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The Legal and Policy Framework of Transboundary Flood Management

The challenge of transboundary flood management in international relations

The joint management of river floods has always been one of the most prominent challenges of transboundary water cooperation in international river basins. Naturally, this condition is also reflected in the relevant international regulatory and policy frameworks. Thus, contemporary public international law stipulates the collaboration of riparian states to prevent and mitigate floods as one of the core obligations of transboundary water cooperation. The European Union actually dedicates a stand-alone regulatory instrument – the Floods Directive – to the collective management of floods in the EU. River basin organisations, basin-wide and bilateral treaties devote significant effort and attention to cross-border flood control.

This is all the more necessary as the various megatrends of our era – most prominently climate change, urbanisation and ensuing land use change – all contribute to the global rise in flood risks. The regular assessment reports of the Intergovernmental Panel on Climate Change project that one of the most critical freshwater-related impacts will be the increased exposure to 20th century 100-year-river-floods. This will go hand in hand with the likely increase in the frequency of meteorological droughts (i.e. less rainfall) and agricultural droughts (i.e. less soil moisture). The rise of hydrological extremes will have a knock-on effect on the safety of humans, material assets, other natural resources and ecosystems. Not only the magnitudes of flood events are expected to increase, but their patterns also show significant changes. The loss of snow and the decrease in total meltwater yields in glacier-fed rivers implies a shift of peak discharge from summer to spring [3 p. 232–234]. In the European context recent research suggests that flood peaks with return periods above 1 in 100 years are expected to double in frequency in the next thirty years [1].

Against this background the importance of proper policy and regulatory frameworks to govern transboundary cooperation in the field of flood protection will only grow. Luckily, flood management belongs to the more "benign" challenges of co-riparian relations. Floods are typically short-term events with a(n almost) mechanical knock-on effect on downstream areas. The downstream motion of water can be predicted fairly precisely by widely available satellite-based technologies. On mid- and downstream areas, where population density tends to be the highest, this allows authorities and citizens to choose the adequate level of protection. Therefore, flood management is usually perceived by riparian states as a politically less contentious issue whose collective resolution is mutually beneficial. (This is in sharp contrast with such "malign" issues of high political

https://doi.org/10.36250/01052_10

conflict potential as water allocation between riparian states or transboundary water pollution) [5]. This condition significantly enhances the development of international governance frameworks and the success of their implementation.

The structure of the international governance framework

General international water law – notably customary international law, the 1997 UN Watercourses Convention and the 1992 UNECE Water Convention – addresses the issue of transboundary flood cooperation at a high level of abstraction. It prescribes horizontal obligations that are derived from the general duty of riparian states to cooperate and not to cause transboundary harm. The main rules of transboundary floods can be clustered into procedural responsibilities and substantive obligations. Procedural responsibilities of riparian states cover emergency cooperation and contingency planning. Substantive obligations, on the other hand, relate to the duty to maintain national flood protection infrastructure and to implement flood control in such a way that it does not increase flood risks in fellow riparian states.

At basin level the relevant multilateral or bilateral treaties usually address the issue of flood management explicitly, even though detailed rules on the subject are adopted only exceptionally (e.g. in the case of the Sava River). Yet, coordination of flood protection has become a major undertaking by all relevant river basin organisations. This development has, especially in the European continent, yielded considerable results in the past two decades. Naturally, flood management also features in the lowest level of transboundary water cooperation: bilateral (frontier) water cooperation treaties.

The European Union (EU) – a regional supranational body of European states – maintains an autonomous water governance regime that covers the issue of transboundary flood management substantially. In fact, the EU's Floods Directive constitutes the World's most elaborate and robust dedicated international cooperation scheme with regards to flood management.

Flood management in international water law

General international water law

International law is the body of law that governs the legal relations among states and international organisations. Its main function is to provide the institutional framework and rules for treaty-making, interpretation and dispute resolution for countries to work together peacefully. International water law is a sublet of public international law concerned with the use and protection of freshwater.

Over the past two centuries international water law has been largely shaped by claims and counter-claims concerning the possession and use of shared water resources. Much of this state practice has been subsequently codified through regional and global

treaties, confirmed by international judicial practice or summarised by the works of non-governmental scholarly bodies, most prominently by the 1966 Helsinki Rules[1] and the 2004 Berlin Rules[2] of the International Law Association.

Today, the use and protection of shared watercourses is governed by a number of fundamental principles rooted in general (customary) international law, two global legal instruments that lay down general cooperation frameworks for transboundary river basins – the 1997 UN Watercourses Convention[3] and the 1992 UNECE Water Convention[4] – as well as the considerable jurisprudence of the International Court of Justice and other international courts and tribunals. Evidently, most of daily cross-border water management, however, takes place through the vast body of regional, basin and bilateral treaties that regulate co-riparian relations at various levels of detail.

Flood management under general international water law

Concerns about the natural variability of transboundary river flow are not a new phenomenon in international relations. Yet, until relatively lately water treaties did not pay sufficient attention to the issue. As a result, general international conventions law scarcely address flood management in any explicit and extensive fashion. They nonetheless provide an important framework to address the issue in detail in basin or bilateral context.

Thus, the core requirements of the UN Watercourses Convention – i.e. equitable and reasonable utilisation of shared river basins, the obligation not to cause significant harm and the obligation to cooperate over planned measures – regulate the issue only indirectly. These general principles, however, imply the duty of watercourse states to manage floods with due attention to the interests of other riparians. The Convention also calls on watercourse states to prevent and mitigate, individually and/or jointly, "harmful conditions", including floods that may have a negative impact on other riparian states.[5] When such conditions amount to an emergency situation, i.e. a sudden event actually or potentially causing serious harm to other watercourse states, the state of origin must immediately notify the (potentially affected) other riparians and take all practicable measures to prevent, mitigate or eliminate the harmful effects of the emergency.[6]

These rather general treaty obligations are further interpreted by the so-called Berlin Rules on Water Resources, a scholarly compilation of customary international water law developed by the International Law Association. The Berlin Rules cluster the relevant duties of riparian states as follows:

[1] International Law Association: The Helsinki Rules on the Uses of the Waters of International Rivers, 14–20 August 1966.
[2] International Law Association: The Berlin Rules on Water Resources, 21 August 2004.
[3] Convention on the Law of Non-Navigational Uses of International Watercourses. New York, 21 May 1997.
[4] Convention on the Protection and Use of Transboundary Watercourses and Lakes. Helsinki, 17 March 1992.
[5] Art. 27, UN Watercourses Convention.
[6] Art. 28. Ibid.

- general obligation to cooperate in the development and implementation of flood control measures with due regards to the interests of states likely to be affected by flooding
- immediate communication of situations likely to create floods or dangerous rises of water levels in their territory to other riparian states and the competent international organisation (river basin commission, bilateral joint commission, etc.)
- joint monitoring of flood conditions and planning of flood protection measures – these include contingency plans, collection and exchange of relevant data, preparation of surveys, the planning and designing of relevant measures (e.g. flood plain management and flood control works), flood forecasting and warnings, development of a regular information service, etc.
- maintenance of flood control works and the prompt implementation of flood control measures to assure the minimisation of damage from flooding[7]

The UNECE Water Convention prescribes similar obligations for riparian states in the Pan-European regional context. The starting point under the Convention is the general obligation to prevent, control and reduce transboundary impact.[8] While transboundary impact is defined as "significant adverse effect […] caused by a human activity", the interpretation practice of the Convention, however, confirms that the impacts of naturally occurring hydrological extremes such as floods also fall under this obligation [4, p. 369]. Hand in hand with the prevention/mitigation obligation goes the general duty of riparian states to cooperate on a multitude of water management issues, such as the joint monitoring and regular assessment of transboundary impacts (including the floods, ice drifts, etc.)[9] or the early exchange of information.[10] Also, in their basin treaties and/or bilateral arrangements riparian states have to establish warning and alarm procedures as well as contingency plans that cover floods.[11] In case of critical situations, parties are under a duty to assist each other following the procedures laid down by the Convention.[12]

In addition to the above general framework, the various Convention bodies have adopted a range of soft-law instruments that provide further assistance to basin states as to the short- and long-term management of floods. First such instrument was the Guidelines on Sustainable Flood Prevention adopted in 2000.[13] The Guidelines cover:

- basic principles, policies and strategies for transboundary flood management
- tasks of joint bodies (river basin organisations)
- the provision of information
- mutual assistance and public awareness
- education and training

7 Art. 34, Berlin Rules.
8 Art. 1.2, 2.1, UNECE Water Convention.
9 Art. 4, 9.2, 11.1, 13.3, UNECE Water Convention.
10 Art. 6, 13.1. Ibid.
11 Art. 3.1, 9.2, 14. Ibid.
12 Art. 15. Ibid.
13 Guidelines on Sustainable Flood Prevention, ECE/MP.WAT/2000/7.

They recommend that joint bodies take a central role in flood control. To that end it suggests that they:

- develop long-term flood prevention and protection strategies as well as action plans for the shared basin
- draw up an inventory of structural and non-structural measures
- help countries cooperate in establishing the water balance for the entire catchment area

The Guidelines also include good practices, inter alia on retention of water in the soil, proper land use, zoning and risk assessment, early warning and forecast systems, awareness raising and planning. Finally, the Guidelines address the health impacts of floods.

The Guidelines were followed by the UNECE Model Provisions on Transboundary Flood Management endorsed in 2006.[14] The Model Provisions comprise a concrete legislative text that can be used by riparian states in their specific basin-wide or bilateral arrangements to tackle the challenges of transboundary flood control. The Model Provisions contain a similar range of obligations as outlined in the Guidelines and the Berlin Rules.

Basin and bilateral water treaties

As the scale of geographical scope decreases, specific variability management schemes become more frequent. Thus most basin and bilateral treaties in the world dedicate significant attention to flood issues. E.g. the Mekong Cooperation Agreement contains general and specific rules for water quantity management for the monsoonal wet and dry seasons.[15] In "cases of historically severe droughts and/or floods", however, the application of regular allocation rules is suspended.[16] Such exceptionally severe hydrological events are subject to early notification and the mandatory involvement of the Joint Committee of the Mekong River Commission with a view to adopting appropriate remedial action.[17] The Charter of Waters of the Senegal River also foresees such consultation procedures in the event pre-fixed water allocations must be revisited due to floods or other natural disasters or water shortages of natural character.[18]

Apparently, water treaties primarily concerned about water allocation are more likely to contain some kind of mechanisms to handle extreme flow variations. For instance, the 1996 Ganges Treaty between India and Bangladesh calls for immediate consultations should the flow at Farakka Dam fall below a commonly agreed threshold so as "to make

[14] Model Provisions on Transboundary Flood Management, ECE/MP.WAT/2006/4.
[15] Art. 5 and 6, Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin. Chieng Rai, 5 April 1995.
[16] Art. 6. Ibid.
[17] Art. 10. Ibid.
[18] Art. 6 and 7, Charter of Waters of the Senegal River, 28 May 2002.

adjustments on an emergency basis, in accordance with the principles of equity, fair play and no harm to either party".[19]

Flood management in the European basin and bilateral water treaties

Despite its primary ecological focus, the Danube Protection Convention[20] contains a number of substantive and procedural provisions that help riparian states address hydrological variability in a systematic and structured fashion. The preamble to the Convention pays specific attention to "the occurrence and threats of adverse effects, in the short and the long term, of changes in conditions of watercourses within the Danube River Basin".[21] It follows that Danubian states are required to cooperate in the prevention, control and reduction of transboundary "adverse impacts and changes occurring or likely to be caused".[22] Joint action thus must also encompass the monitoring and evaluation of the natural water household and all of its components (precipitation, evaporation, surface and groundwater run-off) in the entire basin.[23] From this general objective flow a number of precisely defined obligations. First, riparian states must monitor, record and assess, jointly and individually, the conditions of the Danube's natural water resources through a number of quantitative parameters, including water balances, flood forecasts or any change in the riverine regime.[24] Second, under the general obligation to prevent, control and reduce transboundary impacts riparian states are obliged to exchange all relevant data, including the operation of existing hydrotechnical constructions (e.g. reservoirs, water power plants) and measures aimed at preventing the deterioration of hydrological conditions, erosion, inundations and sediment flow, etc.[25] Regular exchange of information must be supplemented by coordinated or joint communication, warning and alarm systems as well as emergency plans to address critical water conditions, including floods and ice-hazards.[26] Should such a critical situation of riverine conditions arise, riparian states must provide mutual assistance upon the request of the affected basin state.[27]

The sister treaty of the Danube Convention, the Sava Framework Agreement[28] goes even further when it comes to managing hydrological variability. Thus the Sava Framework Agreement specifically refers to droughts and water shortages as critical

[19] Art. II, Treaty between the Government of the Republic of India and the Government of the People's Republic of Bangladesh on sharing of the Ganga/Ganges waters at Farakka. New Delhi, 21 December 1996.
[20] Convention on Cooperation for the Protection and Sustainable Use of the Danube. Sofia, 29 June 1994.
[21] Second Recital, Preamble, Danube Protection Convention.
[22] Art. 5.2, Danube Protection Convention.
[23] Art. 1.c.g), Danube Protection Convention.
[24] Art. 5.2.a) and 9.1. Ibid.
[25] Art. 3.2 and 12. Ibid.
[26] Art. 16. Ibid.
[27] Art. 17. Ibid.
[28] Framework Agreement on the Sava River Basin. Kranjska Gora, 3 December 2002.

hazards jeopardising the integrity of the water regime of the river.[29] In that spirit it calls upon riparian states to establish a coordinated or joint system of "measures, activities and alarms in the Sava River Basin for extraordinary impacts on the water regime, such as […] discharge of artificial accumulations and retentions caused by collapsing or inappropriate handling, flood, ice, drought, water shortage […]".[30] To that effect, parties have even committed themselves to conclude a special protocol "on the protection against flood, excessive groundwater, erosion, ice hazards, drought and water shortages".[31] The 2010 Protocol on Flood Protection to the Framework Agreement on the Sava River Basin[32] – that undertakes the coordinated implementation of the EU's Floods Directive in the basin (even though half of the riparian states are not EU members) – calls for the:

- undertaking of preliminary flood risk assessment
- preparation of flood maps
- development of flood risk management plan in the Sava River Basin[33]

Moreover, the Protocol creates an operative system of flood defence, comprising forecasting, warning and alarm, information exchange as well as the handling of emergency situations and mutual assistance.[34]

The Rhine Protection Convention[35] addresses flood protection in a far less elaborate fashion. The key objectives of the Convention – i.e. the maintenance and restoration of the natural functions of the Rhine basin waters, the environmentally sound management of water resources and general flood protection and prevention – imply the broad cooperation of riparian states over flood protection and other hydrological hazards.[36] Thus, riparian states must inform the International Commission for the Protection of the Rhine (ICPR) and other riparian states likely to be affected of imminent flooding.[37] They must also draw up warning and alert plans for the Rhine under the coordination of the ICPR.[38]

The Meuse Agreement[39] defines the mitigation of the effects of floods and droughts as one of the key objectives of transboundary cooperation.[40] In both cases joint riparian action should extend to the development of preventive measures. To that effect the International Meuse Commission is tasked to develop recommendations on flood prevention and protection, flood management coordination as well as on the mitigation of the effects

[29] Art. 2.1 and 13, Sava Framework Agreement.
[30] Art. 13.1. Ibid.
[31] Art. 30.1.a). Ibid.
[32] Protocol on Flood Protection to the Framework Agreement on the Sava River Basin. Gradiška, 1 June 2010.
[33] Art. 4. Ibid.
[34] Art. 9–11. Ibid.
[35] Convention on the Protection of the Rhine. Bern, 12 April 1999.
[36] Art. 3. Ibid.
[37] Art. 5.6. Ibid.
[38] Art. 8.1.c). Ibid.
[39] International Agreement on the River Meuse (Accord international sur la Meuse). Gent, 3 December 2002.
[40] Seventh and eight recitals, Preamble, Accord International sur la Meuse.

of droughts.[41] The Meuse riparians are also obliged to inform each other of any major hydrological events, including imminent floods.[42]

The 1990 Elbe Convention[43] and the 1996 Oder Convention[44] make no reference whatsoever to hydrological variability, not even flood protection cooperation. The two relevant basin commissions are however tasked to monitor the general hydrological situation in their respective catchment areas.[45]

Bilateral water treaties

The most comprehensive of all bilateral water treaties, the Albufeira Convention between Spain and Portugal[46] sets out concrete measures parties must implement in case of floods. The applicable flood control regime goes actually further than the usual forecasting–warning–emergency–preparedness provisions most regional or bilateral similar arrangements contain. It also gives upper and lower riparian states a right to demand the other party to implement pre-defined (or any other) interventions that are necessary to prevent, control or mitigate the effects of floods.[47] The conditions of exceptional situations – both floods and droughts – are to be defined for every two years and subsequently reviewed. The Convention also calls for the joint study of water floods with a view to long-term prevention and mitigation.[48]

Several other European bilateral water treaties make some reference to cooperation over flood prevention and protection. Most of these treaty provisions, however, tend to be rather basic, reinstating the general will or duty of the parties to cooperate and/or referring the subject to the activities of the joint commissions.[49] In a limited number of cases, bilateral water treaties contain substantive obligations parties must observe in flood protection or other emergency situations. E.g. the Hungarian–Ukrainian frontier water treaty requires parties to refrain from permitting any interventions that may raise flood volumes above previously agreed-upon levels. In the spirit of solidarity, riparian states are also obliged to provide technical assistance in times of exceptional floods

41 Art. 2.c, 4.4.a), b). Ibid.
42 Art. 3.2.d). Ibid.
43 Convention on the International Commission for the Protection of the Elbe. Magdeburg, 8 October 1990.
44 Convention on the International Commission for the Protection of the Oder. Wroclaw, 11 April 1996.
45 Art. 2, Elbe Convention; Art. 2, Oder Convention.
46 Convention on the Co-operation for the Protection and the Sustainable Use of the Waters of the Luso-Spanish River Basins. Albufeira, 30 November 1998.
47 Art. 18.5. Ibid.
48 Art. 18.7 and 19.5. Ibid.
49 E.g. Art. 2.1.b), Agreement between Finland and Sweden Concerning Transboundary Rivers. Stockholm, 11 November 2009; Art. 2.2.b) and 6, Agreement between the Federal Republic of Germany and the European Economic Community, on the one hand, and the Republic of Austria, on the other, on cooperation on management of water resources in the Danube Basin. Regensburg, 1 December 1987.

upon demand (the costs of such technical assistance is to be borne by the beneficiary).[50] The so-called Discharge Rule between upstream Finland and downstream Russia for the Vuoksi river basin[51] calls on riparian states to maintain the flow quantity of the river in a "normal zone", defined by the Rule with reference to historically prevailing natural flow volumes. Should extreme floods or extreme low water levels appear, discharge rates must be changed by Finland with a view to minimising adverse effects.

Flood management in European Union water law

The European Union and the question of freshwater

The European Union (EU) is a supranational form of political and economic integration of 28[52] European states. Over the past 60 years the EU has developed an autonomous legal system that – to a large extent – functions independently from international law and enjoys supremacy vis-à-vis the national legal order of its member states. The EU implements a large number of thematic public policies according to a division of competences laid down in the EU's founding treaties.

One of the most extensive sectoral policies of the EU relates to the protection of the environment. Under the broad heading of environmental policy the EU has, since the 1970s, adopted a large number of legislative acts and strategic documents relating to freshwaters. These legal acts and strategic documents amount to a comprehensive water policy regime.

EU water policy and law represent a very high level of ambition and success in global comparison. No other transnational water governance scheme aims at such a comprehensive protection of human health and the aquatic environment as the EU does. In fact, EU water law amounts to a much more uniform and stringent common water protection regime that most of the world's 28 federations.

The distinctive characteristics of EU water policy and law

The fact that water is regulated in the EU as a sublet of environmental policy has substantial repercussions on the nature and scope of the EU's own water regime. First of all, water quality management and water ecology dominate water policy and legislation. Other aspects of water management fall under the competence of the EU only to the extent their regulation is justified by its relevance to environmental protection. Consequently, the quantitative dimensions of surface water management are hardly addressed by EU

[50] Art. 9.1 and 9.4, Convention between the Government of the Republic of Hungary and the Government of Ukraine on water management questions relating to frontier waters. Budapest, 11 November 1997.
[51] Vuoksi Agreement on Discharge Rule in Lake Saimaa and the Vuoksi River, 1989.
[52] Before the withdrawal of the United Kingdom from the European Union.

law. Second, EU water law is very closely linked to the broader environmental policy and legislation of the bloc, comprising a set of procedural obligations (impact assessment and authorisation of projects and plans) as well as substantive requirements affecting the ways water can be used (nature conservation constraints, industrial uses, pollution, etc.). Finally, environmental policy itself forms an integral part of the EU's the general policy framework. This implies that certain aspects of water management can be affected by other policy fields that fall outside the scope of environmental policy, such as agriculture and fisheries (water pollution, irrigation, aquaculture), transport (navigation), industrial policy (water use efficiency, water pollution) or general economic policy (provision of water services).

Linkages to international and national water law

As mentioned above, EU water law is a comprehensive supranational water governance scheme that – to a very large extent – functions independently from international water law. Yet, the two regimes do not exist in complete isolation. Their relationship can be best described as complementary. International water law is predominantly concerned with the use and protection of transboundary surface waters by riparian states, in other words: transboundary water governance. The usual topics of transboundary water governance include the quantitative management of surface water, economic uses of water (including navigation, hydropower generation, etc.), environmental protection, the management of hydrological variability in shared basins as well as the institutional frameworks of cooperation. Although the raison d'être behind regulating water at EU level is the presence (or likelihood) of transboundary impacts, EU water law addresses cross-border management questions surprisingly lightly. In fact, in this very context it mainly creates non-sanctioned procedural obligations for international river basin planning and management. Consequently, the more extensive scope and provisions of international water law usefully complement the somewhat unidimensional ecological approach of EU water law. Importantly, the EU is also party to a number of multilateral water treaties. Thus, these treaties must also be implemented by EU institutions and member states. In theory, they enjoy precedence over the EU's internal water legislation (even though collisions among the two regimes are hardly identifiable).

The structure of the EU legal order is such that national water governance regimes are subject to the supremacy of EU water law. It follows that the national legislation of member states must comply with the relevant policy objectives as well as the procedural and substantive obligations set by the EU. This, of course, does not imply that member states do not enjoy a considerable margin of discretion with regards to those aspects of water policy that are not regulated by EU water law. In fact, such critical questions of water management as surface water quantity management, economic utilisation of water, protection against hydrological extremes, property rights over water, regulating water services, water infrastructure management, etc. largely remain under national control. Here EU law is only relevant in so far as it defines distant constraints: no measure can

be taken at national level that would jeopardise the attainment of the environmental objectives of EU water policy (e.g. good water status) or would otherwise run counter to the basic requirements of other policy fields (e.g. the provision of services).

The general legal framework of water management in the European Union

The Water Framework Directive

The centrepiece of today's EU water law and policy is Directive 2000/60/EC establishing a framework for Community action in the field of water policy, i.e. the Water Framework Directive (WFD). The WFD represents a broad overhaul of previous water policy and regulatory philosophy: it has either replaced or called for the gradual repeal of 25 years of previous EU water legislation, leaving only a handful of pre-WFD legislation in force. The broad framework of the WFD is complemented by two policy documents: the EU's 7th Environment Action Programme and the Blueprint to Safeguard Europe's Water Resources.[53]

The WFD lays down a comprehensive framework for the protection and the improvement of the aquatic environment in the Union that is supplemented by a set of water and environmental directives.

The WFD has a universal scope covering all inland freshwater (surface and groundwater) bodies within the territory of the EU as well as coastal waters. It also covers wetlands and other terrestrial ecosystems directly dependent on water.[54] Its regulatory approach is based on the integrated consideration of all impacts on the aquatic environment, extending the focus from purely chemical to biological, ecosystem, economic and morphological aspects.

The WFD establishes environmental objectives for surface waters, groundwater and so-called protected areas (areas designated under other EU legislation for their particular sensitivity for water). The environmental objectives for water are summarised as "good water status", described in the Annexes to the Directive by precise ecological, chemical and quantitative parameters. Importantly, the WFD considers quantitative issues as "ancillary" to water quality, conspicuously leaving surface water quantity to a regulatory grey zone. Member states are obliged to carry out extensive monitoring of the quality of the aquatic environment along EU-wide coordinated methodologies.

The planning and implementation framework of the WFD is the river basin. Member states are obliged to identify river basins in their territory and assign them to river basin districts (formal administrative management units comprising one or more basins).

[53] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Blueprint to Safeguard Europe's Water Resources, COM (2012) 0673 final.
[54] Art. 1, WFD.

If a river basin is shared by more than one member state it has to be assigned to an international river basin district.

The environmental objectives of the WFD have to be achieved through a complex planning and regulatory process that, in case of international river basin districts, requires the active cooperation of member states. The main administrative tools of member state action are the river basin management plans and the programmes of measures to be drawn up for each river basin district (or the national segment of an international river basin district).

The WFD lays down strict deadlines for the preparation of the management plans and for the compliance with the environmental objectives. As a general rule, all water bodies in the EU had to reach good status by the end of 2015. If, objectively, that was not possible and was clearly justified under any of the statutory exemptions specified under the Directive, good water status will have to be ensured by the end of the following planning cycle of 2021, or ultimately, by the final compliance deadline specified by the WFD, that is 2027.

Other water-related EU directives

The WFD, as its name suggests, provides only a framework for water policy. There exists a range of additional EU legislative acts addressing various specific water-related issues.

The first group of such measures is concerned with various sources of pollution or the chemical status of water. The most important such measure is the Urban Waste Water Directive,[55] the single most costly piece of environmental legislation ever to be implemented in EU history. It obliges EU member states to collect and subject to appropriate (i.e. at least biological) treatment all urban waste water above 2,000 population equivalent and the waste water of certain industrial sectors. Another important source of nutrient input, i.e. nitrates pollution from agricultural sources is regulated by the so-called Nitrates Directive.[56] It aims to protect surface and groundwater by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. Discharges into surface waters of the most prominent hazardous substances is governed by Priority Substances Directive[57] that sets limit values for 33 priority hazardous substances and 8 other pollutants with a view to their progressive elimination. The Groundwater Directive[58] establishes a regime which defines groundwater quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater.

[55] Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment.

[56] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources.

[57] Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy.

[58] Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration.

The EU's general industrial pollution legislation, the so-called Industrial Emissions Directive[59] (formerly: IPPC directive) lays down an integrated permitting system for the most important industrial installations, with strict conditions relating to surface water, groundwater and soil protection. It subjects all existing and future permits to a periodic review in light of the developments in the best available technique, a set of evolving industry-specific technological and management benchmarks.

Mention also must be made of the Drinking Water Directive[60] and the Bathing Water Directive[61] that regulate two important health aspects of water management: the prevention of water-borne diseases through the contamination of water intended for human consumption and the microbiological pollution of natural bathing waters.

EU environmental directives

Other EU environmental measures have important effects on water management. These include horizontal legislation such as the directives relating to environmental impact assessment and strategic environmental impact assessment,[62] access to environmental information[63] or environmental liability,[64] EU nature conservation measures, especially those concerning the Natura 2000 network[65] or the legislative framework on the EU's marine strategy.[66]

Flood protection under the Water Framework Directive

Flood protection as a derogation from the general environmental objectives

EU water law approaches water management from an environmental perspective. The WFD defines the general environmental objectives of EU water law and policy as follows:

[59] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
[60] Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.
[61] Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality.
[62] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment; Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.
[63] Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information.
[64] Directive 2003/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.
[65] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna, Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds.
[66] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy.

- the prevention of the further deterioration, protection and the enhancement of the status aquatic ecosystems as well as of terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems
- the promotion of sustainable water use based on the long-term protection of available water resources
- the protection and improvement of surface water status, among others, through the progressive reduction of discharges, emission and losses of pollutants
- the progressive reduction of pollution of groundwater and prevention of its further pollution
- the mitigation of the effects of floods and droughts[67]

In view of these general objectives, the WFD also defines specific objectives for surface waters, groundwater and so-called protected areas so as to achieve the gold-standard of water management: good water status.

The presence of flood risks can influence the achievement of these objectives in multiple ways. Therefore, the WFD creates a number of temporary or permanent derogations from the environmental objectives of the WFD with reference to the imperative of flood control:

- Designation of heavily modified or artificial water bodies for flood protection: member states may define less stringent environmental objectives for so-called heavily modified or artificial water bodies. Notably, they do not have to achieve the so-called "good ecological status" for surface water bodies, only the more moderate conditions summarised as "good ecological potential". The WFD allows member states to designate such water bodies for the purposes of flood protection, if the achievement of good ecological status would have significant adverse effects on flood protection and that there are no significantly better environmental options that are technically and/or financially feasible.[68]
- Temporary derogation from the environmental objectives in case of extreme floods: the WFD makes it clear that member states may temporarily deviate from applicable environmental objectives for a particular water body, if non-compliance is the result of exceptional or unforeseeable floods. Even in such cases member states must, however, take all practicable steps to prevent further deterioration of all affected water bodies.[69]

Flood protection in the context of long-term adaptation to hydrological variability

Long-term adaptation to hydrological variability is a key element of the planning and implementation cycle of the WFD. Thus, it imposed an obligation on member states to

[67] Art. 1, WFD.
[68] Art. 4.1 and 4.3. Ibid.
[69] Art. 4.6, WFD.

undertake a detailed analysis of the main characteristics of each river basin by 2004 that had to contain an analysis of all relevant water uses, human and natural impacts on river flow and groundwater status, including abstractions. Ever since member states have had to continuously monitor any developments in these factors, including the volume and rate or level of flow.[70] The impacts of natural and man-made fluctuations in stream flow had to be reviewed by 2014 and appropriate adaptation measures had to be included in the revised river basin management plans and programme of measures.[71]

The administrative and implementation framework of flood protection

While the Floods Directive – as shown below – defines a work programme and set of instruments tailor-made to flood protection, such work programme and instruments are integrated into the broader scheme of the WFD as both water quality improvement and flood protection form a part of broader river basin management. Consequently, the Floods Directive builds upon the administrative setup of "river basin districts" established under the WFD.[72] The WFD's implementation toolkit, notably the river basin management plans (RBMPs) and the programmes of measures (POMs), must also take floods into consideration.

River basin management plans are an innovative tool for the basin-wide management of surface and groundwater resources, aquatic and related terrestrial ecosystems. RBMPs must contain the following minimum:

- description and characterisation of the river basin, including the environmental assessment of human activities, economic assessment of water uses, description of pollution sources and risk analysis of failing to achieve the objectives
- the list of environmental objectives and exemptions established for surface and groundwater
- the list of protected areas
- the map of the monitoring stations
- the measures to achieve cost recovery for water services
- the summary of programme of measures and specific additional measures to achieve the environmental objectives[73]

In case of international river basins member states are required to ensure co-ordination and co-operation with the aim of producing one single international River Basin Management Plan. If such an international RBMP cannot be produced for some reasons, member states are still responsible for producing River Basin Management Plans for the parts of the international river basin district within their territory.[74]

[70] Art. 5 and 8. Ibid.
[71] Art. 5, Annex VII, WFD. Also see [2].
[72] Art. 3, Directive 2007/60/EC.
[73] Annex VII, WFD.
[74] Art 3. Ibid. See also Section III.3.1.a) above.

The comprehensive nature of RBMPs requires that the issue of floods is addressed in the plans as a critical condition influencing the achievement of the environmental objectives of the WFD. Where floods or the requirements of flood defence are expected to lead to long-term or temporary derogations from the environmental objectives, this must be specifically identified in the River Basin Management Plans.[75] The same applies to the programmes of measures, which are compilations of regulatory and administrative tools for the implementation of the environmental objectives of the WFD in the context of a particular river basin district. While not a formal requirement under either directives, member states are nonetheless encouraged to integrate flood risk management plans into river basin management plans. These plans are also meant to be implemented ideally with a synchronised timing as well as a coordinated consultation and reporting process.

Floods Directive

The regulatory approach: Risk assessment and management planning

The EU's key legal act in the field of flood management is the so-called Floods Directive.[76] The directive was adopted in 2007 in response to the growing number of devastating inundations in various parts of Europe. It represents an outlier in EU water law as its main objective is safety (rather than environmental quality), it is closely linked to water quantity management (a constitutional misfit in EU law) and its focus is transboundary water cooperation (instead of parallel domestic actions).

Importantly, the Floods Directive does not address flood management in the general sense of the term, but tackles the issue from a risk management perspective. Consequently, its regulatory approach is mainly of procedural character, focusing on the assessment of flood risks and the planning of flood risk management. Thus, the directive does not address such fundamental questions of flood protection as infrastructure development and maintenance, spatial planning measures, etc. in any substantial fashion.

It, nonetheless, lays down certain basic requirements the national and international management of floods must meet:

- the objectives of flood management must focus on the reduction of potential adverse consequences of flooding for human health, the environment, cultural heritage and economic activity
- flood risk management plans must take into account the following key factors:
  - costs and benefits
  - flood extent and flood conveyance routes
  - areas which have the potential to retain flood water, such as natural floodplains
  - the environmental objectives of the WFD

[75] Art. 4.3. and 4.6. Ibid.

[76] *Directive 2007/60/EC* of the European Parliament and of the Council of 23 October 2007 on the *assessment and management of flood risks.*

  - soil and water management
  - spatial planning, land use, nature conservation
  - navigation and port infrastructure
- flood risk management must cover prevention, protection, preparedness, including flood forecasts and early warning systems, taking into account the characteristics of the particular river basin or sub-basin

Preliminary flood risk assessment, flood hazard and flood risk maps

Under the Floods Directive, EU governments are (were) required to carry out a preliminary flood risk assessment and, subsequently, to establish flood hazard and flood risk maps.

As a first step, member states were required to complete, by the end of 2011, a preliminary assessment of flood risks. This initial assessment served as a filter to identify areas subject to flooding and eliminate those where floods are unlikely to occur or their negative impacts remain insignificant. The preliminary assessment contained, among others, a description of the floods which have occurred in the past and which had significant adverse impacts on human health, the environment, cultural heritage and economic activity. It also had to include an assessment of the potential adverse consequences of future floods on all these conditions.[77]

For areas identified as being at potentially significant risk of flooding, flood hazard maps and flood risk maps had to be drawn up by the of 2013.[78] For other areas, no further steps are necessary.

Flood hazard maps show the probability of different flood events. They had to be drawn up for three different scenarios that could appear within a geographical area:

- floods with a low probability, or extreme event scenarios
- floods with a medium probability (likely return period ≥ 100 years)
- floods with a high probability

Each of the three scenarios must be described through the following elements:

- flood extend
- water depths or water level
- where appropriate, the flow velocity or the relevant water flow[79]

Flood risk maps, on the other hand, outline the potential adverse consequences associated with the above flood scenarios (Figure 1). They must display such adverse consequences broken down along the major subjects of flood protection as follows:

- the indicative number of inhabitants potentially affected

[77] Art. 4.2. Ibid.
[78] Art. 7. Ibid.
[79] Art 6.3–4, Directive 2007/60/EC.

- the type of economic activity of the area potentially affected
- installations covered by the Industrial Emissions Directive
- other information which a member state considers useful[80]

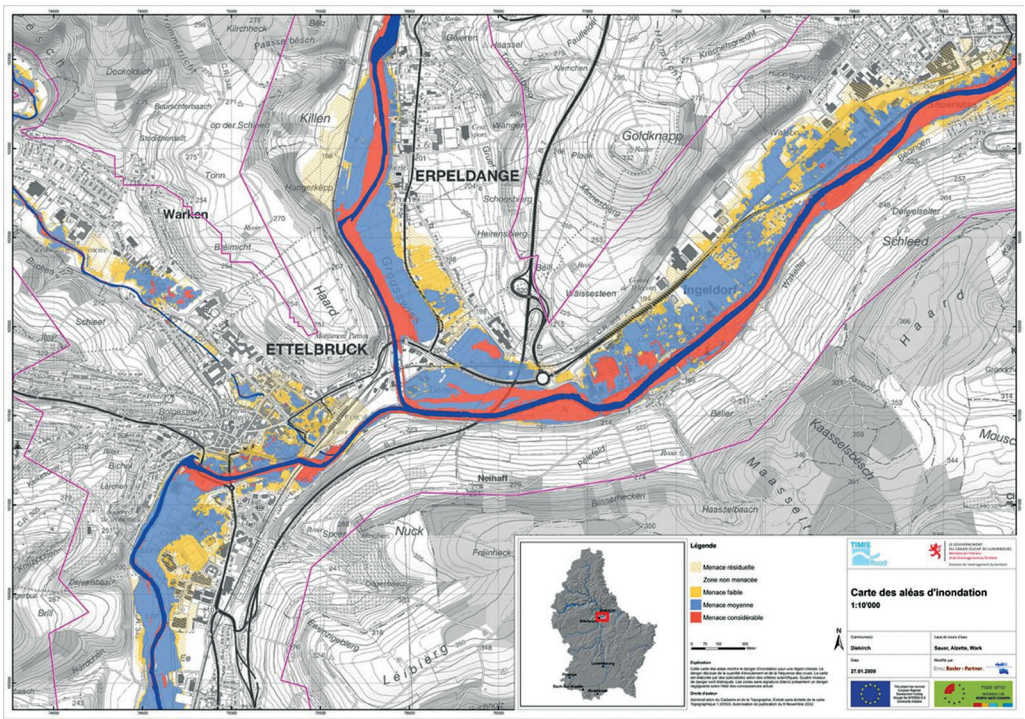

Figure 1. Flood risk map of Ettelbruck, Luxemburg (www.climatetechwiki.org/content/flood-hazard-mapping)

Flood risk management plans

Based on these maps, member states must adopt flood risk management plans that are coordinated at basin or at least sub-basin level (the original deadline was end of 2015). The starting point of flood risk management plans are specific objectives that member states must establish for each of those areas that have been identified with potential significant flood risks or likelihood. These objectives must focus on the reduction of potential adverse consequences of flooding for human health, the environment, cultural heritage and economic activity. Member states must also consider the consequences of non-structural initiatives (e.g. green infrastructure) and the reduction of the likelihood of flooding.[81] Attention must be paid to the environmental objectives of the WFD with

[80] Art. 6.5. Ibid.
[81] Art. 7.2, Directive 2007/60/EC.

regards to surface water, groundwater and protected areas as well as the requirements of other dependent sectors such as spatial planning, soil management, land use, nature conservation, navigation and port infrastructure.[82]

Flood risk management plans must be based on a comprehensive approach towards flood prevention and control. In terms of geographical scope, they must cover the entire flood extent and flood conveyance routes, including areas which have the potential to retain flood water, such as natural floodplains. The scope of measures must extend to all aspects of flood risk management including prevention, protection and preparedness, taking into account the characteristics of the particular river basin or sub-basin. Plans may also include the promotion of sustainable land use practices, improvement of water retention as well as the controlled flooding of certain areas.[83]

An important, but rather general substantive requirement vis-à-vis flood risk management plans is that they cannot include measures which, by their extent and impact, significantly increase flood risks upstream or downstream of other countries in the same river basin or sub-basin (unless these measures have been coordinated and an agreed solution has been found among the member states concerned).[84]

The main content of the flood risk management plans is defined by the directive as follows:

- conclusions of the preliminary flood risk assessment (only for the first plan) in the form of a summary map of the river basin district, delineating those areas where potential significant flood risks exists or might be considered likely to occur
- flood hazard maps and flood risk maps and the conclusions that can be drawn from these maps
- description of the appropriate objectives of flood risk management
- summary of the measures and their prioritisation aiming to achieve the appropriate objectives of flood risk management – this should also include flood related measures taken by other EU environmental directives, e.g. those relating to environmental impact assessment and strategic environmental assessment, industrial installations with major accident hazards, etc.
- description of monitoring
- summary of the public information and consultation measures/actions taken
- list of the national competent authorities and, in case of international river basin districts, description of the relevant cross-border coordination process[85]

The regular updates of flood risk management plans every six years must also include:

- any changes since the publication of the previous version of the plan, including the summary of reviews

[82] Art. 7.3. Ibid.
[83] Ibid.
[84] Art. 7.4. Ibid.
[85] Annex, Part A, Directive 2007/60/EC.

- an assessment of the progress made towards the achievement of the objectives of flood risk management
- description of, and an explanation for, any measures foreseen in the earlier version of the flood risk management plan which were planned to be undertaken and have not been taken forward
- description of any additional measures since the publication of the previous version of the plan[86]

Coordination with the Water Framework Directive

Implementation of the Floods Directive must take place in close coordination with that of the Water Framework Directive. Such coordination has multiple dimensions.

As mentioned earlier, the assessment and management units of floods are the river basin districts defined by the Water Framework Directive, although exceptionally member states may assign individual river basins to a unit of management different from those under the WFD (i.e. they can divide the river basins differently for flood control).

As in the case of river basin management plans, if a river basin district (or other nationally determined administrative unit of flood protection) is shared by more member states, they have to coordinate with a view to producing one single flood risk management plan (or a set of harmonised plans) for the entire international river basin district. This, however, is not an obligation of result. Should such coordination efforts fail, member states just have to go ahead with their individual (uncoordinated) plans. Where an international river basin district falls partly outside the EU, member states are merely required to "endeavour" to produce a single flood risk management plan. If no such plan is eventually produced, individual member states must adopt their own national plan(s).[87]

Given that the original timeframe of implementation of the WFD and the Floods Directive differ significantly, the latter does not call for the merger of the two systems of plans. Yet, the Floods Directive urges member states to coordinate the application of the two directives "focusing on opportunities for improving efficiency, information exchange and for achieving common synergies and benefits". To that end they must ensure that the development of the first flood hazard maps and flood risk maps and their subsequent reviews are carried out in such a way that the information they contain is consistent with relevant information gathered and used under the Water Framework Directive. Evidently, this requires the coordination of river basin management plans and flood risk management plans and allows member states to integrate the former into the larger framework of river basin management plans.[88]

[86] Ibid.
[87] Art. 8.2. and 8.3, Directive 2007/60/EC.
[88] Art. 9. Ibid.

Public participation

The full protection of all relevant values and interests against floods cannot be ensured at reasonable costs to society. Therefore, flood risk management plans must take into the costs and benefits of flood defence when prioritising interventions. Given the conflict potential of flood risk optimisation, the Floods Directive aims to ensure public participation in and transparency of the planning of flood risk management. This includes the following obligations on the part of the competent authorities:

- publication of all relevant documentation: member states must make available to the public the documents of the preliminary flood risk assessment, the flood hazard maps, the flood risk maps and the flood risk management plans
- active involvement of all interested parties: member states must "encourage" active involvement of interested parties in the production, review and updating of the flood risk management plans

This process must be coordinated with the engagement of the public under the Water Framework Directive with regards to adoption and review of river basin management plans.[89] Where flood risk management plans and river basin management plans are produced together, the public participation requirements of the WFD apply automatically. It means that all draft plans must be published one year before adoption, allowing at least six months for comments.[90] For the most probable case, however – i.e. when flood risk management plans are produced independently from the WFD planning cycle – the Floods Directive does not specify concrete procedural steps. Mutatis mutandis, however, a consultation process that is identical or at least similar to the WFD's should be undertaken.

Implementation of the EU's flood management regime

According to a scoreboard published by the European Commission, the Floods Directive has been transposed into national legal systems in time in all EU member states. Moreover, not a single member state has failed to meet the deadlines for the preliminary flood risk assessment, the flood hazard and flood risk maps, respectively.[91] This is a remarkable achievement in view of the complexity of the task, but also vis-à-vis the mush more inconsistent implementation record of the WFD. Similarly impressive is the compliance rate with the requirement to produce flood risk management plans. Here, only three member states out of 28 have failed to deliver the plans in time (Figure 2). Such impressive compliance figures seem to suggest that member states consider flood protection a high priority and find the toolbox of the Floods Directive adequate.

[89] Art. 9 and 10, Directive 2007/60/EC.
[90] Art. 14.1, WFD.
[91] Floods Directive Scoreboard, http://ec.europa.eu/environment/water/flood_risk/implem.htm

National experiences

Following the deadline for the completion of the flood risk management plans (i.e. end of 2015), the European Commission carried out a survey with a view to assessing member states' initial experience with regards to the implementation of the Floods Directive.[92] Since the implementation cycle of the flood risk management plans had just begun, the survey could not evaluate the real impacts of the directive on effective flood control. Yet, it could already identify, even at this early stage, the main impacts of the Floods Directive on national water governance and transboundary cooperation.

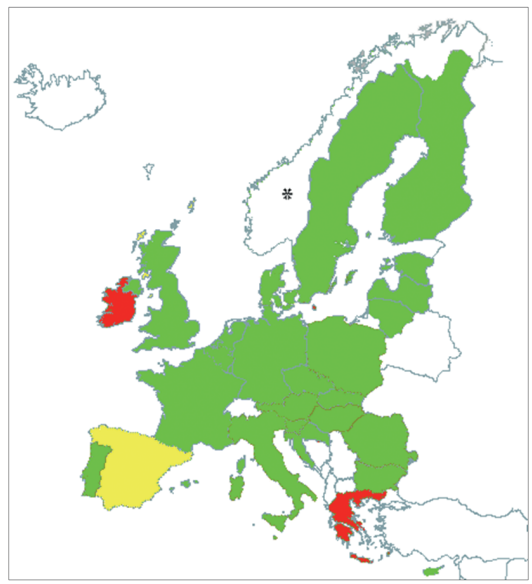

Figure 2. Adoption of flood risk management plans by EU member states (by 2018) (http://ec.europa.eu/environment/water/flood_risk/implem.htm)
Green: Reporting for all Units of Management with significant flood risk
Yellow: Reporting for some, but not all, Units of Management with significant flood risk
Red: No reporting

One of the most significant organisational impacts of the Floods Directive identified by the survey is the fact that it helped enhance the collaboration and coordination among different sectors (e.g. water, disaster management, emergency planning) on the one hand, and among various decision-makers and other stakeholders, on the other hand.[93] As a result, the directive actually influenced policy areas outside water in a considerable way. The Floods Directive also contributed to the consolidation of national and international

[92] For more information see https://circabc.europa.eu/sd/a/8768cbc2-85f3-428f-b859-f9aee7a27e56/FD%201st%20cycle%20questionnaire%20report_formatted_07%20March%202017.pdf
[93] Ibid. 25.

methods and measures for flood risk management. Previous diversity (or often cacophony) of plans and methods was replaced by a systematic, coordinated and holistic approach to flood control. This was manifested in changes in legislation and policies, prioritisation of measures, reorganisation of administrative competences, etc.[94]

Against all these positive developments, the implementation of the Floods Directive continues to pose significant challenges. On the technical side problems have been identified with regards to lack and quality of data, the absence of methodology and models for certain types of floods, the handling of uncertainties, etc. On the organisational/administrative side, difficulties include inadequate financial and human resources, coordination among stakeholders with different competences and/or at various geographical scales, the proper engagement of the public, etc. The latter aspect is particularly important as experience in many member states reveals a very limited interest or engagement by the public in the planning procedure, even though various groups of stakeholders – including the general public – have different flood protection priorities that should be reconciled.[95]

International river basins

All major transboundary river basins in the European Union are subject to a governance treaty that (usually) establishes an implementation body in the form of the joint commission of riparian states. Since flood protection has been one of the key areas of transboundary water cooperation from the outset, these basin commissions have taken a central role in the coordination of the implementation of the Water Framework Directive as well as the Floods Directive. In fact, some basin commissions – such as the International Commission for the Protection of the River Danube (ICPDR) – even played a key role in the conceptualisation of the Floods Directive.

Therefore, the ICPDR also serves as the coordination platform for the implementation of the Floods Directive and for the preparation and update of the Danube Flood Risk Management Plan. Its relevant activities, however, predate the adoption of the directive. In relation to the catastrophic floods in the Danube basin between 2000 and 2002, the ICPDR undertook a comprehensive flood mapping and planning exercise that resulted in the adoption in 2004 of the basin's key strategic document entitled *Action Programme on Sustainable Flood Protection in the Danube River Basin*.[96] The goal of the Action Programme was to achieve a long-term and sustainable approach for managing the risks of floods to protect human life and property, while encouraging conservation and improvement of water related ecosystems. The Action Programme only created an overall framework whose objectives had to be operationalised at lower geographical scale. Therefore, it called for the preparation of flood action plans for all sub-basin in

[94] Ibid. 46.
[95] Ibid. 123, 125.
[96] For more information see www.icpdr.org/flowpaper/app/services/view.php?doc=ICPDR_Flood%20_Action_Programme.pdf&format=pdf&page={page}&subfolder=default/files/

the Danube catchment area. This was achieved by the end of 2009 when 17 flood action plans for the sub-basins of the Danube were adopted by the ICPDR. Importantly, the flood action plans for sub-basins paved the way for the implementation of the EU Directive on Floods in the Danube River Basin.

Even though not all Danube riparian states are members of the EU, in 2010 all basin countries committed themselves to implement the EU Floods Directive throughout the whole Danube river basin and to develop one single international Flood Risk Management Plan or a set of flood risk management plans, based upon the ICPDR's Action Programme for Sustainable Flood Protection and the sub-basin plans. As a first step of this process the preliminary flood risk assessment has been completed for the entire basin by December 2011. This was followed by the preparation of flood hazard and flood risk maps for individual member states as well as for the entire basin.[97]

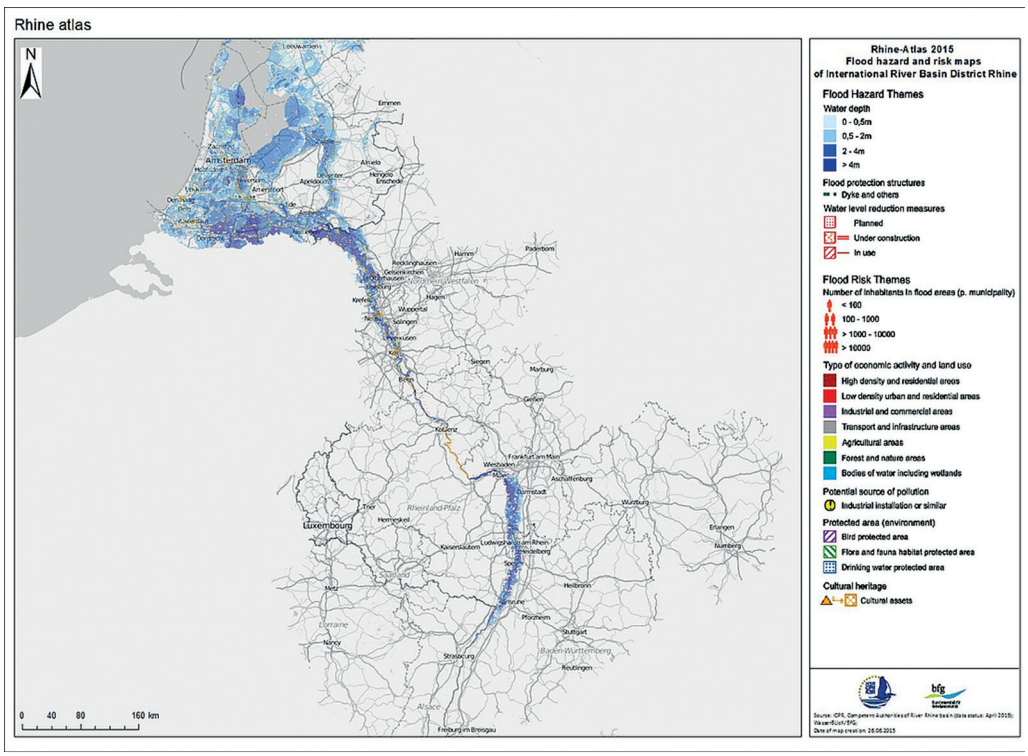

Figure 3. The Rhine Atlas (www.iksr.org/en/documentsarchive/rhine-atlas/)

While the Rhine Protection Convention is less explicit about the coordinated prevention and control of floods than the Danube regime, this has not prevented Rhine riparian states to task the river basin organisation – the International Commission for the Protection

[97] For more information see www.icpdr.org/main/activities-projects/danube-floodrisk-project and www.icpdr.org/flowpaper/app/#page=1

of the Rhine (ICPR) – with the coordination of the implementation of the Floods Directive. The preliminary flood risk assessment for the entire basin and the development of the ensuing flood hazard and risks maps has been completed by 2015, summarised in a publication of the ICPR entitled *Rhine Atlas* (Figure 3).

The EU Solidarity Fund: Post-flooding financial assistance

As shown above, the Floods Directive creates a framework for cooperation to prevent and manage floods with a view to avoiding significant damage to persons, property, infrastructure and the natural environment. Importantly, however, the EU's scope of action is not limited to damage prevention and control as member states (and EU candidate countries) can apply for financial assistance to finance ex post certain emergency measures necessitated by major flood events. Such financial assistance is provided by the so-called EU Solidarity Fund (EUSF) that was established in response to the devastating floods in Central Europe in 2002.

Disbursements from the EUSF are limited to public expenditure related to relief operations. Thus, it does not cover private claims, long-term restoration, infrastructure construction for future floods, etc. The underlying legislative act – Regulation 2012/2002[98] – defines eligible actions as public expenditure for the following essential emergency operations:

- restoring the working order of infrastructure and plant in the fields of energy, water and waste water, telecommunications, transport, health and education
- providing temporary accommodation and funding rescue services to meet the needs of the population concerned
- securing preventive infrastructure and measures of protection of cultural heritage
- cleaning up disaster-stricken areas, including natural zones, as well as immediate restoration of affected natural zones to avoid immediate effects from soil erosion[99]

Funds from the EUSF can be mobilised only in the case of "major disasters" at national or regional scale. National floods qualify as "major disasters" where the ensuing direct damage exceeds EUR 3 billion (in 2011 prices) or 0.6% of the GNI. "Regional natural disasters" are those that result in damage in excess of 1.5% of the affected region's GDP.[100]

While the EUSF is also available to cover natural disasters other than floods (e.g. earthquakes, droughts), since its establishment in 2002 eligible countries have mainly applied for funding mainly for flood-related emergency operations.[101]

[98] Council Regulation (EC) No 2012/2002 of 11 November 2002 establishing the European Union Solidarity Fund.
[99] Art 3. Ibid.
[100] Art 2. Ibid.
[101] For more information see https://ec.europa.eu/regional_policy/sources/thefunds/doc/interventions_since_2002.pdf

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