water, impacts on water tariffs of delivering safe water, satisfaction of final consumers, timeliness and adequacy of responses to problems, etc.	
Policy option 5.2 Responsible drinking water service operators This option proposes to develop a wider performance system for monitoring the performance of water service operators as key to enhance efficiency and the performance of drinking water service operators. Performance will address a range of management, efficiency and environmental footprint issues: delivery of safe drinking water quality, water resource management (in terms of quality and quantity) and its efficiency, conveyance efficiency, water savings, energy efficiency and emissions of CO^2/GHG, satisfaction of final consumers, timeliness and adequacy of responses to problems, etc. Drinking water operators will be responsible for implementing actions that will enhance their overall performance and footprint including in terms of application of measures such as water reuse, water saving, rain-water harvesting, etc.	
Policy option 5.3 Efficient management of the water (service) cycle[6] This policy option expands the previous policy option by applying the development of a performance system water efficiency to a wider "drinking water cum sewage/wastewater system" and bring the responsibility to water service operators to enhance the performance of its management and operation.	
Policy option 5.4. Governance: Responsible consumers This policy option addresses governance issues, promoting a wider involvement of consumers in the management of drinking water services. It includes: • At the drinking water service level – the establishment of a specific consumer board for reviewing performance and discussing decisions with impacts on consumers, combined with the involvement of consumers' representative in the management board of the company; • At the national level – establishment of a consumer association contributing to transparent information to consumers, providing advise on national policies linked to drinking water services, supporting consumers in their dealings with individual water services.	

[6] In French: *petit cycle de l'eau* as opposed to the *grand cycle de l'eau* that encompasses the overall management of water resources and aquatic ecosystems.

6. Safe drinking water for all EU citizens	
Policy option 6.1. Access to safe drinking water for all This option extends the current obligation to provide safe drinking water to all citizens, expanding the drinking water quality standards of the current Drinking Water Directive to all small communities and any person living in Europe (including Roman populations, migrants….).	

Although the list of policy options is provisional and will be further adapted / complemented, it is important to keep in mind the following aspects that will be considered in further development and investigations:

- Different **policy instruments** could be proposed for putting policy options into practice. For example, options that relate to the list of parameters and their threshold values could be translated into a specific EU regulation targeting specific components of the current DWD (in particular quality thresholds for given parameters) or a wider EU directive that would replace the majority of the components of the current DWD.

- It is expected that the different policy options, and the policy instruments that could be proposed, will have very different **pre-conditions** for success and efficiency, such as adaptation in the current governance, the mobilization of financial resources/financing, provisions for linking to other directives and policies, etc.. Specific attentions will be required for capturing these pre-conditions and assessing whether these appear as feasible or leading to too high transaction costs that could hamper the chances of success of implementing a given policy option.

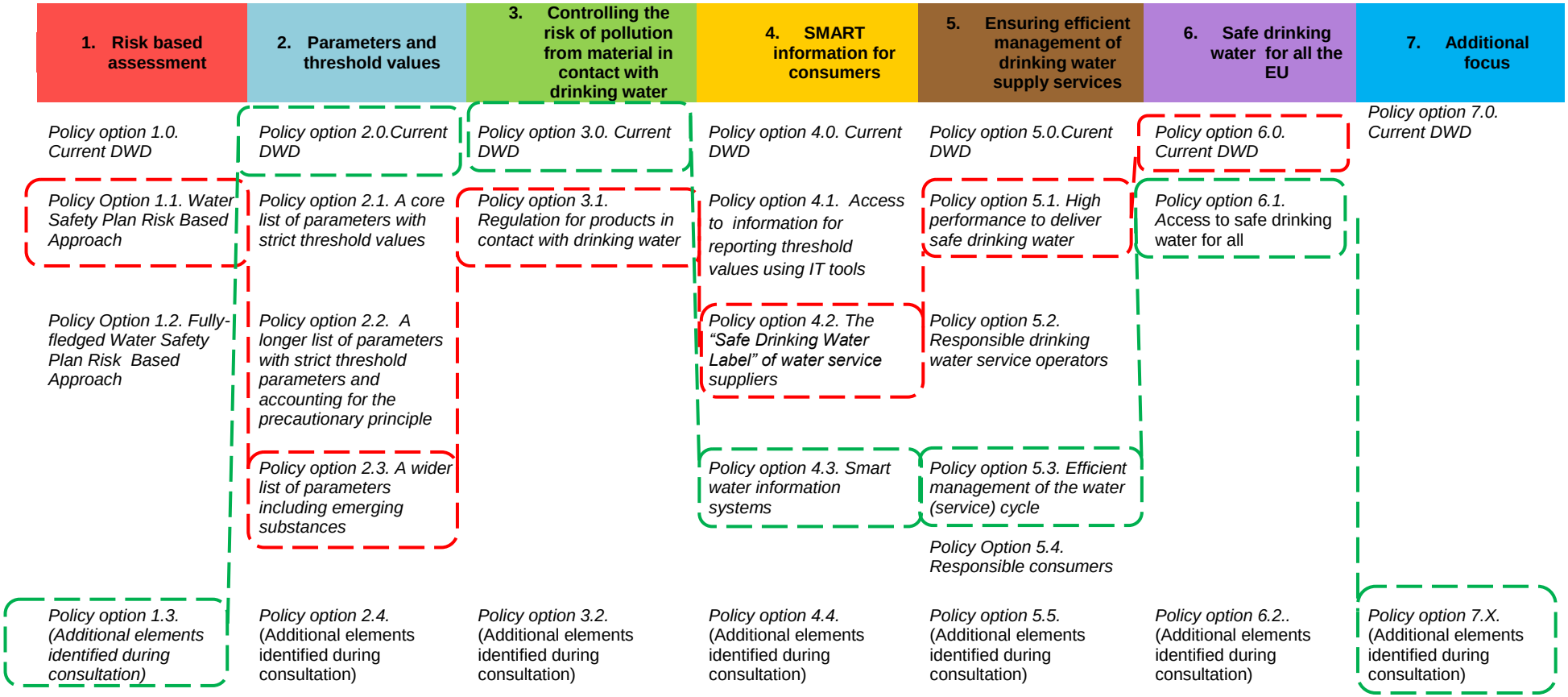
- Specific **derogations** or exemptions could be proposed for each condition or requirement set under any given policy. Derogations could be applied temporarily or permanently, address differences in contexts, types of water services and social groups, or be applied at the household, water service or MS levels.

- The policy (sub-) options proposed above are **non-exclusive** when dealing with different thematic areas. Thus, the revision that could be proposed for the DWD could include a combination of policy options (or package or policy mix) selected from different thematic areas. The coherence between the options selected (including in terms of level of ambition) should be then closely examined. The following figure (Figure 3) illustrates two possible combinations of options (randomly chosen) that would represent different packages.

Questions to the workshop participants:

1. *Which additional thematic areas or issues could be considered when designing policy options?*
2. *With regards to the thematic areas already addressed in policy options, would you identify additional "sub-options" as compared to the ones already proposed? Which ones?*
3. *Which policy (sub-) option is the least "interesting" and/or relevant and/or would have "no chance" of being adopted and/or implemented? Why?*
4. *Which policy (sub-) option appeal(s) to you the most? Why? Which pre-conditions would need to be put in place for ensuring effective implementation?*
5. *Which "policy mix" or "package of options" would you propose as "best alternative to" or "best improvements of" the current DWD? Why?*

Figure 3. An illustration of a possibility to combine sub-options in a policy mix package



V. What could be impacts associated with policy options?

The revision of the DWD and the implementation of any of the policy options identified as alternative to the current DWD are likely to have a wide range of positive and also negative impacts. These might include: **economic** and financial impacts on drinking water service suppliers that might need to change part of the existing infrastructure, use more cost-effective remedial measures for addressing drinking water quality, or face challenges in achieving financial balance; **budgetary impacts** on governments, as a result for example of changes in monitoring obligations on water resources or increased/decreased efforts for reporting to the EC; **social impacts** including for vulnerable groups experiencing changes in levels of drinking water services, able to access these services, or impacted by any change in water tariffs that might result from new EU (investment) obligations; **environmental impacts** resulting from use of more health-compliant materials having ancillary positive environmental benefits, or from the implementation of remedial actions that might deliver parallel environmental benefits for aquatic ecosystems or lead to lower/higher energy uses (and thus emissions of green-house gaz).

Depending on the options considered as priority, impacts will be different. The following table identifies some of the impacts that could be expected from policy options having different focus.

Table 2. Main types of expected impacts

Main focus of the policy option		Types of impacts expected
Parameters values	Parameters list and values	• Health impacts • Adaptation in monitoring (including methods) => impacts on monitoring costs, on MS budget
	Access to drinking water to all citizens (including "small supplies")	• Health impacts for population not connected today or connected to small supplies • Increased costs for small supplies: monitoring costs, potential costs of remedial measures, costs of reporting (consumers, EC)
Risk-based assessment		• Costs of risk-assessment for water supply operators • Swifter action to face emergency/accident situations => more rapid control of pollution problems => reduced health risks and/or reduced costs of "short-term" emergency actions • More cost-effective remedial actions implemented => reduced investment costs for water service operators => reduced water tariffs and water bills => reduced affordability problems for consumers • Environmental impact on water resources quality of remedial measures target pollution at source => impacts on the status of aquatic ecosystems => additional benefits for ecosystems and users of services provided by ecosystems
Smart information to consumers		• Enhanced transparency => higher trust in the overall quality of the drinking water and of drinking water services => increased drinking water consumption by consumers not drinking it today => cost-saving (bottled water not purchased anymore) => allocation to additional expenditures in other household priorities
Ensuring efficient management of drinking water supply services		• Positive environmental impacts from decreasing water footprint, water and energy conservation, water reuse and rain water harvesting • Economic impacts from adjusted water tariffs, which will affect consumer groups and consequently quantity of water consumption • Costs of implementation of management (waste water treatment and water conservation energy conservation innovation technologies, installation of water quantity meters..etc.)
Consumers' participation in DW system governance		• Increased transparency in decision making => more cost-effective investments => reduced investment costs => reduced water tariff
Safe material in contact with drinking water		• Health impacts • Higher trust in the overall quality of drinking water (see above) • Reduced costs for certification (from MS-based certification to EU-wide certification) • More efficient functioning of the EU market for materials in contact with drinking water • Positive impacts on drinking water consumers outside Europe as a result of export of safe material

Clearly, these impacts are likely to depend on the current DW legislation in individual MS and their context. As example:

- For MS already applying the proposed policy option or having a more ambitious legislation, impacts on water service operators and drinking water consumers are likely to be marginal or nil.

- For MS with significant polluting pressures on water resources, moving to cost-effective remedial measures could mean significant cost-savings – while such cost-savings would be marginal for MS with pristine/high quality water resources. Similarly, including small supplies as part of the policy obligations could have cost- implication limited to monitoring and reporting costs in areas with high quality water resources.

Questions to workshop participants

1. *Which (additional) types of impacts could be expected from the implementation of different policy options?*

2. *Which of these impacts would you consider as the most important (and why) – and should receive specific attention during any further assessment?*

3. *Which sector(s)- (raw) water resource management, water service operators, consumers, MS administrations, economic sectors… - would be the most affected (positively or negatively)? Why? Could you bring to the workshop practical examples and illustrations from current practice or pilot projects that could illustrate potential social, environmental and/or economic impacts?*

4. *Which mechanisms could be put in place for minimizing (key) negative impacts?*