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This research on inter-jurisdictional and cross-border river basin management has been undertaken as part of the International Centre for Local and Regional Development’s (ICLRD) EU-Funded initiative, CroSPiaN. Funded under INTERREG IVA, and administered by the Special EU Programmes Body, this three-year programme promotes the development of a cross-border planning network by enhancing and promoting the opportunities that exist for collaboration and addressing identified areas of need.

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Executive Summary

The EU Water Framework Directive (WFD), published in 2000, is recognised to have significant implications for water policy and water management across Europe. The WFD aims to streamline policy approaches to water management with a specific focus on water quality and ecological, as well as chemical, status. Rather than setting specific regulatory standards, the implementation of the WFD relies on consultative and negotiative governance with an emphasis on coordination and cooperation across policy sectors, territorial boundaries and governance levels. While the implementation of the WFD is proceeding at different rates across Europe, it may be noted that it is only very recently that the practical implications for spatial planning are beginning to be realised (see Alahuhta et al. 2010; Kidd & Shaw, 2007).

The publication of the WFD was closely preceded by the European Spatial Development Perspective (ESDP) in 1999 which, although non-binding for member states, emphasises the importance of cross-sectoral planning and service delivery that transcends national and regional boundaries. Together, both documents call for higher standards and better integrated planning, and the engagement of a wider range of stakeholders in decision-making processes. In response, both jurisdictions on the island of Ireland published their respective national planning frameworks in the early ‘noughties’: the statutory Regional Development Strategy 2000-2025 (RDS) for Northern Ireland in 2001, and the non-statutory National Spatial Strategy 2002-2020 (NSS) for Ireland in 2002. Yet, both strategies were published in relative isolation of each other; a legacy of Partition, the Troubles and decades of ‘back-to-back’ planning. Despite this, both administrations have a lengthy – but informal – tradition of working together, even prior to the transposition of the WFD into national legislation, to ensure that their activities do not negatively impact upon each other’s water quality (Murphy & Glasgow, 2009).

In compliance with the WFD, and following its transposition in national legislation in both jurisdictions, the island of Ireland established eight river basin districts – four in the Republic of Ireland, one in Northern Ireland and three that span both jurisdictions (see Figure 1). As of 2011, all have adopted river basin management plans – with each jurisdiction developing a distinct management plan for its portion of the cross-border river basins. A review of the respective plans for both jurisdictions indicates that both governments recognise that river basin planning must engage, and work, with other planning processes – including spatial planning policy and practice – to provide effective environmental protection (OECD, 2010; Murphy & Glasgow, 2009; Environment Agency, 2006).

This, according to Carter, requires creating ‘a framework for holistic cross-sectoral thinking and policy making’ (2007: 332) from national planning frameworks down to County Development or Area Plans. In effect, strategies covering sectoral themes such as housing, transport, and climate change – whether at national, regional or local level – must incorporate key aspects of environmental management / conservation, including existing RBMPs.
The Purpose of this Research

To assist the designated implementing agencies in meeting this challenge, the International Centre for Local and Regional Development (ICLRD – see Appendix I for further information) has developed a set of international case studies that document good practices in bridging the scales and sectors of river basin governance. This study focuses on the States of Berlin and Brandenburg in Germany and the Elbe International River Basin District (IRBD); Berlin being located fully within the Elbe International River Basin District whereas the territory of Brandenburg is divided between the Elbe and Oder IRBDs. It demonstrates how one catchment area applied both regulatory and non-regulatory measures to integrate water...
quality improvements with regional land-use plans. This document presents many insights of relevance to International River Basin Districts, and WFD implementation on the island of Ireland more broadly.

**Summary**

Improving water quality will require a consistent approach to dealing with point and non-point sources of pollution. Systematic monitoring and integration of water quality measures into a broader environmental planning practice is shown to be critically important through this case study of the Elbe International River Basin District – as does the complementary U.S. Study on the Connecticut River Basin (Shi & Driscoll, 2011).

While Directives and regulations are set centrally, it is the sub-regional management of the river basin itself that is key to bringing together official and civic, and business and environmental, leadership in a meaningful way. This is especially the case when spatial planning decisions are made at the ‘local level’.
Chapter I: Good Practice in River Basin Management and Spatial Planning – Introducing the German Governance Framework

Water resource management is a very strong and highly resourced policy sector in Germany with significant capacity to develop and implement a wide range of programmes and initiatives. Indeed in light of the progressive and integrative nature of the German water management legislation, elements of the German system informed and shaped the development of the Water Framework Directive (WFD) at the European level (Lindblom & Viehauser, 2007; see Section 2.1.1 for further information). The work of water planners has changed very significantly across Germany since the introduction of the WFD; moving from a command and control regulatory approach to a governance approach with a strong emphasis on negotiation across sectoral and territorial boundaries.

1.1 River Basin Management in Germany: The Governance Framework

For the purposes of the Water Framework Directive, a total of 10 River Basin Districts (RBDs) have been identified in Germany (through the Federal Water Act in 2002); eight of which cross international as well as State boundaries (see Figure 1.1). Reflecting the federal structure of government in Germany, and the strong emphasis on the principle of subsidiarity, competences and responsibilities for water management are divided among three key levels of government, namely:

- Federal Government;
- Federal States; and
- Municipalities.

These three levels do not form a strict hierarchy per se but they do have specific competences or tasks for which they are responsible.

1.1.1 Federal Government

The German Federal Government is responsible for devising and passing framework legislation for water management, landscape protection, and nature conservation. This framework legislation takes a form similar to that of EU Directives; providing an enabling framework for more detailed legislation enacted within the Federal States. The Federal Government (and specifically the Ministry of the Environment) is responsible for reporting to the European Commission on progress with WFD implementation.

1.1.2 Federal States

Federal States hold the primary competence for water management in Germany; including policy-making, planning and regulation. Interestingly, there is a separate Water Act in place in each state.
1.1.3 Municipalities
Local municipalities are responsible for the management of the local environment, and the provision of public services including water supply and sewerage. They are broadly similar to local authorities in the Republic of Ireland in terms of their range of functions and capacity for self-government. There are over 400 such municipalities in Germany.

1.2 Spatial Planning in Germany: The Governance Framework

The institutional framework for spatial planning in Germany is complex. The Federal Government, Federal States, Planning Regions and Municipalities all have specific and strictly defined competences.
1.2.1 The Federal Level
The Federal Government provides the general legislative framework for spatial planning. As there is no Federal-level spatial strategy, a standing conference of Federal State ministers, with responsibility for spatial planning, acts as an important forum for achieving cooperation and developing common approaches among the Federal States. This work is further supported by Federal Agencies, which provide research support and monitoring of spatial development trends.

1.2.2 The Federal States
The Federal States are constitutionally responsible for the implementation of spatial planning. State Development Plans set out the strategic objectives and policies; thus providing a framework for more detailed plans at regional and local levels. A German State Development Plan may, for example, be seen as broadly comparable to the Northern Ireland Regional Development Strategy (RDS) in the context of the UK.

1.2.3 Planning Regions
Planning regions have limited statutory powers; yet, spatial strategies and landscape plans are produced at this level. The regions are broadly comparable to that of the Regional Authorities in the Republic of Ireland (that is, they have strategic planning functions but limited or no executive competences).

1.2.4 Municipalities
It is at this level that both preparatory and binding land-use plans are produced and development control decisions are made.

The relationships between the different levels of government are determined by the principle of subsidiarity and the ‘counter-current’ principle (see Figure 1.2). This implies a complex two-way process of negotiation across the levels of governance.

Prior to the adoption of the WFD in Germany, spatial planning and water management were connected through Federal and State legislation. It is widely recognised, however, that in practice collaboration between the two sectors was limited. Coordination comprised mainly of formal consultation procedures during the planning process. Under the WFD and with increased attention to issues of water quality and flood risk management, the implications of water resource management for spatial planning are gradually becoming more significant. As a consequence, informal information exchange and cooperation between water planners and spatial planners has increased.

In addition, spatial plans at the various levels are also influenced and informed by sectoral plans, and the policies of a range of public sector agencies. River Basin Management Plans are, as a case in point, one example of sectoral planning with implications for spatial planning.
1.3 Moving towards a Negotiated Governance Approach

The work of water planners has changed very significantly since the introduction of the WFD; moving from a ‘command and control’ regulatory approach to a governance approach that places a strong emphasis on negotiation across sectoral and territorial boundaries (see Figures 1.3 and 1.4). This shift in practice is perceived to have its origins in the WFD itself; the river basin management approach to water policy within the WFD requiring a holistic and territorially integrated approach.

It is acknowledged that several of the policy objectives contained within the Directive have direct or indirect implications for land-use. As a consequence, an integrative cross-sectoral approach is required. Given past achievements in reducing point-source pollution and the particular focus on diffuse source pollution under the WFD, minimising pollution from agriculture is viewed as a priority across Germany. In addition, in the German context, a significant emphasis is being placed on restoring rivers and their immediate catchment areas to a ‘more natural status’ (see Section 3.1). These measures require a significant degree of coordination with other policy sectors and stakeholders, including those associated with agriculture, forestry, environmental protection, urban development and spatial planning (Moss, 2004).
Figure 1.3: Traditional Hierarchical Command and Control Approach

<table>
<thead>
<tr>
<th>Water Resource Management</th>
<th>Spatial Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal</strong></td>
<td></td>
</tr>
<tr>
<td>Legislative Framework</td>
<td>Legislative Framework</td>
</tr>
<tr>
<td></td>
<td>Formal but weak links in legislation between the two policy sectors</td>
</tr>
<tr>
<td><strong>Federal States</strong></td>
<td>Spatial and landscape plans, implementation projects</td>
</tr>
<tr>
<td>Legislation, policies and operational programmes, controls and standards</td>
<td>Weak links in practice</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regional and Local</strong></td>
<td>Implementation, monitoring and policing</td>
</tr>
</tbody>
</table>

(Source: Author).

Figure 1.4: Negotiated Governance Approach

(Source: Author).
This governance approach continues to present challenges, however, as negotiative and participative governance is unfamiliar territory for many of the key actors / stakeholders involved.
**Chapter II: Cross-Border Cooperation in River Basin Management – The Elbe River Basin District**

To date, there has been a large degree of co-ordination between the water resource management sector in Germany and the environmental protection policy area, particularly in relation to Natura 2000 sites. At the same time, however, the water management sector does not always view coordination with spatial planning as a high priority; arguing that the implications of river basin management plans – and related measures for spatial planning in practice – are not yet clear. A key issue is that spatial planning is viewed as a relatively weak regulatory instrument; lacking flexibility with a significant number of years elapsing in some cases before State, regional or municipal plans are reviewed and updated. In response, the water planners would like to see drinking water catchment areas, including future projections, included in spatial plans from hereonin – and this is a current area of discussion.

**2.1 Introducing the Elbe River Basin District**

For the most part, RBDs cover significantly larger geographical areas than those on the island of Ireland. For example, the Elbe International River Basin District (IRBD) covers approximately 148,000 square kilometres in total, and has a population of 25 million. It encompasses parts of the territory of Germany (65.5% of area) and the Czech Republic (33.7%), and also crosses the borders of Poland (0.2%) and Austria (0.6%). The IRBD includes the major cities of Berlin, Hamburg, and Prague – as well as numerous smaller urban centres and extensive rural and protected areas (see Figure 2.1).

As a consequence of high levels of industrial activity, the impacts of large population centres and weak international cooperation, the Elbe River was recorded as being highly polluted by the end of the 1980s. This is despite the fact that River Commissions for the protection of international river basins existed in Germany before WFD implementation. In the case of the Elbe River Basin District, it wasn’t until German reunification and the end of the Cold War that cooperation was established in 1990 on a formal basis through the International Commission for the Protection of the Elbe River (see Section 2.2 below).

**2.1.1 The Elbe River in the States of Berlin and Brandenburg**

Located in former Eastern Germany (Democratic Republic of Germany), Brandenburg completely surrounds the city-state of Berlin. Brandenburg has a total population of approximately 2.5 million, with an overall population density of 82.5 per km². This compares to 73.4 per km² for the Republic of Ireland and 122 per km² in Northern Ireland. The population of Berlin is approximately 3.5 million. Since 1990, suburbanisation and population growth occurred in areas of Brandenburg located close to the boundary with Berlin as the city expanded. At the same time, most rural districts in Brandenburg lost population; with the resulting aging population and declining densities in rural areas.
presenting significant challenges for the provision and financing of public services (see Chapter III), including water supply and wastewater treatment.

Figure 2.1: The Elbe International River Basin District with International and Federal State Boundaries

(Source: FGG Elbe, 2007).

The Federal States of Berlin and Brandenburg have cooperated closely on a range of issues including water resource management and spatial planning; with the International Commission for the Protection of the Elbe River (ICPER) now recognised as a good practice example of international cooperation in river basin management. Since the 1990s, joint spatial plans have been produced for Berlin and Brandenburg, through a joint spatial
planning department (see Figure 2.2). Indeed, coordination between water planners in both States was already established in 1989 prior to formal reunification.

**Figure 2.2: Berlin-Brandenburg Joint Spatial Strategy Diagrams**

(Source: Joint Spatial Planning Department, 2010).

Today, Brandenburg is known for its well-preserved natural environment and relatively ambitious nature protection policies. A number of large scale natural parks were created in the 1990s with significant public investment. As a consequence, spatial planning in rural areas of Brandenburg is focussed on environmental protection and amenity objectives with reduced pressure for rural housing or urban development.

### 2.2 Cross-Border Cooperation in River Basin Management

Cross-border cooperation in water and river basin management requires specific institutional and governance structures. This cooperation generally occurs at two levels:

- **International:** between Germany and neighbouring States
- **Inter-state:** among neighbouring Federal States within Germany
2.2.1 International Level: The International Commission for the Protection of the Elbe River

River Commissions for the protection of international river basins have existed in Germany pre-WFD implementation; the aforementioned International Commission for the Protection of the Elbe River (ICPER) being a good practice example of this. At the end of the 1980s, the Elbe was one of the most polluted rivers in Europe. Pollution from uncontrolled and, in part, untreated wastewater from agricultural, industrial and urban sources had contributed to a significant deterioration in water quality over the previous decades to the extent that it was unsafe to drink water or eat fish from the river. Since 1990, the chemical and ecological status of the river has improved very significantly and a number of fish species have returned (ICPER, 2010).

The ICPER was the first agreement under international law to be signed following the reunification of Germany. Germany and the Czech Republic are the principle partners, while Austria and Poland and the European Union have observer status. The initial signatories were the German and Czechoslovakian Ministers for the Environment and the General Secretary of the EC Directorate General with responsibility for the Environment. The German delegation continues to be led by a representative of the Federal Ministry for the Environment.

The objectives of the ICPER focus on the use of water in the river basin district for drinking water and agricultural activities, and achieving the ‘most natural ecosystem possible’. The achievement of these objectives requires improvements in the physical, chemical and biological water quality status of the Elbe River, and its tributaries (ICPER online: http://www.ikse-mkol.org).

In practice, the work of the ICPER is structured according to three working groups, focussed on

- Water quality (implementation of EU Water Framework Directive);
- Flood risk management (implementation of EU Floods Directive); and
- Responding to incidences of accidental water pollution.

The Commission draws on a high level of expertise with teams of specialists working on planning, monitoring, and implementation issues. For example, the work of the Water Quality (Water Framework Directive) Working Group is supported by four expert groups focussed on topics such as surface waters / groundwater (hydrology); economic analysis; and data management (Figure 2.3). Recommendations of the ICPER are thus supported by a strong evidence base.

Agreement is reached on critical and strategic issues of cross-border cooperation at annual conferences of the signatory powers. The effectiveness of the International Commission is viewed in terms of its ‘international weight’; the ICPER having established a significant institutional presence and status as an international body. The parties involved have invested significant resources of time and energy over a long period. Looking back on the first 20 years of the ICPER, the leaders of the German and Czech delegations note that
regular contact between colleagues from the participating states has led to the development of mutual trust and understanding (ICPER, 2010).

Decisions taken at annual inter-ministerial meetings take the form of non-binding recommendations which may then be acted upon within each jurisdiction as appropriate. The Commission thus relies on voluntary cooperation and persuasion. This has been shown to be effective in practice; particularly in relation to controlling pollution from specific point sources (NGO interview).

Figure 2.3: Organisational Structure of the International Commission for the Protection of the Elbe River (ICPER)


The ICPER Secretariat, based in the city of Magdeburg, Saxony-Anhalt, consists of eight members of staff. It provides expert, language and organisational advice to the Commission and its working groups. In line with the public participation requirements of the WFD, the
ICPER have also hosted annual seminars\(^1\) (under the banner of *The International Elbe Forum*) aimed at members of the public and specific stakeholder groups – see ICPER [http://www.ikse-mkol.org/](http://www.ikse-mkol.org/) for further information.

Environmental NGOs participate in the working groups of the Commission as observers. One such NGO is the Grüne Liga (Green League), a network of local and regional environmental groups founded in 1990 following reunification. The Water Policy Office of the Grüne Liga is active at regional, national and international levels and participated in the drafting process of the EU Water Framework Directive in the late 1990s (Grüne Liga [http://www.grueneliga.de/](http://www.grueneliga.de/)). There is also participation from representatives of neighbouring International Commissions in each case; for example, the Rheine, Oder and Donau in the case of the Elbe River.

Table 2.1 below outlines the key actors and responsibilities with respect of the Elbe International River Basin District and the State of Brandenburg at each level of governance.

**Table 2.1: Institutional Framework of Water Framework Directive Implementation in the Elbe International River Basin District and the State of Brandenburg**

<table>
<thead>
<tr>
<th>Level</th>
<th>Key Actors</th>
<th>Actions and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>Federal Ministry of the Environment</td>
<td>Reporting to the European Commission, Providing enabling framework legislation, Representing Germany on International Commissions</td>
</tr>
<tr>
<td>International River Basin District</td>
<td>International Commission for the Protection of the Elbe River</td>
<td>Coordination and Preparation of International River Basin Management Plans, Ensuring cross border cooperation, Resolving conflicts of interest and information exchange and harmonisation issues</td>
</tr>
<tr>
<td>Inter-state coordination</td>
<td>Elbe River Community Council (FGG Elbe)</td>
<td>Resolving border issues, Development of transboundary concepts and strategies, Exchange of experience, Data harmonisation</td>
</tr>
<tr>
<td>Federal States</td>
<td>Brandenburg Ministry for Environment, Health and Consumer Protection</td>
<td>Development of policy and legislation, participation in interstate and international fora</td>
</tr>
<tr>
<td></td>
<td>State Environment Agency Brandenburg</td>
<td>Implementation of River Basin Management Plans – Development of waterbody development concepts (GEKs) and programmes of measures</td>
</tr>
<tr>
<td>Regional and Local</td>
<td>State Environment Agency, consultants, local authorities, stakeholders</td>
<td>Development of GEKs with stakeholder and public participation, Hosting of and participation at regional information seminars</td>
</tr>
</tbody>
</table>

(Source: Author).

\(^1\) Annual seminars were held in 2007, 2008 and 2009. The open seminar in 2007 and 2009 attracted between 100 and 160 participants, while approximately 40 participants attended the seminars targeted at stakeholder groups.
2.2.2: Interstate Cooperation: The Elbe River Basin Council

Coordination in the implementation of the WFD among the Federal States in Germany is achieved through a number of specific structures. For example, a ‘Working Group on Water Issues of the Federal States and the Federal Government represented by the Federal Environment Ministry’ (LAWA) was established as early as 1956 with the task of harmonising and co-ordinating the various approaches in policy and legislation concerning water management under the Water Acts. This cooperation has brought about a convergence of water resource protection and management while also disseminating procedures and guidelines across the Federal States (Lindblom and Viehauser, 2007). This working group continues to play a central role in WFD implementation, and has been directly involved in the development and roll-out of the Common Implementation Strategy (CIS) for Member States coordinated by the European Commission (European Commission, 2001).

Specific structures are also in place governing interstate cooperation at the level of River Basin Districts. In the case of the Elbe International River Basin District (IRBD), the work of the relevant ministries in the ten Federal States which are located within the IRBD is coordinated through the Elbe River Basin Council (Flussgebietsgemeinschaft Elbe – FGG Elbe). The Council was established in 2004, buts its origins may be traced to the formation of the Working Council for Control of Pollution in the Elbe (ARGE Elbe) in May 1977. Until the 1990s, only Federal States located within the Federal Republic of Germany (i.e. West Germany) participated in the ARGE Elbe. The offices of the FGG Elbe are located in Magdeburg, thus ensuring close cooperation with the ICPER.

The FGG Elbe has a three level structure (see Figure 2.4). Formal decisions are made by the Elbe Ministerial Conference which consists of the Ministers (or Senators) with responsibility for water policy from each of the ten participating Federal States. Executive decisions are taken at the level of the Elbe Council, a forum of senior civil servants from the water management sections of the relevant ministries. Finally, a Coordination Council acts as a technical committee of experts which coordinates the work of specialist working groups. Each participating Federal State and the German Federal Ministry for the Environment are represented at all three levels.

Figure 2.4: Organisational Structure of the Elbe River Basin Council (FGG Elbe)

(Source: Adapted from FGG Elbe: http://www.fgg-elbe.de/tl_fgg_neu/aufgaben.html)
Current inter-state cooperation initiatives are focused on the development of strategies and work programmes aimed at making river systems more navigable for fish and other organisms; with the management and control of nutrient levels being a second area of substantive cooperation. However, despite the high level of coordination across state borders, problems have been identified in border areas due to differences in legal and policy systems, and funding mechanisms. Data harmonisation is also a critical issue, particularly as different monitoring standards may be used in neighbouring states. Where problems are identified, they are usually tackled through specific sub-regional or local projects (Interview with NGO).

2.3 River Basin Management Plans for the Elbe IRBD

The Elbe International River Basin Management Plan consists of Part A dealing with the whole catchment area, and of national river basin plans (Part B) dealing in detail with the national parts of the Elbe catchment area. Part A was published in Czech and German in December 2009, and was prepared under the auspices of the ICPER. It provides a detailed overview on all aspects of WFD implementation, including characterisation, monitoring, environmental objectives, and economic analysis.

The National River Basin Management Plans and associated programmes of measures were also published in late 2009; with the preparation of the German National River Basin Management Plan for the Elbe (i.e. Part B) coordinated by the Elbe River Basin Council. This National Plan for the Elbe was prepared with significant participation from the principal water authorities of each of the ten Federal States involved as well as the Federal Level (FGG Elbe, 2009).

The Elbe International River Basin District is further geographically divided into 9 Coordination Areas; five of which are located within Germany. The boundaries of these Coordination Areas are aligned to river catchments, and thus cross both Federal State and international boundaries. In each case, one Federal State is designated as the ‘lead authority’. For example, Brandenburg is the lead authority for the Havel Coordination Area but is also a partner in the Mulde/Elbe/Schwarze Elste, and Middle Elbe/Elde Coordination Areas. The State of Bavaria in the Southeast is a partner in four international Coordination Areas led by the Czech Republic. The designation of one state as the lead authority with respect to Coordination Areas is broadly comparable with the designation of lead local authorities in the case of River Basin Districts in the Republic of Ireland.

From the perspective of the International Commission, the publication of the International River Basin Management Plan is viewed as the start of the process of WFD implementation. At the international level, the focus in the years ahead will be on preparation of the River Basin Management Plan for the period 2016-2021 (see Table 2.2). This will be supported by a review and update of key areas of research and analysis on a continuous basis.
Table 2.2: Important Dates for the Implementation of the Water Framework Directive in the Elbe IRBD: 2010-2015

<table>
<thead>
<tr>
<th>Key Milestone</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>By end 2012</td>
<td>Publication of timetable and work programme of the River Basin Management Plan for the period 2016 – 2021 for public consultation</td>
</tr>
<tr>
<td>By end 2013</td>
<td>Review and as necessary update environmental and economic analysis of the Elbe catchment area from 2004, including an inventory of emissions, discharges, and losses of all priority substances and other pollutants; publication of updated overview of the significant water management issues in the Elbe catchment area for public consultation</td>
</tr>
<tr>
<td>By end 2014</td>
<td>Publication of Draft River Basin Management Plan for the period 2016-2021 for public consultation</td>
</tr>
<tr>
<td>By end 2015</td>
<td>Publication of final River Basin Management Plan for the period 2016-2021</td>
</tr>
</tbody>
</table>

(Source: ICPER, 2009).

It is furthermore envisaged that climate change implications will be afforded increased attention in future years. Until now, climate change adaptation has been viewed by water resource planners as a separate process from the preparation and implementation of river basin management plans. As more research on climate change adaptation is conducted, and specific results with relevance for water resource management emerge, the issue is likely to be integrated more fully with WFD concerns (Interview with Water Planners, Brandenburg).
Chapter III: From Plans to Implementation – River Basin Management and Spatial Planning in Brandenburg and Berlin

In the State of Brandenburg, the Water Policy Section of the Ministry for Environment, Health and Consumer Protection has overall responsibility for the preparation and implementation of River Basin Management Plans under the WFD (see Table 2.1). The practical work of monitoring and implementation is, however, the responsibility of the State Environment Agency, who report to the Ministry for Environment, Health and Consumer Protection. In Berlin, responsibility for the river basin management similarly lies with the Senate Administration for Health, Environment and Consumer Protection; and there is close coordination between the States of Berlin and Brandenburg on jointly financed projects. There are also regular meetings of a joint Berlin-Brandenburg working group, focussed specifically on WFD implementation (Interview with Water Planners).

Water management first became an issue for spatial planning in Berlin and Brandenburg in terms of flood risk management. This followed the severe flooding of the Oder River in 1997 and the subsequent realisation of the need to include flood risk appraisal in spatial plans. This, for example, led to the identification of areas of high flood risk in the statutory joint spatial plans for Berlin and Brandenburg in 2004 and subsequently 2009. The Joint Spatial Planning Department for Berlin and Brandenburg furthermore acted as lead partner in an INTERREG project on flood prevention and monitoring in the Oder catchment area (OderRegio online).

The implementation of the WFD is understood to underscore the importance of the coordination of spatial plans with neighbouring jurisdictions (at all levels: countries, federal
states, planning regions, municipalities). However, it was stressed during the course of the fieldwork for this study that this level of spatial coordination occurs anyway through formal institutionally embedded processes. Along with the WFD, other EU Directives including those on flooding and Strategic Environmental Assessment (SEA) are recognised as significant in terms of strengthening the environmental dimension of spatial plans.

(Source: Berlin and Brandenburg Joint Spatial Planning Department, 2010).

Formal negotiation with municipalities and planning regions prior to the adoption of the joint State Development Plan is a key element of spatial planning in Berlin-Brandenburg. The inclusion of specific objectives relating to water quality and WFD implementation was, however, not an issue for debate in the making of the 2009 State Development Plan (Interview with Spatial Planner, Joint State Spatial Planning Department Berlin-Brandenburg).

It is worth noting at this juncture that the planning and development challenges experienced in Brandenburg are for the most part significantly different from recent experience in Ireland. In particular, single rural dwellings do not represent a significant issue for water quality. The first joint water management plan at the inter-state level in Germany was prepared for Berlin and Brandenburg. It was published in the mid-1990s. Discussions between water planners in both States began just weeks after the fall of the Berlin Wall in 1989 in the context of anticipated large-scale urban and suburban development post unification in the capital city-region. Water supply was expected to be a critical issue. However, the level of development anticipated did not materialise, and many parts of Brandenburg now face chronic population decline and reduced densities. This situation of population decline and out-migration in rural Brandenburg has led to problems of over-capacity of the wastewater treatment system introduced in the 1990s. This issue of over-capacity, in turn, significantly impedes the efficiency of the system – with potentially severe implications for water quality – and has also led to excessively high water charges for residential consumers and businesses. This is perceived, however, as an issue for water planners rather than for spatial planners (Interview
Spatial planners, however, contend that they can potentially play a critical role in initiating and moderating processes of joint cross-sectoral strategy development. In this context of water resource management, water charges and the efficiencies (or not) of the existing system, there is a pressing need to coordinate the relevant funding programmes of agriculture, forestry, nature protection and spatial planning. It is argued, for example, that jointly funded projects can lead to practical integration of water protection measures through sector-specific programmes (von Haaren & Galler, 2011; Moss & von Haaren, 2009).

It is further suggested that policies for the protection of open spaces and greenbelts in floodplain and river basin areas should take a multifunctional approach, explicitly recognising the value of such areas in relation to water quality, biodiversity and social amenity (Gailing, 2007). This emphasis on multifunctionality is, for example, similar to the green infrastructure approach recently introduced in a number County Development Plans and Regional Planning Guidelines in the Republic of Ireland (Fingal County Council 2011; Dublin and Mid-East Regional Authorities, 2010).

As is the case across many EU member states, climate change adaptation is an emerging area of policy in Berlin and Brandenburg. It is recognised that it has significant implications for water resource management and planning. Drier summer months are expected to lead to reduced water levels with implications for water quality and ecological status. In comparison

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2 The emerging Green Infrastructure (GI) approach to planning is proactive, design-led and seeks to protect, create and manage space in an integrated way as part of the wider spatial planning process. In the case of Fingal County Council, the green infrastructure approach involves the five key themes of 1) Biodiversity, 2) Parks, Open Space and Recreation, 3) Sustainable Water Management, 4) Archaeological and Architectural Heritage and 5) Landscape.
with WFD implementation, climate change adaptation is viewed as a long-term issue. Across Germany to date, there has been significant investment in this area, with a range of projects focussed on ‘landscape water budgets’. In some cases there are complementarities with WFD implementation, where a similar range of measures may apply and specific WFD objectives may be accommodated – thus creating a ‘win-win’ scenario for government, environmental NGOs and other key stakeholders.

3.1 Good Practice Examples of Water Resource Management

Water resource management projects currently involve direct consultation and negotiation with farmers, foresters and other landowners. A significant emphasis is placed on restoring the natural ecological functioning of river systems. Practical steps in this regard include removing obstacles, creating fish passes, introducing or augmenting vegetation, and controlling pollution from agriculture and other sources. Sub-regional scale implementation is structured through the preparation of waterbody development concepts (Gewässerentwicklungskonzepte – GEKs) which provide an assessment of current status and a programme of measures for individual waterbodies.

A total of 161 hydrological areas have been identified in Brandenburg for the purposes of preparing GEKs. They are contracted out by the State Environment Agency to external consultants and will be implemented according to prioritisation criteria. Most of these are at an early stage of development at present. They aim to provide an integrated approach whereby the impact of WFD measures are considered in relation to existing flood risk management measures, and the management of Natura 2000 sites. Stakeholder participation is also an integral element of the preparation of GEKs; yet there is limited involvement from spatial planners in this process.

3.1.1 The River Panke

In the state of Berlin, a pilot project in river basin management has focussed on the River Panke and its catchment. The Panke River is 27km long in total, 18km of which are in Berlin. The catchment area is approximately 200 km² with a population of around 250,000. The river flows from Northeast to Southwest where it joins the larger River Spree, through the Berlin Spandauer Canal in the city of Berlin (see Figure 3.1). This project, significantly, represents a joint initiative between two Senate administrations responsible for the environment (including WFD implementation) and urban development, respectively. As a pilot project it sought to demonstrate the potential to achieve good ecological status in urbanised waterbodies that have been significantly modified through traditional water management measures. The project provides an integrated ecological ‘concept’ or strategy drawing on both water management and landscape planning disciplinary traditions and expertise. In order to ensure local ownership there is significant emphasis being placed on public participation. In addition to information seminars, an educational computer game was developed in order to generate awareness among school children.

The strategy document and a detailed research report were published in 2009 (Berlin Senatsverwaltung für Gesundheit, Umwelt, und Verbraucherschutz (SGUV), 2009a, b); and
the objective is to have full implementation of the measures by December 2015. Specific measures will be supported by detailed formal land-use plans produced at the local level. Under pilot projects, measures are focussed on allowing sections of the river, which had been previously straightened and channelised, to flow more freely and return to a more meandering course.

**Figure 3.1: The Panke and Spree Rivers in Berlin**

(Source: Berlin Senatverwaltung für Gesundheit, Umwelt und Verbraucherschutz, 2009).

The proposed measures thus provide for a greater amount of space to be allocated to the river, thus promoting habitat restoration and biodiversity. This is achieved in part through the appropriate designation and protection of existing green space and the purchase of privately owned areas of land where required. Given the high demand for land in cities such as Berlin, such multi-functional approaches are adopted where possible; with restored floodplains and river basins seen to have significant amenity as well as ecological value if sustainably managed.

The river restoration approach adopted in the case of the Panke pilot project is widely accepted internationally as an essential complement to more traditional conservation and natural resource management measures (Wohl et al., 2005). The research report (Berlin SGUV, 2009b) provides details of the specific measures required for integration with spatial, landscape and land-use plans in order to achieve the objectives set out in the strategy. In
this context, local land-use plans are the most significant, while spatial and landscape plans focus on strategic objectives.

**3.1.2 Lakes of Uckermark**

A second good practice example of WFD implementation concerns the Lakes of Uckermark in Northeast Brandenburg (see Figure 3.2). River basin management measures have been introduced through a large-scale nature protection project (*Naturschutzgrosprojekt Uckermaerkische Seen*) over the period 1996-2010. The project has been financed to the extent of €20.6 Million through the Federal Ministry for the Environment (75%), Brandenburg Environment Ministry (19%) and NGOs (6%) (Bender and Schäfer, 2009).

![Figure 3.2: The Lakes of Uckermark](Source: Bender and Schäfer, 2009).

The project area lies in a hilly landscape with numerous glacial lakes and peatlands. The seven core areas include 84 lakes and 233 kilometres of river on 25,000 hectares. Since 1997, the area lies in an officially protected Nature Park. The area has a low population density (approximately 30 per km²) with a settlement structure of small villages. Eutrophication, deforestation and artificial drainage are among the problems impacting on the ecology of the park.

Priority objectives under this nature protection project include a stabilisation of water levels and improvement of water quality in order to enhance the ecological capacity of the lakes and river systems; actions which require a significant level of negotiation with local agriculture and forestry landowners. Conflicts of interests do arise; for example in relation to the control of pollution and the management of competing land-uses and development objectives. In addition, where floodplain restoration measures are introduced, areas of private property may also become flooded.
In this instance, spatial planners have a key role to play in relation to the management of competing land-uses. As such, the regional planning office is represented on the steering group of the project, and on the Board of Trustees for the Nature Park.

(Source: Berlin and Brandenburg Joint Spatial Planning Department, 2010).
Chapter IV: Lessons for Managing River Basins on the Island of Ireland

The water management and water planning policy sector in Germany is very strong and highly resourced with dedicated funding programmes. It is institutionalised primarily at the level of individual federal states. Indeed Germany has a long history of integrated water resource management with key principles of the Water Framework Directive (WFD) informed by existing practice in Germany. The Elbe River International River Basin District (IRBD) represents a good practice example of international and subnational cross-boundary cooperation in water resource management. The International Commission for the Protection of the Elbe River (ICPER) and the Elbe River Basin Council (FGG Elbe) provide formal structures for policy coordination, joint strategy development and evidence informed decision-making.

At the local level, municipalities are required to take into account river basin management plans but not necessarily directly through spatial planning policy. Spatial planning is not always viewed as a principal vehicle for implementation. It is apparent that the watershed or catchment approach of the WFD presents a particular challenge for spatial planners who are used to working within the framework of administratively defined geographical boundaries. Thinking in terms of river basins which cross the boundaries of municipalities, regions, federal states and nations may require a change in mindset. Communication and awareness is also a significant issue. There is limited awareness on the part of many spatial planners of specific water management issues and of implementation programmes currently underway in the context of River Basin Management Plan (RBMPs). This limited awareness may reflect the strict compartmentalisation and division of responsibilities characteristic of the German policy system. It may also, however, relate to difficulties in translating the technical language and objectives of the RBMPs into policy priorities and points of action relevant for land-use planning. Spatial planning is also perceived as a relatively weak and inflexible regulatory instrument, particularly given that in some cases, spatial plans are updated and reviewed on a very infrequent basis.

In the case of Brandenburg, coordination with spatial planning is not viewed as a high priority for WFD implementation at this stage in the process. This may reflect lower levels of development pressure and an already existing highly regulated and integrated approach to the protection of areas of open space and high environmental quality. Coordination with the agriculture and environmental protection policy sectors is much more advanced and currently given higher priority.

Good practice examples (such as the Panke project in Berlin and the Lakes of Uckermark in Brandenburg) point to the potential for spatial planners to become directly involved in the process, realising joint objectives for water quality, the development of open spaces and the amenity value of the natural environment.
Looking to the future, it is argued that the existing traditions of landscape planning and landscape ecology in Germany can provide the basis for integrated environmental planning which takes into account the whole range of environmental considerations, including climate change mitigation and adaptation, biodiversity, flood risk and water quality in planning and development decision-making (von Haaren & Galler, 2011).

4.1 Lessons for the Island of Ireland

The RBMPs operate in parallel to the spatial planning systems of both jurisdictions on the island of Ireland. Yet, it is increasingly clear that they should, in fact, play a more integral part of environmental management / water resource management systems. The OECD argues that Ireland must “further integrate water quality and flood risk management considerations into spatial planning and development management processes” (2010: 11). This German case study – similar to that of the Connecticut River Basin – demonstrates the role for spatial planning in river basin management, but also that the interventions required are wider than mere land-use planning.

Four key lessons emerging from this study of the Elbe IRBD for the island of Ireland are:

(1) Distinction between policy and operational interactions:
In the case of the International Commission for the Protection of the Elbe River (ICPER) a strong distinction is made between policy and operational interactions. The ICPER meets formally on an annual basis with decisions taking the form of non-binding recommendations to be acted upon within each jurisdiction. Similarly there is a strong rationale for the Irish North-South Technical Advisory Group and North-South WFD Coordination Group to continue to play a key role in ensuring cross-jurisdictional coordination at both strategic and operational levels throughout the implementation phase. Critical areas of work requiring cross-border cooperation include data management and harmonisation, assessment of transboundary problem areas and reporting to the European Commission.

(2) Policy recommendations are supported by a strong evidence base:
The recommendations of the ICPER are not binding on the participating member states. The effectiveness of this body thus in large part rests on its ‘international weight’. The annual high-level meetings include senior civil servants (at the federal level in Germany) and representatives from the European Commission and also neighbouring River Basin Districts. A strong evidence basis and an objective, scientific approach to problem-solving and decision-making is fundamental in order to ensure that decisions take into account all relevant factors - and are not only driven by political factors. It is imperative that cross-border cooperation in IRBDs on the island of Ireland continue to be supported by a strong evidence base and objective, scientific analysis of critical problems and issues. This may require targeted research programmes supported by dedicated funding.

(3) Strategic approach to stakeholder engagement
During the preparation of the River Basin Management Plan for the Elbe River, annual seminars were held with the aim of generating public awareness and encouraging
participation. These events addressed invited participants across a wide spectrum of private and civil society interest groups, were conducted at the national level, and focused on strategic issues. Similarly, engagement with the general public and key stakeholders is critical to ensure public understanding of measures undertaken to safeguard water quality and achieve WFD objectives across the island of Ireland. The lessons learnt from the experience of stakeholders with the River Basin Advisory Councils in the Republic of Ireland should feed into the design of engagement strategies for the implementation phase. Cross-border seminars focused on strategic issues for each IRBD should also be considered.

(4) Coordination between river basin management and spatial plans at project level

The River Panke and Lakes of Uckermark projects in Berlin and Brandenburg illustrate the extent to which projects with specific WFD objectives require an integrated approach. Coordination with other policy sectors and their responsible state agencies including agriculture, forestry and environmental policy is critical in order to ensure an adequate level of funding in the first instance and to ensure the success of the projects. The Panke River strategy draws on close cooperation with the urban planning departments of the Berlin Senate and local district authorities. As River Basin Management Plans and associated Programmes of Measures across the island of Ireland are translated into practical projects with concrete objectives, opportunities for proactive collaboration and joint working with urban and environmental planners will emerge. Such projects will, however, have resource implications which should not be underestimated.

4.2 Conclusion

Coordination between river basin management and spatial planning must recognise that spatial planning is a political activity, as well as a technical discipline. Generating political and public acceptance for river basin management and water quality protection measures will be key to successful implementation. The water resource management sector in Ireland, both North and South, is currently fragmented and poorly developed in comparison to other countries. Investment is required to support the development and application of expertise and the roll-out of practical measures to preserve and enhance water quality and improve decision-making.

Looking to the future, it is evident that environmental considerations will play an increasingly critical and decisive role in spatial planning. In particular, the pace of climate change, and the need for adaption, may bring new challenges, which may interact with water policy objectives in unexpected ways. In this sense, integration between river basin management and spatial planning may be seen as part of a wider process of integrating spatial planning, urban development and environmental policy objectives.
References


Appendix I: The International Centre for Local and Regional Development

A registered charity based in Armagh, Northern Ireland, the International Centre for Local and Regional Development (ICLRD) is a North-South-US partnership established in 2006 to explore and expand the contribution that planning and the development of physical, social and economic infrastructures can make to improve the lives of people on the island of Ireland and elsewhere. The partner institutions began working together in 2004 and currently include: the National Institute for Regional and Spatial Analysis (NIRSA) at the National University of Ireland, Maynooth; the School of the Built Environment at the University of Ulster; the Institute for International Urban Development in Cambridge, Massachusetts; and the Centre for Cross Border Studies in Armagh.

Each of these partners brings together complementary expertise and networks on both a North-South and East-West basis – creating a unique, all-island and international centre. The ICLRD continues to expand its collaboration with other institutions and has built up close working relationships with individual faculty and researchers from Harvard University, Queens University Belfast and Mary Immaculate College Limerick. It is also developing its international linkages, particularly with those organisations that have an interest in cross-border cooperation and collaboration; for example, Mission Opérationnelle Transfrontalière (MOT) in France and Groundwork Northern Ireland.

What does the ICLRD do?

- Provides independent joined-up research and policy advice on cross-border and all-island spatial planning and local and regional development issues (economic development, transport, housing, the environment, service provision, etc.);
- Offers professional education and capacity building programmes for communities and local, regional and national government representatives and officials;
- Assists local governments / communities in translating policy into ‘on the ground’ action;
- Acts as a catalyst to bring relevant public and private actors, North and South, together to work on common goals;
- Promotes international cooperation and exchanges.

The ICLRD uses a variety of strategies to undertake this work, including engaging in action research with local governments, communities and central agencies; undertaking and publishing case study research to evaluate and develop good practice models; hosting conferences and workshops on key themes; and developing and delivering training modules for key stakeholders in the physical, social and economic development of the island of Ireland.

Why is this work important?
The ICLRD’s work is important in relation to four key processes on the island of Ireland:

- Cross-jurisdictional commitment to spatial planning and infrastructure projects;
• Peace and reconciliation, and the regeneration of local communities in the Border area;
• Economic competitiveness and growth on the global stage;
• Multi-level governance and compliance with planning, economic and environmental directives from the European Union.

CroSPIaN
In cooperation with the Centre for Cross Border Studies, the ICLRD has for the past three years been involved in an exciting new programme to develop a cross-border planning network. This initiative has been made possible through funding from the EU’s INTERREG IVA Programme; administered through the Special EU Programmes Body. Having commenced in 2009, the network (CroSPIaN) has undertaken the following activities:

• Two action research projects per year which enhance emerging cross-border activities and expertise in the vital area of spatial planning;
• One executive training programme per year for at least 20 central and local government officials, councillors and community leaders to assist them in both delivering and supporting these activities;
• An annual conference and technical workshop; the dual function of which has been to facilitate networking and address identified areas of need.
Appendix II: Interviewee List

1. Bender, M. Grüne Liga, Water Policy Section (Environmental NGO), Berlin. 23rd February 2011.
2. Dinkelberg, Dr. W. Joint Spatial Planning Department, Berlin-Brandenburg, Potsdam. 18th February 2011.