

18. GERMANY

18.1 Water Resources Management Policies and Actions

In Germany, the water resources management policies was first set by implementing the requirement stated in Agenda 21, which was adopted in 1992 at the United Nations Conference on Environment and Development in Rio Janeiro. Chapters 17 and 18 among the 40 chapters particularly describe the policy requirements for environmentally sound and sustainable development relevant for water resources management.²⁹¹

Later, water resources management changed with the entry into force of the EU Water Framework Directive (WFD) on 22 December 2000. A document "Environmental Policy - Water Resource Management in Germany" was issued by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) in 2002. This document outlines the structures of national and international water resources management and a range of measures aimed at solving water problems, and particularly reducing water pollution. It also highlights the challenges faced by water resources management in Germany.

To summarise, water resources management policy in Germany is based on the following fundamental principles:²⁹²

- Priority of prevention
- Cooperation between all parties concerned
- Allocation of costs on the basis of the polluter-pays principle and full recovery of costs

Below shows some key elements for the changes through the WFD:²⁹³

- River basin management in 10 catchment areas
- The integrated management of groundwater and surface waters including lakes, estuaries (river mouths) and coastal waters
- The definition of biological and chemical quality objectives
- The obligation to initiate measures within binding deadlines
- The involvement of the general public in the planning processes

The provisions of the EU WFD have been transposed into the Federal Water Act through the amendment of 2002. It sets out management objectives for all waterbodies which must be achieved by 2015 in accordance with the provisions of the Directive²⁹⁴

²⁹¹ Extracted from the "Environmental Policy - Water Resource Management in Germany, Part 1 Fundamentals", http://www.bmu.de/files/pdfs/allgemein/application/pdf/broschuere_wasserwirtschaft_teil1_en.pdf, page 4

²⁹² Extracted from the "Environmental Policy - Water Resource Management in Germany, Part 1 Fundamentals", http://www.bmu.de/files/pdfs/allgemein/application/pdf/broschuere_wasserwirtschaft_teil1_en.pdf, page 4

²⁹³ Extracted from the "Environmental Policy - Water Resource Management in Germany, Part 1 Fundamentals", http://www.bmu.de/files/pdfs/allgemein/application/pdf/broschuere_wasserwirtschaft_teil1_en.pdf, page 4

²⁹⁴ Extracted from the "Environmental Policy - Water Resource Management in Germany, Part 1 Fundamentals", http://www.bmu.de/files/pdfs/allgemein/application/pdf/broschuere_wasserwirtschaft_teil1_en.pdf, page 23

The status achieved in the principal fields are summarised below:²⁹⁵

- **Integrated planning and management of water resources**
The integrated approach to the management of water resources is pivotal to water conservation policy in Germany, as well as being a central element of the EU WFD. However, integrated resources management has already been achieved at all levels, as the integration of quality and quantity issues at river basin level often necessitates the establishment of new administrative structures and workflows. Agenda 21 places great emphasis on involving all “stakeholders” in decision-making processes and on the widespread sharing of information.
- **Assessing water supply**
According to WFD, water quantify plays a major role in the assessment of the groundwater status. It has a supporting function in the assessment of surface waterbodies.
- **Protecting water resources, water quality and aquatic ecosystems**
Reducing water pollution caused by wastewater discharges has been a central aspect of water conservation activities in Germany for the last 30 years. Large sums have been invested in the establishment and operation of wastewater treatment plants, and many industrial installations have managed to reduce their pollution levels substantially by introducing internal production measures (closed cycle systems, substitution of dangerous substances). This has resulted in a remarkable improvement in the quality of surface waters.

From both economic and ecological point of view, it is good to promote the use of “clean technology”, the closing of substance cycles in industrial processes, and the use of substitutes for dangerous substances. At the same time, greater efforts must be made to reduce diffuse inputs into waters, largely by improving agricultural practices and reducing the deposition of pollutants. Groundwater protection must also be addressed in the agricultural sector. As a general principle, agricultural production should be subject to the same standards as apply to pollution from the domestic and industrial sectors.

- **Drinking water supplies and sanitation**
Maintaining drinking water quality remains an important task in Germany. New challenges have emerged, such as viruses and parasites which are largely resistant to chlorine. Chemical pollution of untreated water, especially with nitrate and pesticides, causes further problems. The lead pipelines have recently re-emerged as a result of the lowering of the drinking water limit value for lead. These pipes need to be replaced with new and safe materials. Purification stages to remove organic substances and the extensive reduction of nutrients have been introduced in many sewage treatment plants.
- **Water and sustainable urban development**
Many water supply systems, and especially disposal systems, in urban areas were

²⁹⁵ Extracted from the “Environmental Policy – Water Resource Management in Germany, Part 1 Fundamentals”, http://www.bmu.de/files/pdfs/allgemein/application/pdf/broschuere_wasserwirtschaft_teil1_en.pdf, page 4-7

constructed many years ago and require substantial remediation and maintenance work. In many cases, too, infrastructure systems need to be adapted in line with changing population figures.

- Water and sustainable food production and rural development

There are problems arising from the use of fertiliser and pesticides in the agricultural sector. Further efforts are necessary to facilitate their use without impairing water resources. Another water resources management problem concerns flooding, which can cause major damage. The influence of man on the occurrence of flood events (as a result of waterbody development, the sealing and compacting of land and the reduction of natural flood plains) and on the damage caused by such events (e.g. as a result of building in areas endangered by floods) is considerable. In order to reduce the frequency and scale of flood damage, there is a need for coordination between a number of policy and planning areas. Such measures have been set in motion and are gradually being implemented. There is in particular a need to restore natural flood plans and modify land use accordingly.

- Impacts of climate change on water resources

The uncertainties surrounding the risks of climate change presenting on water resources remain considerable, especially as regards regional changes in rainfall distribution. At present there is no reason to expect any fundamental changes in the water resources situation in Germany, but there are foreseeable effects that will impact different regions in different ways. In particular, there include a shift in precipitation from summer to winter, and an increase in heavy rainfall. For this reason, it is vital to develop measures now so that water resources management may be adapted in line with changing conditions.

- Integrated management and sustainable development of coastal and marine areas

The current utilisation and pollution situation in the North Sea and Baltic Sea far exceeds the boundaries of sustainability. In many cases this over-utilisation of the sea and coasts is proving too much for the buffering and self-purifying capacity of the marine ecosystems. Apart from discharges of nutrients and pollutants, rapid advances are currently being made in the technical utilisation of the seas and coasts. Numerous oil and gas pipelines, electrical and telecommunications cables are being laid on or in the seabed, tourism use is on the increase, and there are plans for erecting huge offshore wind farms with up to 600 units per location. The impacts of many of these uses on the natural balance have yet to be investigated, because there is insufficient research data available. In future there is a need for integrated coastal regions. To this end, sector-specific planning must be replaced by cross-sectoral management.

- Protection of the marine environment

Nutrients and pollutants are still being discharged into North Sea and Baltic Sea on a large scale via rivers and the atmosphere. Particularly problematic areas here include inputs of nitrogen compounds, heavy metals, persistent organic pollutants, oil and radioactive substances. Reduction targets for nutrients and chemicals classified as particularly dangerous to the environment have been agreed under various international conventions in the interests of sustainable development, but have yet to be fully achieved. It still has to be assumed, therefore, that parts of the

North Sea are – at least sometimes – approaching the limits of their capacity to absorb environmental pressures. Solutions will need to focus on the main sources of pollutant emissions (industry, transport, agriculture), and are largely similar to the action required for the protection of freshwater resources.

- Sustainable utilisation and conservation of marine bioresources
Many fish stocks are in an alarming state, primarily as a result of excessive fishing capacity putting great pressure on dwindling stocks. Bottom-trawling causes physical destruction of the seabed, which in turn leads to ecological damage. Sustainable use of marine bioresources aims to maintain an equilibrium between fishing catches and fish stocks. This must be ensured by incorporating environmental concerns into fisheries policy and setting appropriate targets – especially in a European context. Apart from reducing fishing intensity and improving controls, technical measures (e.g. more selective nets, designation of protected and prohibited zones) can also make a contribution to sustainable, ecosystem-compatible resource management.

Other legislations

Wastewater Charges Act²⁹⁶

This Act regulates the levying of charges for the direct discharge of wastewater into a waterbody. The charge is the first eco-tax to be levied at Federal level as a steering instrument. It ensures that the polluter-pays principle is applied in practice, since it requires direct dischargers to bear at least some of the costs associated with their use of the environmental medium of water. The charge is determined on the basis of the quantity and harmfulness of specific constituents discharged into the water.

²⁹⁶ Extracted from the “Environmental Policy – Water Resource Management in Germany, Part 1 Fundamentals”, http://www.bmu.de/files/pdfs/allgemein/application/pdf/broschuere_wasserwirtschaft_teil1_en.pdf, page 24

18.2 Environmental Evaluation/SEA in Germany

In Germany, the EU Directive 2001/42/EC (also known as SEA Directive) was implemented by two legal acts into the German federal laws:

- concerning specific provisions on urban land use planning, regional and spatial planning by law of the 24 June 2004 that inter alia amended the Federal Building Code and entered into force on the 20 July 2004;
- concerning the implementation of the SEA Directive 2001/42 in general by law of the 25 June 2005, that inter alia amended the Federal EIA Act²⁹⁷ and entered into force on the 29 June 2005.²⁹⁸

The above two legal acts in the German federal law provide statutory requirement that SEA has to be implemented for plans and programmes, but excluding policies.

Under German federal law:

- (i) SEA is required in each case for:
 - transport plans at federal level;
 - “extension plans for airports”;
 - flood protection plans;
 - programs of measures according to the Water Framework Directive;
 - spatial planning and regional planning;
 - federal Spatial plans for the German exclusive economic zones of the North Sea and the Baltic Sea;
 - determination of special suitable areas for offshore wind farms;
 - urban land use plans (preparatory land use plans and legally binding land use plans); and
 - landscape plans.
- (ii) SEA is required for the following plans or programmes if they set the framework for future development consent for projects listed in Annexes I and II to Directive 85/337/EEC²⁹⁹:
 - noise action plans;
 - air quality improvement plans;
 - waste management concepts prepared by authorities; and
 - waste management plans.
- (iii) SEA is also required for plans and programmes according to Article 3 para. 2 of

²⁹⁷ EIA Act, <http://www.bmu.de/files/pdfs/allgemein/application/pdf/uvpg.pdf>, originated from the web site of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

²⁹⁸ Extracted from the proceedings of the 4th seminar of the PlanNet Europe network on SEA of urbanism plans and programs, by the Ministry of the Brussels-Capital-Region North Communication Centre (CCN) Brussels, http://plannet.difu.de/2005/proceedings/2005_plannet-proceedings.pdf, page 317 (Annex 4E - Germany)

²⁹⁹ Annexes I and II to Directive 85/337/EEC (on the assessment of the effects of certain public and private projects on the environment as amended by Council Directive 97/11/EC) can be found at the link: <http://www.lemma.ulg.ac.be/research/suit/ConsolDir.pdf>

the SEA Directive.³⁰⁰

According to the Federal Building Code, urban land use plans are exempted of SEA only if:

- amendments of these plans have no influence on the principal features of the existing plan or if:
- building schemes only describe the status quo of existing land use patterns.

The general steps in practice to implement SEA are:

- Screening;
- Scoping;
- Preparing the environmental report;
- Consultations;
- Revision of the environmental report;
- Decision making (taking into account the environmental report, and the opinions expressed during consultations including transboundary consultations);
- Information of the authorities involved and the public according to Article 9 of Directive 2001/42/EC;
- Monitoring.³⁰¹

The 16 Länder in Germany had to implement SEA through their own laws, since the federal acts only constituted a framework. There were bills in most of the Länder. Draft guidelines have been released for transport planning. For spatial/land use planning, guidance includes:

- Guidance on how to adapt the Federal Construction Act with new EU Directives
- Recommendations of the Federal Ministry for the Environment, Nature Protection and Nuclear Safety for direct implementation of the SEA Directive through the Länder
- The Environmental Report in Practice covering statutory local land use plans and master plans³⁰²

³⁰⁰ SEA Directive Article 3 para. 2 can be referred to the link,

<http://www.environ.ie/en/Publications/Environment/Miscellaneous/FileDownload,1805,en.pdf>, page 9

³⁰¹ Extracted from the proceedings of the 4th seminar of the PlanNet Europe network on SEA of urbanism plans and programs, by the Ministry of the Brussels-Capital-Region North Communication Centre (CCN) Brussels, http://plannet.difu.de/2005/proceedings/2005_plannet-proceedings.pdf, page 320 (Annex 4E – Germany)

³⁰² <http://www.laum.uni-hannover.de/uvp/aktuell/SEAINMS2006.pdf>, page 5

18.3 Environmental Evaluation/SEA on Water Resources Management in Germany

In Germany, the SEA Directive was implemented by two legal acts into the German federal laws. It is a statutory requirement that SEA has to be implemented for plans and programmes that related to different sectors. For examples, under German federal law, SEA is required in cases for flood protection plans, programmes of measures according to the Water Framework Directive and so on, which are related to water resources management.

Information on SEA in Germany can be referred to section 18.2.

A summary table for both the water resources management policies and actions and SEA status in Germany is presented in **Exhibit GM-1**:

Exhibit GM-1 Summary of Water Resources Management (WRM) Policies and Actions and SEA status in Germany	
(a) WRM Policies and Actions	
WRM Policies and Actions	Policies <ul style="list-style-type: none"> ● Implementation of Agenda 21 and EU Water Framework Directive Actions <ul style="list-style-type: none"> ● N/A
Guidance/Legislations in WRM	<ul style="list-style-type: none"> ● Federal Water Act ● Wastewater Charges Act
(b) Environmental Evaluations / SEA Status in WRM Policies and Actions	
Type of Assessment	SEA
Requirement Mechanisms	Statutory
Legislation for Environmental Evaluation / SEA	<ul style="list-style-type: none"> ● Federal Building Code (2004) ● Federal EIA Act (2005)
Applications	Plans and Programmes

18.4 Analysis and Conclusions

WRM Policies

It is understood that WRM policies in Germany focus primarily on maintaining or re-establishing the ecological balance of water bodies, on guaranteeing drinking and process water supplies and on providing long-term safeguards for all other water uses benefiting the general public while at the same time protecting the various water bodies as far as possible. At present the prime objective of German water management is the practical implementation of the *EU Water Framework Directive*, which entered into force on 22 December 2000, in the ten river basin districts which are partially or wholly on German territory. The Directive is intended to achieve a good status for water bodies (rivers, lakes, coastal waters and groundwater) throughout Europe and to prevent any further deterioration. Another important field of water protection policy is preventive flood protection.

Pursuant to the distribution of responsibilities between the Federation and the Länder as laid down in the Basic Law, responsibility for setting up regulatory frameworks lies with the Federal Government, while the Länder are in charge of implementing and supplementing the federal regulations and enforcing all statutory provisions in the field of water pollution control. The Federal Government cooperates closely with the Länder and attempts to achieve equal implementation of EU and national requirements.

As responsibility for water bodies does not end at national borders, in its water protection policy the Federal Government has placed special emphasis on transboundary cooperation for the protection of inland water bodies and seas. It also supports transboundary cooperation in the management of water bodies in various regions of the world for example via initiatives like the Petersberg Process.

Compared to Germany, Hong Kong is not within the EU Directive regime and the scope of water resources need to be managed is restrained to the two main sources of water – rainfall from natural catchment and supply from Guangdong. It is Water Supplies Department's (WSD) scope of work to cover the whole process from the collection of natural yield from rainfall, the reception of raw water from Guangdong to the provision of a supply with a quality of accepted international standards to the users' taps. WSD also supplies sea water for flushing purposes to over 80% of the population. For protection against flooding, sewage collection, treatment and disposal, it is under Drainage Services Department's (DSD) jurisdiction.

For the sustainable development of Hong Kong, WSD has initiated a *Total Water Management programme* comprising key elements of new water resources, water reclamation, water conservation and water resources protection and management was initiated for better utilization of the different water resources.

Similar to Germany, Hong Kong, while is part of Guangdong province, has a neighbour city, Shenzhen, to the north. Effective transboundary cooperation is considered to be essential for the protection of inland water bodies.

EE/SEA

As an EU Member State, Germany is obliged to adopt the requirements of the EU Directive 2001/42/EC by bringing into force the laws, regulations and administrative provisions necessary to comply with the Directive. In this connection, two relevant acts have been passed under the German federal laws, and SEA has become a statutory requirement for WRM plans and programmes (e.g. flood protection plans, programmes of measures according to the Water Framework Directive, etc.)

Hong Kong is not an EU Member. Hong Kong's SEA/EE is under Environmental Protection Department's (EPD) jurisdiction. Similar to the EU Member counterparts, there are both statutory and administrative systems for PPP projects in Hong Kong. While the statutory requirements govern primarily large scale development projects (i.e. over 20 ha of area or population over 100,000), the administrative counterpart has been applied to land use planning, transportation and sectoral PPP.

In most EU Member States' practices, a statutory system is put in operation for WRM related plans and programmes. Hong Kong may adopt a similar approach by expanding the scope of the current statutory system to cover other sectors such as WRM.

Also, the SEA Directive sets out the requirements for undertaking environmental assessments for plans and programmes in various sectors, namely, agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use, etc. A similar scope or categorisation of sectors is recommended for setting up within Hong Kong's next generation SEA management framework.



Talsperre Zeulenroda³⁰³



Wupper Valley dam, Germany³⁰⁴

³⁰³ Source: <http://www.geoinf.uni-jena.de/4630.0.html?&L=2>

³⁰⁴ Source: <http://www.lahmeyer.de/e/company/history/tour/1978.html>

18.5 Examples of Water Resources Management Policies / Actions or their Environmental Evaluation/SEA

Owing to limited information available from the internet, there are no suitable examples for Germany.