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Adaptation to Climate Change in European Water Law and Policy

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1. Introduction¹

Despite all efforts to mitigate climate change, climate change seems inevitable.² Adaptation to climate change is inextricably linked to water management, as variations in temperature, precipitation and extreme weather events increase the risks of floods and droughts and higher water temperatures impacts on water quality (SEC (2009) 386). Water quality and quantity management is also important to protect the aquatic ecosystem. Adaptive water management is important as climate change may affect the safety of EU citizens and may have an adverse impact on the availability of sufficient and clean water for all users, including (aquatic) ecosystems.³ Adaptation can be defined as anticipating the adverse effects of climate change and taking appropriate action to prevent or minimize the damage it may cause (<http://ec.europa.eu/dgs/clima>). In this sense, adaptation reduces vulnerability.⁴ As can be seen in various national adaptation strategies from western and northern Europe, climate change can also result in opportunities for tourism and agriculture, e.g. an increase in the growing season and the yields.⁵

Adaptation efforts should not be limited to the reduction of vulnerability. Instead, in line with the approach taken in the Cancun Adaptation Framework⁶ and the EU White Paper on Adapting to Climate Change,⁷ adaptation should be directed towards reducing vulnerability and increasing the resilience of the social-ecological system.⁸ Resilience is originally an ecological concept. It refers to the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks.⁹ When a system is forced beyond the boundaries

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1 The research for this article took place in the context of the Knowledge for Climate research programme. A preliminary version of this article was presented at the Meeting of the Malta Forum on Adaptation to Climate Change in February 2012.

2 Intergovernmental Panel on Climate Change (IPCC), *IPCC Fourth Assessment Report: Climate Change*, 2007.

3 SEC (2009) 386.

4 W.N. Adger et al., 'Social-ecological resilience to coastal disasters', 2005 *Science* 309, pp. 1036-139.

5 G.R. Biesbroek et al., 'Europe Adapts to Climate Change: Comparing National Adaptation Strategies', 2010 *Global Environmental Change* 20, pp. 440-450.

6 Decision 1/16 adopted by the Conference of the Parties to the United Nations Framework Convention on Climate Change held in Cancun on its sixteenth session from 29 November to 10 December 2010, available at <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=4> (last visited 8 November 2012).

7 White Paper on Adaptation to Climate Change, COM(2009) 147.

8 C. Folke et al., 'Regime shifts, resilience, and biodiversity in ecosystem management', 2004 *Annual Review of Ecology, Evolution, & Systematics* 35, pp. 557-581; C. Folke et al., 'Adaptive governance of social-ecological systems', 2005 *Annual Review of Environment and Resources* 30, pp. 441-473.

9 B. Walker et al., 'Resilience management in social-ecological systems: a working hypothesis for a participatory approach',

of its regime, it shifts into a new regime, which is governed by a different set of structures and processes. A regime shift can be dramatic or subtle, and the characteristics of the new regime will depend on the feedback between the basin of attraction that characterizes the new regime and the driving variables in the system.¹⁰

Since the human influence on the resilience of ecosystems can hardly be overestimated, the concept of social-ecological resilience has been developed. Social-ecological resilience is the capacity of linked social and ecological systems to absorb as well as to adapt to change.¹¹ In other words, both society and nature have to adapt to climate change. How large the role of the government in this adaptation should be, depends on the question whether a society is of the opinion that adaptation is in the public interest and also depends on its politico-philosophical basis. It follows from resilience research that to sustain and absorb stress, external interference and complex changes, society should aim at strengthening the ability to deal with uncertainties and surprises, rather than attempting to control nature, maintain once and for all a given social or ecological situation, or counter any change.¹²

We will analyse to what extent the current EU legal framework for water management at the river basin level enhances resilience and thus contributes to adaptation to climate change. This leads us to the following overarching question:

To what extent is the European water legislation and policy enhancing resilience in adaptation to climate change?

We will first discuss the legal status of resilience and how resilience can be measured. This is complemented with an analysis of the compatibility of the White Paper on Adaptation to Climate Change with this 'resilience' approach. Then we will set out to what extent the main adaptation tasks in water management can be tackled with the help of the current water acquis, considering the need to increase resilience at the river basin level. This analysis includes the Water Framework Directive (WFD), the Floods Directive (FD), and the Water Scarcity and Drought Strategy (WSDS). They share the same building blocks, so differences and similarities will be mentioned where appropriate.

Marine waters fall outside the scope of this research, because climate change poses different challenges to marine waters (warmer water, acidification). While the river basins also include coastal waters, the EU Member States manage marine waters under the legal framework of the Marine Strategy Framework Directive (MSFD).¹³ The integration or mainstreaming of water concerns and related climate change adaptation measures into other policies also falls outside the scope of this article, although we recognize that it is one of the key aspects for successful adaptation to climate change in water management (as stated in the EU documents mentioned above, but also in other documents, such as OECD 2002).¹⁴ Pollution control, reversing overexploitation of scarce water resources and flood risk management are issues that cannot be solved alone within the context of water management.¹⁵ Land use planning in particular is critical in this regard.¹⁶ Water concerns should be fully reflected in land use planning and other environmental regulation of human activities. The WFD, the FD and the WSDS can further integration through the instruments of physical assessment and economic analysis, provided that climate change impacts are included.

2002 *Conservation Ecology* 6, no. 1, p. 14.

10 Folke et al. 2004, supra note 8.

11 Adger et al. 2005, supra note 4.

12 Folke et al. 2004, supra note 8; Folke et al. 2005, supra note 8; Adger et al. 2005, supra note 4.

13 A. Hilderling et al., 'Tackling pollution of the Mediterranean Sea from land-based sources by an integrated ecosystem approach and the use of the combined international and European legal regimes', 2009 *Utrecht Law Review* 5, no. 1, pp. 80-100.

14 OECD, *Improving Policy Coherence and Integration for Sustainable Development – A Checklist*, 2002.

15 H.F.M.W. van Rijswick & H.J.M. Havekes, *European and Dutch Water Law*, 2012.

16 A.A.J. de Gier et al., 'The influence of environmental quality standards and safety standards on spatial planning – Water and air as examples', 2007 *Journal of European Environmental and Planning Law* 4, no. 1, pp. 23-36.

2. The principle of resilience

The principle of resilience does not occur in the EU Treaties or secondary EU legislation. Resilience is first mentioned in the White Paper on Adapting to Climate Change.¹⁷ That is not surprising, in view of the development of this principle precisely in the context of adaptation to climate change literature.¹⁸ It is regrettable however, that the White Paper does not define the principle. This is important because two definitions of resilience exist. The so-called engineering approach defines resilience as return time after disturbance.¹⁹ A more dynamic approach defines resilience as the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks.²⁰

The EU White Paper Adapting to climate change appears to take a dynamic approach to resilience, as its four pillars of action adhere to elements considered important in resilience theory:

1. building a knowledge base;
2. integrating adaptation into EU key policy areas;
3. employing a combination of policy instruments (market-based instruments, guidelines, public-private partnerships) to ensure the effective delivery of adaptation, and
4. promoting international coordination on adaptation.

In addition, the White Paper states that the EU is willing to support and strengthen climate change adaptation measures taken at a local, regional or national level. The White Paper explicitly aims to develop a framework to reduce the EU's vulnerability to the impact of climate change. Increasing resilience is not included as an aim. Yet the White Paper mentions the importance of resilience to the impacts of climate change in various sectors so many times that building resilience appears to be an aim as well.

Resilience needs to be made measurable to enable its use as an evaluation criterion. The resilience literature promotes adaptive governance and adaptive management to increase social-ecological resilience and to deal with the long-term horizon and unpredictability of climate change.²¹ The focus of adaptive management is on learning. Institutions which manage adaptively experiment in safe ways, monitor results, update assessments and modify their policy as new knowledge is gained.²² The learning dimension of adaptive management also strongly values local knowledge and recognizes the need to share power between different levels and sectors of government and civil society through openness and participation in decision-making.²³

Promoting resilience through the legal system requires finding a mode of rendering adaptive governance elements compatible with the requirements of the rule of law.²⁴ These requirements boil down to adding two procedural aspects: respect for legal certainty and ensuring access to the courts.²⁵

1. Striking the right balance between legal certainty and flexibility to provide for rules that can deal with change without becoming arbitrary or uncertain.
2. Improving the adaptability of rules to enable learning, which refers to using assessments and monitoring results in an iterative process of decision-making.

17 White Paper on Adaptation to Climate Change, COM(2009) 147.

18 P.P.J. Driessen & H.F.M.W. van Rijswijk, 'Normative Aspects of Climate Adaptation Policy', 2011 *Climate Law*, no 4, pp 1-23.

19 C.S. Holling, 'Engineering resilience versus ecological resilience', in P. Schulze (ed.), *Engineering with ecological constraints*, 1996.

20 Walker et al. 2002, supra note 9.

21 L.H. Gunderson & C.S. Holling (eds.), *Panarchy: understanding transformations in human and natural systems*, 2002.

22 Ibid.

23 D. Huitema et al., 'Adaptive water governance: assessing the institutional prescriptions of adaptive (co-)management, from a governance perspective and defining a research agenda', 2009 *Ecology and Society* 14, no. 1:26, available at <<http://www.ecologyandsociety.org/vol14/iss1/art26/>> (last visited 8 November 2012); S. Munaretto & D. Huitema, 'Adaptive Comanagement in the Venice Lagoon? An Analysis of Current Water and Environmental Management Practices and Prospects for Change', 2012 *Ecology and Society* 17, no. 2:19, available at: <<http://www.ecologyandsociety.org/vol17/iss2/art19/>>.

24 J. Ebbesson, 'The rule of law in governance of complex socio-ecological changes', 2010 *Global Environmental Change* 20, no. 3, pp. 414-422; B. Cosens, 'Transboundary River Governance in the Face of Uncertainty: Resilience Theory and the Columbia River Treaty', 2010 *Journal of Land Resources and Environmental Law* 30, no. 2, pp. 229-265.

25 Ebbesson 2010, supra note 24.

3. Openness and participation in decision-making and access to justice to enable goals to be achieved in a legitimate way.
4. Multilevel governance at the bioregional scale.
5. Effectiveness, which refers to the achievement of goals. In a legal context, this requires that the legal framework is adequate to enable the achievement of its aims.²⁶ For this purpose, the legal framework should provide for the necessary conditions for the implementation of the rules, which includes their enforcement, and not provide for obstacles which hinder implementation.²⁷

The EU legal framework for water management – the WFD,²⁸ the FD and the WSDS – will be analysed using these criteria to assess whether they enhance resilience in adaptation to climate change.²⁹

Our evaluation criteria partially overlap with the actions proposed by the White Paper. Both strongly emphasize learning. Both also aim at increasing the effectiveness of adaptation, and at ensuring multilevel governance. Perhaps both aim at creating adaptive rules, as the White Paper proposes integrating adaptation as a concern into other policies. The White Paper does not pay much attention to openness, participation and access to justice and to the flexibility of rules. Perhaps the drafters of this policy document considered that these elements were already present in the water acquis. Our analysis of the water acquis will reveal whether it already reflects these elements of adaptive management and to what extent the EU should take action to strengthen resilience in water governance.

3. Resilience in European water governance

Prior to the WFD, the FD and the WSDS, European water legislation mainly contained environmental quality standards and emission values which the Member States had to implement in a cyclic way through plans and programmes of measures. It is common in European law to leave the administration of European law primarily in the hands of the Member States, because EU law does not offer a general legal basis for the harmonization of institutional and procedural administrative law. This is generally referred to as the institutional and procedural autonomy of the Member States.³⁰ Only when national administrative law is perceived to hinder the effective implementation of European law will the ‘Europeanization’ of national administrative law occur through European case law, directives or regulations.³¹ The introduction of river basin management authorities in the WFD shows that the EU considered that purely national water management would hinder the achievement of the chemical and ecological objectives of this directive. This institutional set-up has been taken over by the FD and the WSDS, as this approach is also well suited to setting up a system based on assessing flood and drought risks and providing for emergency response and preparedness.³²

Multilevel governance on a bioregional scale

The European water legislation and policy takes a river basin approach. This means that the Member States have to identify river basins and assign them to individual river basin districts responsible for water management (Article 3 WFD and Article 3 FD, WSDS p. 3). Each Member State has to ensure appropriate administrative arrangements, which include the identification of appropriate competent authorities, both on the national and the international level, since many river basins in Europe are transboundary. EU water management therefore takes place on a bioregional scale as it follows hydrological boundaries instead of administrative boundaries. Although the WFD and the FD prescribe the establishment of river

26 A.M. Keessen et al., ‘Transnational River Basin Management in Europe’, 2008 *Utrecht Law Review* 4, no. 3, pp. 35-56.

27 A.W.G.J. Buijze, ‘Effectiviteit in het bestuursrecht’, 2009 *Nederlands Tijdschrift voor Bestuursrecht* 8, pp. 228-237.

28 Water management in this article is limited to river basin management. As stated in the introduction, the Marine Strategy Framework Directive is not analyzed in this article.

29 This builds on the work of O. Odom Green, H.F.M.W. van Rijswick et al., A.M. Keessen & A.S. Garmestani, ‘EU Water Governance: Striking the Right Balance between Regulatory Flexibility and Enforcement?’, *Ecology and Society* 2012, in press.

30 J.H. Jans et al., *Europeanisation of Public Law* 2007.

31 A.M. Keessen, *European Administrative Decisions. How the EU Regulates Products on the Internal Market*, 2008.

32 R.K. Craig, ‘Adapting Water Law to Public Necessity: Reframing Climate Change Adaptation as Emergency Response and Preparedness’, 2010 *Vermont J. Env. Law* 11, p. 709.

basin districts, they still leave discretion to the Member States in assigning the competent authorities in due respect of the principles of procedural and institutional autonomy. The WFD term 'appropriate' slightly limits that discretion. It means that the identification of competent authorities and administrative arrangements should result in effective river basin management throughout the whole (international) river basin.

The institutional set-up of the WFD, the FD and the WSDS is reflected in the multilevel approach to goal and standard setting taken by these directives and policy document. The directives and communication allow the Member States to have discretion in developing water policy, directed at meeting the open and flexible goals (see below). Most of the implementing regulation is established by the lower levels in the hierarchy, i.e. at the national, regional and (sub-)river basin levels. In international river basins, the Member States that share a river basin have to cooperate by way of shared goal setting, planning and risk assessments. However, the Member States are only obliged to discuss their plans and measures in international river basin committee meetings to try to achieve a coordinated overarching management plan and programme of measures. The available instruments to realize this cooperation are the traditional international treaties between riparian states, which do not offer a proper legal system to enforce shared responsibilities.³³ Administrative cooperation between the various authorities and states involved therefore only proceeds on a weak legal or voluntary basis.³⁴

The discretion in the set-up of the authorities is such that national water authorities differ considerably in their tasks, legal status and competences. These institutional differences between Member States sharing the same river basin do not facilitate the transboundary management of river basins.³⁵ Yet international cooperation is necessary to ensure that everyone has a fair share of water in case of scarcity; that flood prevention measures do not result in flooding elsewhere in the river basin, that water pollution is kept within acceptable limits throughout the entire river basin and that measures to attain the ecological objectives, for instance fish ladders to facilitate fish migration, are taken in the whole river basin. Ideally, cooperation can even lead to taking adaptation measures at the most suitable place in the river basin.³⁶ The Commission concluded in the first report on the implementation of the WFD that most of the administrative arrangements appear, on paper, to be capable of ensuring a proper implementation of the WFD. However, it was often not clear to the Commission how the coordination arrangements between different authorities within the Member States were functioning, let alone coordination at the international level. The Commission reported that despite international coordination mechanisms being in place in many international river basin districts, only a few Member States reported using them to coordinate their monitoring programmes.³⁷

Information, participation and access to the courts

EU water management contains mandatory disclosure provisions and encourages public participation,³⁸ which is supposed to improve decision-making and legitimacy.³⁹ Article 14 WFD obliges the Member States to inform and consult the public when defining goals, making plans and adopting measures.⁴⁰

33 H.F.M.W. van Rijswijk et al., 'The need for international and regional transboundary cooperation in European river basin management as a result of new approaches in EC water law', 2010 *ERA Forum* 11, no. 1, pp. 129-157; E. Hey & H.F.M.W. van Rijswijk, 'Transnational watermanagement', in O. Jansen & B. Schöndorf-Haubold (eds.), *The European Composite Administration*, 2011, pp. 227-249.

34 J.J.H. van Kempen, *Europees waterbeheer: eerlijk zullen we alles delen? Een analyse van de Europese stroomgebied-benadering in het licht van de grensoverschrijdende verontreiniging van water tussen lidstaten*, 2012 [*European Water Management: Fair Sharing for All? An Analysis of the European River Basin Approach in Light of Transboundary Water Pollution between Member States*].

35 Van Rijswijk et al. 2010, supra note 33.

36 Biesbroek et al. 2010, supra note 5; Driessen and Van Rijswijk 2011, supra note 18; S.C. Van Pelt & R.J. Swart, 'Climate Change Risk Management in Transnational River Basins: the Rhine', 2011 *Water Resource Management* 25, pp. 3837-3861.

37 Report from the Commission to the European Parliament and the Council in accordance with Article 18.3 of the Water Framework Directive 2000/60 on programmes for monitoring of water status, COM(2009) 156 final.

38 European Community, *Guidance on public participation in relation to the water Framework Directive*, Luxembourg, Office for official publications of the European Communities, 2002.

39 S.R. Arnstein, 'A ladder of citizen participation', 1969 *Journal American Institute of planners* 35, no. 4, pp. 215-224; E.R. Alexander, 'The Public Interest in Planning: From Legitimation to Substantive Plan Evaluation', 2002 *Planning Theory*, no. 1, p. 226; Walker et al. 2002, supra note 9.

40 H.F.M.W. Van Rijswijk, 'The Status of Consumers in European Water Regulation', in Ch. Verdure (ed.), 'Environmental Law and Consumer Protection', 2011 *European Journal of Consumer Law / Revue Européenne de droit de la consommation*, no. 1, pp. 115-148.

This requires transparency and a clear explanation of the proposed measures.⁴¹ These requirements also apply to drought risk management plans and measures if a Member State has integrated drought risk management in its WFD plans and programmes of measures. The WSDS does not elaborate on introducing obligations to have the public participate in the price setting of drinking water and sanitation services. Yet this aspect deserves scrutiny, particularly in countries that suffer from water scarcity and droughts.⁴² Disclosure and participation requirements similar to those of the WFD apply to the results of assessments and the proposed measures for dealing with flood risks, as follows from the FD.⁴³ Within the ambit of flood risk management, the FD promotes openness by the mandatory use of flood hazard maps (showing areas prone to flooding) and flood risk maps (showing the potential adverse consequences of floods).

The involvement of the public is important in devising an adequate water management strategy. However, the interests of all actors, being private or public actors, may be contradictory. Common goals and necessary measures may be hard to define and to realize when so many and often opposite interests are at stake. The Greek diversion case provides a typical example of this.⁴⁴ The project concerns a partial diversion of the upper water of the river Acheloos to Thessaly, mainly to serve the irrigation needs of cotton farmers, but also for electricity production and the supply of water to towns and cities in the region of Thessaly. Environmental organizations, international NGOs and local municipalities opposed this decision for over twenty years. Water management in times of climate change requires balancing the interests of all water users. Their interests can be framed in terms of rights and duties.⁴⁵ Water users exercise their right to clean and sufficient water for drinking, bathing, nature, agriculture and industry uses, sufficient water for shipping and protection against flooding. These rights can only be realized if the corresponding duties are felt with the same intensity. The main duty that users should have is to develop and maintain sustainable use, i.e. regarding the quantity they use, pollution control and the purification of polluted water.

The WFD, the FD and the WSDS promote the balancing of the different interests through financial instruments. The WFD proposes the economic analysis of all water uses in the (sub-)river basin and the cost recovery requirement, which is based on the principles that the polluter pays and the user pays.⁴⁶ However, the implementation of cost recovery measures differs wildly among the Member States. Often they are not used beyond paying for drinking water supply and waste water treatment (WSDS, p. 3). In the Greek case, these instruments were not used, as the deadline for using them had not yet expired at the time the contested decisions were taken. The WSDS recommends the introduction of the user pays principle for all essential uses to encourage efficient water use (WSDS, p. 3). The FD also relies on a financial incentive to balance conflicting interests, as it prescribes an assessment of the adverse consequences of future flooding. The FD does not prescribe the user pays principle for balancing contradictory interests in general. However, it enables the balancing of international interests by referring to the solidarity principle to prohibit including measures in plans which result in a shift of the burden of flooding from one Member State to another without prior consent (Article 7 (4) FD).

If disputes over water management arise, access to justice should be available to stakeholders to ensure that the public administration remains within legal bounds. They should therefore be able to enforce their right to public participation and to challenge acts, administrative decisions and omissions in the implementation of the water plans and programmes of measures. This right is firmly established by the Aarhus Convention, ratified by both the EU and its Member States. Ratification was followed by the establishment of directives on environmental information and public participation in environmental

41 Communication from the Commission to the European Parliament and the Council, Towards sustainable water management in the European Union, First stage in the implementation of the Water Framework Directive 2000/60/EC, COM(2007) 128 final.

42 M.G. Quesada, *Water and Sanitation Services in Europe, Do Legal Frameworks Provide for Good Governance*, Centre for Water Law, Policy and Science, University of Dundee, 2010 and OECD, *Water Governance in OECD countries, a multilevel approach*, OECD studies on water, 2011.

43 These transparency and participation requirements follow from the European adherence to the Aarhus Convention. This Convention is more generally implemented in Directive 2003/35 and Regulation 1367/2006.

44 ECJ, 11 September 2012, Case C-43/10, *Nomarchiaki*, [2012] ECR I-0000.

45 H.F.M.W. Van Rijswick, *Moving Water and the Law*, 2008; Van Rijswick & Havekes 2012, *supra* note 15.

46 P.E. Lindhout, 'A Wider notion of the scope of water services in EU water law. Boosting payment for water-related ecosystem services to ensure sustainable water management?', 2012 *Utrecht Law Review* 8, no. 3, pp. 86-101.

matters and a regulation which covers the Aarhus Convention vis-à-vis the European institutions and bodies. The Directive on Access to Justice in Environmental Matters is still pending.

The *Janecek* case demonstrates that when directives take a programmatic approach like the WFD and the FD, citizens can only enforce their right that the Member States establish plans and programmes of measures.⁴⁷ They cannot enforce compliance with specific measures in a plan or programme that aim to realize the general objectives. Another problem could be that citizens depend on national law for access to the courts as long as the Directive on Access to Justice in Environmental Matters is pending. In general, that would mean that European citizens cannot rely on European law rights for access to justice. However, the ECJ has held that the Member States have to interpret their laws in the light of the Aarhus Convention.⁴⁸ Apparently, the ECJ feels entitled to control the faithful implementation of the Aarhus Convention in the Member States because of the Europeanisation of environmental law.⁴⁹ After all, a lack of access to justice undermines the position of citizens in water management and diminishes their role in the implementation of water management measures.

Flexible goals, objectives and exemptions

The WFD, the FD and the WSDS need to maintain 'flexibility' for developing a substantive water policy at the appropriate level, because geophysical circumstances and the effects of climate change differ per region.⁵⁰ This flexibility is reflected in the open and flexible goals of the WFD, the FD and the WSDS. The WFD environmental goal for surface waters is to achieve a 'good chemical and ecological status' in 2015. Groundwater should at that time be in a good chemical and quantitative status, which is also important for adaptation to climate change.⁵¹ The chemical goals are set at the EU level for the most dangerous substances and at the national level for less dangerous substances or for those substances that are not problematic in the whole EU but only in a specific Member State. The ecological goals are established at the (sub-)river basin level. They include a quantitative objective as they also prescribe minimum ecological flow levels. The quantitative goal for groundwater is somewhat established at the EU level as the WFD prescribes the achievement of a balance between abstraction and recharge. The WSDS does not add the goal of achieving a good quantitative surface water status or elaborate specific standards. Its goal is the mitigation of water scarcity and droughts and it offers a set of policy options to be implemented under the WFD. The FD also sets an open goal – reducing the adverse effects of flooding – and allows the Member States to set 'appropriate objectives' for the management of flood risks in their river basin districts to achieve this goal (Article 7 FD).

The elaboration of goals into objectives is a complex, multilevel process under the WFD. This applies in particular to its ecological goal. The benchmark against which the achievement of the good ecological status goal is to be tested is the best status achievable, the so-called high status. This is defined as the biological, chemical and morphological conditions associated with no or very low human pressure.⁵² These reference conditions have to be set at the (sub-)river basin level on the basis of expert advice from ecologists, as the ecological objectives depend on the local circumstances.⁵³ The assessment of the quality of a particular water body is based on the extent of deviation from the reference status. Good status is achieved if only a slight deviation from the high status is present. Ecologists have however criticized the benchmark against which the attainment of good ecological status is tested for being unrealistic.⁵⁴

47 ECJ, Case C-237/07, *Janecek*, [2008] ECR I-2607, Para. 43-47.

48 ECJ, Case C-240/09, *Lesoochránárske zoskupenie*, [2011] ECR I-0000.

49 J. Jans, 'Who is the referee? Access to justice in a globalized legal order. A case analysis of ECJ judgment C-240/09 *Lesoochránárske zoskupenie* [2011] ECR I-0000 of 8 March 2011', 2011 *Review of European Administrative Law*, no. 1, pp. 85-97.

50 G.T. Raadgever et al., 'Uncertainty management strategies: Lessons from the regional implementation of the Water Framework Directive in the Netherlands', 2011 *Environmental Science & Policy* 14, no. 1, pp. 64-75. Cf. A.M. Keessen et al., 'The need for flexibility and differentiation in the protection of vulnerable areas in EU environmental law: the implementation of the Nitrates Directive in the Netherlands', 2011 *Journal for European Environmental and Planning Law* 8, no. 2, pp. 141-164.

51 P. de Smedt, 'Water-related tools for climate change adaptation in the Flemish region: The art of linking water objectives to spatial planning', 2010 *Journal for European Environmental and Planning Law* 7, no. 3, pp. 287-301.

52 W. Howarth, 'The Progression Towards Ecological Quality Standards', 2006 *Journal of Environmental Law* 18, no. 1, pp. 3-35.

53 C. Dieperink et al., 'Ecological ambitions and complications in the regional implementation of the Water Framework Directive in the Netherlands', 2012 *Water Policy* 14, pp. 160-173; G.T. Raadgever et al., 'Uncertainty management strategies: Lessons from the regional implementation of the Water Framework Directive in the Netherlands', 2011 *Environmental Science & Policy* 14, no. 1, pp. 64-75.

54 E.g. D. Paganelli et al., 'Critical appraisal on the identification of Reference Conditions for the evaluation of ecological quality status along

However, the WFD allows the Member States to achieve only good ecological potential in artificial or (by human activities) heavily modified water bodies, thus ensuring flexibility.

An example of an ecological objective is the presence of a viable population of salmon in the River Rhine. This objective is set by the Member States sharing the River Rhine on the basis of expert advice. They thus implement Annex V to the WFD, which stipulates for a river that composition, abundance and age structure of fish fauna (which it further specifies) have to be included as a quality element for the classification of ecological status. Many Member States had severe problems in dealing with the elaboration of the ecological standards of the WFD.⁵⁵ The WFD prescribed an intercalibration exercise in order to harmonize the understanding of good ecological status and to facilitate the establishment of clear, enforceable, ecological objectives. The Member States were placed into 14 intercalibration groups that share ecological types of rivers, lakes and coastal/transitional waters, for instance 'northern lakes' and 'Mediterranean rivers', and can thus compare monitoring results. This has resulted in harmonized ecological objectives and values to be attached to these objectives. Thus the intercalibration exercise has enabled the classification of water bodies into bodies with an ecological high, good, moderate and low status.⁵⁶ Muddy waters and clear waters can then be compared among them.

The social context plays an important role in determining how these high ecological objectives can be made compatible with human impacts.⁵⁷ While the WFD integrates the measures to be taken under other water directives (e.g. the Nitrates Directive), it allows the Member States not to take additional measures but to invoke justifications for not meeting the good ecological status.⁵⁸ These justifications have to be included in the (sub-)river basin management plan and are subject to disclosure and public participation obligations. This ensures that locals and interest groups have their say and can provide the decision makers with relevant information. Moreover, the WFD gives the European Commission also a role in this regard. It may only accept a justification in situations that fit the conditions of the four exceptions mentioned in the WFD. These exceptions are new sustainable developments, force majeure, a postponement of the deadline for meeting the objectives and a lowering of the objectives. A proportionality test and an assessment of costs and benefits is among the conditions that apply for their use.⁵⁹ To put it succinctly, the main hindrance to an all too easy invocation of justifications is that all affordable and practically feasible measures should be taken before a justification can be invoked.

The FD takes the procedural approach of the WFD to the next level. It neither contains European standards for flood risks nor a procedure for the elaboration of such standards. The FD takes a completely procedural approach as the setting of binding flood risk standards at the EU level has been supplemented by regulatory mechanisms – assessments of flood risks and flood hazards – which set out the basis for action but allow for national discretion in whether and which measures are taken.⁶⁰ The preamble to the FD justified this subsidiarity-inspired approach by reference to the different types of floods that occur and the variation of damage that floods may cause. It is not the aim of the FD to offer citizens protection against flooding by setting minimum common safety standards, such as a 1 in a 200 years probability of flooding. Instead, flooding is considered in the preamble as a natural phenomenon which cannot be prevented.

the Emilia-Romagna coast (Italy) using M-AMBI', 2011 *Marine Pollution Bulletin* 8, pp. 1725-1735.

55 A.M. Keessen et al., 'European River Basin Districts: Are They Swimming in the Same Implementation Pool?', 2010 *Journal of Environmental Law* 22, no. 2, pp. 197-222; Y. Uitenboogaart et al. (eds.), *Dealing with complexity and policy discretion, the implementation of the Water Framework Directive in five Member States*, 2009.

56 Communication from the Commission to the European Parliament and the Council, Towards sustainable water management in the European Union, First stage in the implementation of the Water Framework Directive 2000/60/EC, COM(2007) 128 final.

57 D. Moss, 'The Water Framework Directive: total environment or political compromise?', 2008 *Science of the Total Environment* 400, pp. 32-41; W.E. Bijker et al., *The paradox of scientific authority: the role of scientific advice in democracies*, 2009; C. Dieperink et al. 2012, supra note 53.

58 Report from the Commission to the European Parliament and the Council in accordance with Article 18.3 of the Water Framework Directive 2000/60 on programmes for monitoring of water status, COM(2009) 156 final; H. Ginzky, 'Exemptions from statutory water management objectives: Requirements, spheres of responsibility, unresolved implementation issues', 2006 *Journal for European Environmental and Planning Law* 3, no. 2, pp. 117-131.

59 R. Brouwer et al., 'Integrated river basin accounting in the Netherlands and the European Water Framework Directive', 2005 *Statistical Journal of the United Nations Economic Commission for Europe* 22, no. 2, pp. 111-131.

60 W. Howarth, 'Aspirations and Realities under the Water Framework Directive: Proceduralisation, Participation and Practicalities', 2009 *Journal of Environmental Law* 21, no. 3, pp. 391-417.

The FD prescribes that the Member States must establish 'appropriate' objectives for the management of flood risks in their river basins, including coastal areas. They have to set their standards on the basis of the flood hazard maps and flood risk maps, which the FD requires them to prepare. Their objectives should focus on the reduction of potential adverse consequences of flooding for human health, the environment, cultural heritage and economic activity. Only if it is considered appropriate should the Member States adopt objectives to reduce the likelihood of flooding. Consequently, different standards apply throughout a transboundary river basin. For instance, Dutch safety standards in the Rhine basin are up to ten times higher than German safety standards.⁶¹ These differences are caused by a different approach towards flood risks. A preventive approach prevails in the Netherlands, while the German *Länder* take a precautionary and damage-reduction approach.⁶² The FD is so open and flexible that it does not include exemptions to be invoked for not being able to reduce potential adverse consequences of flooding.⁶³

Adaptability of rules to enable learning

The adaptiveness of rules presumes, first of all, that assessments and monitoring are prescribed to obtain reliable and up to date information for decision-making in a changing environment.⁶⁴ The WFD obliges the Member States to make for each river basin district or for the portion of an international river basin district falling within its territory an analysis of its characteristics, the impacts of human activities on the status of surface waters and groundwater, and an economic analysis of water use (Article 5 WFD).⁶⁵ Having this information available makes it not only possible to set adequate goals and standards but also to take adequate, proportionate and fair measures to improve and protect the status of water bodies.⁶⁶ The WSDS attaches similar importance to improving knowledge and data collection. Water scarcity and drought risks should be addressed by the monitoring programmes established under the WFD. The FD also contains assessment obligations; however, it does not elaborate on establishing monitoring programmes.

Adaptability also refers to changing the course of action on the basis of the information acquired through assessments and monitoring. The WFD and the FD provide for a mandatory cyclical planning process, based on the assessments and monitoring results, to protect and improve the ecological, chemical and quantitative status of river basins. The WSDS recommends that water scarcity be taken into account in the context of WFD assessments and monitoring. The plans have to be made and reviewed every six years. Public participation in this process should ensure that local input is taken into account. The plan has to contain a programme of measures to tackle the causes of not achieving the good status of waters, reducing water scarcity or a reduction of the adverse effects of flooding. From 2015 the time scale for the creation of flood risk management plans and programmes of measures will be synchronized with the WFD timescales for plans and programmes of measures to further realize integrated water management (Article 9 WFD). This will make it easier to achieve synergies, for instance by taking measures to boost ecosystem storage capacity for water.

The first generation of plans and programmes date from 2009 and will expire in 2015. In the meantime, new plans and programmes have to be drafted to cover the next planning period that lasts from 2015 until 2021. This six-year planning cycle facilitates learning and enables adaptive water management. Unfortunately, it also enables the Member States to postpone the realization of the WFD goals and objectives at least until the third planning cycle has ended in 2027.⁶⁷ It is not fully clear to what extent plans and programmes of measures may or must be changed during the planning period. It appears – as

61 Van Pelt & Swart 2011, supra note 36.

62 Ibid.

63 W. Howarth, 'The European Community approach to flood defence', 2007 *The Journal of Water Law* 18, pp. 115 et seq.; C. Herman, 'Will the Floods Directive keep our feet dry? Policies and regulations in the Flemish region and Scotland', 2010 *The Journal of Water Law* 21, pp. 156 et seq.

64 L. Baaner, 'The programme of measures of the Water Framework Directive – More than just a formal compliance tool', 2011 *Journal for European Environmental and Planning Law* 8, no. 1, pp. 82-100.

65 R. Brouwer et al., 'Integrated river basin accounting in the Netherlands and the European Water Framework Directive', 2005 *Statistical Journal of the United Nations Economic Commission for Europe* 22, no. 2, pp. 111-131.

66 W. Howarth, 'Cost Recovery for Water Services and the Polluter Pays Principle', 2009 *ERA Forum*, pp. 565-587.

67 Howarth 2009, supra note 60; Keessen et al. 2008, supra note 26.

mentioned above – from the text of the WFD that changes must be made if monitoring reveals that the goals as set out in the plan will not be met without additional measures. Yet the Member States may in these circumstances also be entitled to invoke a WFD exemption. In case of an extreme event, the WFD allows for temporarily not meeting its goals. The exemption of new sustainable development can be used to justify adaptation to climate change measures such as new flood defence infrastructure or the diversion of a river.⁶⁸ The FD provides neither for elaborate monitoring programmes to continuously measure flood risks and flood hazards nor for exemptions and does not refer to intermediate changes to plans and programmes of measures.

Effectiveness

The timely achievement of the WFD goals and objectives will be quite a challenge. The first Commission report on the implementation of the WFD revealed that the percentage of water bodies actually meeting all the WFD objectives is very low, in some Member States as low as 1%.⁶⁹ Most water bodies are at risk of not meeting all the WFD requirements before 2015. Many high at risk water bodies are located in densely populated areas and regions of intensive, often unsustainable, water use.⁷⁰ Another factor is whether a Member State had made the necessary investments to comply with earlier EU water law, which addressed pollution by domestic waste water discharges, nutrients from agriculture and industrial emissions.⁷¹ Currently, the most significant and widespread pressures are diffuse pollution (in particular by agricultural sources), physical degradation of water ecosystems and, particularly in Southern Europe, the overexploitation of water.⁷²

The advantages of the flexible and adaptable European river basin approach may at the same time seriously hamper the effectiveness of the very legal framework.⁷³ The vast differences between Member States are the main problem. Taking regional, climatological and societal differences into account in decision-making appears to enable less legitimate differences to creep in. For instance concerning the level of ambition to protect waters, the choices to prioritize and facilitate the water needs of the various users and the interpretation of the main concepts and obligations of the WFD. Interviews with civil servants involved in the implementation of the WFD and questionnaires completed by legal experts from various Member States revealed that Member States adopt different approaches.⁷⁴ In practice, the river basin approach has led to river basin management within national borders. This could well be expected in view of the considerable differences between the Member States in the extent to which they comply with their EU obligations in the field of environmental law (e.g. COM(2008)).⁷⁵ This also applies to their compliance with the ‘old’ water directives.⁷⁶

Various legal factors contribute to explain the persistence of national boundaries. The lack of coordination within river basins can be due to a different interpretation of the open and flexible provisions of EU water law and policy.⁷⁷ Such substantive differences can be addressed by the Common Implementation Strategy.⁷⁸ It can also be caused by a different level of ambition. That can only be solved through coordinated action by the parties to a river basin district and enforcement action by the Commission. Private parties cannot enforce the achievement of these goals but could be forced to adapt if states take the cost recovery of their water use more seriously. Note, however, that cost recovery may

68 ECJ, Case C-43/10, *Nomarchiaki*, [2012] ECR I-0000.

69 Communication from the Commission to the European Parliament and the Council, Towards sustainable water management in the European Union, First stage in the implementation of the Water Framework Directive 2000/60/EC, COM(2007) 128 final.

70 *Ibid.*

71 *Ibid.*

72 *Ibid.*

73 OECD, *Water Governance in OECD countries, a multilevel approach*, OECD studies on water, 2011.

74 Keessen et al. 2010, *supra* note 55; Y. Uitenboogaart et al. (eds.), *Dealing with complexity and policy discretion, the implementation of the Water Framework Directive in five Member States*, 2009.

75 Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions, on implementing European Community Environmental Law, COM(2008) 773 final.

76 Communication from the Commission to the European Parliament and the Council, Towards sustainable water management in the European Union, First stage in the implementation of the Water Framework Directive 2000/60/EC, COM(2007) 128 final.

77 Keessen et al. 2010, *supra* note 55; Uitenboogaart 2009, *supra* note 74.

78 J.J.H. van Kempen, ‘Countering the Obscurity of Obligations in European Environmental Law: An Analysis of Article 4 of the European Water Framework Directive’, 2012 *Journal of Environmental Law*, doi: 10.1093/jel/eqs020.

not apply to protection against flooding, since this principle does not appear in the FD. Institutional differences also hamper coordinated action throughout a river basin. The remaining institutional autonomy leads to different administrative structures in every Member State, which does not facilitate transboundary cooperation at levels other than the state level.⁷⁹

Finally, the lack of coordinated action could be due to inconsistency in the EU river basin management approach. While river basin management presupposes shared responsibilities and accountability, the integration into river basin districts has not been coupled with shared river basin accountability for attaining the goals.⁸⁰ Instead, the individual Member States remain responsible and accountable for compliance with their EU obligations. If this leads to conflicts between Member States, the European Commission can only mediate in conflicts between riparian states without having binding dispute settlement powers in the absence of a legal basis in the WFD or the FD for arbitration.⁸¹ The Member States are not allowed to seek international arbitration, because the European Court of Justice has established in its case law that arbitration is not allowed concerning disputes involving the interpretation or application of EU law.⁸² Consequently, disputes have to be solved amicably or through infringement proceedings brought before the European Court of Justice. Although EU Member States can take each other to court over disputes if they suspect an infringement of EU law, in practice they rarely make use of this power. This means that the European Commission has to enforce compliance.⁸³

The open and flexible formulation of the goals and objectives hampers enforcement. It remains controversial to what extent the achievement of the WFD's objectives is enforceable. Already when the Commission proposed the WFD, the Council fought with the European Parliament about the legal status of these objectives.⁸⁴ Should the WFD's good status obligations be obligations of best effort or should they be obligations of result? The latter obligation is less far-reaching than the former in case the result of good surface water status is not achieved. Then, a Member State would still have complied with its duty if it can demonstrate that it had taken protective measures and in so doing had acted with the intention of contributing towards or not jeopardizing the result of good surface water status. Despite a change in formulation from 'in order to achieve' to 'with the aim of achieving', the Court of Justice will have the final say in the qualification of the good status obligations. One can take a cue from a case in which Luxembourg was condemned for not timely and correctly having transposed inter alia the WFD goals into binding national law.⁸⁵ This points towards the qualification of the WFD's ecological obligations as obligations of result, as it is most in line with the wording in the several language editions of the WFD and with earlier case law on environmental objectives.⁸⁶

The enforceability of the goal of mitigating the challenge posed by water scarcity and drought varies. As the WSDS states, the protection of fresh water supply can be improved by the application of the instruments of the WFD, but it is left completely to the discretion of the Member States to do so. Since the WSDS is only a Commission Communication, it does not contain obligations that bind the Member States. Consequently, the enforceability of the WSDS totally relies on the enforceability of the relevant obligations under the WFD. The WFD goal of achieving the good quantitative status of groundwater by 2015 unless an exemption can be invoked constitutes a clearly worded, enforceable obligation of result.⁸⁷ Protecting other fresh water resources as one of the objectives of the WFD is however not further elaborated in the WFD in the absence of a good quantitative status obligation for surface water. The

79 Van Rijswijk et al. 2010, supra note 33.

80 Keessen et al. 2008, supra 26; E. Hey & H.F.M.W. van Rijswijk, 'Transnational watermanagement', in O. Jansen & B. Schöndorf-Haubold (eds.), *The European Composite Administration*, 2011, pp. 227-249.

81 Keessen et al. 2008, supra note 26.

82 Keessen et al 2008, supra note 26; Hey & Van Rijswijk 2011, supra note 80.

83 J.J.H. van Kempen, *Europees waterbeheer: eerlijk zullen we alles delen?, Een analyse van de Europese stroomgebied-benadering in het licht van de grensoverschrijdende verontreiniging van water tussen lidstaten*, 2012 [*European Water Management: Fair Sharing for All? An Analysis of the European River Basin Approach in Light of Transboundary Water Pollution between Member States*].

84 M. Kaika, 'The Water Framework Directive: a new directive for a changing social, political and economic European framework', 2003 *European Planning Studies* 11, no 3.

85 ECJ, C-32/05, *Commission v Luxembourg*, [2006] ECR I-11323.

86 Van Kempen 2012, supra note 83.

87 Ibid.

only exception is the obligation to secure a minimal ecological flow level which follows from the WFD obligation to achieve good ecological status.

The goal of reducing the adverse effects of flooding (Article 1 WFD, FD) constitutes an obligation of best efforts which appears to be hardly enforceable from the outset. The FD is the most explicit example of the governance approach in EU environmental law, offering large policy discretion to the Member States in the way they want to deal with flooding. It does not contain or elaborate upon safety norms to be met within a set deadline unless an exemption can be invoked. Hence the FD does not offer citizens a minimum level of protection against flooding at all. Instead, it focuses on the availability of information concerning flood risks and the obligation for the Member States to develop flood risk management plans, which contain measures to achieve the 'appropriate' objectives. This does not amount to a strong obligation to take measures. In the absence of a cost recovery obligation, it is also not clearly established who should bear the costs of taking such measures. There are large differences in flood protection arrangements and strategies throughout the European Union, which will turn out – similar to the river basin management plans under the WFD – to be largely uncoordinated across the river basin district as firm coordination provisions are lacking. The lack of coordination reduces synergy as it makes it difficult to assess which combination of flood strategies – prevention, protection, preparedness, recovery – could work best within the river basin to reduce the adverse effects of flooding.

4. Conclusions and outlook

This article aimed to analyze the appropriateness of the EU legal framework for water management to adapt to climate change in the context of the following overarching question: To what extent is the European water legislation and policy enhancing resilience in adaptation to climate change? We measured the resilience of two directives, the WFD and the FD, and one policy document, the WSDS. From the literature we developed the following five assessment criteria:

1. Striking the right balance between legal certainty and flexibility to provide for rules that can deal with change without becoming arbitrary or uncertain.
2. Improving the adaptability of rules to enable learning, which refers to using assessments and monitoring results in an iterative process of decision-making.
3. Openness and participation in decision-making and access to justice.
4. Multilevel governance on a bioregional scale.
5. Effectiveness, which refers to the achievement of goals. In a legal context, this requires that the legal framework is adequate to enable the achievement of its aims. For this purpose, the legal framework should provide for the necessary conditions for the implementation of the rules, which includes their enforcement, and not provide for obstacles which hinder implementation.

The combination of competent authorities and administrative arrangements per river basin district and a strong demand for disclosure and public participation constitute positive and resilient institutional elements of the WFD. They enable the specific and changing circumstances and societal needs within river basins to be dealt with. The rules are adaptive in the sense that they prescribe assessments, monitoring and public participation to inform the coordinated, six-year planning cycle of the WFD, the WSDS and the FD.

There are, however, also weak spots. Flexibility, an element not elaborated in the White Paper, constitutes one of them. The effectiveness in the sense of goal attainment depends on the way the open and flexible goals are elaborated into more specific objectives at the national, regional and local level, the extent to which Member States use their discretionary room to recover the costs of water use and take measures or to rely on exemptions instead. The sustainable and equitable use of water is hardly regulated. Instead, the WFD and WSDS fully rely on the cost recovery for water services (Article 9 WFD), but it can be doubted whether all users pay for fresh water and if they pay whether the price reflects the scarcity of the resource. There are – besides the general principles of EU law – no legal mechanisms to arrive at a fair and equitable distribution and use of fresh water resources. This is not only a problem with regard

to the right to water,⁸⁸ but also with regard to a fair balance in water use *between* several societal groups (households, industry, agriculture, tourism) and *within* these societal groups. In view of the uncertainties for individuals to rely on their water rights before the courts because of the multilevel approach and the large margins of discretion that are offered to the Member States, the result may be conflicts and an insufficient level of protection for individuals and other societal groups.⁸⁹

Especially social justice and fairness (substantive, procedural and distributive) within transboundary river basins is a hot topic that should be further investigated to facilitate its use as a basis for EU action in the field of adaptation, because the distributional effects of adaptation policies can have large impacts on the interests of the several stakeholders.⁹⁰ It is crucial to arrive at a fair distribution of profits, risks, welfare, scarce water and the room for pollution at the river basin level. It is equally important to facilitate that ecological adaptation measures, such as measures to improve fish migration and green infrastructure, are taken in a coordinated way throughout entire river basin districts. A stronger role for the Commission in preventing and solving transnational disputes and ensuring compliance is required to facilitate goal attainment in transboundary river basins.⁹¹ Shared responsibility at river basin level for the achievement of the goals and objectives seems a logical next step which would further the achievement of a fair distribution of water and coordinated action at river basin level. Aligning current mechanisms can also further the fair and equitable use of fresh water, in particular reinforcing the obligation of cost recovery for all users – thus including agricultural use – and promoting synergy in the implementation of the water directives.

The earlier attention of EU environmental law to give rights to European citizens seems to belong to the past. As the *Janecek* case demonstrated, citizens cannot enforce compliance with the goals and objectives when directives take merely a procedural approach without substantive provisions that give rights. Citizens can only ask that plans, programmes of measures and maps be made and disclosed, but they can hardly influence the choice of measures and their actual implementation. The focus in EU water law is primarily on the beginning of the policy cycle, where the involvement of citizens has to be ‘encouraged’. The focus is not on the end of the policy cycle and – crucial for effectiveness – on the enforceability of the objectives and on granting rights to citizens. This seriously limits the role of private enforcement. The European Commission appears to have to play the most important role in enforcing compliance.

Only time will tell whether the current approach constitutes a problem for achieving adaptation and building resilience. It depends on the willingness of the individual Member States to take measures and their ability to coordinate their water plans across the entire river basin. A lack of appropriate action at the river basin level can easily lead Member States to inaction instead of trying to become more resilient and meet the objectives of the several water directives on time. If the Member States do not take appropriate measures, the EU legal framework facilitates that citizens can take adaptation measures themselves. The application of the cost recovery principle should promote their sustainable water use and their access to information on drought and flood risks should ensure that people know the risks and can, for instance, decide to relocate or insure themselves. Provided, of course, that they have the means to take action. It could be argued whether distributive fairness should or can be achieved by economic instruments alone,⁹² as reliance on private action may disproportionately affect vulnerable groups which lack the financial means to adapt.

88 H. van Rijswijk, ‘Searching for the Right to Water in the Legislation and Case Law of the European Union’, in: H. Smets (ed.), *The right to safe drinking water and sanitation in Europe / Le droit à l’eau potable et à assainissement, sa mise en oeuvre en Europe*, 2012, pp. 87-113.

89 H.F.M.W. van Rijswijk & A.M. Keessen, ‘Legal Protection of the Right to Water in the European Union’, in F. Sultana & A. Loftus (eds.), *The Right to Water: Politics, Governance and Social Struggles*, 2011, pp. 123-138.

90 Driessen & Van Rijswijk 2011, supra note 18.

91 Van Kempen 2012, supra note 83.

92 H. Unnerstall, ‘The Principle of Full Cost Recovery in the EU-Water Framework Directive – Genesis and Content’, 2007 *Journal of Environmental Law* 19, no. 1, pp. 29-42, doi:10.1093/jel/eq1038.