



# Assessment of Member States' progress in the implementation of Programmes of Measures during the first planning cycle of the Water Framework Directive

## Member State Report:

*Germany (DE)*

Disclaimer: this report was prepared by consultants contracted by the European Commission, and it does not necessarily reflect the views of the Commission.

# 1. Introduction

The Water Framework Directive (WFD) requires that Member States (MS) establish Programmes of Measures to achieve the objectives established under Article 4. Measures are required to reduce the pressures to levels that are compatible with the achievement of the objectives such as the achievement of good water status by 2015.

Programmes of Measures for the first planning cycle were due to be published in December 2009 and should have been made operational in Member States by December 2012. Progress with implementation of the measures was to be reported electronically to the Commission in December 2012 through the Water Information System for Europe (WISE).

A preliminary assessment of the 2012 electronic WISE reports was undertaken in 2013 through the use of templates comprising a number of pre-defined questions, the answering of which by consultant Member State assessors provided the assessment of Member States' progress. The results were presented to the Commission by the consultants in a Preliminary Assessment report in January 2014.

The preliminary assessment was taken further by undertaking an in-depth assessment of some key processes in developing programmes of measures and in relation to five key aspects/pressures (agriculture, chemicals, hydromorphology, urban waste water treatment and water abstraction) of the Water Framework Directive. This was again facilitated by the use of pre-defined questions within templates answered by Member State assessors.

The results were reported to the Commission in December 2014 as a European Overview report that provided an overview of the progress made by Member States in the development and implementation of programmes of measures for the first planning cycle. It was also based on the conclusions from the Commission's 2012 assessment of the first River Basin Management Plans<sup>1</sup>, Member States' electronic (WISE) reports to the Commission in December 2012 on the progress with implementation of their programmes of measures (summarised in the Preliminary Assessment report) and the information arising from the Commission's bilateral meetings with Member States on their first River Basin Management Plans during 2013 and 2014. The report was used in support of the Commission's Communication to the European Parliament and Council on progress with Water Framework Directive implementation and its associated Commission Staff Working Document, both to be published in March 2015.

This report is a summary of the findings of the preliminary and in-depth assessment of the progress with the implementation of the programmes of measures in Germany.

References to River Basin Management Plans (RBMPs) and programmes of measures (PoMs) throughout this document relate to the first planning cycle unless explicitly stated otherwise.

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<sup>1</sup> [http://ec.europa.eu/environment/water/water-framework/impl\\_reports.htm](http://ec.europa.eu/environment/water/water-framework/impl_reports.htm)

## 2. Questions used in the assessments

For the **preliminary assessment** the following assessment questions were asked:

- Question 1. What is the reported progress between 2009 and 2012 with the implementation of the Basic Measures set out in Article 11.3.a?
- Question 2. What is the reported progress between 2009 and 2012 with the implementation of the Other Basic Measures set out in Article 11.3b-I?
- Question 3. What is the progress with the implementation of Supplementary Measures between 2009 and 2012?
- Question 4. Are there Supplementary Measures in place to tackle each of the significant pressures for which Basic Measures are reported by Member States to be not enough to achieve WFD objectives? Which pressures are not tackled?
- Question 5. Which measures reported to be implemented in the first RBMP/PoM in 2009 have not been reported in 2012?
- Question 6. What is the status of implementation of the Key Types of Measures identified in the Member State, and what progress is expected over the duration of the first RBMP?
- Question 8. What is the reported overall progress on implementing the Programme of Measures? Are there differences between the RBDs in the Member State? What are the main obstacles to successful implementation (if any)?
  - 8a) What are the main achievements?
  - 8b) Improvements in status of water bodies?
  - 8c) What are the main obstacles?
  - 8d) Overall Progress?
- Question 9. How are the measures being financed? What are the main achievements, progress and obstacles in securing the budget for the PoMs?
  - 9a) Securing finance for the PoMs?
  - 9b) Funding source?
  - 9c) Overall progress?

For the **in-depth assessment** the following assessment questions were asked:

- Question 1. What are the impacts on water bodies reported for 2009?
- Question 2. Have the sources of the impacts been identified?

- Question 3. If the sources of at least some of the impacts were identified, please indicate the relevant sources and pressures in the excel spreadsheet provided in the document area to answer this question
- Question 4. Have the identified impacts been apportioned between the sources and sectors/drivers responsible for the pressures?
- Question 4a. Are there different approaches to source apportionment between the RBDs within the MS?
- Question 5. If no source apportionment was undertaken, how were measures assigned to the sectors to reduce pressures?
- Question 6. How were the measures assigned across the polluters and activities/sectors responsible for the impacts?
- Question 7a. Has the scale of the pressures arising from agriculture been quantified in terms of the reductions required to achieve WFD objectives?
- Question 7b. How much of the gap to the achievement of WFD objectives was expected to be achieved by the Nitrates Action Programmes?
- Question 7c. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.3.h basic measures?
- Question 7d. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.3.g basic measures?
- Question 7e. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.4 supplementary measures?
- Question 8a. Has the scale of the pressures arising from emissions, discharges and losses of chemicals been quantified in terms of the reductions required to achieve WFD objectives?
- Question 8b. How much of the gap to the achievement of WFD objectives was expected to be achieved by the Basic Measures required by Article 11.3.a (measures required by the IPPC Directive (96/61/EC and 2008/1/EC) which was superseded by the Industrial Emissions Directive (2010/75/EU) on 7 January 2014)?
- Question 8c. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.3.g and Article 11.3.k basic measures?
- Question 8d. What measures are in place to address the related objectives under the Environmental Quality Standards Directive (2008/105/EC)?
  - Is there an inventory of the sources of chemical pollution?
  - Are mixing zones being used?
  - If mixing zones are used, does the plan indicate measures taken to reduce the extent of the mixing zone in the future?
  - Are there specific measures with the aim of progressively reducing pollution from priority substances?

- Are there specific measures with the aim of ceasing or phasing out emissions, discharges and losses of priority hazardous substances?
- Question 8e. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.4 supplementary measures?
- Question 9a. Has the scale of hydromorphological pressures been quantified in terms of the reductions required to achieve WFD objectives?
- Question 9b. How much of the gap to the achievement of WFD objectives was expected to be achieved by the Basic Measures required by Article 11.3.a?
- Question 9c. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.3.i basic measures?
- Question 9d. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.4 supplementary measures?
- Question 10a. Has the scale of the pressures arising from urban waste water treatment been quantified in terms of the reductions required to achieve WFD objectives?
- Question 10b. How much of the gap to the achievement of WFD objectives was expected to be achieved by the national programmes for the implementation of the Urban Waste Water Treatment Directive?
- Question 10c. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.3.g basic measures?
- Question 10d. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.4 supplementary measures?
- Question 11a. Has the scale of the pressures arising from water abstraction been quantified in terms of the reductions required to achieve WFD objectives?
- Question 11b. How much of the gap to the achievement of WFD objectives was expected to be achieved by the Basic Measures required by Article 11.3.a?
- Question 11c. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.3.c and 11.3.e basic measures?
- Question 11d. How much of the gap to the achievement of WFD objectives was expected to be achieved by the implementation of Article 11.4 supplementary measures?
- Question 12a. Was a cost effectiveness analysis undertaken during the development of the programme of measures?
- Question 12b. Did the cost effectiveness analysis influence the selection of measures?
- Question 12c. What were the main factors that limited the use of a cost effectiveness analysis?
- Question 13. What are the effects/consequences of uncertainty in the Article 5 pressures and impacts analysis, monitoring and classification of status on targeting of measures to reduce pressures to achieve WFD objectives?
- Question 14. What are the main changes and improvements envisaged for the second planning cycle?

### 3. Contextual information on Germany

There are 10 River Basin Districts (RBDs) in Germany. Germany is a federal state and in the context of the programme of measures, a national catalogue under the LAWA working group was developed. A largely uniform nationwide approach has been applied for the identification of pressures and impacts in the German RBDs. For surface waters the following statements can be made:

- Point source pressures were identified in all RBDs except the Eider and Schlei-Trave for rivers and lakes. In addition, the Elbe reported point source pressures for its transitional waters.
- Diffuse pollution pressures were identified by all RBDs for rivers and lakes and to a lesser extent for transitional and coastal waters.
- Water abstraction was the least reported pressure, mentioned by the Danube, Rhine, Elbe and Odra for its rivers. Elbe also reported this pressure for its lakes.
- Water flow regulation pressures were reported by all the RBDs for rivers, most of the RBDs except the Odra, Maas and Eider for lakes, and to a lesser extent for transitional and coastal waters.

In terms of ecological status for natural surface water bodies, in 2009 15.5% of water bodies were reported to be good or better in 2009 which was expected to increase by 10.9% to 26.4% by 2015. In 2009, 85.8% of natural surface water bodies were at good chemical status and this was expected to increase to 88.5% in 2015.

For groundwater bodies (GWBs) the following statements can be made:

- Abstraction pressures were reported in all RBDs except the Danube, Ems, Eider and Schlei-Trave. The percentage of groundwater bodies failing to achieve good status is not very high in the RBDs with the exception of the Maas, where 29.5% of its GWBs are failing. Conversely, only 0.11% of GWBs are failing to achieve good status in the Weser.
- Artificial recharge was not reported as a pressure.
- Diffuse pollution is a major pressure, resulting in the Maas, for example, in 68% of its GWBs failing good status. The RBD with the least problem is Schlei-Trave (only 14%). Overall it is a major pressure.
- Point source pressures were only reported by the Rhine, Weser, Elbe and Odra but to a very minor extent (ranging from 0.32-2.78% of GWBs). Saltwater intrusion was reported in the Elbe but it is only the cause of 0.23% of GWBs not achieving good status.

In Germany overall, 62.7% of groundwater bodies were reported to be at good chemical status in 2009, increasing to 67.8% in 2015, and 96.2 % at good quantitative status in 2009 increasing to 96.3% in 2015.

## 4. Role of basic measures and supplementary measures

Article 11.3 of the WFD states that basic measures **are the minimum requirements** to be complied with and **shall** consist of <sup>2</sup>:

Paragraph a: those **measures required to implement Community legislation** for the protection of water, including measures required under the legislation specified in Article 10 and in part A of Annex VI (*e.g. measures to achieve compliance with the Nitrates Directive and Urban Waste Water Treatment Directive*)

Paragraphs b to l: measures that largely require binding rules in terms of, for example, the control of abstractions (paragraph e) (*e.g. requires abstraction permits to be revised in line with WFD requirements*), diffuse sources (paragraph h) (*e.g. where phosphate, pesticides, sediment, organic pollution and ammonia from agriculture are identified as a pressure affecting the achievement of overall good status, controls must be established*), and activities that affect hydromorphological conditions (paragraph i) (*e.g. controls should be defined to ensure that actions in or near rivers do not negatively impact on morphological condition*) that go beyond the national implementation of Article 11.3.a measures for the achievement of WFD objectives.

In certain situations basic measures alone will not be sufficient to achieve good status and so Article 11.4 supplementary measures may be needed. MS must first have basic measures that are compliant with Article 11.3 and second define supplementary measures and have a credible plan for securing and tracking progress on the established supplementary measures. Supplementary measures can be, for example, technical measures, advisory services or cooperative agreements between groups of stakeholders (see WFD Annex VI.B).

Basic and supplementary measures must add up to what is needed to address the pressures to allow the achievement of the WFD objectives.

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<sup>2</sup> Meeting of the Strategic Co-ordination Group, 4 November 2013, Agenda point 4.a. Clarification on WFD programmes of measures (Article 11).

## 5. Targeting of measures to reduce pressures and impacts to achieve WFD objectives

Measures should be targeted in terms of their type and extent to ensure that pressures are addressed and that this will deliver improvements towards achieving good status or potential in the individual water bodies. The measures should be designed based on the assessment of the actual status of the water body, supplemented with the information from the analysis of pressures and impacts affecting the water body.

In terms of the objective of achieving good status by 2015, the aim would be to identify the gap in water body status/potential expected by 2015 and the status required by the Water Framework Directive. How large the gap that must be filled to achieve WFD objectives in any particular River Basin District and Member State will depend, for example, on how Member States have implemented the requirements under other Directives (e.g. the relative stringency of measures in national Nitrates Action Plans) and policies, as well as differences in the type, extent and magnitude of pressures on water bodies. The gap should be filled with measures that would be implemented under the Water Framework Directive for those water bodies expected to be failing objectives in 2015 without exemptions.

The gap to the achievement of objectives will be caused by significant pressures on water bodies: the sources and sectors responsible will have to be identified to determine where actions on the ground are needed to reduce pressures to levels in/on water bodies compatible with the achievement of objectives. This may be achieved through the use of source apportionment to give a clear picture of the most important sources for a given pressure or impact. In this context a source might be considered as a combination of a pressure type (e.g. diffuse or point source pollution combined with the responsible sector or driver (e.g. diffuse – agriculture, diffuse – forestry)).

The required reduction of the pressures to fill the gap to the achievement of objectives should then be quantified: this can be expressed in different ways depending on the nature of the pressure. For example: for nutrient pollution it could be in terms of the required reduction in the loads of nitrogen and phosphorus in the receiving water bodies; for pressures arising from the hydromorphological alteration of water bodies it could be expressed as number of barriers that have conditions not compatible with the achievement of Water Framework Directive objectives; and, for water abstractions the volume of water abstracted or diverted that has to be reduced to achieve objectives.

### Apportionment of impacts and pressures to sources

As described above source apportionment information is required so that measures can be targeted effectively at sources to reduce the pressures to levels compatible with the achievement of WFD objectives.

The RBMPs provide a qualitative apportionment: sources are identified but their relative contribution to impacts and pressures on water bodies is not assessed or quantified.

The approach is based on analysing and combining monitoring results, land use data information and economic activities. In the context of the LAWA, a largely uniform nationwide approach has been applied for the identification of pressures and impacts in the German RBDs. The work was guided by the documents “Arbeitshilfe zur Umsetzung der EG – Wasserrahmenrichtlinie”, (2003) and the LAWA paper “Significant Pressures (“Signifikante Belastungen”) (2003), that include criteria/thresholds to determine anthropogenic pressures from relevant drivers and to assess their impacts in time to report to the EC. The general method (contained in the mentioned documents) to define significance is based on the EU guidance and includes Laender specific approaches. In general, the DE approaches consider a pressure



that is not of natural origin to be significant in the DE RBDs if it is likely to cause a water body to fail to achieve “good status”.

## Approaches of assigning measures to sectors/sources to reduce pressures

This information was not included in the RBMPs.

## Assigning measures across the polluters and activities/sectors responsible for the impacts

The programme of measures was developed at the national level under the LAWA, with a focus on sectors that contributed most to the pressures and impacts. Measures were developed for each respective theme (agriculture, groundwater, hydromorphology, water pricing, etc.). On the one hand, this ensured a common approach in the Laender, especially in RBDs with multiple administrative districts. On the other hand, the information provided in the plans remains very general as only overarching categories of measures are provided. These general measure categories were complemented and refined on the Laender level. The implementation of the measures is the responsibility of the Laender.

## Cost effectiveness

Cost-effectiveness analysis (CEA) is an appraisal technique that provides a ranking of alternative measures on the basis of their costs and effectiveness, where the most cost-effective has the highest ranking.

Uncertainty on costs, effectiveness and time-lagged effects of measures needs to be dealt with throughout the economic analysis process associated with the WFD, and more generally throughout the process of identifying measures and developing the RBMP. Sources of uncertainty are highly diverse according to situations and river basins, but will exist with regards to the assessment of pressures, impacts, baseline, costs or measures effectiveness. It is important that key areas of uncertainty and key assumptions made for the analysis are clearly spelt out and reported alongside the results of the analysis.

A cost effectiveness analysis was undertaken during the development of the programme of measures for all measures and for all significant pressures. However, the following factors limited the use of CEA in the first programme of measures:

- Lack of information on the environmental effectiveness of some measures in terms of reducing pressures and improving water body status for some pressures.
- Lack of information on the regulatory effectiveness of some measures in terms of reducing pressures and improving water body status for some pressures.
- Lack of information on the time-lag between making measures operational, the pressures being reduced and improvements being apparent.
- Lack of information on the costs of measures for some pressures.

The RBMPs indicate that the CEA was one out of the several selection criteria in the selection process, but it remains unclear to what extent it was used.

The issue of cost-effectiveness is mentioned in all Federal States plans, but is not treated consistently (exceptions: the RBMP of Saarland does not mention the issue of CEA at all while the RBMP Hessen only mentions it in a general way in the introduction of the plan). As a basis, all measures listed in the LAWA catalogue of measures, which has been used as a structuring element in all Federal States RBMPs, are 'deemed' to be cost-efficient; therefore, to a certain degree, in all RBDs in Germany, the cost-efficiency of measures has been considered. At the same time, cost-efficiency was basically recognised but not calculated on a per-measure basis or at the RBD / sector level, nor in a consistent manner across the

Federal States since the descriptions on the issue differ. As examples: The Bavarian RBMPs for the Rhine and Danube do not calculate the cost efficiency of measures in the strategic planning phase; instead, they referred to the operational planning processes when it comes to the implementation of measures by 2012, in which cost efficiency will be calculated. The RBMP of NRW states that the cost-efficiency of measures can only be calculated in detail at a later time, during more concrete operational planning processes (in which the exact costs of measures will be calculated). The Thuringia RBMP for the Rhine mentions cost-effectiveness as considered only in the context of measures related to nutrient point source pollution.

Uncertainties with respect to CEA are due to the limited possibility of projecting the impacts of a specific measure or combination of measures in a quantitative way. Other uncertainties regarding the PoM in general are financing and availability of areas/plots.

## Assessment of Disproportionate costs

An extended time to the achievement of objectives or less stringent objectives can be justified on the grounds of disproportionately expensive measures (Articles 4.4 and 4.5).

Disproportionate costs are being used to justify the application of Article 4 (4) exemptions in all RBMPs with the exception of DE6000 and DE9650. Disproportionate costs are being used to justify the application of Article 4 (5) in only DE2000 and DE960. However, the justification provided is unclear as no detailed methodology was reported.

## Effects of uncertainties

Measures should be targeted in terms of their type and extent to ensure that pressures are tackled and reduced, and that this will deliver improvements towards achieving good status or potential in the individual water bodies. The measures should be designed based on the assessment of the actual status of the water body, supplemented with the information from the analysis of pressures and impacts affecting the water body.

Therefore, uncertainty in the robustness and suitability of methods used in the Article 5 analysis of pressures and impacts, and/or in the confidence of the results of monitoring and the subsequent assessment of ecological and chemical status can fundamentally affect how measures are targeted at water bodies at risk of failing objectives or those that are assessed as being at less than good status from all significant pressures in a RBD.

Uncertainties in the Article 5 assessment are mentioned in the RBMPs, but there is no information on how they have been addressed. The PoMs in most Laender do not link measures to a specific water body. It is stated that this is done in the detailed planning process. This process is now ongoing.

## 6. Progress with the implementation of the Basic Measures set out in Article 11.3.a

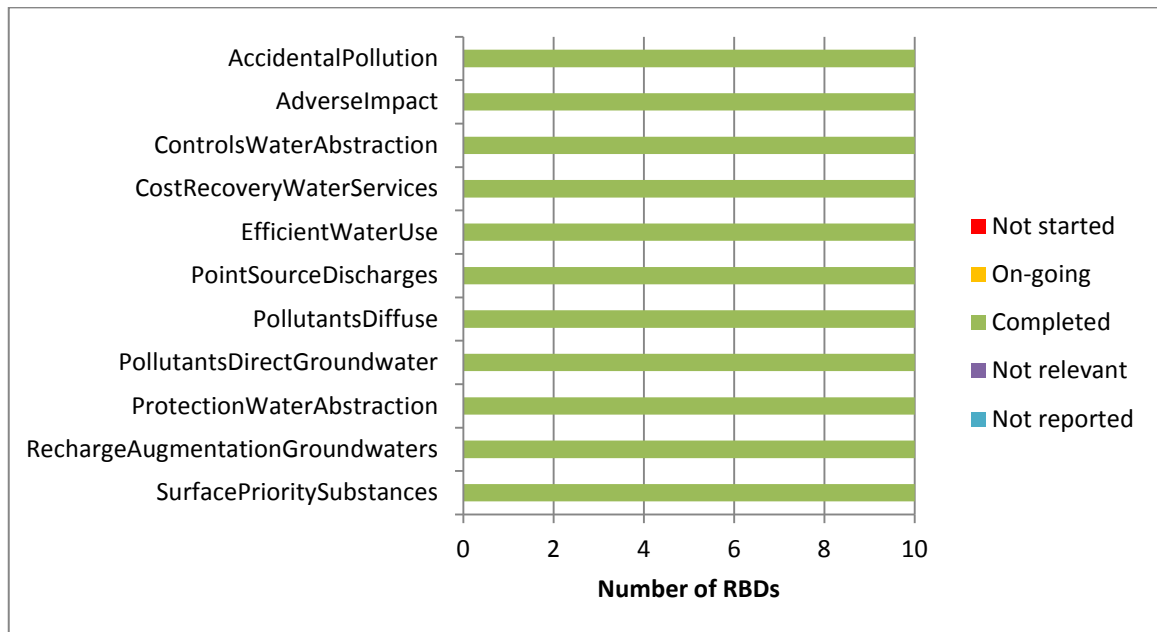
According to the information supplied by the RBDs, all the basic measures were implemented in 2009. However, only the RBDs Schlei Trave and Warnow Peene reported information in 2009 beyond the title of the regulation transposing the EU Directives' requirements. These RBDs provide information on specific actions they would take to ensure the achievement of objectives and refer to annexes of the RBMP regarding measures.

None of the RBDs reported on the progress between 2009 and 2012 or what might be achieved by 2015. It is not possible to evaluate how well the measures have been implemented and whether any gaps remain. Generally, there was no information reported on the contribution that the implementation of basic measures makes to the achievement of WFD objectives.

## 7. Progress with the implementation of Basic Measures set out in Article 11.3b-I

### Reported progress

**Figure 7.1** Reported progress with implementation of basic measures (Article 11.3 (b) to (l) in 2012) (PoM aggregation report)



Source: WISE PoMs Aggregation Report 2-2 - Implementation of Other Basic Measures in 2012

All Basic Measures were implemented and complemented by all of the RBDs. Very little information was provided by most of the RBDs except listing laws and regulations. The RBDs Oder, Eider, Schlei-Trave and Warnow-Peene reported generic text that, despite the implementation of these measures, environmental objectives may not be achieved in all areas. It is not clear which areas will not achieve objectives or which specific measures are being referred to. It is not possible to pass judgement on the progress of achieving environmental objectives by 2015.

### Delays in implementation

Member States were asked to report if there were substantial delays in the implementation of basic measures required under Article 11.3. b to l.

There were no reported delays of Article 11.3 (b to l) basic measures in the DE RBDs.

## 8. Supplementary measures (Article 11.4)

### The need for supplementary measures

Supplementary Measures are those measures designed and implemented in addition to the Basic Measures where they are necessary to achieve the environmental objectives of the WFD as established in Article 4 and Annex V. Supplementary Measures can include additional legislative powers, fiscal measures, research or educational campaigns that go beyond the Basic Measures and are deemed necessary for the achievement of objectives.

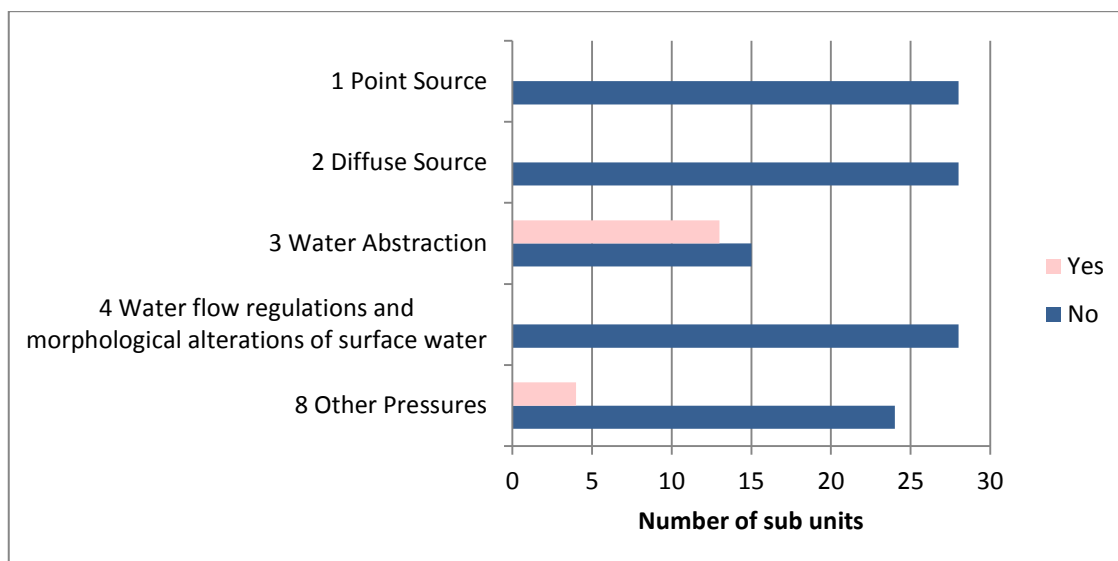
In 2010, Member States reported details of the Supplementary Measures planned (in 2009) to tackle significant pressures on surface and ground waters where Basic Measures were not enough to meet WFD environmental objectives. Details of the measures were reported in a List of Supplementary Measures specific to each RBD. Each Supplementary Measure was to be reported with a national code. In some Member States, national codes and measures may be common to more than one RBD, whereas in others the same measure may have a different code in each RBD. Therefore, the number of different measures used at a national level does not necessarily equate to the sum of the different measures used in the component RBDs. Also, the same Supplementary Measure may be applicable to more than one pressure type.

Member States were asked to report which Supplementary Measures were used to tackle specific pressures (at an aggregated and/or disaggregated level) when Basic Measures were not enough: these are indicative of those that have been applied or planned in 2009. There are also examples of where not all Supplementary Measures in the List of Supplementary Measures are reported to be used or planned in 2009.

In 2012, Member States reported some additional aspects on Supplementary Measures including their state of implementation ('not started', 'on-going' or 'completed'), whether their implementation was substantially delayed and, if so, the reasons for the delay.

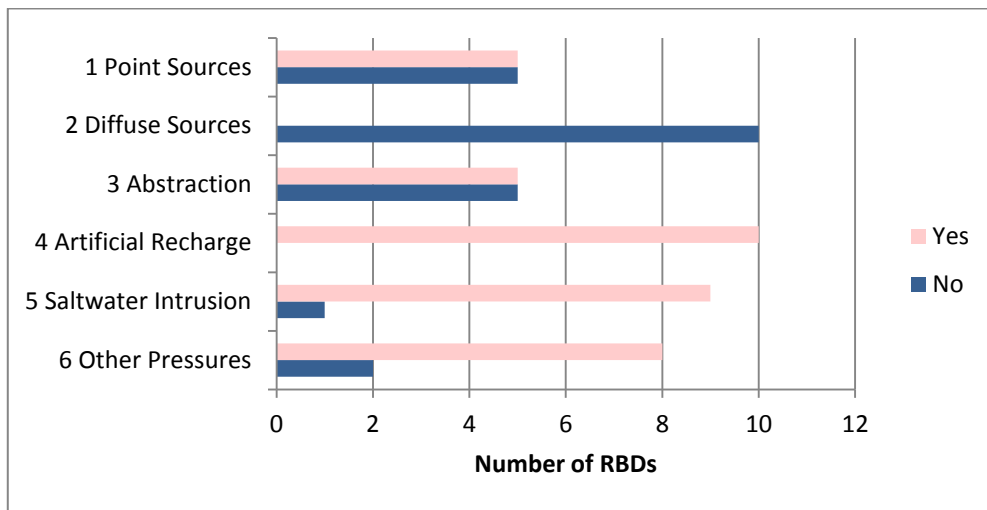
**Figure 8.1** Number of sub-units within the Member State (DE) where basic measures are enough (Yes) or not enough (No) to tackle significant pressures on surface water bodies (28 sub-units reported in DE).

Source: WISE PoM reports



**Figure 8.2** Number of river basin districts within the Member State (DE) where basic measures are enough (Yes) or not enough (No) to tackle significant pressures on ground water bodies. 10 RBDs reported in DE.

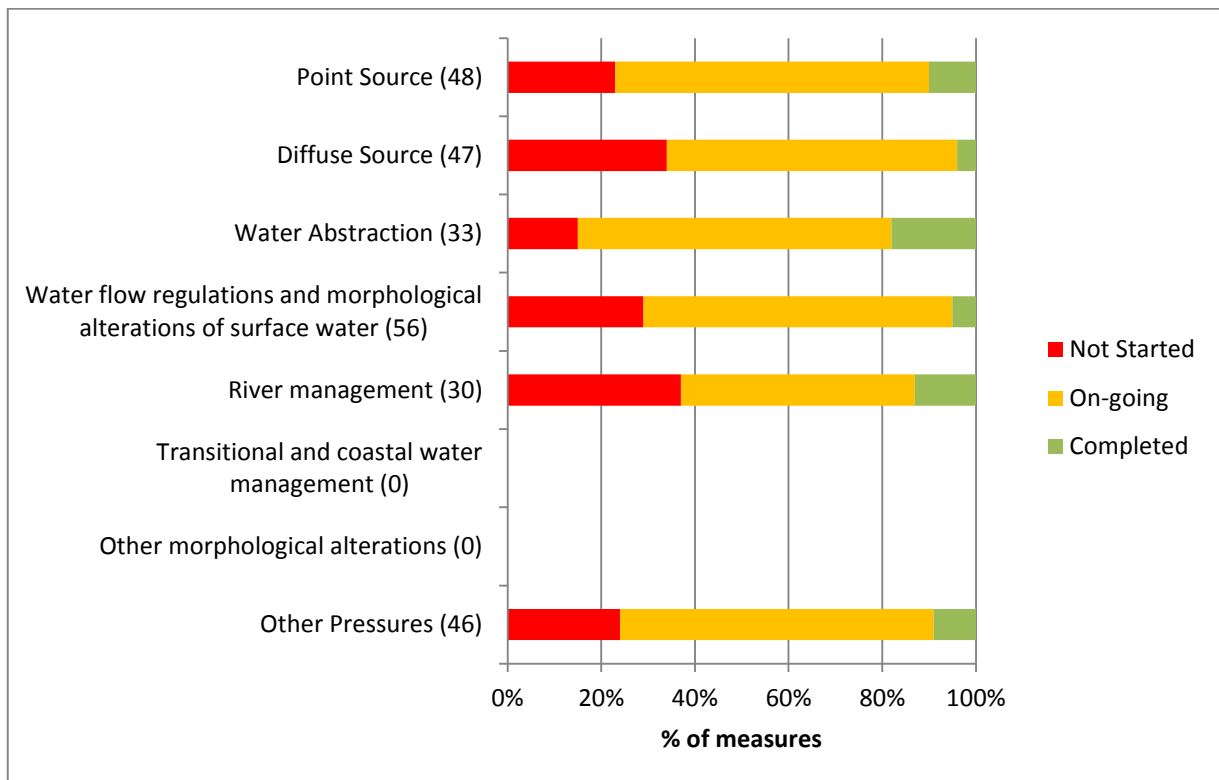
Source: WISE PoM reports



## Progress with the implementation of Supplementary Measures between 2009 and 2012

### Surface Waters

**Figure 8.3** State of implementation of supplementary measures in relation to significant pressures of surface waters in 2012



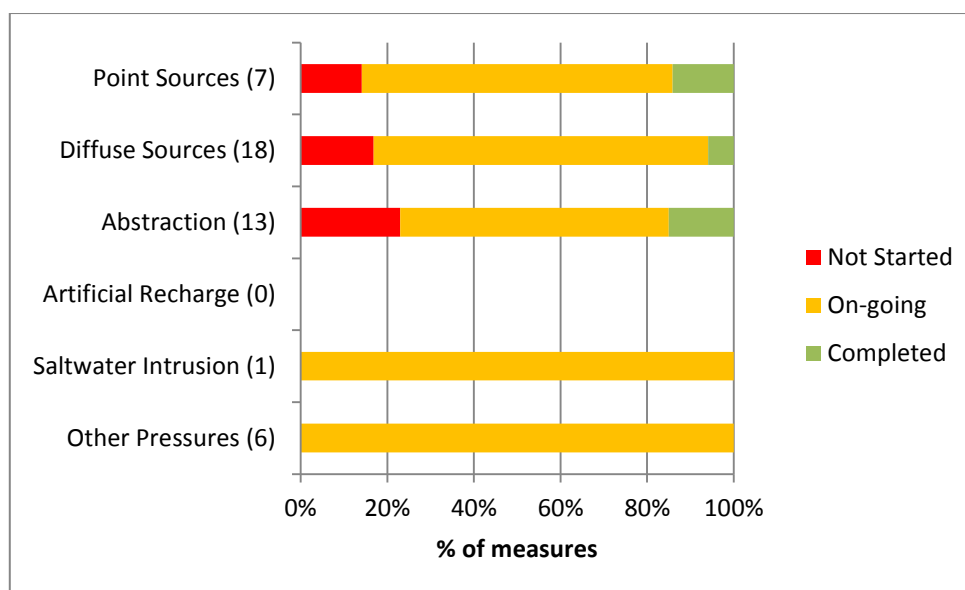
Number in brackets is the number of supplementary measures tackling the pressure.

Note: a measure may tackle more than one pressure.

Source: WISE PoMs Reports

## Groundwater

**Figure 8.4 State of implementation of supplementary measures in relation to significant pressures on ground waters in 2012**



Number in brackets is the number of supplementary measures tackling the pressure.  
Note: a measure may tackle more than one pressure

459 supplementary measures were reported for the whole of Germany. Major differentiations cannot be made regarding the progress of measures according to pressures. Around 30% of measures have not started, around 50-70% are ongoing and around 10-20% have been completed.

The situation in the different RBDs in Germany is largely similar: the percentage of projects on-going ranges from 73% (Eider) to 91% (Rhine). Warnow-Peene has completed 18% of its measures, the highest out of the RBDs.

Regarding measures that are not yet started, the picture varies more greatly: while Schlei-Trave, Eider, Maase, Odra and the Ems have not yet started 20%, 23%, 23%, 21% and 22% of their measures, respectively. Warnow-Peene has not yet started 5% of its measures, the Elbe just 7%. Overall, significant delays have been reported by all the RBDs except the Eider. Delays have been linked to a wide range of barriers such as financial, legal, technical, capacity and acceptance problems. New knowledge of measures, changes in costs, changes in the sources of impacts as well as changes in the status of water bodies were also reported regularly.

Overall, very few supplementary measures were reported for groundwater bodies, mirroring the lack of pressures identified for groundwater bodies.

## Delays in implementation

As with Article 11.3 b to l basic measures, Member States were asked to report whether there was a substantial delay in implementing supplementary measures included in the first RBMPs in 2009, and to explain any such delays.

There are reported delays of Article 11.3 (b to l) basic measures in the DE RBDs, mainly due to regulatory barriers (29%), funding/finance obstacles (22%), the need for land of land/acquisition (22%), and lack of Staff (22%). Other reasons given were technical barriers (11% of measures), new information /findings (4%) and because the planned measures were no longer needed (4%).

## Supplementary Measures in place to tackle each of the significant pressures for which Basic Measures are not enough to achieve WFD objectives

Point source pollution is a problem for all RBDs with the exception of the Eider and Schlei-Trave. For the rest, rivers and lakes are affected; in the Ems and Maas only rivers are failing due to point source pollution. All RBDs reported supplementary measures to tackle point source pollution in surface waters.

Diffuse pollution is reported as a pressure for surface waters in all RBDs, although in some RBDs it is only a pressure for rivers and lakes (Danube, Rhine, Odra, Maas - only rivers), while for the other RBDs all water body categories are affected. All the German RBDs reported supplementary measures for every water body category (rivers, lakes, transitional waters and coastal waters).

The Danube, Rhine, Elbe and Odra reported water abstraction pressures in surface waters, mainly for rivers, although in the Elbe it is also a pressure in its lakes. Every RBD reported supplementary measures to tackle water abstraction, largely for river water bodies and to a lesser extent for transitional waters and lakes. Water flow regulations and hydromorphological pressures were reported by all the RBDs for their surface waters. Water flow regulations and hydromorphological pressures apply mainly in rivers but they are also an issue for lakes, transitional and coastal waters (Ems, Weser; Schlei Trave and Rhine lakes only). All the RBDs reported supplementary measures for the pressure, focussing most of their measures on surface waters.

Despite not being reported as pressures, supplementary measures were reported in the every RBD for River Management and Transitional and coastal water management. All the RBDs reported supplementary measures focussing on barriers and land sealing (not the Maas) to address other morphological pressures.

All the RBDs except the Weser, Eider and Schlei-Trave reported 'Other pressures' for their rivers (Danube, Ems, Maas), lakes (Odra) or both (Rhine, Elbe (also transitional waters)). Every RBD reported supplementary measures to tackle 'other pressures', focussing mainly on fishing and 'other pressures in transitional waters'.

For groundwater, the pressure reported the most frequently was diffuse sources, reported by all the RBDs. Every RBD reported supplementary measures to address this pressure.

Groundwater abstraction pressures were reported by the Rhine, Weser, Elbe, Odra, Maas and Warnow-Peene. Every RBD, regardless of experiencing the pressure, reported relevant supplementary measures.

Point source pressures for groundwaters were reported by the Rhine, Weser, Elbe and Odra. Every RBD except Schlei-Trave reported supplementary measures to address point source pollution of groundwaters. Saltwater intrusion was only reported by the Elbe, which reported one supplementary measure. Other pressures were reported in the Weser and Elbe. All RBDs except Schlei-Trave reported supplementary measures to address 'other pressures'.

Artificial recharge was not reported as a pressure and no supplementary measures were reported.



## 9. Reporting of Key Types of Measures

In 2012, Member States were asked to report on 16 defined Key Types of Measures (KTM). These were expected to incorporate Article 11.3 (b to l) basic measures and supplementary measures. Their implementation and completion were expected to deliver the bulk of the actions required to achieve WFD objectives, i.e. to reduce significant pressures to the extent required to achieve good status or to prevent deterioration of status in high and good status water bodies. The defined KTMs were:

- 1 Construction or upgrades of wastewater treatment plants beyond the requirements of the Directive on Urban Waste Water Treatment;
- 2 Reduce nutrient pollution in agriculture beyond the requirements of the Nitrates Directive;
- 3 Reduce pesticides pollution in agriculture;
- 4 Remediation of contaminated sites (historical pollution including sediments, groundwater, soil);
- 5 Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams);
- 6 Improving hydromorphological conditions of water bodies other than longitudinal continuity;
- 7 Improvements in flow regime and/or establishment of minimum ecological flow;
- 8 Water efficiency measures for irrigation (technical measures);
- 9 Progress in water pricing policy measures for the implementation of the recovery of cost of water services from households;
- 10 Progress in water pricing policy measures for the implementation of the recovery of cost of water services from industry;
- 11 Progress in water pricing policy measures for the implementation of the recovery of cost of water services from agriculture;
- 12 Advisory services for agriculture;
- 13 Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc.);
- 14 Research, improvement of knowledge base reducing uncertainty;
- 15 Measures for the phasing-out of emissions, discharges and losses of priority hazardous substances or for the reduction of emissions, discharges and losses of priority substances
- 16 Upgrades or improvements of industrial wastewater treatment plants (including farms) beyond the requirements of the Integrated Pollution Prevention and Control (IPPC) Directive;

Member States also were given the possibility to report different or additional KTMs according to their specific situations and requirements.

Quantitative indicators for the scale and progress with the implementation of measures were proposed for each of the defined Key Types of Measure. Member States could also report their own indicators if the proposed ones were not appropriate for their specific national situations.

Sections 10 to 14 show and describe the progress made by Germany in the implementation of KTMs primarily associated with the five key topics subject to the in-depth assessment: not all KTMs were reported and/or applicable to the situation in Germany. Some of the KTMs are not necessarily associated with the 5 selected Topics: these are described in section 15. As indicated above, Member States were also able to report different KTMs from the defined KTMs; these are also described in section 15.

# 10. Progress with implementation of measures to reduce pressures (nutrients, organic matter) from agriculture

## Quantification of the scale of agricultural pressures

The German Water Authorities have identified agriculture as the main source for diffuse nitrogen (~ 75 %) and phosphorus (~ 55 %) emissions. For the most part the RBMPs and PoMs do not include information on how the expected effects of measures to tackle/reduce agricultural pressures have been quantified. According to the information supplied by DE during the bilateral meetings, modelling nutrient emissions is currently taking place in most RBDs. The effect of planned measures will be calculated through these nutrient models, and the measures will be adapted to reach targets for the second management period.

However, a common target has been established in the North Sea basins of 3.8mg TN/l. For the Baltic Sea the definition of a common target is in progress. The target is set regarding good ecological status in transitional and coastal waters.

## Assessment of measures for the achievement of WFD objectives

No specific information was reported regarding how much of the gap to the achievement of WFD objectives was expected to be achieved by the Nitrates Action Programmes. The Nutrient management strategy developed by DE is in place through voluntary and mandatory measures. Mandatory measures include: reducing N surplus (ND) (mandatory max. surplus for the whole DE, 60kg/ha) together with agricultural administration (fertilisation ordinance, drinking water protection zones, buffer strips), continue farmer advisory service, better targeted agri-environment measures, using synergies with river and surface water restoration. Voluntary measures include: advisory service, agri-environmental measures and wetlands restoration. According to the information supplied by Germany in the bilateral discussions with the Commission, even by implementing the current Nitrates Directive, DE will not achieve good status under the WFD.

As regards Article 11.3.h and Article 11.3.g basic measures, measures have been taken, even if it is not always clear what they contain as the RBMPs only refer to legislative texts. There has been no assessment or judgement as to how much the measures will contribute to the achievement of WFD objectives.

In terms of the need to implement supplementary measures, the RBMPs indicate that basic measures to tackle point source pollution in rivers are not enough (except the Eider, Schlei-Trave and Warnow-Peene); for lakes (except in the Meuse, Eider, Schlei-Trave and Warnow Peene); for transitional waters only in the Elbe (not a reported pressure in the rest of the RBDs).

Basic measures to tackle diffuse sources were not enough to meet WFD objectives in rivers in all RBDs; in all lakes except for the Meuse (not a reported pressure); in transitional waters in the Ems, Weser and Elbe; in coastal waters in all RBDs except the Danube, Rhine, Meuse, and Warnow Peene (not a reported pressure).

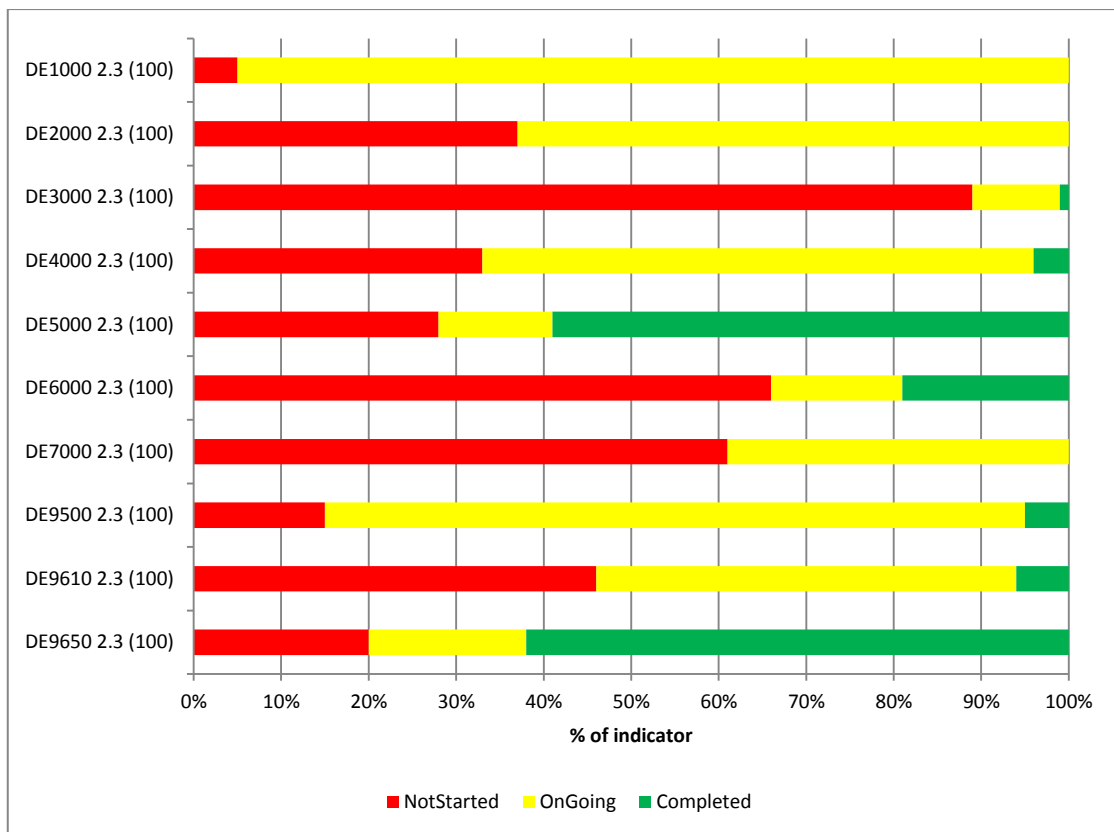
Water abstraction was identified as a pressure in the Danube (rivers) and basic measures are not enough; in the Weser for rivers and lakes and basic measures are not enough; in the Odra (rivers) and basic measures are not enough. Basic measures were reported as not enough in the Weser for water abstraction despite no reported pressures. Basic measures to tackle water abstraction are considered enough in the Ems, Meuse, Schlei Trave, Eider and Warnow Peene. Measures have been taken (PoM report 2012).

There is a generic catalogue of measures by the LAWA (which was the starting point in many Laender). It links all technical measures to Annex Vi part B of the WFD. There is no assessment or judgment as to how much the measures will contribute to the achievement of WFD objectives.

## Key types of measure

### KTM2. Reduce nutrient pollution in agriculture beyond the requirements of the nitrates directive

**Figure 10.1 Percentages of measures/indicators associated with KTM2 that were reported as being not started, on-going and completed in 2012**



Key to indicators:

The annotations next to each bar in the Figure shows "RBDCode: Indicator number: (value of the indicator when 100% completed)":

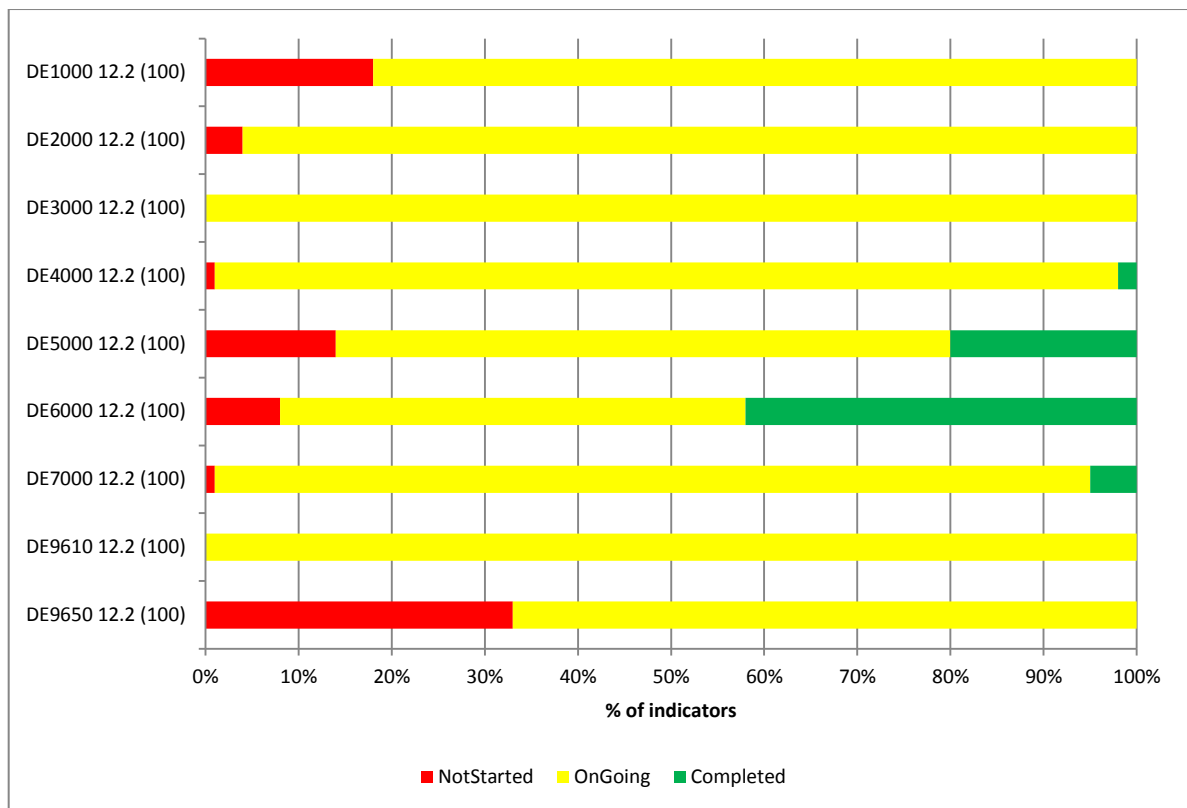
2.3 Number of projects/measures

Source: WISE PoM Reports

This indicator was reported by all the RBDs. The indicator used is the number of projects/measures: 156 have been completed, 444 are on-going and 400 have not yet started.

## KTM12: Advisory services for agriculture

**Figure 10.2** Percentages of indicator/baseline associated with KTM12 that were reported as being not started, on-going and completed in 2012



Key to indicators:

The annotations next to each bar in the Figure shows "RBDCCode: Indicator number: (value of the indicator when 100% completed)."

12.2 Number of advisory services

Source: WISE PoM Reports

The number of advisory services was reported by all the RBDs except the Eider. So far, 68 have been completed, 752 are on-going, 79 have not yet started.

# 11. Progress with implementation of measures to reduce pressures from chemicals

## Quantification of the scale of chemical pressures

Information is provided on “number of water bodies failing EU Environmental Quality Standards for Priority Substances” and “number of water bodies failing national Environmental Quality Standards for River Basin Specific Pollutants” (see WFD aggregation reports e.g. SWB\_CLASS\_EXCEEDED\_EQS). The information is based on monitoring results.

## Assessment of measures for the achievement of WFD objectives

### Basic and supplementary measures

As regards basic measures required by Article 11.3.a, the POM reports from 2009 and 2012 only mention that the directives are implemented but not how much they contribute to WFD objectives.

As regards basic measures required by Article 11.3.g and Article 11.3.k, measures have been taken (even if it is not always clear what they contain as they refer to legislative texts). There is no assessment or judgement as to how much the measures will contribute to the achievement of WFD objectives.

Basic measures to tackle point sources (point sources including UWWT and storm water overflows) were not enough to meet WFD objectives in rivers in all RBDs except the Eider and Schlei-Trave; in lakes in the Danube, the Rhine, Weser, Elbe and Odra; and in transitional waters in the Elbe. There is a generic catalogue of measures by the LAWA (which was the starting point in many Länder). It links all technical measures to Annex VI part B of the WFD. There is no assessment or judgment in the PoMs (which are standalone documents in DE) as to how much the measures will contribute to the achievement of WFD objectives.

### Measures required by the EQS Directive

#### Inventory of the sources of chemical pollution

As there is no reporting requirement, no inventory of sources of chemical pollution is mentioned in any of the German RBMPs. Bavaria refers to the webpage of the German Federal Environment Agencies Pollutant register in its plans for the Rhine and Danube; no other plan or Land does the same. In the bilateral meeting it is mentioned that such an inventory will be developed under the LAWA.

#### Use of mixing zones

For the entire German territory no evidence about the application of mixing zones is found. There is one indirect reference to the topic. Germany does not use mixing zones, but uses the concept of a monitoring station representative for the status of the whole water body. Only NRW refers to mixing zones as a criterion for the selection of monitoring sites.

#### Measures taken to reduce the extent of the mixing zone in the future

This measure is not relevant in Germany.

#### Specific measures with the aim of progressively reducing pollution from priority substances

General measures do not target a specific chemical substance but focus on industrial and household emissions. Additionally, the Danube and the Rhine include emissions from agriculture, and the Weser

includes emissions from potash mining. In the Danube and the Rhine, there was no common approach among the Laender in developing and reporting on general measures to address chemical pollution. For all the RBDs, WISE mentions basic and supplementary measures. The basic measures cover regulations/laws/by-laws that regulate permitting/emission standards (combined approach) aiming at industrial point sources and waste water treatment plants.

Examples of supplementary measures from WISE (from a list of many) are: 'measures for the reduction of pesticide pollution from agriculture'; 'realisation and continuation of specific water protection measures in drinking water areas'; 'conceptual measure: development of concepts / studies / expert reports'; 'conceptual measure: conducting R&D and demonstration projects'; 'conceptual measure: information and training measures'. In Germany's bilateral meeting with the Commission it was agreed that the second RBMP would include a more consistent approach to substance-specific measures in the different Laender.

### **Specific measures with the aim of ceasing or phasing out emissions, discharges and losses of priority hazardous substances**

See above.

### **Key types of measure**

No relevant KTMs were reported/included in Germany.

## 12. Progress with implementation of measures to reduce pressures from hydromorphological alterations

### Quantification of the scale of pressures from hydromorphological alterations

The scale of hydromorphological pressures has not been quantified in terms of the reductions required to achieve WFD objectives. In WISE the only information provided related to 'Altered habitats as a result of hydromorphological alterations'. However, there is a German wide assessment on the hydromorphological status of rivers of 2001 (see <http://gis.uba.de/website/web/atlantiskarten/gewstruktur.htm>). It has been updated in some Laender during the pressures assessment. As hydromorphology is only a supporting quality element (QE) that needs to be considered when assessing high status, the link between good ecological status/good ecological potential is not clear.

Specific standards or methods regarding hydromorphological quality elements for ecological status assessment are not reported in the RBMPs/PoMs for all RBDs and all Laender. In addition, no class boundaries for hydromorphology are yet reported to support biological elements for an ecological status assessment. Despite the RBMPs demonstrating the scale of the pressure, there is no link to status.

### Assessment of measures for the achievement of WFD objectives

In terms of the Article 11.3.a basic measures, the Environmental Impact Assessment Directive (85/337/EEC) and the Habitats Directive (92/43/EEC) are mentioned, but: i) there are no details on what measures are planned, and ii) there has been no assessment or judgement of how much the measures will contribute to the achievement of WFD objectives in the PoMs (which are standalone documents in DE).

In terms of the Article 11.3.i basic measures, while measures are indicated, the RBMPs mainly list links to legislation, so it is not clear what technical measures are behind the legislation. There was no assessment or judgment in the PoMs on how much the measures will contribute to the achievement of WFD objectives.

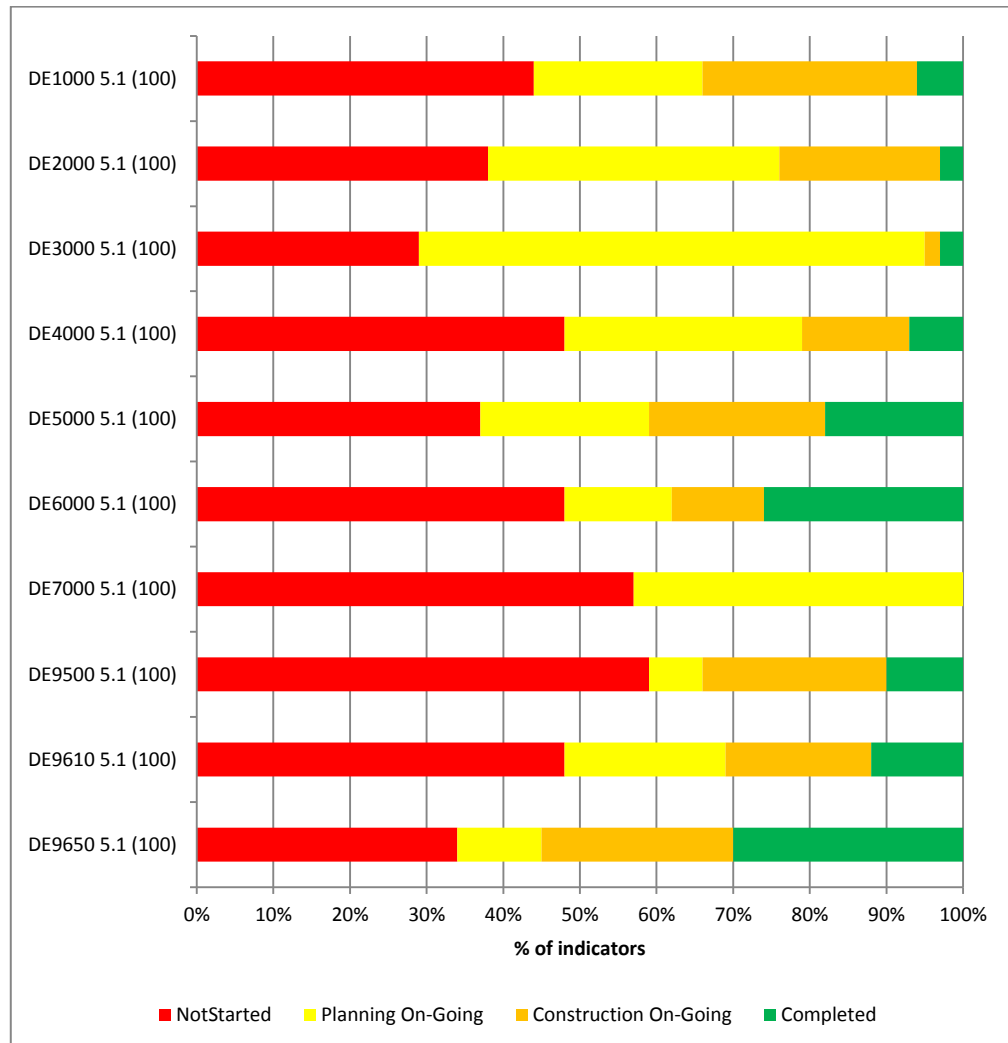
Basic measures are not enough to meet WFD objectives in rivers in all RBDs; in lakes in all RBDs except the Odra, Maas and Eider; in transitional waters in the Weser, Elbe and Eider; and in coastal water in the Ems, Weser, Elbe and Warnow-Peene (PoM report 20102). Measures have been taken. There is a generic catalogue of measures by the LAWA (which was the starting point in many Laender). It links all the technical measures to Annex Vi part B of the WFD. There is no assessment or judgment of how much the measures will contribute to the achievement of WFD objectives in the PoMs.



## Key types of measure

### KTM5: Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams)

**Figure 12.1 Percentages of indicator/measures associated with KTM5 that were reported as being not started, planning on-going, construction on-going and completed in 2012**



Key to indicators

The annotations next to each bar in the Figure shows "RBDCCode; Indicator number; (value of the indicator when 100% completed)":

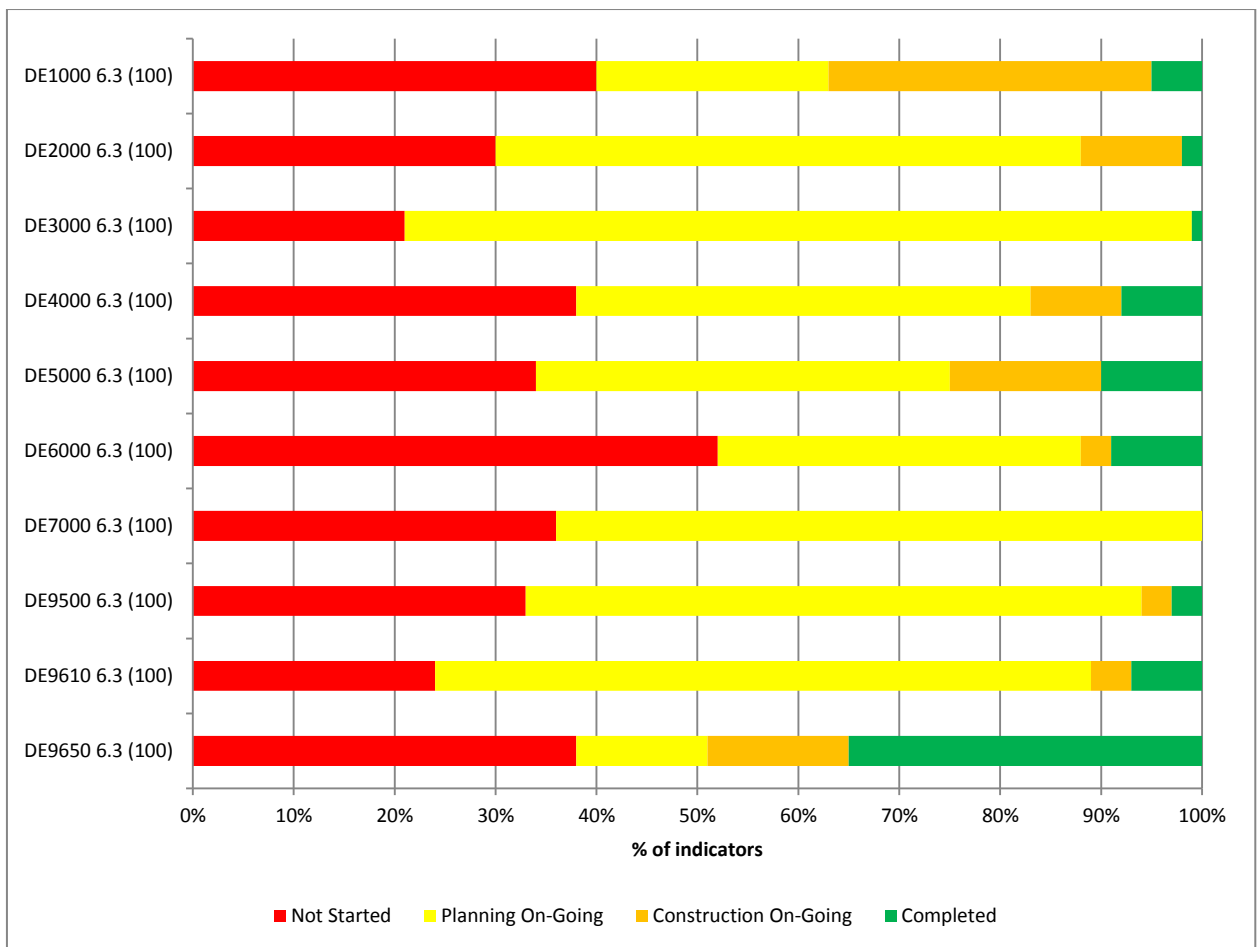
5.1 Number of projects/measures to improve longitudinal continuity

Source: WISE PoM Reports

As shown in the figure, 115 projects have been completed, for 168 construction is on-going, for 275 planning is on-going and 442 projects have not yet started.

**KTM6: Improving hydromorphological conditions of water bodies other than longitudinal continuity**

**Figure 12.2 Percentages of indicator/measures associated with KTM6 that were reported as being not started, planning on-going, construction on-going and completed in 2012**



Key to indicators

The annotations next to each bar in the Figure shows "RBDCode; Indicator number; (value of the indicator when 100% completed)"

6.3 Number of projects/measures

Source: WISE PoM Reports

As shown in the figure, 80 projects have been completed, for 90 construction is on-going, for 484 planning is on-going, and 346 projects have not yet started.

## 13. Progress with implementation of measures to reduce pressures from urban waste water treatment

### Quantification of the scale of the pressures

There is a pressure assessment for point sources from urban wastewater treatment plants >2000 population equivalent, industrial emissions and other point source pollution such as stormwater overflow.

### Assessment of measures for the achievement of WFD objectives

Measures to reduce pressures from treated urban waste water are included in the RBMPs, but the plans mainly list links to legislation, so it is not clear what technical measures are behind the reported measures. No assessment or judgment of how much the measures will contribute to the achievement of WFD objectives was found in the PoMs (which are standalone documents in DE).

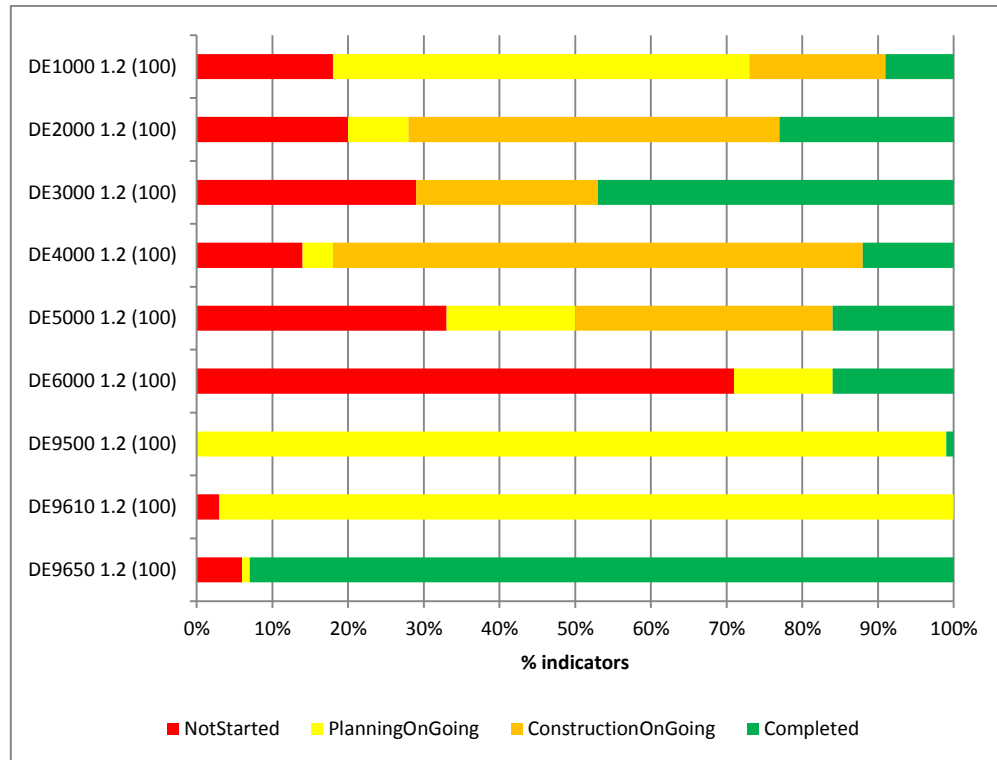
Article 11.3.g basic measures are found but they mainly consist of links to legislation so it is not clear what technical measures are behind the reported measures. No assessment or judgment of how much the measures will contribute to the achievement of WFD objectives was found in the PoMs (which are standalone documents in DE).

Basic measures to tackle point sources (point sources also cover chemical pollution) were not enough to meet WFD objectives in rivers in all RBDs except the Eider and Schlei-Trave; in lakes in the Danube, the Rhine, Weser, Elbe and Odra; and in transitional waters in the Elbe. Measures have been taken (POM report 2012). There is a generic catalogue of measures by the LAWA (which was the starting point in many Laender). It links all technical measures to Annex Vi part B of the WFD. There is no assessment or judgment how much the measures will contribute to the achievement of WFD objectives in the PoMs.

## Key types of measure

### KTM1. Construction or upgrades of wastewater treatment plants beyond the requirements of the directive on urban waste water treatment

Figure 13.1 Percentages of indicator/measures associated with KTM1 that were reported as being not started, planning on-going, construction on-going and completed in 2012



Key to indicators measures

The annotations next to each bar in the Figure shows "RBDCode; Indicator number; (value of the indicator when 100% completed)"

1.2 Number of projects/measures

Source: WISE PoM Reports

This KTM was reported by 9 RBDs; the Maas did not report for this KTM. The indicator used is the number of projects: 217 have been completed, 195 construction is on-going, 294 planning is on-going, and 194 projects have not yet started.

## 14. Progress with implementation of measures to reduce pressures from water abstractions

### Quantification of the scale of the pressure

There is an assessment of how much water is abstracted, but there is not a direct relationship to what is good status (WISE). Groundwater abstraction is reported in WISE. As the balance is done in accordance with WFD requirements, it is clear how much less water needs to be abstracted.

### Assessment of measures for the achievement of WFD objectives

In terms of the Article 11.3.a basic measures, the Environmental Impact Assessment Directive (85/337/EEC) and the Habitats Directive (92/43/EEC) are mentioned, but: i) there are no details on what measures are planned, and ii) there is no judgment as to how much the measures will contribute to the achievement of WFD objectives.

In terms of the Article 11.3.c and Article 11.3.e basic measures, the RBMPs mainly list links to legislation so it is not clear what the technical measures are behind the measures that are described. There is no assessment or judgment as to how much the measures will contribute to the achievement of WFD objectives.

Basic measures were considered not enough to meet WFD objectives in rivers in the Danube, Rhine, Elbe and Oder and in lakes in the Odra. In the Ems, Maas, Eider, Schlei Trave and Warnow Peene, basic measures were sufficient. Measures have been taken to address water abstraction but there is no assessment or judgment as to how much the measures will contribute to the achievement of WFD objectives.

### Key types of measure

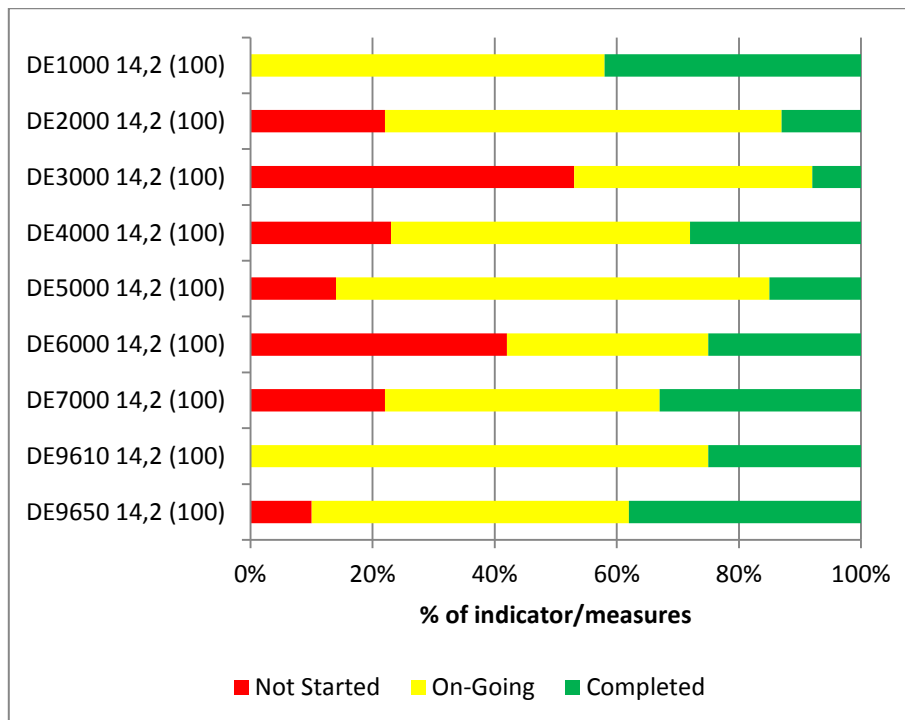
No relevant KTMs were reported/included in Germany.

## 15. Reporting of other Key Types of Measure

This section summarises the progress with the implementation of the defined KTM's not included within the assessment of the specific pressures/issues. Member States were also given the possibility to report different or additional KTM's according to their specific situations and requirements: these are also summarised in this section.

### KTM14: Research, improvement of knowledge base reducing uncertainty

**Figure 15.6 Percentages of indicator/measures associated with KTM14 that were reported as being not started, planning on-going, construction on-going and completed in 2012**



Key to indicators measures

The annotations next to each bar in the Figure shows "RBDCode; Indicator number; (value of the indicator when 100% completed)"

14.2 Number of the research studies etc.

Source: WISE PoM Reports

This indicator was reported by all the RBDs except the Eider. The indicator used is the number of the research studies, development and demonstration projects: 227 have been completed, 487 are on-going and 186 have not yet started.

### Summary assessment on the state of implementation of Key Types of Measure

Six KTM's were reported in Germany. Reporting was carried out using a common method: selected measures from the LAWA national catalogue of measures were categorised according to the EU KTM's. The water body status was available for each reported type of measure. The data on water body status was summed up within each status classification for the selected measures to get an indicator value. To provide directly comparable indicator values between the river basins, the indicator values were reported in the form of percentages. The sub-measures of each KTM were reported as the quotient of the sum by the

total number of individual measures under each KTM. For the six KTMs, two were not applied in the Eider (farm advisory services and research) and one was not applied in the Maas (construction or update of wastewater treatment plants). Two KTMs focussed on hydromorphology and two KTMs focussed on water pollution (wastewater plants and nitrates from agriculture). No KTMs were reported that focussed on water quantity issues or related to water pricing in different sectors.

## **New Key Types of Measures**

No new key types of measure were reported in Germany

## 16. Overall progress with the Programme of Measures

### Main achievements

The RBDs are similar regarding the current status of implementation of measures with slight variations. For most of the RBDs, few measures have been completed (ranging 5-12%); the Elbe has already completed 20% of its measures. All the RBDs have already implemented between 50-68% of the measures in their programmes. Most RBDs have not started around 30% of the measures; in the Danube only 20% of measures have not yet started. Some of the RBDs differentiate on implementation rates of particular measures especially selected for their importance (e.g. Danube, Rhine, Elbe).

None of the RBDs reported whether the measures are leading to changes in status.

### Main obstacles

The RBMPs experienced similar obstacles to measures that are causing delays in their implementation. The main obstacles mentioned by all RBDs are the lack of acceptance of the measures by stakeholders and trouble acquiring the land needed to implement measures. In addition, some RBDs (Elbe, Schlei Trave and Warnow Peene) mention that they were too ambitious in their planning and that it is unrealistic that they will be able to finish planning and implementing their measures by 2015. The high costs of measures and the need to find financing was mentioned by all RBDs except the Danube and Ems. The Maas also mentioned the lack of human resources. Schlei Trave and Warnow Peene mentioned the competition for land with biogas installations as an obstacle to implementing measures. Schlei Trave also mentioned that new knowledge on the impacts of the measures have caused their implementation to be delayed.

### Overall Progress

Progress by the RBDs in implementing their PoMs is on-going. A number of obstacles have been identified and around one-third of the measures have not yet been implemented. Few projects/measures have been completed. As no information was reported on improvements in water bodies, it is difficult to judge whether Germany is doing well or whether more efforts are needed. It appears that measures of importance have a higher progress rate than the other measures, but overall the completion of measures is slow.