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**Second River Basin Management Plans – Member State: The Netherlands**

***Accompanying the document***

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL**

**on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)**
**Second River Basin Management Plans**
**First Flood Risk Management Plans**

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# Acronyms and definitions

| | |
|---|---|
| EQS Directive | Environmental Quality Standards Directive |
| FD | Floods Directive |
| Km | Kilometre |
| $km^2$ | Kilometre squared |
| KTM | Key Type of Measure |
| PoM | Programme of Measures |
| QA/QC Directive | Quality Assurance / Quality Control Directive |
| RBD | River Basin District |
| RBMP | River Basin Management Plan |
| WFD | Water Framework Directive |
| WISE | Water Information System for Europe |
| Annex 0 | Member States reported the structured information on the second RBMPs to WISE (Water Information System for Europe). Due to the late availability of the reporting guidance, Member States could include in the reporting an Annex 0, consisting of a short explanatory note identifying what information they were unable to report and the reasons why. This Annex was produced using a template included in the reporting guidance. If Member States reported all the required information, this explanatory note was not necessary. |

# Foreword

The Water Framework Directive (WFD) (2000/60/EC) requires in its Article 18 that each Member State reports its River Basin Management Plan(s) (RBMPs) to the European Commission. The second RBMPs were due to be adopted by the Member States in December 2015 and reported to the European Commission in March 2016.

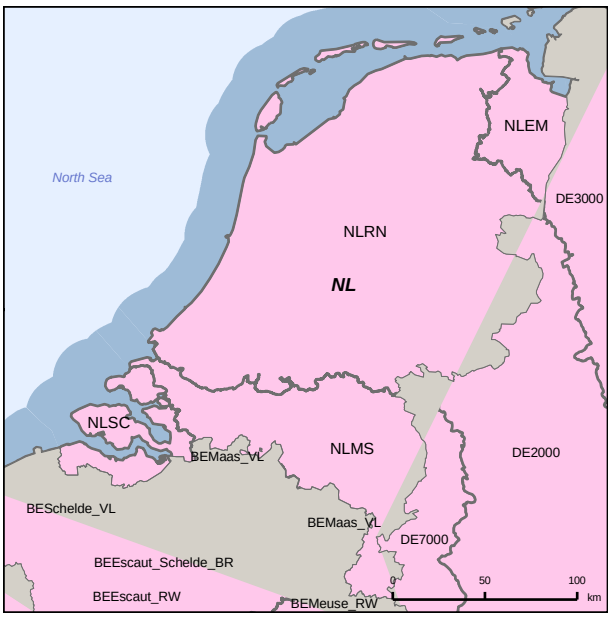
This Member State Assessment report was drafted on the basis of information that was reported by Member States through the Water Information System for Europe (WISE) electronic reporting.

The Member State Reports reflect the situation as reported by each Member State to the European Commission in 2016 or 2017 and with reference to River Basin Management Plans (RBMP) prepared earlier. The situation in the Member States may have changed since then.

# General Information

The Netherlands (Map A) cover a total area of 41 526 km² and has 16.4 m inhabitants.

***Map A*** ***Map of River Basin Districts***




*Source: WISE, Eurostat (country borders)*

*International River Basin Districts (within European Union)*
*International River Basin Districts (outside European Union)*
*National River Basin Districts (within European Union)*
*Countries (outside European Union)*
*Coastal Waters*

It has four RBDs, which are all parts of international RBDs. The sharing countries are European Union Member States, as well as Switzerland and Liechtenstein. Information on the areas of the national RBD including sharing countries is provided in Table A and the percentage share in the Netherlands is shown in Table B.

***Table A: Overview of RBDs in the Netherlands***

| RBD | Name | Size ($km^2$) | Percentage of national territory | Percentage of international RBD | Countries sharing RBD |
|---|---|---|---|---|---|
| NLRN | Rhine | 28 500 | 69 | 17.1 | AT, BE, CH, DE, FR, IT, LI, LU |
| NLSC | Scheldt | 3 200 | 8 | 5.5 | BE, FR |
| NLMS | Meuse | 7 500 | 18 | 21.8 | BE, DE, FR, LU |
| NLEM | Eems | 2 600 | 6 | 13 | DE |

*Source: RBMPs reported to WISE*

***Table B Transboundary river basins by category and % share in the Netherlands***

| Name international river basin | National RBD | Countries sharing RBD | Co-ordination category | |
|---|---|---|---|---|
| | | | 1 | |
| | | | km² | % |
| Rhine | NLRN | AT, BE, CH, DE, FR, IT, LI, LU | 28917 | 17.0 |
| Scheldt | NLSC | BE, FR | 3200 | 5.5 |
| Meuse-Maas | NLMS | BE, DE, FR, LU | 7500 | 21.8 |
| Ems | NLEM | DE | 2600 | 13.0 |

*Source: WISE electronic reports*

***Category 1: International agreement, permanent co-operation body and international RBMP in place.***
***Category 2: International agreement and permanent co-operation body in place.***
***Category 3: International agreement in place.***
***Category 4: No co-operation formalised.***

## Status of second river basin management plan reporting

A total of four RBMPs for the Netherlands (Rhine, Scheldt, Meuse, Ems) were published on 22 December 2015. Documents are available from the European Environment Agency (EEA) EIONET Central Data Repository https://cdr.eionet.europa.eu/

# Key strengths, improvements and weaknesses of the second River Basin Management Plan(s)

The main strengths and shortcomings of the second RBMP of the Netherlands are as follows:

- **Governance and public consultation**

  - The Netherlands has long-standing mechanisms for coordination among the many public bodies involved in water management.
  - The RBMPs are linked to other water management plans at international, national and regional levels.
  - The Netherlands cooperates closely on water management with other Member States, via both international river commissions and bilateral agreements.
  - The public and interested parties were informed by a range of mechanisms, including media. Consultations also covered other national and regional water management plans. There was an outreach to the general public via social media.
  - A broad range of stakeholders was actively involved, including via advisory groups.

- **Characterisation of the RBD**

  - Three of the 18 lake water typologies did not have corresponding intercalibration types: most of these are heavily modified or artificial water bodies[1].
  - Type specific reference conditions have only been established for some of the relevant hydromorphological quality elements in each water category. This may lead to some weaknesses in the classification of status/potential according to the hydromorphological quality elements.
  - For groundwater bodies, further characterisation work has been undertaken since the first cycle by describing the geological formation and whether they are layered or not. The Netherlands has also included an assessment of linkages with surface water bodies and terrestrial ecosystems.
  - The significance of pressures is reported to be defined in terms of thresholds or linked to the potential failure of objectives for all RBDs for both surface water and

[1] The Netherlands subsequently clarified that all of them are brackish, which were not included in the intercalibration exercise.

groundwaters. However, expert judgment was used to assess the significance of water abstraction and water flow pressures on surface waters.

- 32 of the 41 substances Priority Substances were included in an inventory for each of the RBDs[2]. Tier 1 (point source information) was implemented for a limited number of substances (for most of the others no information was reported). The Guidance Document recommends using at least Tier 1+2 for substances deemed relevant at RBD level.

- **Monitoring, assessment and classification of ecological status**

- There was an increase in the proportion of lake water bodies included in operational monitoring since the first RBMPs. However, operational monitoring decreased in river and coastal water bodies. Surveillance monitoring decreased in all four water categories.

- All biological quality elements used for surveillance monitoring were sampled at least at the minimum recommended frequency at all sites at which they were monitored. However, this was not the case for operational monitoring for most biological quality elements.

- 213 different River Basin Specific Pollutants were reported to be monitored, only in water. They were monitored in all water categories. All of those monitored for surveillance purposes were sampled at least at the minimum recommended frequency at all sites where they were monitored. In contrast, of those included in operational monitoring only 2 % were sampled at least at the minimum recommended frequency at all sites where they were monitored.

- Based on the one-out-all-out-approach, there are still only two water bodies in good or high ecological status/potential, although the first RBMPs foresaw that good ecological status/potential would be reached by 2015 for 9-13 % of artificial and heavily modified water bodies and for 28 % of natural water bodies. It should be noted, however, that at the level of the individual biological quality elements there has been some progress between the first and second RBMPs in terms of an increase in the proportion of surface water bodies achieving good ecological status/potential.

[2] The Netherlands subsequently clarified the reasons for not including the substances on the inventories was because the production of the substances has ceased and the application of these substances as pesticides is no longer allowed in the EU.

- The confidence in classification of ecological status is reported as high or medium for all water bodies, which is a major improvement since the first RBMPs, which included no information on confidence.

- Assessment methods have been developed for all relevant biological quality elements in all water categories. A new method for angiosperms has been developed for transitional and coastal waters.

- Environmental Quality Standards were reported for 96 River Basin Specific Pollutants, of the 213 which were monitored. All standards were derived in accordance with Technical Guidance n° 27 and the analytical methods used meet the minimum performance criteria laid down in Article 4(1) of the Quality Assurance / Quality Control Directive (QA/QC Directive).

- **Monitoring, assessment and classification of chemical status in surface water bodies**

- About half of surface water bodies in the second RBMP were failing to achieve good status (52 %) with 39 % at good status and 9 % in unknown status. The Netherlands reported chemical status in the second RBMP based on the more stringent standards in the revised Environment Quality Standards Directive (2013/39/EU). This precludes a direct comparison between chemical status in the first and second RBMPs.

- Although not reported to WISE, the Netherlands subsequently clarified that territorial waters have been monitored for chemical status.

- About 60 % of all water bodies were monitored. The overall number of water bodies delineated decreased between the two RBMPs, and according to WISE, the number of sites and waterbodies monitored have also decreased. However it is unclear whether this apparent decrease in monitoring sites / waterbodies results from different approaches to reporting between the first and the second RBMP.

- 23 % of water bodies were classified by monitoring, 69 % by grouping and 9 % by expert judgement.

- A majority of water bodies are classified with high confidence. The Netherlands mentioned grouping is applied only when the confidence of the assessment within the group was high.

- The Netherlands mentioned that all 41 priority substances were taken into account in the assessment of status, and that all substances were monitored, including those assessed as discharged. Monitoring frequencies for the majority of substances met the recommended minimum frequency for operational and surveillance monitoring in water.

- Mercury, hexachlorobenzene and hexachlorobutadiene were not monitored in biota but in water, for assessment against alternative standards said by the Netherlands to be as protective as the biota standards.

- For trend assessment, no Priority Substances were monitored in sediment or biota. The RBMPs indicated that trend analysis is undertaken on the basis of water column monitoring.

- **Monitoring, assessment and classification of quantitative status of groundwater bodies**

- All groundwater bodies are covered by monitoring.

- All groundwater bodies have a clear status with high confidence, still remain in good status and are not at risk.

- Groundwater associated surface water bodies and groundwater dependent ecosystems have been considered in the assessment of status although they are not related to any risk.

- All ecosystems have been considered although they are not related to any risk.

- **Monitoring, assessment and classification of chemical status of groundwater bodies**

- The coverage of groundwater bodies by monitoring remains fully comprehensive.

- Not all WFD core parameters are monitored.

- The total groundwater body area failing good chemical status has significantly decreased. This is partly due to changes in the reporting methodology.

- Groundwater associated surface water bodies and groundwater dependent ecosystems have been considered in the assessment of status although they are not related to any risk.

- **Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential**

  - In the context of designating heavily modified water bodies, the RBMPs contain brief descriptions of how significant adverse effects of restoration measures on the use and the wider environment have been defined (as part of the methodology).

  - The Netherlands has also set up a system of factsheets with detailed information for each water body on the outcomes of assessments of the designation tests of the WFD. These factsheets contain descriptions of the assessment of restoration measures and their significant adverse effects on the use and the wider environment as well as on the assessment of "other means" to achieve the beneficial objectives of the modifications, in order to reach decisions on the designation.

  - Good ecological potential has been defined in terms of biological elements. The good ecological potential definition for biological quality elements is based upon the assessment of biological quality element values for good ecological status of the closest comparable water body type, but with maximum values for good ecological potential that may be lower than those for good ecological status (it is lower for at least one biological quality element).

  - Mitigation measures for defining good ecological potential have been reported in WISE for all four RBDs. The ecological changes expected due to the mitigation measures are described in a qualitative way with reference to biology.

- **Environmental objectives and exemptions**

  - Environmental objectives for ecological and chemical status of surface water bodies and chemical and quantitative status of groundwater bodies have been reported in all RBDs.

  - Drivers, pressures and pollutants leading to exemptions are reported.

  - The low number of water bodies that is in good status by 2015 and the high number of remaining exemptions poses a significant challenge with regard to the timely achievement of the WFD objectives.

- **Programme of Measures**

  - All measures planned for the first cycle have been completed; significant progress has been made in linking measures to pressures and providing gap analyses with quantitative gap indicators for meeting objectives.

  - It is not clear whether the Programmes of Measures (PoMs) are sufficiently ambitious as in a large number of water bodies some pressures will not be addressed by 2027. An analysis of the planned measures has been carried out, in particular for the preparation of the third plans, but it is acknowledged that a quantitative anaylisis would be difficult with the available scientific knowledge.

  - A clear financial commitment has been secured for the implementation of PoM in all four RBDs.

  - Most significant pressures on surface waters and groundwaters have been covered by KTMs.

  - The Netherlands have mapped a total of 30 national measures and 71 national supplementary measures against 18 predefined KTMs and 26 of its own KTMs.

  - Priority substances and KTMs to tackle them have been reported for surface water in all four RBDs.

  - Gap analyses have been presented for all significant pressures in all four RBDs for 2015, 2021 and 2027. For groundwater, most gaps are expected to be closed by 2021, and all by 2027. For surface waters, gap values are expected to be reduced in most cases, but few are expected to be closed by 2027.

  - There has been close co-ordination between RBMPs and Flood Risk Management Plans in all four RBDs.

- **Measures related to abstractions and water scarcity**

  - Water abstraction pressures have been reported to be relevant for some areas of the Netherlands, but no information has been reported yet on abstractions, the water exploitation index + or in support of the European State of the Environment Report in relation to water quantity.

- There is a permitting regime and a register of abstractions for surface water and groundwater, and a concession, authorisation and/or permitting regime to control water impoundment.

- No specific water resource allocation and management plans have been developed and only complementary measures associated to "KTM99-Other" are reported to tackle significant abstraction pressures.

- **Measures related to pollution from agriculture**

  - There is a clear link between agricultural pressures and agricultural measures.

  - Safeguard zones have been established for abstractions.

  - Implementation of basic measures Article 11(3)(h) for the control of diffuse pollution from agriculture at source is ensured in all RBDs and the same rules apply across the whole RBD.

  - Supplementary measures for reducing pollution from agriculture are reported as well as measures to reduce sedimentation from soil erosion and surface runoff.

  - Financing of measures is secured and the costs of the measures are reported.

- **Measures related to pollution from sectors other than agriculture**

  - KTMs have been reported in all RBDs in the Netherlands for significant pressures from individual Priority Substances causing non-compliance.

  - The reported information indicates that substance-specific measures are in place for each of the Priority Substances and River Basin Specific Pollutants reported to be causing failure in surface water bodies, and for each of the pollutants reported to be causing failure of good chemical status of groundwater in all assessed RBMPs.

- **Measures related to hydromorphology**

  - Significant hydromorphological pressures and operational KTM to tackle these are reported in all RBDs. Basic measures are also in place (authorisation and/or permitting regime to control physical modifications), though there is no register of physical modifications of water bodies.

- Ecological flows have been derived and implemented for all relevant water bodies and the national measures include several measures to guarantee ecological flow.

- Although KTM23 on Natural Water Retention Measures is not specifically reported, reference is made to the inclusion of integrated approaches (including Natural Water Retention Measures and green infrastructure) in several water-related strategies and plans. These will have consequences for the implementation of Natural Water Retention Measures in all RBMPs.

- Between 2015 and 2021, very little progress is expected in terms of closing the gap for hydromorphological pressures in three RBDs (the Ems, Meuse and Scheldt RBDs). The main progress is expected to be achieved between 2021 and 2027. Only in the Rhine RBD, some more progress is expected by 2021 in terms of reducing the number of water bodies failing the objectives due to physical alterations from agriculture, dams and barriers and other hydromorphological alterations.

- **Economic analysis and water pricing policies**

  - A broad definition of water services has been used and cost recovery calculations are presented for all water services.

  - No detailed information on the application of the polluter pays principle was reported.

- **Considerations specific to Protected Areas (identification, monitoring, objectives and measures)**

  - The Netherlands has developed specific plans for a majority of the Protected Areas, but there are still some Protected Areas for which additional measures have not been set in the second River Basin Management Plans.

  - Objectives for protected areas linked to the Birds and Habitats Directives are currently all generic and work is reported to be on-going to determine specific needs.

  - Monitoring has only been reported for Drinking Water Protected Areas related to groundwater but the monitoring was not reported for any other type of protected area (this was only done through the reporting under the other relevant Directives).

- **Adaptation to drought and climate change**

  - Climate change was considered in several ways in all river basin districts and it is stated that the Common Implementation Strategy guidance document on how to adapt to climate change was used.

  - Specific sub-plans addressing climate are also reported for all river basin districts in the Netherlands. Sub-plans addressing water scarcity and droughts have been reported for all river basin districts in the second cycle.

# Recommendations

- The Netherlands should continue to improve international cooperation, including coordinated assessments of the technical aspects of the Water Framework Directive such as ensuring a harmonized approach for status assessment and a coordinated PoM in order to ensure the timely achievement of the WFD objectives.

- The Netherlands should complete the assessment of the effectiveness of the existing agricultural measures and identify which additional measures are needed to achieve the objectives of the WFD.

- The Netherlands should make sure that assessment methods for biological quality elements are sensitive to all significant impacts, including chemical pollution. Hydromorphological quality elements should be used for classification of water bodies.

- The chemical status of the remaining water bodies in unknown status should be assessed and the status of territorial water bodies should be reported to WISE. If reduced monitoring frequencies are used, the Netherlands should provide the corresponding explanations, as required by the WFD.

- The Netherlands should continue investigating the possibility to monitor in biota for status assessment, and in a non-water matrix for trend assessment (following on the discussions in the Working Group Chemicals).

- A significant number of exemptions is still applied in the second RBMPs. Efforts need to be continued to ensure the implementation of an ambitious PoM in order to ensure the timely achievement of the WFD objectives. The justifications for the application of exemptions should be reviewed accordingly.

- Specific prioritisation of measures based on cost-effectiveness analysis should be provided.

- It is not clear whether the measures identified are adequate and whether the Programmes are sufficiently ambitious, as many of the pressures are estimated not to be fully addressed by 2027. The Netherlands should define ambitious measures based on the pressures and impacts analysis and status assessment of water bodies. The choice of measures should reflect the significance of the pressure.

- In the third RBMPs the Netherlands should describe in more detail how it is proposed that the "Deltaplan Agrarisch Waterbeheer" can help to reduce pollution from agriculture and characterise additional measures that have been included in this plan.

- As regards chemical pollution from non-agricultural sources, the Netherlands should ensure that the Programmes of Measures are based on reliable assessment of the pressures, and that all relevant pollutants are identified and addressed.

- The Netherlands should apply cost recovery for water use activities having a significant impact on water bodies or justify any exemptions using Article 9(4). The Netherlands should continue to transparently present how financial, environmental and resource costs have been calculated and how the contribution of the different users is ensured. It should also continue to transparently present the water-pricing policy and provide a transparent overview of estimated investments and investment needs.

- The Netherlands has failed to provide information on the implementation of additional measures for several relevant Protected Areas, with the exception of safeguard zones for the protection of Drinking Water. The Netherlands needs to conclude its on-going work to determine the needs for measures under the Habitat and Birds Directives..

# Topic 1 Governance and public participation

## 1.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 1.1.1 Administrative arrangements – river basin districts

The Netherlands has four RBDs: the Rhine, which covers 69 % of the national territory; Meuse; Scheldt; and Ems. All four are part of international RBDs.

### 1.1.2 Administrative arrangements – competent authorities

The Netherlands reported Competent Authorities across several administrative levels.

At national level, the Netherlands reported that the Ministry of Infrastructure and the Environment has main roles for the enforcement of regulations, economic analysis, pressure and impact analysis, preparation of the RBMPs and PoM, public participation, coordination of implementation and reporting to the European Commission; and it has supporting roles for the monitoring and assessment of status of surface water and for the implementation of measures. The Ministry of Infrastructure and Water Management has main roles for the preparation of the RBMPs and PoM and the coordination of implementation. The Netherlands informed that in 2017, the Ministry of Infrastructure and the Environment became the Ministry of Infrastructure and Water Management; the roles of the Ministry of Economic Affairs have been taken by the Ministry of Agriculture, Nature and Food Quality.

The 12 provinces each have main roles for the monitoring and assessment of status of groundwater, enforcement of regulations, pressure and impact analysis, public participation, implementation of measures and coordination of implementation.

The 24 regional water authorities[3] are each responsible for the monitoring and assessment of status of surface water, enforcement of regulations, pressure and impact analysis, public participation, implementation of measures and coordination of implementation.

The Association of Dutch Municipalities has a main role for the implementation of measures and a supporting role for the coordination of implementation.

In its assessment of the first RBMPs, the European Commission recommended that the Netherlands provide transparency concerning the coordination mechanisms among the many competent authorities.

[3] The Netherlands subsequently informed that there are currently 21 regional water authorities.

The second RBMPs explain that coordination takes place under the lead of the Water Steering Group (Stuurgroep Water), chaired by the Minister of Infrastructure and Environment (now the Minister of Infrastructure and Water Management). Bodies represented in the group include Rijkswaterstaat (an Agency of the Ministry in charge of water infrastructure, amongst others), provinces, regional water authorities, municipalities and drinking water authorities.

### 1.1.3 RBMP – structure and Strategic Environmental Assessment

For all four of its RBDs, the Netherlands reported (Figure 1.1) that separate plans cover the following topics: agriculture, chemical industry, chemical pollution, climate change, coastal erosion, hydropower, nutrient enrichment, rural planning, transport, urban planning and water scarcity and droughts.

***Figure 1.1 Issues, sectors, sub-basins or water categories in the Netherlands supplemented by more detailed sub-plans for the second cycle***

| RBD | Agriculture | Chemical industry | Hydropower | Transport | Water Scarcity and droughts | Climate change | Coastal erosion | Rural planning | Urban planning | Nutrient enrichment | Chemical pollution | Other: Hydromorphology, migration continuity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NLEM | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| NLMS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| NLRN | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| NLSC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

*Source: WISE electronic reports*

| | |
|---|---|
| ✓ | Covered by sub-plans |

The Netherlands reported the following separate plans: the National Water Plan 2016-2021; the Plans of the Regional Water Authorities 2016-2021, the Water Management and Development Plan for the Dutch Main Water System[4]. The Netherlands also cites the international RBMPs related to each of its RBDs and their PoM.

A Strategic Environmental Assessment was reported to have been carried out for RBMPs and Programmes of Measures in all four RBDs.

[4] The Netherlands subsequently informed that the RBMPs also refer to the regional plans of all provinces.

### 1.1.4 Public consultation

In all four RBDs, the public and interested parties were informed by: Internet, invitations to stakeholders, local authorities, media (papers, TV and radio) and meetings. Documents were made available (for the requisite six months) either electronically via download or in hard copy in municipal buildings.

The following stakeholder groups were actively involved in the development of the RBMPs: agriculture/farmers, consumer groups, energy/hydropower, fisheries/aquaculture, industry, local/regional authorities, NGOs/nature protection and water supply and sanitation operators. Active involvement used the following mechanisms: establishment of advisory groups, involvement in drafting and regular exhibitions. In addition, there was an outreach to the general public using social media.

Public consultation had the following impacts in each of the RBDs: the addition of new information, changes to the selection of measures and changes to the methodology used.

The European Commission, in its review of the first RBMPs, recommended that the Netherlands ensure that all relevant documents are easily accessible for public participation. The RBMPs indicate that the public consultation also covered the draft plans of Rijkswaterstaat, the Provinces and the water boards. The Netherlands informed that a national web site[5] was used to provide all these plans; moreover, factsheets, prepared for each water body in the Netherlands, were also available for consultation[6].

### 1.1.5 Integration with the Floods Directive and the Marine Strategy Framework Directive

The Netherlands carried out joint consultation of its RBMPs and the Flood Risk Management Plans under the Floods Directive[7] .

The Netherlands carried out a joint consultation between the RBMPs and the Marine Strategy Framework Directive[8].

[5] See: www.helpdeskwater.nl/sgbp. The draft plans for consultation are available at the following page: https://www.helpdeskwater.nl/onderwerpen/wetgeving-beleid/kaderrichtlijn-water/2016-2021/@177334/waterbeheerplannen-0/

[6] https://www.waterkwaliteitsportaal.nl/Beheer/Data/Publiek?viewName=Factsheets&year=2015&month=December

[7] Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007L0060

### 1.1.6 International coordination

All four of the RBDs in the Netherlands are part of an international RBD. An international agreement, a permanent co-operation body and an international RBMP are in place for all RBDs (designated as category 1 cooperation). Moreover, explicit links were made with national RBMPs within the international RBMP. Netherlands reported that there was international coordination on public participation only in one RBD, the Rhine[9].

The Netherlands also cooperates bilaterally on water management with neighbouring Member States: for example, with the Flanders Region of Belgium in the Flemish-Dutch Scheldt Commission and the Flemish-Dutch Bilateral Meuse Commission. For further information see the reports on international coordination on the Water Framework Directive.

## 1.2 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *The division of competences between the different authorities results in a complex system with different levels involved in the implementation of the WFD. Furthermore, the background documents with many important details are not easily accessible, and the relevant information, including on pressures, methodologies and measures, may be spread in several plans (national, regional, local). Improved transparency and communication of the coordination mechanisms between competent authorities would be advisable. In addition, easy access to all relevant documents will encourage public participation in both the development and delivery of necessary measures to ensure sustainable water management.*

  Assessment: Regarding coordination, the RBMPs explain that coordination takes place under the lead of the Water Steering Group (*Stuurgroep Water*), chaired by the Ministry of Infrastructure and Environment (now the Ministry of Infrastructure and Water Management). Bodies represented in the group include the Rijkswaterstaat, Provinces, regional water management authorities, municipalities and drinking water authorities. Consequently, the Netherlands has fulfilled this part of the recommendation.

[8] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

[9] The Netherlands subsequently informed that the international parts of the RBMPs were part of the public consultation process in all RBDs.

For the second cycle of RBMPs, public consultation also covered the draft plans of Rijkswaterstaat, the Provinces and the water boards; moreover, detailed factsheets on each water body were available for consultation. Consequently, this part of the recommendation has also been fulfilled.

# Topic 2 Characterisation of the River Basin District

## 2.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 2.1.1 Delineation of water bodies and designation of heavily modified and artificial water bodies

There has been a reduction in the number of river water bodies in one RBD (the Rhine RBD -6 %) and the others have remained the same (Table 2.1). There has been a reduction in the number of lake water bodies in one RBD (the Meuse RBD -6 %), an increase of only 1 % in one RBD (the Rhine RBD) and the others have remained the same. Fewer coastal water bodies were delineated in the second cycle in all four RBDs (nine compared to fifteen, 40 % reduction)[10]. The numbers of transitional and groundwater bodies (Table 2.2) remained the same.

The minimum size criteria reported were 10 $km^2$ catchment area for rivers and 0.5 $km^2$ surface area for lakes, which is system B in Annex II of the WFD. Table 2.3 shows the differences in size distribution of surface water bodies in the Netherlands between the second and first cycles. It is notable that both the maximum and the average size of coastal water bodies have decreased significantly in area[11]. The RBMPs also noted that some small changes in the areas of water bodies in each water category were made, in particular for coastal water bodies. Coastal waters have been limited to one mile from the coast, contrary to the first cycle; this was to avoid overlap with the Marine Strategy Framework Directive and was in line with delineations in neighbouring countries[12].

[10] The Netherlands clarified that the actual number of coastal waters remained the same, but that five were reported as territorial water bodies. However these were not reported to WISE in the second cycle.

[11] This likely relates to the removal of territorial waters as coastal water bodies.

[12] The Netherlands subsequently highlighted that the chemical status is assessed for the 12-mile zone.

*Table 2.1 Number and area/length of delineated surface water bodies in the Netherlands for the second and first cycles*

| Year | RBD | Rivers | | Lakes | | Transitional | | Coastal | |
|---|---|---|---|---|---|---|---|---|---|
| | | Number of water bodies | Total length of water body (km) | Number of water bodies | Total area ($km^2$) of water bodies | Number of water bodies | Total area ($km^2$) of water bodies | Number of water bodies | Total length of water body (km) |
| 2016 | NLEM | 5 | 271 | 14 | 20 | 1 | 175 | 1 | 135 |
| 2016 | NLMS | 103 | 2 288 | 52 | 80 | 1 | 46 | 1 | 84 |
| 2016 | NLRN | 137 | 2 351 | 336 | 2 710 | 2 | 170 | 4 | 3 159 |
| 2016 | NLSC | 1 | 16 | 49 | 244 | 1 | 326 | 3 | 717 |
| 2016 | Total | 246 | 4 927 | 451 | 3 055 | 5 | 717 | 9 | 4 095 |
| | | | | | | | | | |
| 2010 | NLEM | 5 | 275 | 14 | 33 | 1 | 176 | 2 | 684 |
| 2010 | NLMS | 103 | 2 117 | 49 | 82 | 1 | 46 | 2 | 496 |
| 2010 | NLRN | 145 | 2 349 | 338 | 2 692 | 2 | 134 | 6 | 8 682 |
| 2010 | NLSC | 1 | 16 | 49 | 239 | 1 | 328 | 5 | 2 027 |
| 2010 | Total | 254 | 4 756 | 450 | 3 046 | 5 | 684 | 15 | 11 889 |

*Source: WISE electronic reports.*

*Table 2.2 Number and area of delineated groundwater bodies in the Netherlands for the second and first cycles*

| Year | RBD | Number | Area ($km^2$) | | |
|---|---|---|---|---|---|
| | | | Minimum | Maximum | Average |
| 2016 | NLEM | 2 | 330.65 | 1 981.65 | 1 156.15 |
| 2016 | NLMS | 5 | 26.32 | 6 277.99 | 2 024.06 |
| 2016 | NLRN | 11 | 223.48 | 6 141.16 | 2 138.20 |
| 2016 | NLSC | 5 | 47.9 | 1 773.15 | 804.16 |
| *2016* | *Total* | *23* | *26.32* | *6 277.99* | *1 737.98* |
| | | | | | |
| 2010 | NLEM | 2 | 331 | 1 982.00 | 1 156.50 |
| 2010 | NLMS | 5 | 26 | 6 277.00 | 2 023.80 |
| 2010 | NLRN | 11 | 223 | 6 141.00 | 2 137.91 |
| 2010 | NLSC | 5 | 47 | 1 773.00 | 796 |
| *2010* | *Total* | *23* | *26* | *6 277.00* | *1 736.04* |

*Source: WISE electronic reports*

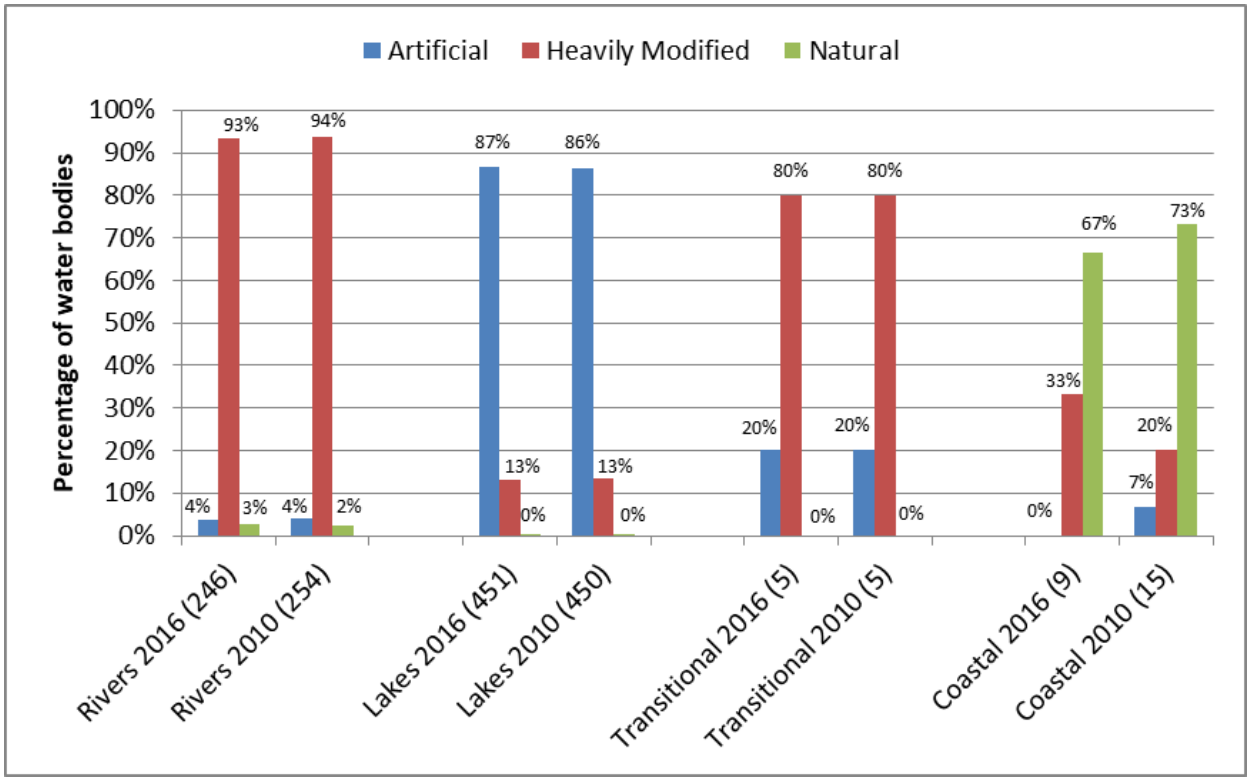
*Table 2.3 Size distribution of surface water bodies in the Netherlands in the second and first cycles*

| Year | RBD | River length (km) | | | Lake area ($km^2$) | | | Transitional ($km^2$) | | | Coastal ($km^2$) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Minimum | Maximum | Average | Minimum | Maximum | Average | Minimum | Maximum | Average | Minimum | Maximum | Average |
| 2016 | NLEM | 12.55 | 108.35 | 54.29 | 0.03 | 8.99 | 1.45 | 174.86 | 174.86 | 174.86 | 135.03 | 135.03 | 135.03 |
| 2016 | NLMS | 3.79 | 104.61 | 22.22 | 0.01 | 63.17 | 1.55 | 45.89 | 45.89 | 45.89 | 83.76 | 83.76 | 83.76 |
| 2016 | NLRN | 1.67 | 120.55 | 17.16 | 0 | 1 148.95 | 8.07 | 49.8 | 119.99 | 84.89 | 269.81 | 2 156.22 | 789.71 |
| 2016 | NLSC | 15.74 | 15.74 | 15.74 | 0 | 139.31 | 4.97 | 326.01 | 326.01 | 326.01 | 0.51 | 363.49 | 238.97 |
| | | | | | | | | | | | | | |
| 2010 | NLEM | 12.55 | 108.35 | 54.95 | 0.17 | 8.99 | 2.37 | 175.8 | 175.8 | 175.8 | 135.55 | 548.91 | 342.23 |
| 2010 | NLMS | 3.87 | 108.44 | 20.55 | 0.01 | 63.97 | 1.66 | 46.23 | 46.23 | 46.23 | 95.74 | 400.15 | 247.95 |
| 2010 | NLRN | 0.26 | 120.57 | 16.2 | 0 | 1 137.43 | 7.96 | 48.04 | 85.87 | 66.96 | 256.05 | 3 077.06 | 1 446.95 |
| 2010 | NLSC | 15.74 | 15.74 | 15.74 | 0.02 | 139.02 | 4.87 | 327.86 | 327.86 | 327.86 | 0.51 | 1 300.91 | 405.47 |

*Source: WISE electronic reports*

In the second RBMP only 2 % of identified surface water bodies were natural with 42 % being designated as heavily modified and 56 % as artificial. Figure 2.1 shows the proportion of surface water bodies in the Netherlands designated as artificial, heavily modified and natural for the second and first cycles. The decrease in coastal water bodies was mostly in terms of natural water bodies (-45 %), but the only artificial coastal water body was not delineated in the second cycle. For lake water bodies there was an increase in artificial water bodies (1 %), a decrease in heavily modified water bodies (-2 %), whereas the natural lake water bodies remained the same. For river water bodies there was an overall decrease in artificial and heavily modified water bodies (-10 % and -3 % respectively), whilst there was an increase of 17 % in natural river water bodies. Overall in the second RBMP there was a high proportion of heavily modified and artificial water bodies (97 %).

***Figure 2.1*** ***Proportion of surface water bodies in the Netherlands designated as artificial, heavily modified and natural for the second and first cycles. Note that the numbers in parenthesis are the numbers of water bodies in each water category***




*Source: WISE electronic reports.*

Table 2.4 summarises the information provided by the Netherlands on how water bodies have evolved between the two cycles. It shows there were not a significant amount of changes and

that there were minimal changes to river and lake water bodies. The changes included both aggregation and splitting, creation and deletion.

***Table 2.4 Type of change in delineation of groundwater and surface water bodies in the Netherlands between the second and first cycles***

| Type of water body change for second cycle | Groundwater | Rivers | Lakes | Transitional | Coastal |
|---|---|---|---|---|---|
| Aggregation | | 1 | 3 | | |
| Splitting | | 15 | | | |
| Aggregation and splitting | | 2 | | | |
| Change in code | | 51 | 151 | | |
| Extended area | | | 2 | | |
| Creation | | | 4 | | |
| Deletion | | 2 | 9 | | 6 |
| No change | 23 | 177 | 291 | 5 | 9 |
| | | | | | |
| Total water bodies before deletion | 23 | 248 | 460 | 5 | 15 |
| Delineated for second cycle (after deletion from first cycle) | | 246 | 451 | 5 | 9 |

*Source: WISE electronic reports.*

### 2.1.2 Identification of transboundary water bodies

All four RBDs are international. Two groundwater bodies were identified as transboundary in the Scheldt RBD. No surface water bodies were reported as transboundary in WISE.

### 2.1.3 Typology of surface water bodies

In general there was an apparent decrease in number of types from first RBMP to the second RBMP[13] (Table 2.5). It was stated in the RBMPs that the typology remains a working instrument and that it is a compromise between a workable method and the specificities of each water body.

It is reported that the Netherlands applied system B and they designated their own categories. Member States were asked to report "Not applicable" if there is no corresponding intercalibration type for national types. Most national types (heavily modified, artificial and

[13] The Netherlands subsequently clarified that this is the result of the difference in the reporting format between 2009 and 2016 and in order to report the ecological classification in 2009 all water bodies were reported as a separate type (this was in agreement with the Commission and the EIONET helpdesk). They further stated that the numbers should be: R-types 2010 identical to 2016 (total 12); L-types 2010 identical to 2016, except for NLRN (17 L-types 2010 is correct); T-types 2010 identical to 2016 (all RBD 1); C-types 2010 should be: NLEM 2, NLMS 2, NLRN 4, NLSC 3. There are fewer coastal water body types in 2016 because coastal waters between 1 and 12 miles no longer have been presented as water bodies

natural) have been intercalibrated. However, in each of the RBDs there are lake water bodies that are reported not to have a corresponding intercalibration type. Overall three of the 18 lake water types (type codes M30, M31 and M32) did not have corresponding intercalibration types: most of these are heavily modified or artificial water bodies[14]. There was a second phase of intercalibration that was finalised in 2013. There has been an update of the typologies and intercalibration, but only for natural waters, not for heavily modified or artificial water bodies. The RBMPs reported that compared to the first cycle there was more harmonisation in the biological quality elements used and comparable water types with other European Union Member States.

***Table 2.5 Number of surface water body types at RBD level in the Netherlands for the first and second cycles***

| RBD | Rivers | | Lakes | | Transitional | | Coastal | |
|---|---|---|---|---|---|---|---|---|
| | 2010 | 2016 | 2010 | 2016 | 2010 | 2016 | 2010 | 2016 |
| NLEM | 8 (3) | 3 | 16 (5) | 5 | 2 (1) | 1 | 4 (2) | 1 |
| NLMS | 114 (11) | 11 | 57 (8) | 8 | 2 (1) | 1 | 4 (2) | 1 |
| NLRN | 6 | 6 | 17 | 16 | 1 | 1 | 4 | 3 |
| NLSC | 2 (1) | 1 | 56 (7) | 7 | 2 (1) | 1 | 8 (3) | 2 |
| *Total* | *121 (12)* | *12* | *131 (18)* | *18* | *4 (1)* | *1* | *13 (4)* | *3* |

*Source: WISE electronic reports. Note that the total is not the sum of the types in each RBD as some types are shared by RBDs. Numbers in brackets were provided by the Netherlands and the differences are based on the changes in reporting.*

### 2.1.4 Establishment of reference conditions for surface water bodies

Type specific reference conditions have been established for all relevant biological quality elements in most but not all river types (Table 2.6): for one river type (R7), biological quality elements have been established for some but not all[15]. Type specific reference conditions have been established for all relevant physicochemical quality elements in all river types for each water category. Type specific reference conditions have only been established for some of the relevant hydromorphological quality elements in each water category. This may lead to some weaknesses in the classification of status/potential according to the hydromorphological quality elements.

[14] The Netherlands subsequently clarified that all of them are brackish, which were not included in the intercalibration exercise.

[15] The Netherlands subsequently clarified that this is a reporting error and for all biological quality elements, references and metrics are available.

*Table 2.6* ***Percentage of surface water body types in the Netherlands with reference conditions established for all, some and none of the biological, hydromorphological and physicochemical quality elements. Numbers in parenthesis are the number of types in each category***

| Water category | Water types | Biological quality elements | Hydromorphological quality elements | Physicochemical quality elements |
|---|---|---|---|---|
| Rivers (12) | All | 92 % | | 100 % |
| | Some | 8 % | 100 % | |
| | None | | | |
| Lakes (18) | All | 100 % | | 100 % |
| | Some | | 100 % | |
| | None | | | |
| Coastal (3) | All | 100 % | | 100 % |
| | Some | | 100 % | |
| | None | | | |
| Transitional (1) | All | 100 % | | 100 % |
| | Some | | 100 % | |
| | None | | | |

*Source: WISE electronic reports.*

### 2.1.5 Characteristics of groundwater bodies

The geological formation of the aquifer types in which groundwater bodies reside and details of whether groundwater bodies are layered have been reported. Further characterisation work has been reported since the first cycle with the inclusion of the assessment of linkages with surface water bodies and terrestrial ecosystems for all RBDs.

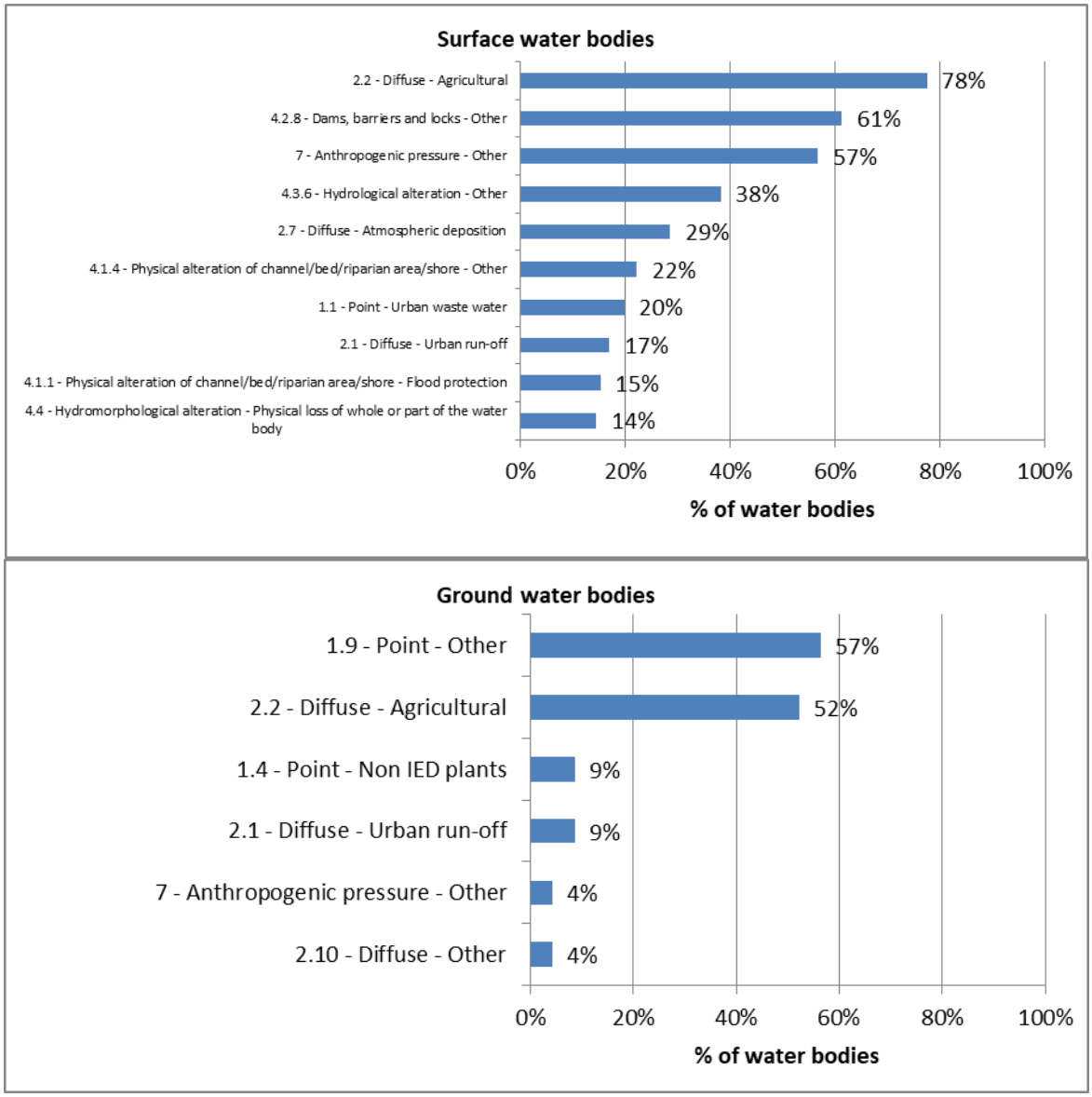
### 2.1.6 Significant pressures on water bodies

The reporting of pressure types also changed between the reporting cycles and as a result it is difficult to compare significant impacts because of these changes and the changes in the delineation of water bodies between the cycles. In the second RBMP, diffuse agricultural pressures were reported to affect the largest proportion (78 %) of surface water bodies followed by pressures from dams, barriers and lock from "other" sectors (61 %) (Figure 2.2). In the first RBMP, the Netherlands only reported pressures at an aggregated level with diffuse source pressures affecting 90 % of surface water bodies (Figure 2.3). For most of the Netherlands' RBDs there was a reported increase in water bodies impacted by diffuse sources, particularly in the Rhine RBD.

In the second RBMP, 'Point source – other' was reported to affect the largest proportion (57 %) of groundwater bodies followed by the pressure 'Diffuse – agriculture' (52 %) (Figure 2.2).

It was reported what pressures were excluded from the assessment: 'Point - Mine waters' for surface and groundwaters[16].

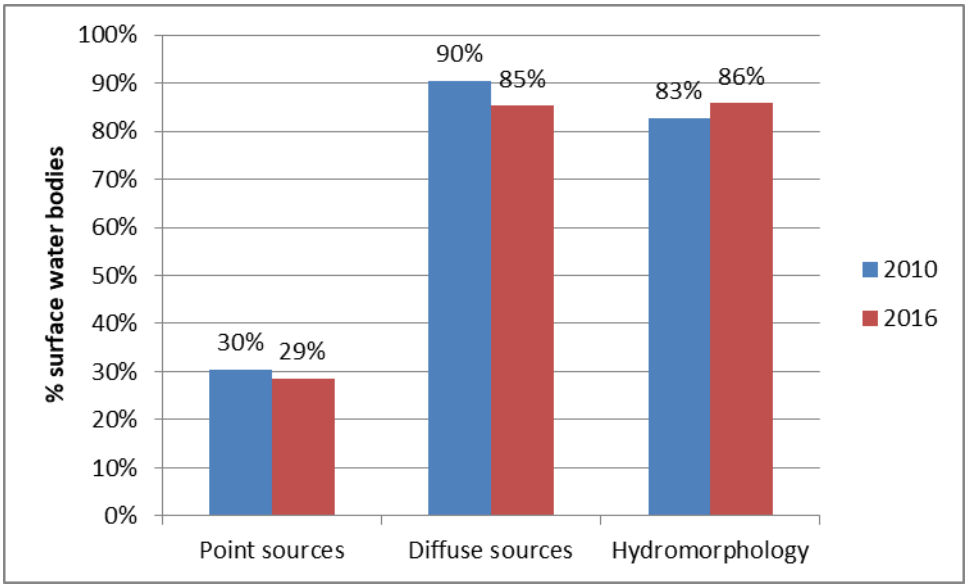
***Figure 2.2 The most significant pressures on surface water bodies and groundwater bodies in the Netherlands for the second cycle***




*Source: WISE electronic reports*

[16] The Netherlands subsequently clarified that mine waters is not a significant pressure to surface water or groundwater in the Netherlands.

*Figure 2.3* ***Comparison of pressures on surface water bodies in the Netherlands in the first and second cycles. Pressures presented at the aggregated level. Note there were 711 identified surface water bodies for the second cycle and 724 for the first cycle.***




*Source: WISE electronic reports.*

### 2.1.7 Definition and assessment of significant pressures on surface and groundwater

For surface waters numerical tools were used for defining significant pressures from point and diffuse sources. Other pressures were identified by expert judgment (e.g. abstractions and flow). For surface water bodies significance of pressures has been defined in terms of thresholds and is linked to the potential failure of objectives.

For groundwaters a combination of numerical tools and expert judgment was used for defining significant pressures from point and diffuse sources. The significance of pressures has been defined in terms of thresholds and is linked to the potential failure of good status.

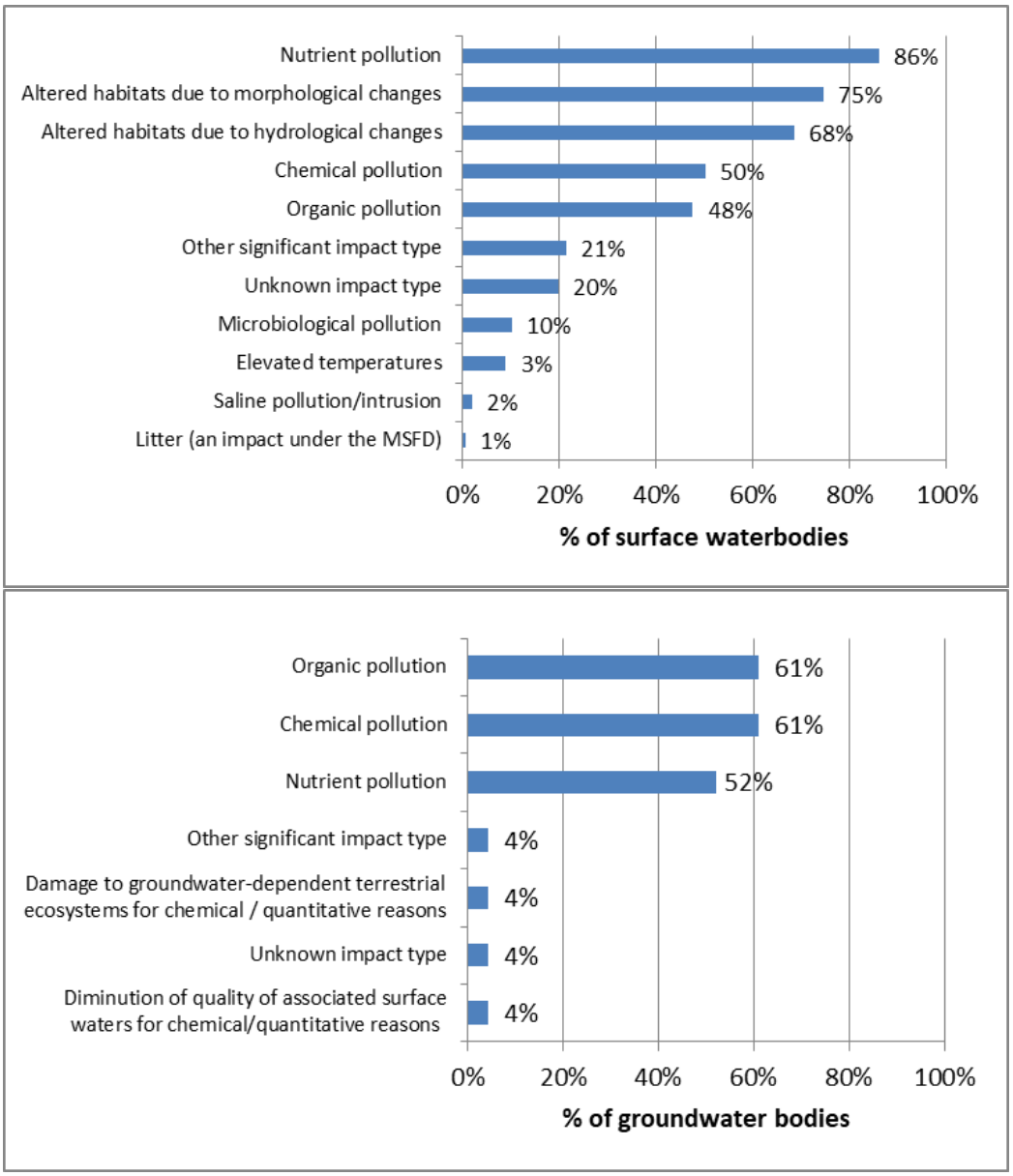
The RBMPs did not highlight any major changes in the methodology or criteria for the identification of pressures since the first cycle.

### 2.1.8 Significant impacts on water bodies

In the second RBMP, the most significant impact on surface water bodies was nutrient pollution (86 %) followed by altered habitats due to morphological changes (includes connectivity) (75 %), altered habitats due to hydrological changes (68 %), chemical pollution

(50 %) and organic pollution (48 %) (Figure 2.4). For groundwater bodies the most significant impacts were nutrient and organic pollution each with 61 % of groundwater bodies affected. The Netherlands did not report on impacts in the first RBMP.

***Figure 2.4 Significant impacts on surface water and groundwater bodies in the Netherlands for the second cycle. Percentages of numbers of water bodies***




*Source: WISE electronic reports*

### 2.1.9 Groundwater bodies at risk of not meeting good status

No groundwater bodies in any of the RBDs were reported to be at risk of failing to meet good chemical status in the second RBMP. The pollutants putting groundwater bodies at risk of

failing good chemical status have been reported for two RBDs (the Meuse RBD and the Rhine RBD). No groundwater bodies in any of the RBDs were reported to be at risk of failing to meet good quantitative status in the second RBMP.

### 2.1.10 Quantification of the gap and apportionment of pressures

There are some inconsistencies in the pressures for which measures are planned and the significant pressures reported at the water body level. For example, in the Meuse RBD, 'Diffuse - urban runoff' and 'Diffuse – agricultural' have been reported at the groundwater body level but this pressure has not been reported as being tackled in the PoM[17].

14 Priority Substances are causing the failure of good chemical status in surface waters in the Netherlands, and two pollutants (total phosphorus and nitrogen) causing the failure. Inventories of emissions, discharges and losses of chemical substances

Article 5 of the Environmental Quality Standards Directive (EQS Directive)[18] requires Member States to establish an inventory of emissions, discharges and losses of all Priority Substances and the eight other pollutants listed in Part A of Annex I EQS Directive for each RBD, or part thereof, lying within their territory. This inventory should allow Member States to further target measures to tackle pollution from priority substances. It should also inform the review of the monitoring networks, and allow the assessment of progress made in reducing (respectively suppressing) emissions, discharges and losses for priority substances (respectively priority hazardous substances).

The Netherlands reported inventories for each of their four RBDs. Of the 41 Priority Substances 33 were included in an inventory for each of the RBDs. The following Priority Substances and groups of priority substances and other pollutants were not included in any of the inventories: trifluralin; alachlor; atrazine; chlorpyrifos; chlorfenvinphos; pentachlorobenzene total cyclodiene pesticides (aldrin + dieldrin + endrin + isodrin) and total DDT (DDT, p,p' + DDT, o,p' + DDE, p,p' + DDD, p,p'). The Rhine RBMP reported that these substances were not included in the emission inventory because the production of the substances has ceased and the application of these substances as pesticides is no longer allowed and therefore there are zero emissions.

[17] The Netherlands subsequently clarified that this was reported and linked to surfacewaterbody in the complex reporting schema of PoM (poMID=1) but should have been also be linked to groundwater (poMID=2).

[18] Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02008L0105-20130913

The two-step approach from the Common Implementation Strategy Guidance Document n°28[19] has been followed for all substances considered in the inventories. For a limited number of substances Tier 1 (point source information) was implemented (for most of the others no information was reported). The Guidance Document recommends using at least Tier 1+2 for substances deemed relevant at RBD level. The data quality was not reported.

## 2.2 Main changes in implementation and compliance since the first cycle

There has been a reduction in the number of river water bodies in the Rhine RBD (-6 %) and the others have remained the same. There has been a reduction in the number of lake water body in one RBD (the Meuse RBD -6 %), an increase of 1 % in one RBD (the Rhine RBD) and the others have remained the same. Coastal waters have been limited to one mile from the coast, contrary to the first cycle; this has been to avoid overlap with the Marine Strategy Framework Directive. The numbers of transitional and groundwater bodies remained the same.

It is difficult to compare significant impacts because of changes in delineation of water bodies between the cycles and in the definition of impact types. For most of the Netherlands RBDs an increase was reported in water bodies impacted by diffuse sources, particularly in the Rhine RBD between the first RBMP and the second RBMP.

## 2.3 Progress with Commission recommendations

There were no Commission recommendations based on the first RBMPs and first PoM for this topic.

[19] CIS Guidance N° 28 - Preparation of Priority Substances Emissions Inventoryhttp://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm

# Topic 3 Monitoring, assessment and classification of ecological status in surface water bodies

## 3.1 Assessment of implementation and compliance with WFD requirements in the second RBMPs

### 3.1.1 Monitoring of ecological status/potential

***Monitoring programmes***

Article 8.1 of the WFD requires Member States to establish monitoring programmes for the assessment of the status of surface water and of groundwater in order to provide a coherent and comprehensive overview of water status within each RBD. Territorial waters are not a water body category under WFD. However, it should be noted that under Article 2(1) of the WFD, territorial waters are included for the assessment and reporting of chemical status.

Separate monitoring programmes were reported for surface waters and for groundwater including both surveillance and operational monitoring.

***Monitoring sites***

Table 3.1 compares the number of monitoring sites used for surveillance and operational purposes between the first and second RBMPs, and Table 3.2 gives the number of sites used for different purposes for the second RBMPs. Figure 3.1 shows the percentage of water bodies included in surveillance and operational monitoring between the first and second RBMPs.

Overall there was a small increase in the number of sites used for operational and/or surveillance monitoring of surface waters in the Netherlands, 854 for the first plan and 857 for the second. However, there were significant decreases in the numbers of sites used for the surveillance monitoring of all four water categories from the first to the second RBMPs. Proportionally the largest decrease was in coastal waters where numbers decreased from 26 for the first RBMP to 10 for the second RBMP. There were also significant decreases in numbers of operational sites in coastal (44 %) and transitional waters (30 %) but small increases in operational sites in lakes (2 %) and rivers (1 %) from the first to the second RBMPs.

***Table 3.1 Number of sites used for surveillance and operational monitoring in the Netherlands for the second and first RBMPs. Note that for reasons of comparability with data reported in the first RBMPs, the data for the second RBMPs does not take into account whether sites are used for ecological and/or chemical monitoring***

| | **Rivers** | | **Lakes** | | **Transitional** | | **Coastal** | |
|---|---|---|---|---|---|---|---|---|
| | **Surv.** | **Op** | **Surv.** | **Op** | **Surv.** | **Op** | **Surv.** | **Op** |
| **second RBMP** | | | | | | | | |
| NL_EM | 2 | 6 | 5 | 14 | 2 | 2 | 1 | 1 |
| NL_MS | 38 | 129 | 7 | 70 | 1 | 4 | 1 | 1 |
| NL_RN | 29 | 208 | 54 | 359 | 4 | 5 | 5 | 7 |
| NL_SC | 0 | 1 | 14 | 22 | 4 | 3 | 3 | 1 |
| *Total by type of site* | *69* | *344* | *80* | *465* | *11* | *14* | *10* | *10* |
| *Total number of monitoring sites* | *354* | | *475* | | *16* | | *12* | |
| **first RBMP** | | | | | | | | |
| NL_EM | 2 | 5 | 5 | 14 | 4 | 4 | 2 | 1 |
| NL_MS | 48 | 140 | 11 | 51 | 3 | 5 | 4 | 2 |
| NL_RN | 31 | 193 | 67 | 359 | 3 | 7 | 13 | 10 |
| NL_SC | 0 | 1 | 12 | 30 | 4 | 4 | 7 | 5 |
| *Total by type of site* | *81* | *339* | *95* | *454* | *14* | *20* | *26* | *18* |
| *Total number of monitoring sites* | *342* | | *462* | | *23* | | *27* | |

Surv. = Surveillance monitoring, Op. = Operational Monitoring

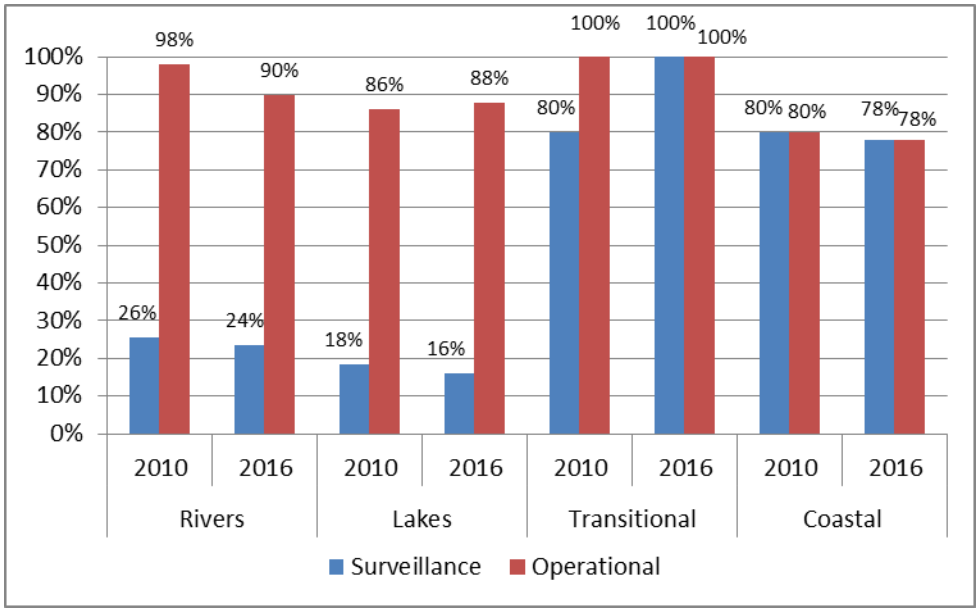
*Sources: Member States electronic reports to WISE*

***Table 3.2 Number of monitoring sites in relevant water categories used for different purposes in the Netherlands***

| **Monitoring Purpose** | **Rivers** | **Lakes** | **Transitional** | **Coastal** |
|---|---|---|---|---|
| Chemical status | 184 | 298 | 9 | 8 |
| Ecological status | 322 | 444 | 14 | 11 |
| Operational monitoring | 344 | 465 | 14 | 10 |
| EIONET State of Environment monitoring | 35 | 26 | 16 | 12 |
| Surveillance monitoring | 69 | 80 | 11 | 10 |
| **Total sites irrespective of purpose** | **355** | **475** | **16** | **12** |

*Source: WISE electronic reporting*

***Figure 3.1*** ***Percentage of water bodies included in surveillance and operational monitoring in the Netherlands for the first RBMP (2010) and second RBMP (2016). Note no differentiation is made between water bodies included in ecological and/or chemical monitoring***




*Source: WISE electronic reporting*

To add context to the assessment of the number of water bodies used in monitoring, there was a 40 % reduction in the number of identified coastal water bodies from the first to the second RBMPs. There was also a small decrease in the numbers of river water bodies (254 to 246) and an increase of one in the number of lakes. Overall five transitional water bodies were identified for both periods.

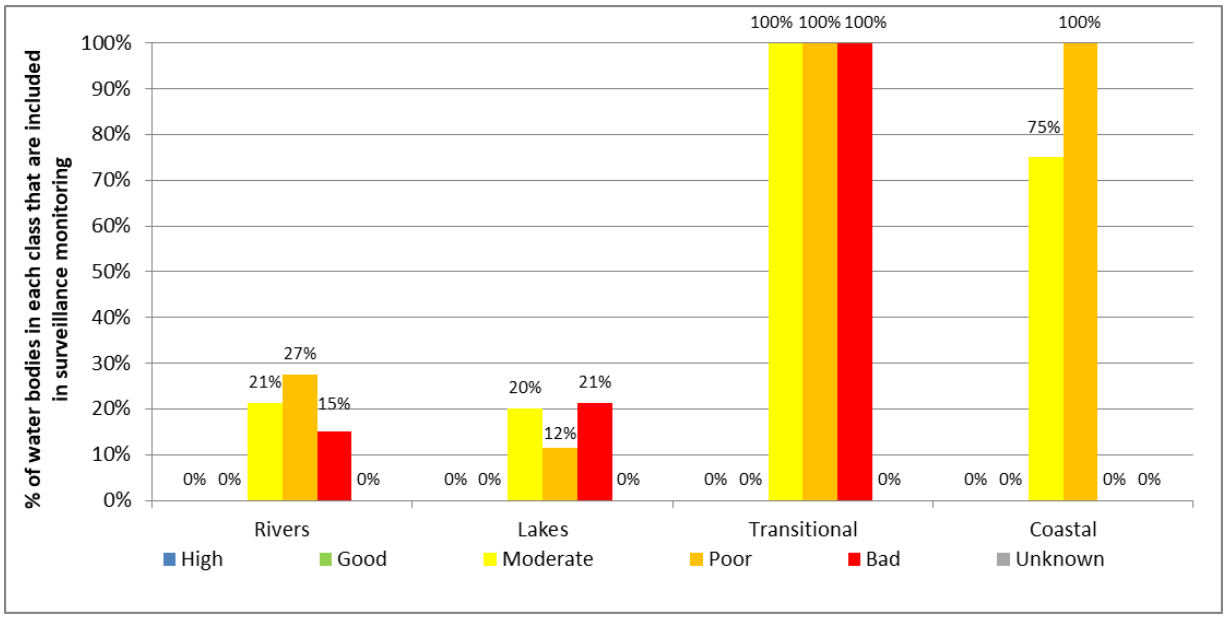
There was a small reduction in the proportion of coastal, lake and river water bodies included in surveillance monitoring from the first to the second RBMP. For example, for river water bodies 82 (18 %) were included in surveillance monitoring for the first RBMP compared to 72 (16 %) for the second RBMP. All five transitional water bodies were included in surveillance monitoring for the second RBMP compared to four of the five for the first RBMP.

In terms of river and coastal water bodies, there was a reduction in the proportion included in operational monitoring between the two RBMPs, and an increase in the proportion of lakes and all transitional water bodies were included for both RBMPs. The largest proportional change (reduction) was for rivers with 249 (98 %) being included in operational monitoring for the first RBMP and 221 (90 %) for the second RBMP.

### *Monitored water bodies used for ecological status/potential*

Figure 3.2 shows the proportion of water bodies subject to surveillance monitoring within each ecological status class.

***Figure 3.2 Proportion of water bodies in each ecological status/potential class that are included in surveillance monitoring in the Netherlands***




*Source: WISE electronic reporting*

### *Transboundary surface water body monitoring*

The Netherlands did not report any transboundary surface water bodies, but did report two transboundary groundwater bodies in the Scheldt RBD. The Netherlands did not report any monitoring sites that were part of international networks even though it is likely that some are used for this purpose.

### *Quality elements monitored (excluding River Basin Specific Pollutants)*

Table 3.3 illustrates the quality elements used for the monitoring of water bodies for the second RBMP. No differentiation is made between purposes of monitoring.

***Table 3.3 Quality elements monitored for the second RBMPs in the Netherlands (excluding River Basin Specific Pollutants). Note: quality element may be used for surveillance and/or operational monitoring***

| | Biological quality elements | | | | | | | | | Hydromorphological quality elements | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Phytoplankton | Macrophytes | Phytobenthos | Benthic invertebrates | Fish | Angiosperms | Macroalgae | Other aquatic flora | Other species | Hydrological or tidal regime | Continuity conditions | Morphological conditions |
| Lakes | Yes | No (Yes) | No (Yes) | Yes | Yes | | | Yes | | Yes | | Yes |
| Rivers | Yes | No (Yes) | Yes | Yes | Yes | | | Yes | | Yes | Yes | Yes |
| Transitional | Yes | | | Yes | Yes | No (Yes) | No | Yes | | Yes | | Yes |
| Coastal | Yes | | | Yes | No | No (Yes) | No | Yes | | No | | No |

| | General physicochemical quality elements | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Transparency conditions | Thermal conditions | Oxygenation conditions | Salinity conditions | Acidification status | Nitrogen conditions | Phosphorus Conditions | Silicate | Other determinand for nutrient conditions |
| Lakes | No (Yes) | No (Yes) | Yes | No (Yes) | No (Yes) | Yes | Yes | No | No |
| Rivers | | No (Yes) | Yes | No (Yes) | No (Yes) | Yes | Yes | No | No |
| Transitional | No | No (Yes) | Yes | No | No | Yes | Yes | No | No |
| Coastal | No | No (Yes) | No (Yes) | No | No | Yes | Yes (No) | No | No |

*Source: WISE electronic reporting. Values in brackets provided by the Netherlands subsequent to WISE reporting.*

Two RBDs have one coastal water body each, which were reported not to be monitored. The expected biological quality elements are monitored in the other two RBDs within coastal waters. All the expected biological quality elements are monitored in some lake water bodies. There is only one reported river water body in one RBD, which in terms of biological quality elements was only monitored for other aquatic flora. In the other three RBDs with rivers, all the expected biological quality elements were monitored in some water bodies. In none of the RBDs with transitional water bodies are all the expected biological quality elements monitored. Fish and benthic invertebrates are not monitored in transitional water bodies in two RBDs.

Hydromorphological quality elements were not reported to be monitored in any coastal water body in the Netherlands and in the transitional water bodies in two of the four RBDs with

transitional water bodies. Hydrological regime is not monitored in lakes in one RBD but the expected elements are in the other three RBDs. Continuity and hydrological regime are monitored in rivers in three of the four RBDs with rivers; morphological conditions are monitored in rivers in three of the four RBDs.

In general, only two types of general physicochemical quality elements are monitored in the Netherlands: nutrient and oxygenation conditions. The other groups (transparency, thermal conditions, salinity and acidification status) are not reported to be monitored[20].

Annex V of the WFD provides guidance on the frequency of monitoring of the different quality elements. Surveillance monitoring should be carried out for each monitoring site for a period of one year during the period covered by a RBMP i.e. six years. For phytoplankton this should be done twice during the monitoring year and for the other biological quality elements once during that year. As a guideline, operational monitoring should take place at intervals not exceeding once every six months for phytoplankton and once every three years during the six year cycle for the other biological quality elements. Greater intervals may be justified on the basis of technical knowledge and expert judgement.

All biological quality elements used for surveillance monitoring in all four water categories were sampled at, or more than, the minimum WFD recommended frequency at all sites at which they were monitored. In coastal waters two of the three, in transitional waters three of the four and in rivers one of the five biological quality elements used for operational monitoring were sampled with a compliant frequency at all of the sites where they were monitored. In lakes none of the biological quality elements were reported as having been sampled at this frequency at all sites.

***River Basin Specific Pollutants and matrices monitored***

Annex V of the WFD provides guidance on the frequency of monitoring of the different quality elements: once every three months is recommended for “other pollutants” which are taken here to equate to river basin specific pollutants. Surveillance monitoring should be carried out for each monitoring site for a period of one year during the period covered by a river basin management plan i.e. six years. For river basin specific pollutants the frequency should be four times for the surveillance year, and for operational monitoring four times a year for each year of the cycle.

213 River Basin Specific Pollutants were reported to be monitored in water (only) in the Netherlands including 102 reported as "other chemical substances". 212 of these were included

[20] The Netherlands subsequently indicated that all relevant general physicochemical quality element groups are monitored and used in assessing status/potential. The omission in the reporting is likely to be an error.

in surveillance monitoring of water, all were sampled at least at the minimum recommended frequency at all sites where they were monitored. Of the 213 River Basin Specific Pollutants included in operational monitoring only four (2 %) were sampled at least at the minimum recommended frequency at all sites where they were monitored. For 25 substances (12 %) none of the sites were sampled at this frequency.

Table 3.4 shows the number of sites used to monitor River Basin Specific Pollutants in the Netherlands for the first and second RBMPs. A small reduction in monitoring of rivers (six sites) is observed with a greater reduction for lakes (49 sites, a 16 % reduction). Transitional and coastal water have remained the same.

***Table 3.4*** ***Number of sites used to monitor River Basin Specific Pollutants reported in the second RBMP and non-priority specific pollutants and/or other national pollutants reported in the first RBMP in the Netherlands. Note, the data from both cycles may not be fully comparable as different definitions were used and also not all Member State reported information at the site level meaning that there were no equivalent data for the first RBMP***

| RBMP | | Rivers | Lakes | Transitional | Coastal |
|---|---|---|---|---|---|
| first | Sites used to monitor non-priority specific pollutants and/or other national pollutants | 176 | 315 | 8 | 8 |
| second | Sites used to monitor River Basin Specific Pollutants | 170 | 266 | 8 | 8 |

*Sources: WISE electronic reporting*

### *Use of monitoring results for classification*

Grouping was not used in the classification of ecological status/potential at the quality element level. However, the Netherlands also reported that the grouping of water bodies has been used in extrapolating the assessment and classification of ecological status from monitored water bodies to those water bodies with no monitoring sites.

Monitoring results were solely used in coastal and transitional waters, and overwhelmingly used in lakes (~95 % of total lake water bodies) and rivers (~95 % of total river water bodies). Expert judgement was used to approximately the same extent in rivers and lakes where around 1 % of water bodies were classified by this means.

There is a mismatch between the number of water bodies monitored for different quality elements (fewer) and the number of water bodies classified based on monitoring results (more) for the same quality elements.

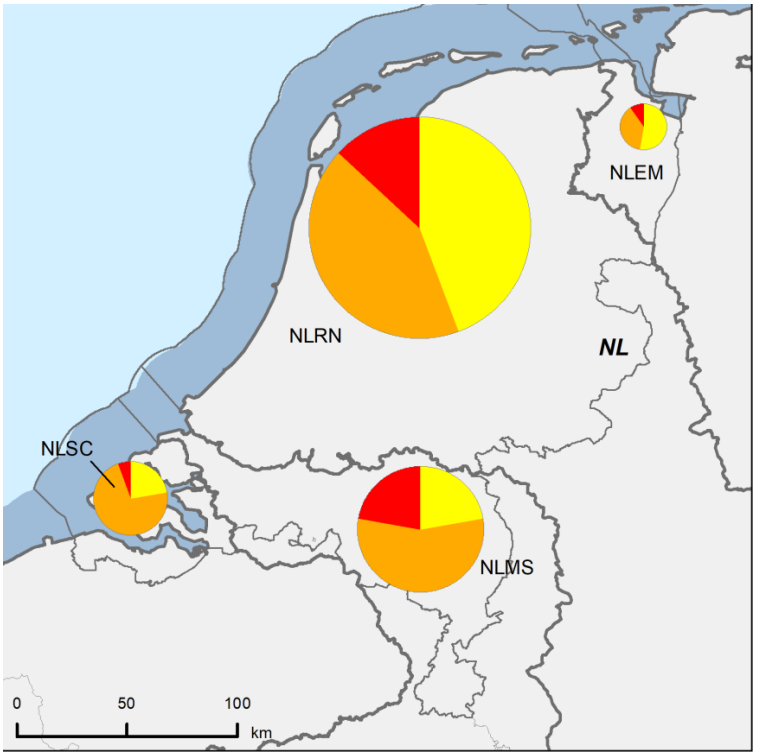
### 3.1.2 Ecological Status/potential of surface water

The ecological status/potential of surface water bodies in the Netherlands for the second RBMPs is illustrated in Map 3.1. This is based on the most recent assessment of status.

Figure 3.3 shows the confidence in the classification of ecological status/potential and Figure 3.4 compares the ecological status of surface water bodies in the Netherlands for the first RBMPs with that for the second (based on the most recent assessment of status/potential) and that expected by 2015).

***Map 3.1*** ***Ecological status or potential of surface water bodies in the Netherlands based on the most recently assessed status/potential of the surface water bodies***

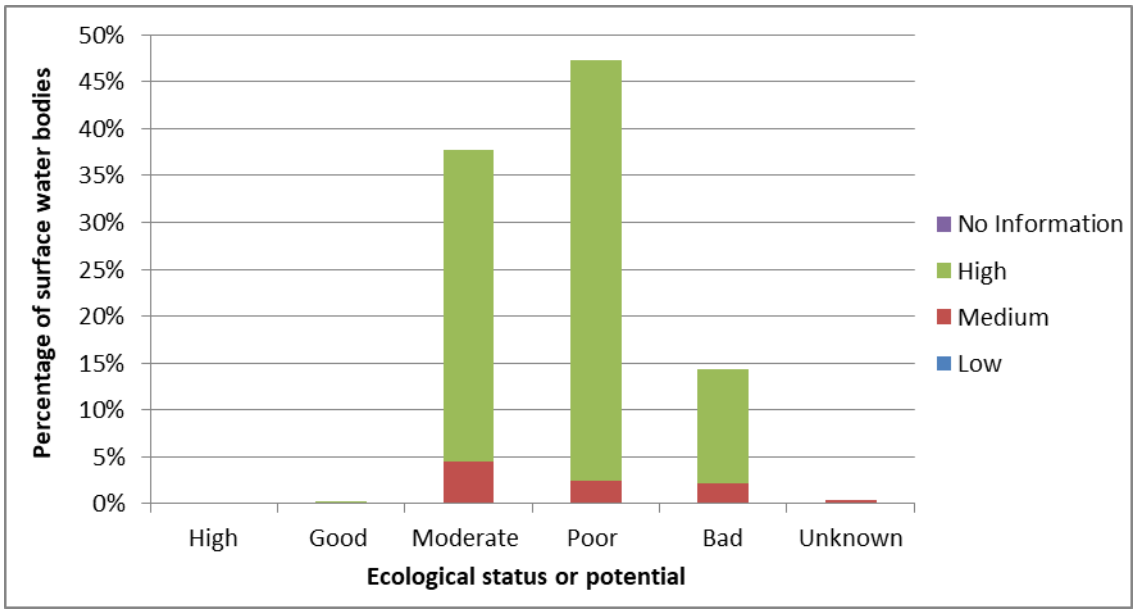
*Note: Standard colours based on WFD Annex V, Article 1(4)(2)(i).*




*High*
*Good*
*Moderate*
*Poor*
*Bad*
*Unknown*
*RBDs*
*Countries outside the European Union*

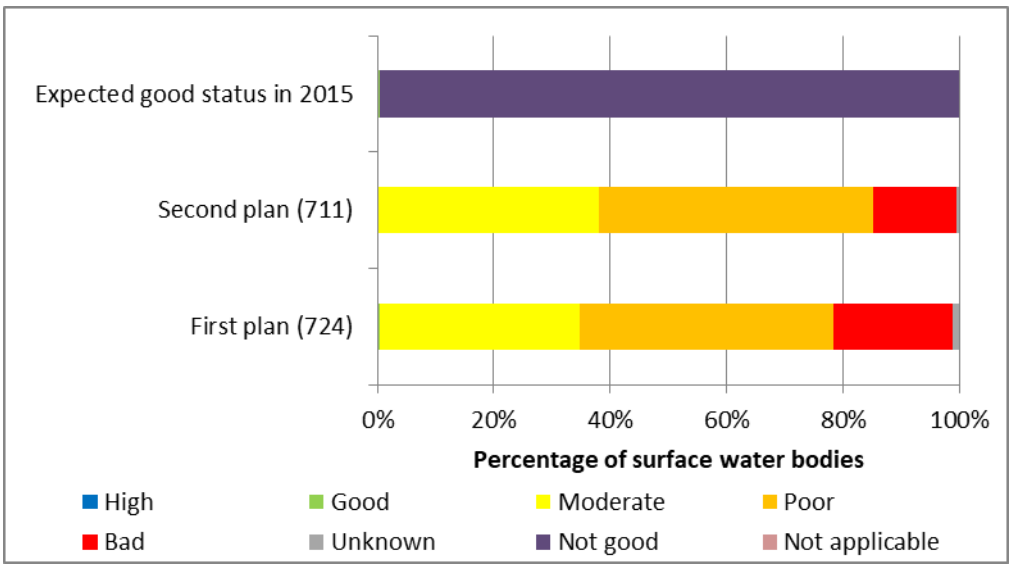
*Source: WISE, Eurostat (country borders)*

*Figure 3.3* ***Confidence in the classification of ecological status or potential of surface water bodies in the Netherlands based on the most recently assessed status/potential***




*Source: WISE electronic reporting*

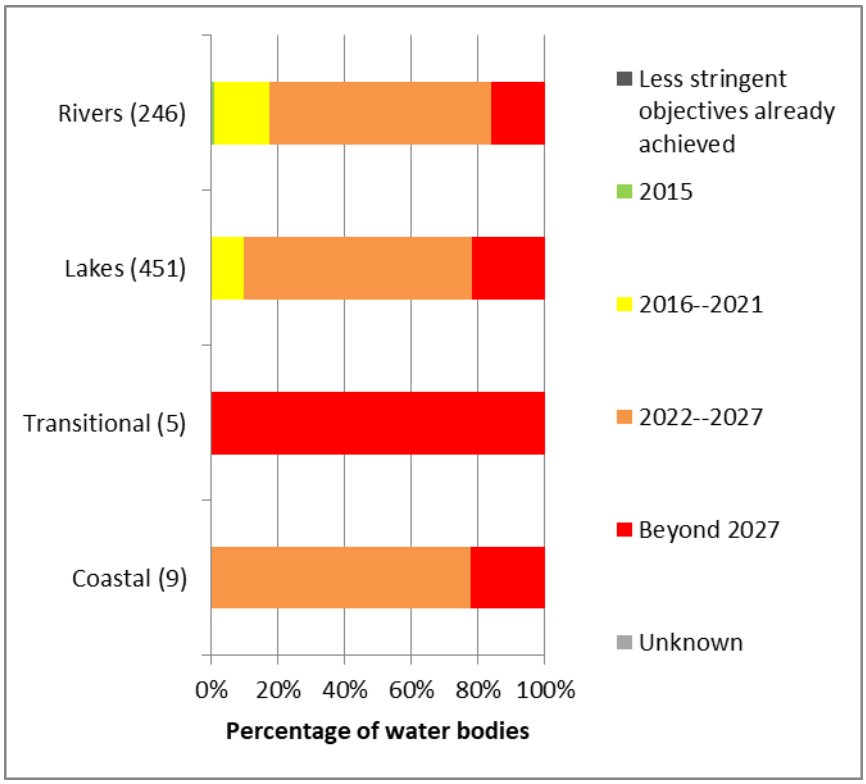
*Figure 3.4* ***Ecological status or potential of surface water bodies in the Netherlands for the second RBMPs, for the first RBMPs and expected in 2015. The number in the parenthesis is the number of surface water bodies for each cycle. Note the period of the assessment of status for the second RBMPs was 2009 to 2014. The year of the assessment of status for first RBMPs is not known***




*Source: WISE electronic reporting*

Member States were asked to report the expected date for the achievement of good ecological status/potential. The information for Netherlands is shown in Figure 3.5.

***Figure 3.5*** ***Expected date of achievement of good ecological status/potential of surface water bodies in the Netherlands. The number in the parenthesis is the number of water bodies in each category***




*Source: WISE electronic reporting*

All water bodies have been classified, except three artificial/heavily modified lakes in the Rhine RBD. This is an improvement for the two saline water categories since the first RBMPs, when 25 % of transitional and coastal water bodies were of unknown status/potential.

Based on the one-out-all-out approach, there are still only two water bodies in good or better ecological status/potential for the second RBMP in spite of the first RBMPs objective to achieve good ecological status/potential by 2015 for 9-13 % of artificial and heavily modified water bodies and for 28 % of the natural water bodies. The achievement of the good status objective has now been postponed to 2027 or later for most of the water bodies. For the first RBMP there were three water bodies at good status/potential. There was a small reduction in the proportion of water bodies with unknown status/potential from 1.1 % (eight water bodies) in the first RBMP to 0.4 % (three water bodies) for the second.

At the level of the individual biological quality element there has been some progress between the two RBMPs in terms of an increase in the proportion of surface water bodies achieving

good ecological status/potential. For example, in terms of benthic invertebrates the proportion of surface water bodies at good status/potential for the first plan was 19 % (724 water bodies) increasing to 25 % (711 water bodies) for the second.

The RBMP for the Rhine RBD reports that ecological status/potential has improved significantly since 2009; the improvement is due to improvements in most biological quality elements, except fish, which remained more or less stable. The improvement is still not sufficient to improve the overall status/potential to good or high.

A comparison with the status in 2009 in the Scheldt RBMP shows a mixed picture: water bodies in good or high status have decreased for algae, while there is an increase of water bodies in good/high status for benthic invertebrates, fish and macrophytes. There are still no water bodies with good/high ecological status/potential.

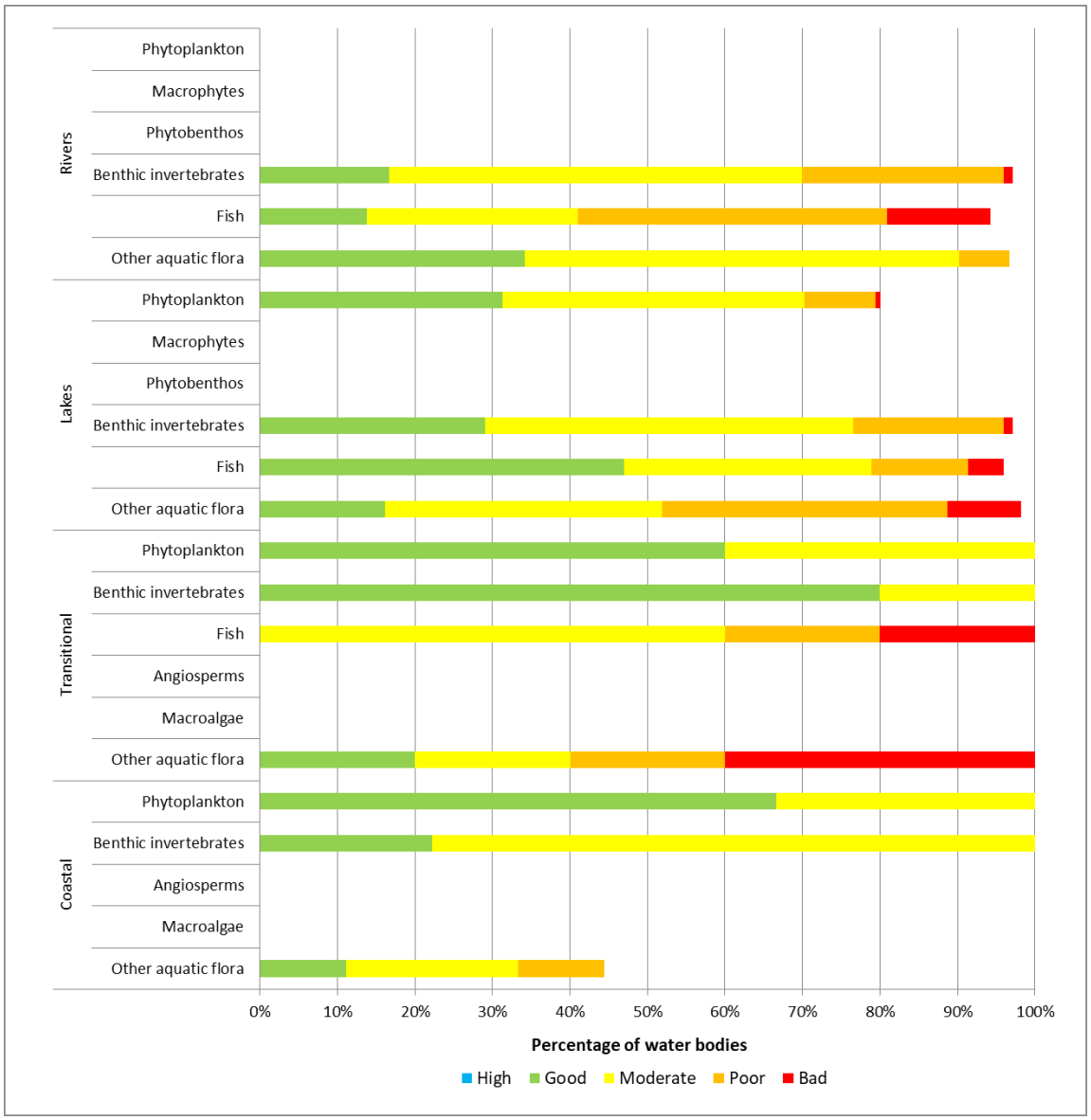
A similar comparison in the Ems RBMP shows that the ecological status has improved since 2009; overall improvements are still not enough to move the ecological status from good to high.

It is stated in the Meuse RBMP that there is a significant improvement compared to 2009 for all quality elements. However, this is still not sufficient to improve the overall ecological status to good or high.

***Classification of ecological status in terms of each classified quality element***

Figure 3.6 shows the percentage of water bodies in terms of the biological quality element used for classification.

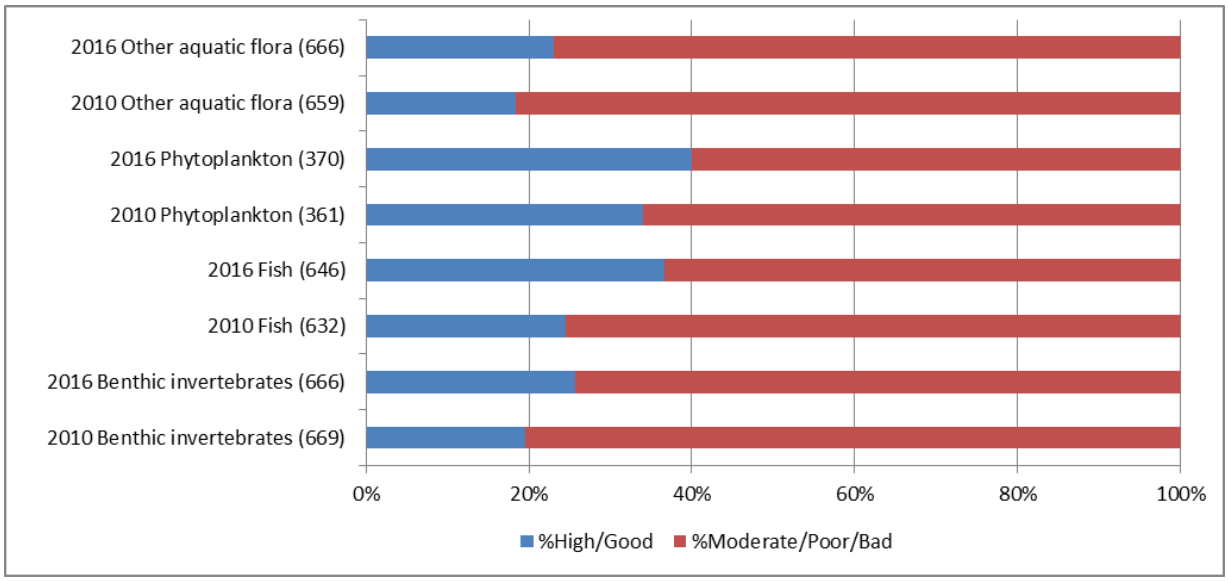
***Figure 3.6*** ***Ecological status/potential of the biological quality elements used in the classification of surface waters in the Netherlands. Note that water bodies with unknown status/potential, and those that are monitored but not classified or not applicable, are not presented.***




*Source: WISE electronic reporting*

Figure 3.7 compares the classification of biological quality elements for the first and second RBMPs for rivers and lakes. It should be noted that this comparison should be treated with some caution as there are differences between the numbers of surface water bodies classified for individual elements between the first and second RBMPs and slight changes due to adaptation to Intercalibration and technical improvement of biological metrics. In general for the elements provided in Figure 3.7 the percentage of rivers and lakes at high/good status has increased.

***Figure 3.7 Comparison of ecological status/potential in the Netherlands according to classified biological quality elements in rivers and lakes between the two RBMPs***

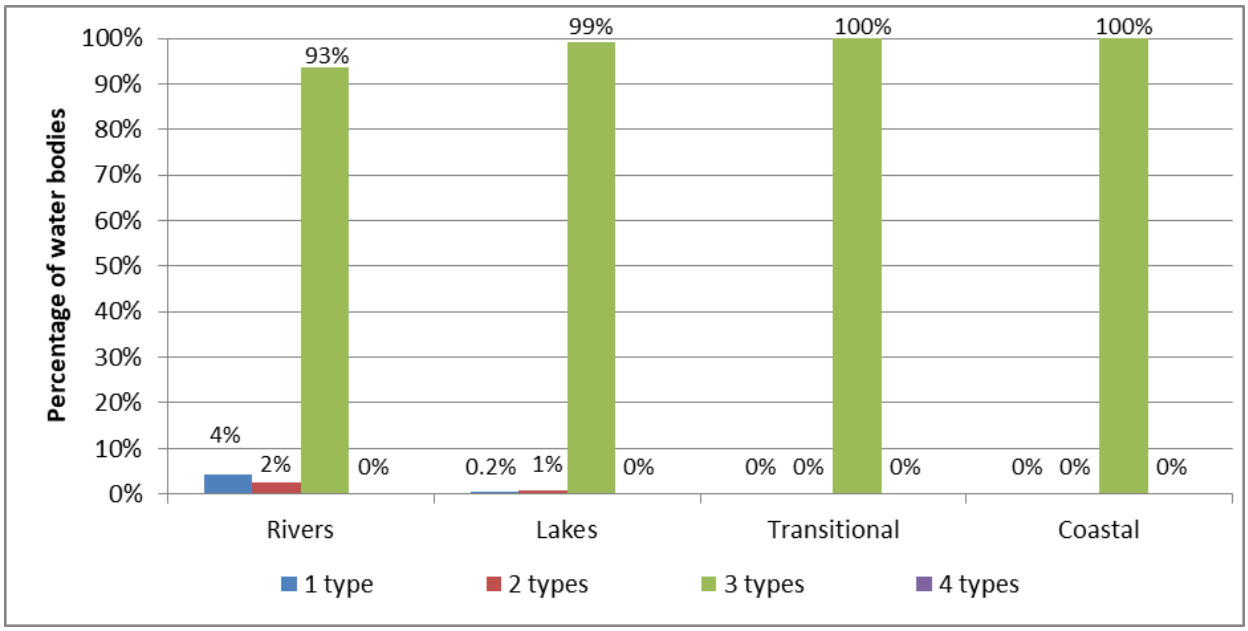



*Source: WISE electronic reporting*

Figure 3.8 and Figure 3.9 illustrate the basis of the classification of ecological status/potential of water bodies in the Netherlands for the second RBMPs.

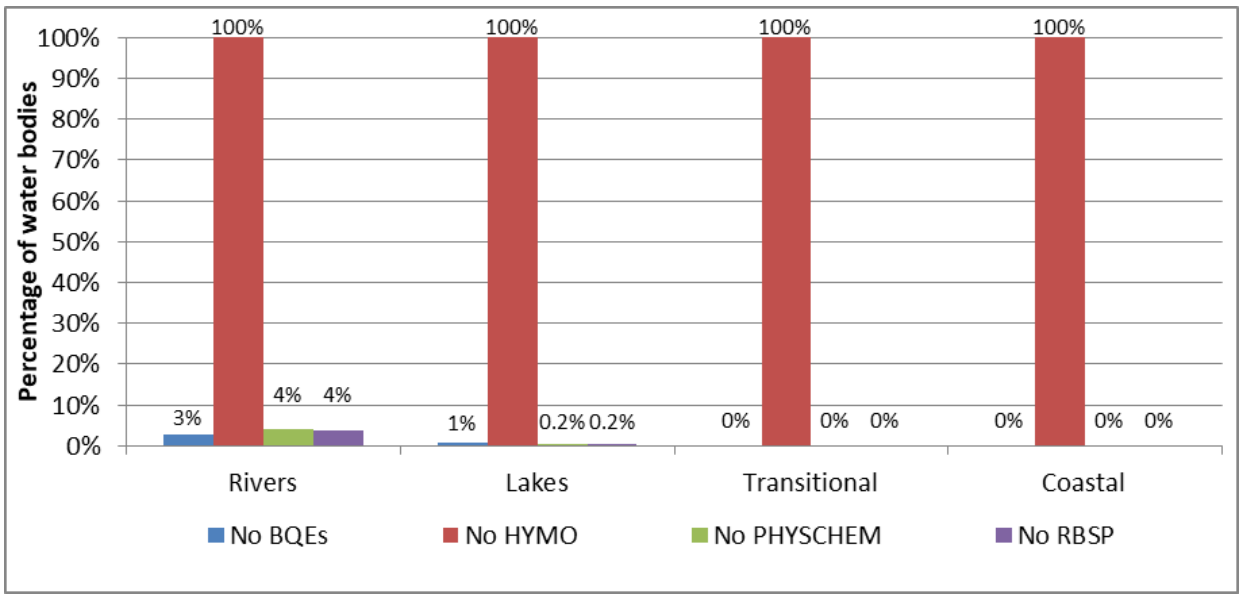
The classification of the individual quality elements is illustrated in Figure 3.10.

*Figure 3.8* ***The classification of the ecological status or potential of water bodies in the Netherlands using 1, 2, 3 or 4 types of quality element. Note: the four types are: biological; hydromorphological, general physicochemical and River Basin Specific Pollutants***



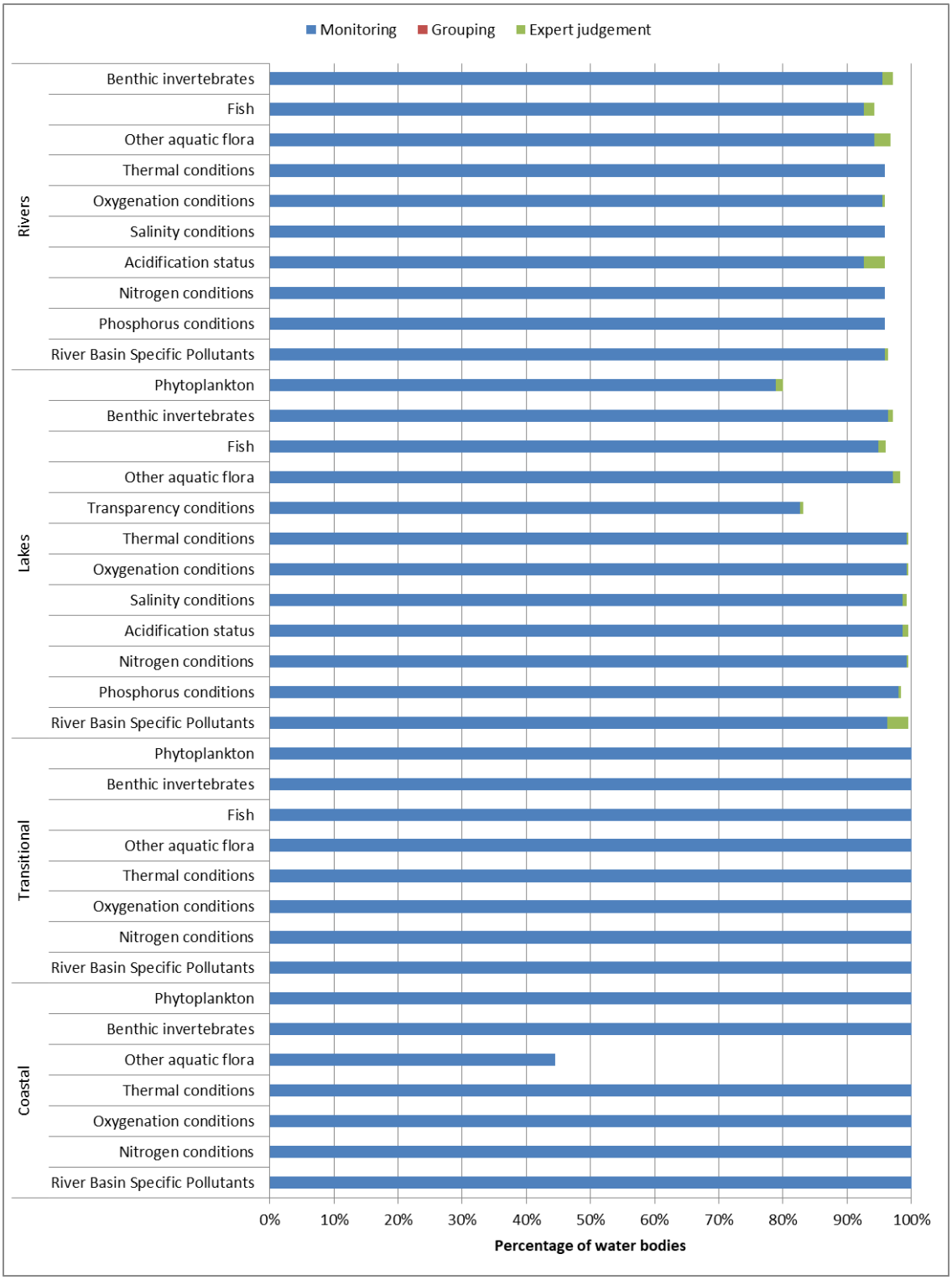

*Source: WISE electronic reporting*

*Figure 3.9* ***The percentage of water bodies in the Netherlands where no biological quality element or no hydromorphological (HYMO) or no general physicochemical (PHYSCHEM) or no river basin specific pollutant (RBSP) has been used in the classification of ecological status or potential***




*Source: WISE electronic reporting. The Netherlands noted that hydromorphology has, in fact, been used in classification.*

***Figure 3.10 Basis of the classification of ecological status/potential in the Netherlands. The percentages are in terms of all waterbodies in each category.***




*Source: WISE electronic reporting*

Several quality elements are reported to be in good status/potential in a large proportion of water bodies in all or some of the RBDs: These are phytoplankton in coastal and transitional waters and oxygenation conditions in all the water categories. There are also several other quality elements in good status/potential in many water bodies in most of the RBDs, e.g. all biological quality elements in lakes, transparency and nutrients in lakes, benthic invertebrates in rivers and other aquatic flora and benthic invertebrates in transitional waters.

For many water bodies, a change in class is reported for several quality elements, but there is no clear pattern for the different quality elements, some changes are to the better and others to the worse. Some of the changes are reported as consistent, others are due to changes in monitoring and/or assessment systems.

***Assessment methods and classification of biological quality elements***

Assessment methods are developed for all biological quality elements in all water categories except macroalgae in transitional and coastal waters[21]. A new method for angiosperms has been developed for transitional and coastal waters.

Reference conditions are set for all types and all the biological quality elements where methods are developed.

The sensitivity of several of the biological quality element methods to different impacts have been reported as impact-specific.

The methodology document referenced in the RBMPs was examined for major changes in assessment methodologies for the biological quality elements. There did not appear to be any major changes in methodology, except for a reference to the calculation of confidence levels of the overall ecological assessment and the fact that a new method had been developed for angiosperms in transitional and coastal waters, compared with the first RBMP.

***Intercalibration of biological assessment methods and national classification systems***

A number of water body types are reported to have been linked to the common intercalibration types, but it is not clear which biological quality element methods have been intercalibrated, and how the class boundaries have been set for national types not linked to the common intercalibration types.

[21] The Netherlands subsequently stated that in terms of macroalgae in transitional and coastal waters the Common Intercalibration Strategy Working Group on Ecological Status had accepted that this element was not applicable in the Netherlands.

All national types are linked to an intercalibration type, except three brackish water lake types. Surprisingly, two national river types with calcareous geology, R17 and R18, have been linked to a siliceous intercalibration type: R-C1[22].

***Assessment methods for hydromorphological quality elements***

The use of hydromorphological quality elements in the classification of ecological status/potential is generally lacking[23] even though certain hydromorphological quality elements (hydrological or tidal regime, river continuity conditions and morphological conditions) are reported to be supporting sensitive biological quality elements.

***Assessment methods for general physicochemical quality elements***

Common standards are reported for all types of water bodies in all water categories for thermal conditions, oxygenation conditions and nutrient conditions, for transparency in lakes, and for salinity and acidification in rivers and lakes. The nutrient standards are higher than the saturation level for nutrient sensitive biological quality elements, although they are indicated to support these biological quality elements.

***Selection of River Basin Specific Pollutants and use of Environmental Quality Standards***

It is reported in the methodology paper (cited in the RBMPs) that there is a list of substances with significant emissions (diffuse and point) that have been added to the list of substances to be monitored.

Environmental Quality Standards were reported for 96 different River Basin Specific Pollutants; all standards were for water only. All standards have been derived in accordance with the 2011 Technical Guidance Document Number 27[24] and the analytical methods used meet the minimum performance criteria laid down in Article 4(1) of the QA/QC Directive (2009/90/EC[25]) for the strictest standard applied for all substances.

***Overall classification of ecological status***

The Netherlands reported that the one-out-all-out principle has been used in all RBDs.

[22] The Netherlands subsequently indicated that national types R17 and R18 have a relative small size (<8 m) and calcareous geology is not really excluded from intercalibration type RC-1 as calcareous and siliceous types can combine together to some extent and, therefore, in the Netherlands' view the best fit is with RC-1.

[23] The Netherlands subsequently indicated that the classification of hydromorphological quality elements is only relevant to the classification of good ecological status and maximum ecological potential.

[24] https://circabc.europa.eu/sd/a/0cc3581b-5f65-4b6f-91c6-433a1e947838/TGD-EQS%20CIS-WFD%2027%20EC%202011.pdf

[25] Directive 2009/90/EC of 31 July 2009 laying down, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of water status http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1524565750309&uri=CELEX:32009L0090

## 3.2 Main changes in implementation and compliance since the first RBMPs

Overall there was a small increase in the number of sites used for operational and/or surveillance monitoring of surface waters in the Netherlands between the two plans. However, there were significant decreases in the numbers of sites used for the surveillance monitoring of all four water categories between the two RBMPs in the Netherlands. Proportionally the largest decrease was in coastal waters where numbers decreased from 26 for the first RBMP to 10 for the second RBMP. There were also significant decreases in numbers of operational sites in coastal (44 %) and transitional waters (30 %) but small increases in operational sites in lakes (2 %) and rivers (1 %) from the first to the second RBMPs.

The confidence in classification of ecological status/potential is given as high or medium for all water bodies, which is a major improvement since the first RBMP, where no information was given on confidence.

All water bodies have been classified, except three artificial/heavily modified lakes in the Rhine RBD. This is an improvement for the two saline water categories since the first RBMP, when 25 % of transitional and coastal water bodies were unknown.

For many water bodies, a change in class is reported for several quality elements, but there is no clear pattern for the different quality elements, some changes are to the better and others to the worse. Some of the changes are reported as consistent, others are due to changes in monitoring and/or assessment systems.

River Basin Specific Pollutants are monitored in all RBDs, the methodology for analysis and assessment is well described, and the water bodies and substances causing exceedances of the Environmental Quality Standard values are reported.

## 3.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *The identification of River Basin Specific Pollutants needs to be more transparent, with clear information on how pollutants were selected, how and where they were monitored, where there are exceedances and how such exceedances have been taken into account in the assessment of ecological status. It is important that there is an ambitious approach to combatting chemical pollution and that adequate measures are put in place.*

Assessment: The Netherlands reported details of the specific River Basin Specific Pollutants monitored in each RBD. River Basin Specific Pollutants were also used in the classification of ecological status/potential and the River Basin Specific Pollutants causing the failure of status were also given. Environmental quality standards were also reported for 96 River Basin Specific Pollutants for the Netherlands and the standards were all reported to have been derived in accordance with the 2011 Technical Guidance Document Number 27. In these aspects, it is clear that the Netherlands has met this recommendation.

# Topic 4 Monitoring, assessment and classification of chemical status in surface water bodies

## 4.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 4.1.1 Monitoring of chemical status in surface waters

***Monitoring sites and monitored water bodies used for monitoring of chemical status***

Member States have to implement surveillance and operational monitoring programmes in accordance with the requirements of the WFD and of the EQS Directive, for the assessment of ecological status/potential and chemical status.

Surveillance monitoring programmes should allow Member States to supplement and validate the impact assessment procedure, to efficiently and effectively review the design of their monitoring programmes, and to assess the long-term changes in natural conditions and those resulting from widespread anthropogenic activity. For operational purposes, monitoring is required to establish the status of waterbodies identified as being at risk of failing to meet their environmental objectives, and to assess any changes in the status of such waterbodies resulting from the PoM.

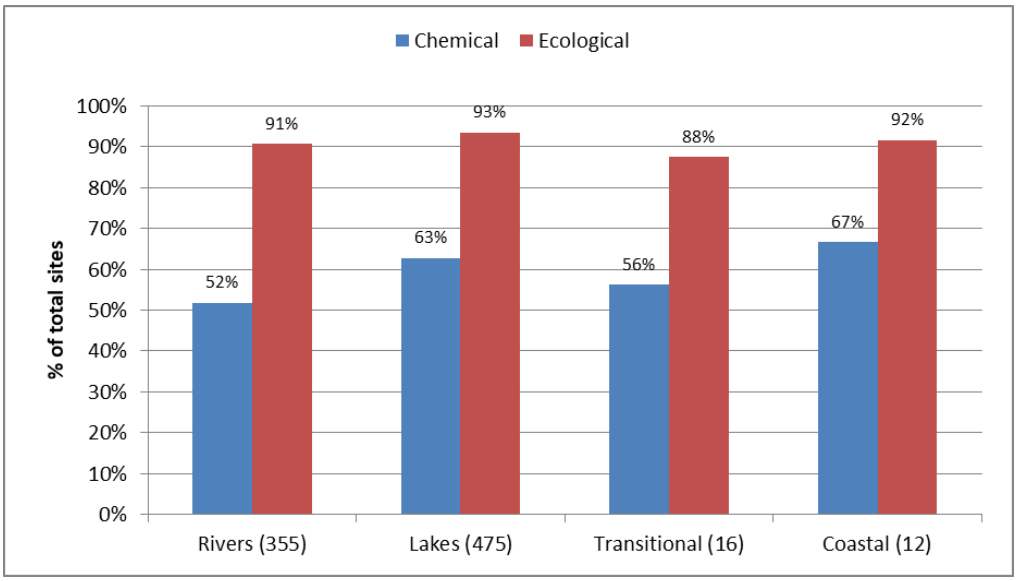
Section 3.1.1 of this report summarises the characteristics of the surveillance and operational monitoring programmes in the Netherlands for the second RBMP.

Figure 4.1 summarises the proportion of sites used for the monitoring of chemical status in surface waters for the second RBMP. In this figure, no distinction is made between sites used for surveillance and/or operational purposes. More detailed information can be found on the website of the European Environment Agency[26].

Up to 67 % of monitoring sites are used for the monitoring of chemical status in surface waters. Although not reported to WISE, the Netherlands clarified that territorial waters have been monitored for chemical status.

[26] https://www.eea.europa.eu/publications/state-of-water

***Figure 4.1 Proportion of sites used for monitoring of chemical status and, for comparison, ecological status, in the Netherlands. The number in parenthesis next to the category is the total number of monitoring sites irrespective of their purpose***




*Source: WISE electronic reporting*

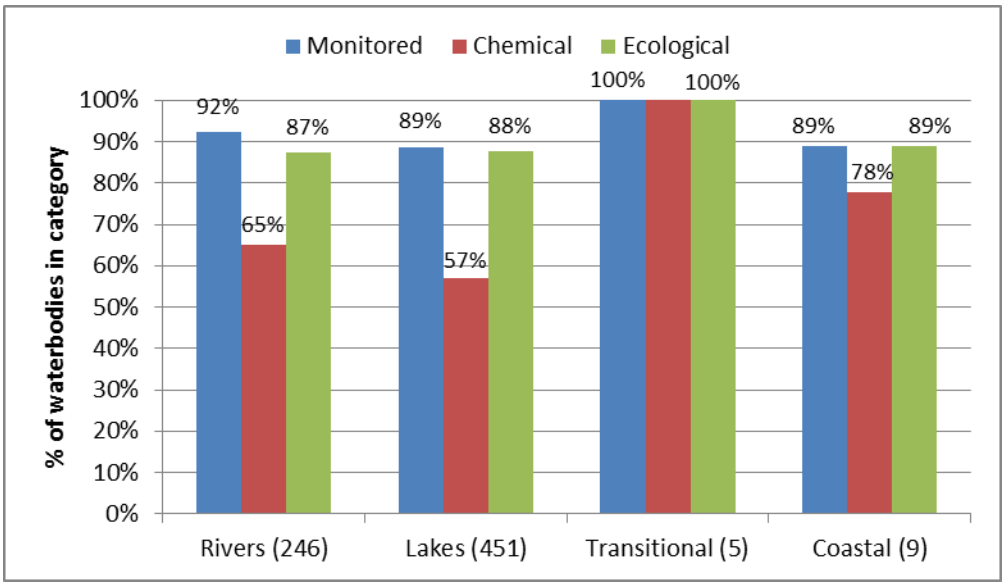
A large proportion of the monitoring sites in each water category are used for the monitoring of ecological status (88-93 %) with a smaller proportion (52-67 %) used for chemical status (Figure 4.1).

According to WISE, for surface water bodies across all RBDs in Netherlands, a higher proportion of sites was monitored for chemical status under operational monitoring (58 % of total sites monitored) than under surveillance monitoring (14 % of total sites monitored). For water bodies, similar percentages were reported respectively for operational and surveillance monitoring (58 % and 16 % respectively). However, the Netherlands subsequently informed that all sites monitored for chemical status were included in the surveillance monitoring programme with a proportion of these also included in the operational monitoring programme.

Between the two RBMPs, according to WISE, there was a net decrease in monitoring sites and surface water bodies monitored for operational purposes (an increase of four sites and decrease of 26 water bodies), the increase was associated with an increase in lake monitoring sites. For surveillance monitoring the number of sites has decreased by 43, and for water bodies the decrease was 21 since the first cycle. This comparison should however be taken with caution as there may be issues with reporting of sites for surveillance/ operational monitoring as mentioned above. The apparent overall reduction in the number of sites and water bodies monitored may at least partially result from a reduction in the number of water bodies delineated in the second RBMP.

Figure 4.2 summarises the proportion of water bodies monitored for chemical status in surface waters for the second RBMP. For this figure, no distinction is made between water bodies used for surveillance and/or operational purposes. Also given is the proportion of water bodies monitored for any purpose and, for comparative purpose, those for ecological status.

***Figure 4.2*** ***Proportion of total water bodies in each category which are monitored, monitored for chemical status and monitored for ecological status, in the Netherlands. The number in parenthesis next to the category is the total number of water bodies in that category***




*Source: WISE electronic reporting*

A high proportion of surface waterbodies were monitored for ecological status in the second cycle in all water categories with fewer surface freshwater water bodies monitored for chemical status; higher proportions were monitored in transitional and coastal water bodies where the total numbers are fewer.

All transitional water bodies failing to achieve good status were covered by operational monitoring in the Netherlands. This was also the case for 57-78 % of lake water bodies failing to achieve good status, 67 % for coastal water bodies failing to achieve good status in the Rhine RBD, the Scheldt RBDs and all coastal water bodies in the Ems RBD and the Meuse RBDs. For river water bodies, 67-78 % failing to achieve good chemical status were monitored in the Ems RBD, the Meuse RBD and the Rhine RBDs. This is consistent with the use of grouping and expert judgement in the assessment of chemical status in the absence of monitoring data.

***Long-term trend monitoring and monitoring of Priority Substances in water, sediment and biota for status assessment***

**Monitoring for status assessment**

Requirements

Article 8.1 of the WFD requires Member States to establish monitoring programmes in order to provide inter alia a coherent and comprehensive overview of water status within each RBD. The amount of monitoring undertaken in terms of Priority Substances, frequency and numbers of sites should be sufficient to obtain a reliable and robust assessment of status. According to the EQS Directive (version in force in 2009), mercury, hexachlorobenzene and hexachlorobutadiene have to be monitored in biota for status assessment, unless Member States derived a standard for another matrix, which is at least as protective as the biota standard.

Spatial Coverage

Overall in the Netherlands, according to WISE, all substances are monitored, except total DDT, brominated diphenylethers, and hexachlorocyclohexane which are not monitored in any RBD, and nonylphenol which is not reported to be monitored in the Scheldt and Meuse RBDs. However, the Netherlands subsequently clarified that hexachlorocyclohexane, brominated diphenylethers and 4-nonylphenol are monitored, unless in areas where no emissions, discharges or losses are identified.

According to WISE, in all RBDs in the Netherlands, 25 % or more coastal water bodies were monitored for more than 10 Priority Substances in water. The Netherlands subsequently informed that all coastal waters were monitored for 10 or more Priority Substances. 64 % of lake water bodies are monitored for 10 or more Priority Substances in the Ems RBD, but for the remaining RBDs only 6 to 10 % of lakes were monitored for this number of Priority Substances. In the Ems RBD, 80 % of river water bodies were monitored for 10 or more Priority Substances; for the other RBDs less than 15 % were monitored for this number of Priority Substances. The majority of transitional waters across all RBDs were monitored for more than 10 Priority Substances, with the exception of the Ems RBD where four Priority Substances were monitored. The Netherlands subsequently mentioned that in coastal waters all Priority Substances are monitored, but most Priority Substances are found in concentrations below the limit of quantification.

This should however be treated with caution, as it seems there may be issues with the reporting (in particular for substances such as hexachlorocyclohexane, brominated diphenylethers and nonylphenol).

Mercury, hexachlorobenzene and hexachlorobutadiene were not monitored in sediment or biota. The Netherlands monitors for these substances in water for status assessment.

Frequencies

The WFD indicates that, for the surveillance and operational monitoring of Priority Substances in water, the frequency of monitoring should be, respectively,at least monthly for one year during the RBMP cycle and at least monthly every year. Monitoring in biota for status assessment should take place at least once every year according to the EQS Directive. In all cases greater intervals can be applied by Member States if justified on the basis of technical knowledge and expert judgement.

Monitoring frequencies in water are reported for between 35 and 38 Priority Substances at site level (depending on the RBD) with a frequency of 12 times per year and once per cycle. This meets the requirement for surveillance monitoring. Between 29 and 38 Priority Substances (depending on the RBD) were monitored with a frequency of 12 times per year and each year in the cycle. This meets the requirement for operational monitoring. 18 Priority Substances were monitored with frequencies ranging from zero to six times per year and from at least once to twice per cycle. These frequencies do not meet the recommended minimum frequencies for either surveillance or operational monitoring. It could not be determined whether these reduced frequencies resulted from a reporting mistake or whether they were chosen based on expert judgment or technical knowledge.

In the Danube RBD in particular, several substances are reported to be monitored every three RBMPs in at least some sites, which is likely to be the implementation of Annex V section 1.3.1, for cases where the previous surveillance monitoring exercise showed that the body concerned reached good status and there is no evidence that the impacts on the water body have changed.

**Monitoring for long term assessment**

Requirements

Article 3.3 of the EQS Directive (version in force in 2009) requires Member States to monitor 14 Priority Substances[27] that tend to accumulate in sediment and/or biota, for the purpose of long-term trend assessment.

[27] Anthracene, brominated diphenylether, cadmium, C10-13 chloroalkanes, DEHP, fluoranthene, hexachlorobenzene, hexabutadiene, hexachlorocyclohexane, lead, mercury, pentachlorobenzene, PAH, Tributyltin.

Spatial coverage

The Netherlands does not monitor any Priority Substances in sediment or biota for trend assessment. No information was reported regarding whether arrangements were in place for the long-term trend analysis of concentrations of those Priority Substances in the Netherlands.

However, the RBMPs indicate that monitoring in the water column is used for trend assessment as well as for status assessment. The sampling locations for the trend monitoring consist of one monitoring site per water body (the same as for status monitoring). The chemical trend monitoring network consists of locations in river mouths in the RBDs, at borders and at representative locations in important water bodies or large lakes.

Frequencies

Monitoring should take place at least once every three years, unless technical knowledge and expert judgment justify another interval.

The Netherlands does not report monitoring frequencies for trend assessment.

***Monitoring of Priority Substances that are discharged in each RBD***

Annex V of the WFD states, in Section 1.3.1 (Design of surveillance monitoring), that "Surveillance monitoring shall be carried out for each monitoring site for a period of one year during the period covered by a river basin management plan for [*inter alia*]: priority list pollutants which are discharged into the river basin or sub-basin." Section 1.3.2 (Design of operational monitoring) of the Directive states that "In order to assess the magnitude of the pressure to which bodies of surface water are subject Member States shall monitor for those quality elements which are indicative of the pressures to which the body or bodies are subject. In order to assess the impact of these pressures, Member States shall monitor as relevant [*inter alia*]: all priority substances discharged, and other pollutants discharged in significant quantities."

Member States are therefore required to monitor all Priority Substances which are discharged into the river basin or sub-basin.

The Netherlands reported that 32 Priority Substances were included in an inventory and discharged for each of the RBDs[28] (the Netherlands clarified that for substances not included in the inventories no emission has been identified).

[28] The Netherlands subsequently clarified that there can be two reasons for not including a substance in the inventory: 1) a zero-emission has been reported to the 'NL-Emissiregistratie' by industry. This might be due to

Between 90 and 94 % of Priority Substances discharged were monitored in the RBDs in the Netherlands. However, according to WISE, in all four RBDs the following two substances were in an inventory and discharged but were not monitored: hexachlorocyclohexane and brominated diphenylethers (congener numbers 28, 47, 99, 100, 153 and 154) but in two RBDs (the Meuse RBD and the Scheldt RBD) this was the case for a third substance, 4-nonylphenol. The Netherlands subsequently clarified that these substances are monitored where emissions, discharged or losses have been identified.

***Performances of analytical methods used***

In the Netherlands, for all monitored Priority Substances the analytical methods used meet the minimum performance criteria laid down in Article 4(1) of the QA/QC Directive (2009/90/EC[29]) for the strictest standard applied.

The method of dealing with measurements of Priority Substances lower than the limit of quantification is as specified in Article 5 of the QA/QC Directive (2009/90/EC) for all four RBDs in the Netherlands.

### 4.1.2 Chemical Status of surface water bodies

Member States are required to report the year on which the assessment of chemical status is based. This may be the year that the surface water body was monitored. In case of grouping this may be the year in which monitoring took place in the surface water bodies within a group that are used to extrapolate results to non-monitored surface water bodies within the same group. For the Netherlands, the assessment of chemical status was undertaken between 2009 and 2014. The Netherlands subsequently clarified that monitoring data from 2012, 2013 and 2014 was used preferentially for the status assessment in the second RBMP but where data was missing from one of these years then it was supplemented with data from previous years.

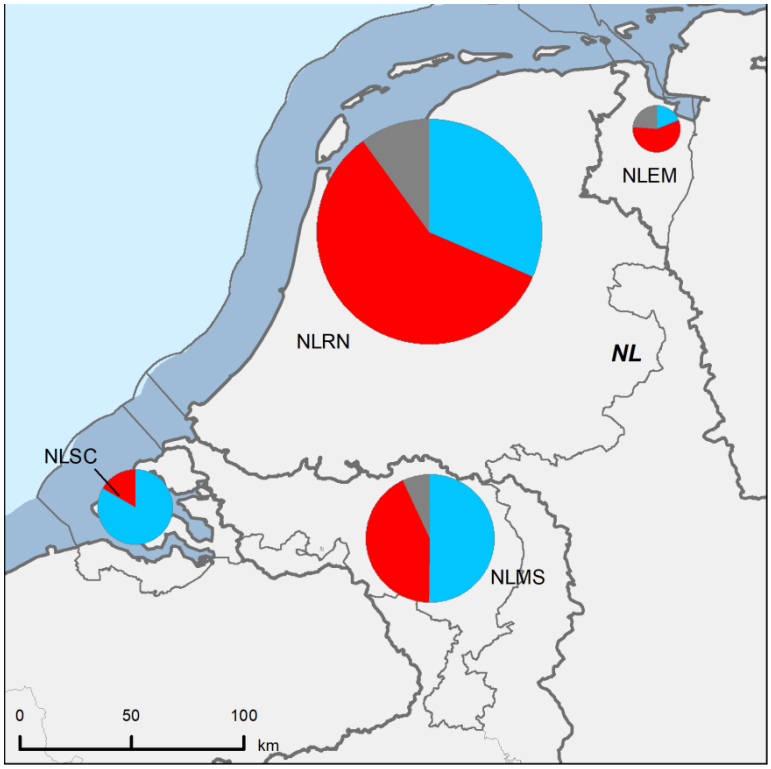
The chemical status of surface water bodies in the Netherlands for the second RBMP is illustrated in Map 4.1. This is based on the most recent assessment of status.

reporting thresholds. Pesticides and other substances that are no longer authorized are not included. The Netherlands decided not to report zero-emissions on the public website. Therefore these substances are not found on the public website and not reported to WISE. 2) For the RBMP, only data from the 'NL Emissieregistratie' was used for so-called 'probleemstoffen (substances exceeding the environmental quality standard)'. Other substances were not reported.

[29] Directive 2009/90/EC of 31 July 2009 laying down, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of water status http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1524565750309&uri=CELEX:32009L0090

***Map 4.1*** ***Chemical status of surface water bodies in the Netherlands based on the most recently assessed status of the surface water bodies***

*Note: Standard colours based on WFD Annex V, Article 1.4.3*




*Source: WISE, Eurostat (country borders)*

*Good*
*Failing to achieve to good*
*Unknown*
*River Basin Districts*
*Countries outside the EU*

The chemical status of surface waters in the Netherlands for the first and second RBMPs is given in Table 4.1. The Netherlands reported chemical status in the second RBMP based on the environmental quality standards laid down in the revised EQS Directive (2013/39/EU) and therefore direct comparison with chemical status in the first RBMP is not possible.

***Table 4.1 Chemical status of surface water bodies in the Netherlands for the second and first RBMPs. Note: the number in parenthesis next to the water category is the number of water bodies. Note: chemical status assessment is based on the standards laid down in EQS Directive 2013/139/EU (version in force on 12 August 2013). Some Member States did not fully implement the Directive in the first RBMPs as the transposition deadline was in July 2010, after the adoption of the first RBMPs***

| Category | Good | | Failing to achieve good | | Unknown | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| **second RBMP** | | | | | | |
| Rivers (246) | 103 | 42 % | 96 (134) | 39 % (54 %) | 47 (9) | 19 % (4 %) |
| Lakes (451) | 176 (175) | 39 % | 259 (265) | 57 % (59 %) | 16 (11) | 4 % (2 %) |
| Transitional (5) | | | 5 | 100 % | | |
| Coastal (9) | | | 8(9) | 89 % (100 %) | 1 (0) | 11 % (0 %) |
| Total (711) | 279 | 39 % | 368 | 52 % | 64 | 9 % |
| **first RBMP** | | | | | | |
| Rivers (254) | 153 | 60. % | 71 | 28. % | 30 | 12 % |
| Lakes (450) | 352 | 78 % | 89 | 20 % | 9 | 2 % |
| Transitional (5) | | | 5 | | | |
| Coastal (15) | 1 | 7. % | 14 | 93. % | | |
| Total (724) | 506 | 70 % | 179 | 25 % | 39 | 5 % |

*Source: WISE electronic reporting(the numbers in parenthesis were subsequently provided by the Netherlands, who clarified they could not report to WISE the failure of chemical status according to the 2013 environmental quality standards for some of the polycyclic aromatic hydrocarbons, and hexachlorocyclohexane).*

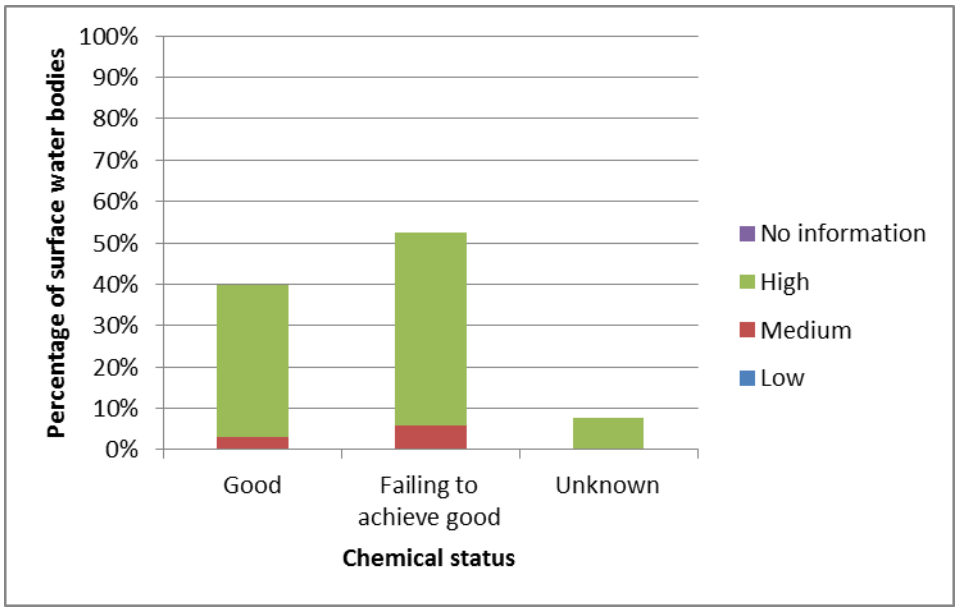
Overall the number of surface water bodies has decreased from 724 in the first cycle to 711 in the second cycle. The majority of surface water bodies in the second RBMP are failing to achieve good status (52 %) with 39 % at good status and 9 % in unknown status.

In the Netherlands as a whole, 23 % of water bodies were classified by monitoring, 69 % by grouping and 9 % by expert judgement[30]. The approach described in the RBMPs indicates that, where monitoring data is available, the one-out-all-out principle has been applied.

Figure 4.3 shows the confidence in the classification of chemical status for the second RBMP.

[30] The Netherlands expressed some doubts about this figure but could not clarify whether this resulted from a reporting mistake

***Figure 4.3 Confidence in the classification of chemical status of surface water bodies in the Netherlands based on the most recently assessed status/potential***




*Source: WISE electronic reporting*

Overall 91 % of surface water bodies in the Netherlands were classified for chemical status with high confidence and 9 % with medium confidence (the high confidence reported in WISE for water bodies in unknown status probably results from a reporting mistake). The Netherlands subsequently clarified that grouping is only applied when the confidence of the classification within the group is high. Confidence in the classification of chemical status for the first RBMPs was not reported.

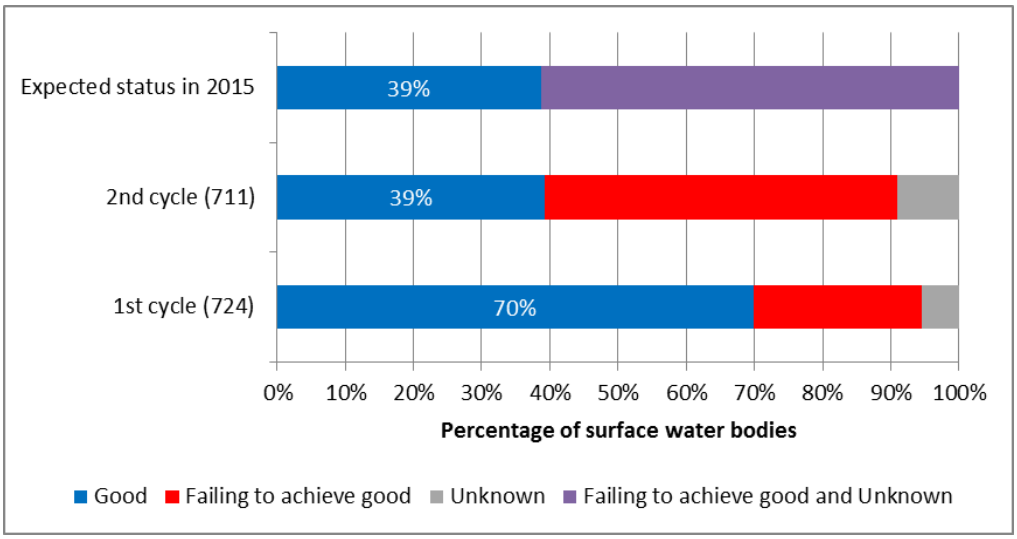
Figure 4.4 compares the chemical status of surface water bodies in the Netherlands for the first RBMPs with that for the second cycle (based on the most recent assessment of status) and that expected by 2015. The direct comparison of chemical status between the first and second RBMP is not possible because the assessment of chemical status in the second RBMP was undertaken based on the more stringent environmental quality standards in the revised EQS Directive (2013/39/EU).

More information on the chemical status in each RBD and water category can be found on the website of the European Environment Agency[31].

[31] https://www.eea.europa.eu/publications/state-of-water

***Figure 4.4*** ***Chemical status of surface water bodies in the Netherlands for the second RBMP, for the first RBMP and expected in 2015. The number in the parenthesis is the number of surface water bodies for both cycles. Note the period of the assessment of status for the second RBMP was 2009 to 2014. The year of the assessment of status for first RBMP is not known.***

*Note also that the assessment of chemical status in the second RBMP was based on the more stringent standards in the revised Environmental Standards Directive (2013/39/EU). The use of these more stringent standards is a major contributor to the large difference in the proportion of good status between the two RBMPs.*




*Source: WISE electronic reporting*

The assessment of chemical status for the second RBMPs was expected to be reported based on the standards laid down in EQS Directive 2008/105/EC (version in force on 13 January 2009[32]). However, the Netherlands based the assessment of chemical status on the more stringent standards in the revised EQS Directive (2013/39/EU)[33]. Compared to the standards in force in 2009, the new standards caused the status to appear to deteriorate for 11 % of water bodies for fluoranthene, and for 5 % of water bodies for nickel, in the Netherlands as a whole.

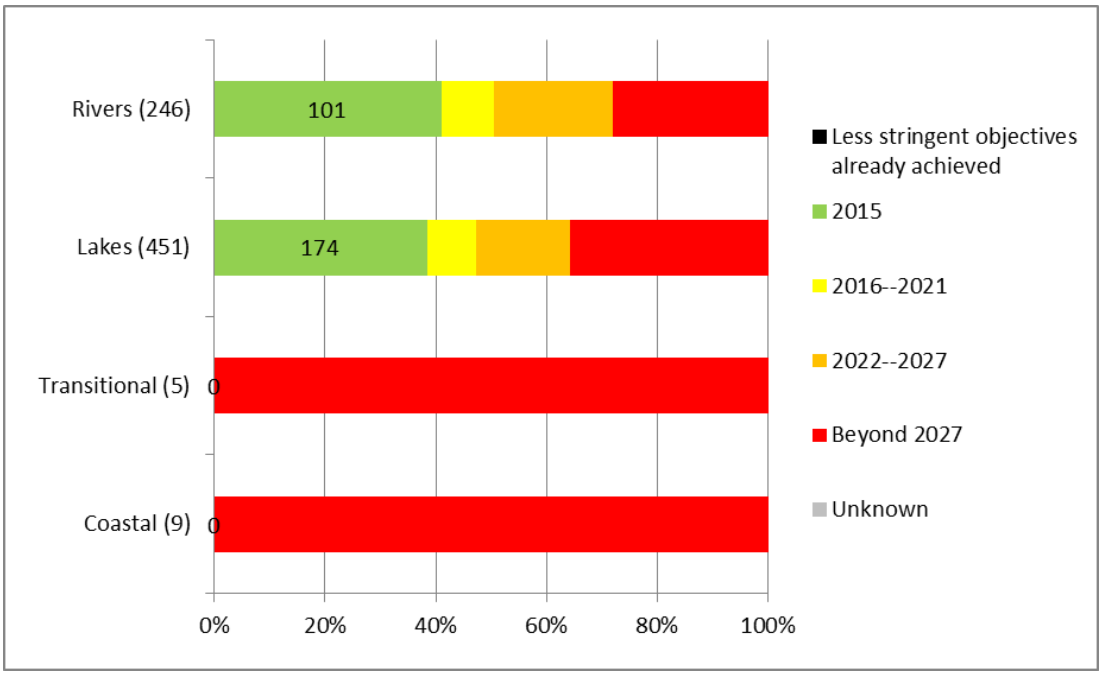
Good chemical status should be reached by 2021 in relation to the revised environmental quality standards, unless Member States apply exemptions under WFD Article 4(4) or less

[32] Please note that following Directive 2013/39/EU, which amended the Environmental Quality Standards Directive, introduced a less stringent annual average environmental quality standard for naphthalene in transitional and cosatal waters. This less stringent environmental quality standard should be taken into account for the determination of surface water chemical status by the 2015 deadline laid down in Article 4 of the WFD.

[33] More stringent environmental quality standards were set for seven substances : Anthracene, Brominated diphenylether, Fluoranthene, Lead and its compounds, Naphthalene, Nickel and its compounds, Polyaromatic hydrocarbons (PAH)

stringent objectives under WFD Article 4(5). Figure 4.5 shows the expected date for the achievement of good chemical status in the Netherlands.

***Figure 4.5 Expected date of achievement of good chemical of surface water bodies in the Netherlands. The number in the parenthesis is the number of water bodies in each category***




*Source: WISE electronic reporting*

Good chemical status of surface water bodies is not expected to be achieved by the end of the third cycle in any of the RBDs in the Netherlands. Overall more than 50 % of surface water bodies in Netherlands are expected to be failing to achieve good chemical status at the end of 2027. All coastal and transitional water bodies in all of the RBDs are expected to achieve good chemical status after 2027. No data on the expected achievement of good chemical status was reported in the first RBMPs. The expected or actual improvement in the chemical status of surface water bodies at the end of the first planning cycle was reported to be as described in the RBMP for all four RBDs.

***Priority substances causing the failure of good chemical status***

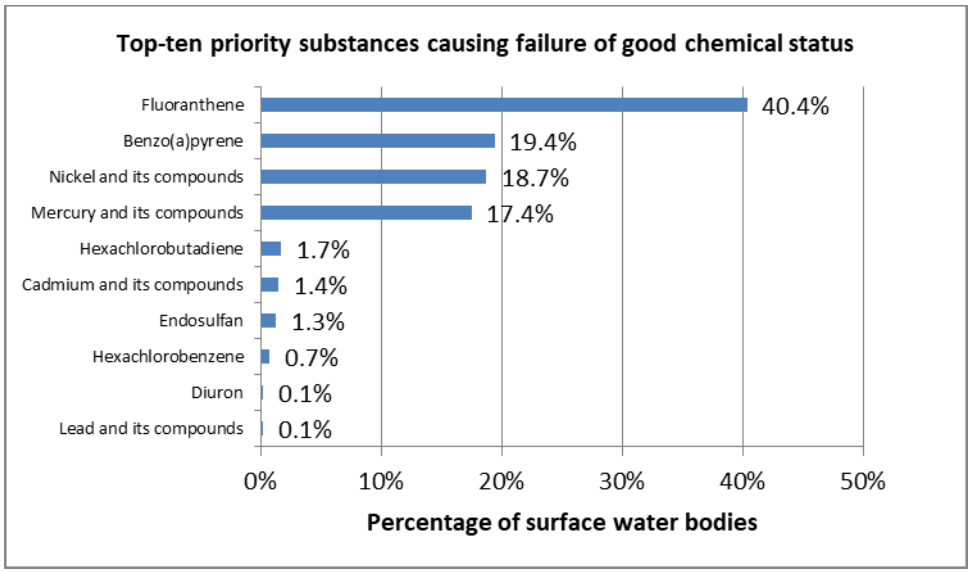
The Netherlands reported exceedances based on the revised, more stringent Environmental Quality Standards from Directive 2013/39/EU.

Priority Substances were reported to be causing failure to achieve good chemical status in surface water bodies in the Netherlands based on the more stringent environmental quality

standards in the revised Environmental Standards Directive (2013/39/EU). The "top-10" substances causing failure are shown in Figure 4.6.

The substances causing the greatest proportion of water bodies to fail good chemical status in the second RBMP were fluoranthene (40 % of water bodies), benzo(a)pyrene (19 %), nickel and its compounds (19 %) and mercury and its compounds (17 %).

***Figure 4.6 The top-10 Priority Substances causing failure to achieve good chemical status in surface water bodies in the Netherlands***




*Source:, WISE electronic reporting*

Overall for surface water bodies in the Netherlands, the largest proportion of exceedances were for the annual average-environmental quality standard for fluoranthene (25 %), benzo(a)pyrene (15 %), nickel and its compounds (14 %) and mercury and its compounds (12 %). Exceedances of maximum allowable concentration environmental quality standards were greatest for fluoranthene (8.5 %).

***Ubiquitous persistent, bioaccumulative and toxic Priority Substances***

According to Article 8(a) of the EQS Directive[34], eight priority substances and groups of priority substances are behaving like ubiquitous, persistent, bioaccumulative and toxic substances[35]. These substances are generally expected to cause widespread exceedances, and their emissions can be challenging to tackle (e.g. due to long-range atmospheric transport and deposition). In order to show the progress made in tackling other priority substances, Member

[34] Amended by Directive 2013/39/EU

[35] Brominated diphenylether, Mercury and its compounds, Polyaromatic hydrocarbons (PAH), Tributyltin, PFOS, dioxins, hexabromocyclodecane and heptachlor

States have the possibility to present the information related to chemical status separately for these substances.

While two ubiquitous persistent, bioaccumulative and toxic Priority Substances (benzo(a)pyrene and mercury ) are reported among the top-10 Priority Substances causing failure of good chemical status, they are not causing failure alone in the vast majority of cases. The influence of these substances on chemical status is limited with only 3 % more surface water bodies failing to achieve good chemical status when they are included in the assessment compared to when they are not. This is illustrated in the 2018 State of Water report of the European Environment Agency[36].

***Priority substances used in the assessment of chemical status compared to those monitored***

The Ems and Rhine RBDs reported to WISE that almost all 41 Priority Substances are both monitored and used in the assessment. The Priority Substances not monitored but included in the assessment of chemical status were: hexachlorocyclohexane, and brominated diphenylethers (congener numbers 28, 47, 99, 100, 153 and 154) and total DDT. However, the Netherlands subsequently clarified that these substances are monitored where emissions, discharges and losses were identified.

The Meuse RBD and Scheldt RBD reported to that almost all 41 Priority Substances are both monitored and used in the assessment. The Priority Substances that are not monitored but are included in the assessment of chemical status include the substances listed above for the Ems RBD and the Rhine RBDs plus 4-nonylphenol. The Netherlands subsequently clarified that these three substances were monitored where emissions, discharges and losses were identified.

***Application of alternative environmental quality standards for water, biota and sediment***

According to the EQS Directive, Member States may opt to apply environmental quality standards for another matrix than the one specified in the directive for a given substance. If they do so, they have to ensure the environmental quality standard they set in the other matrix (or matrices) offers at least the same level of protection as the standard established in the Directive.

[36] https://www.eea.europa.eu/publications/state-of-water (p40-41 of the report). Also available in a more interactive format at : https://tableau.discomap.eea.europa.eu/t/Wateronline/views/WISE_SOW_SWB_Chemical_Status_Maps/SWB_Failing_Good_Chemical_Status_RBD?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display_count=no&:showVizHome=no

The Netherlands reported that all of the environmental quality standards laid down in Annex II of the Directive 2013/39/EU for assessment of the chemical status of bodies of surface water had been applied for all substances used in the assessment of status.

***Use of mixing zones***

Article 4 of the EQS Directive provides Member States with the option of designating mixing zones adjacent to points of discharge in surface waters. Concentrations of priority substances may exceed the relevant environmental quality standard within such mixing zones if they do not affect the compliance of the rest of the surface water body with those standards. Member States that designate mixing zones are required to include within their RBMPs a description of the approaches and methodologies applied to define such zones, and a description of the measures taken to reduce the extent of the mixing zones in the future.

Mixing zones have been designated in all RBDs in the Netherlands. The Netherlands reports that the methodology for the designation of Mixing Zones in these RBDs follows the tiered approach as laid down in the 'Technical Background Document on Identification of Mixing Zones'[37]. The RBMP refer also to the methodology from the "Guidance Immission assessment" which comprises four tiers: Tier 0 (Is pollution present?), Tier 1 (An initial screening if emission is trivial), Tier 2 (simple dilution calculations), Tier 3 (Detailed modelling), and Tier 4 (Research and validation of models). The Netherlands clarified that an assessment of fictive discharges in different types of water bodies was carried out with the above methodology. In each cases, the distance where the Environmental Quality Standards were met was significantly smaller than the maximal size of the mixing zone mentioned in the CIS Guidance Document. The Netherlands also mentioned that the implementation of new Best Available Techniques should further reduce the extent of the mixing zones in the future.

***Background Concentrations and Bioavailability***

The EQS Directive stipulates that Member States have the possibility, when assessing the monitoring results against the environmental quality standard, to take into account:

> (a) natural background concentrations for metals and their compounds, if they prevent compliance with the environmental quality standard; and
>
> (b) hardness, pH or other water quality parameters that affect the bioavailability of metals.

[37] https://circabc.europa.eu/sd/a/78ce94bb-6f1c-4379-87ac-88a18967c4c3/Technical%2520Background%2520Document%2520on%2520the%2520Identification%2520of%2520Mixing%2520Zones.doc+&cd=1&hl=en&ct=clnk&gl=uk

Natural background concentrations for metals and their compounds are taken into consideration where such concentrations prevent compliance with the relevant environmental quality standard in all four RBDs of the Netherlands. The RBMPs indicate that this is a change in approach from the first RBMPs and is a factor that makes direct comparison of the results between the cycles difficult.

Water quality parameters that affect the bioavailability of metals have been taken into account when assessing monitoring results against relevant environmental quality standards in all four of the RBDs in the Netherlands.

## 4.2 Main changes in implementation and compliance since the first cycle

Between the two RBMPs, there was a decrease in the number of sites and waterbodies monitored. This comparison should however be treated with some caution, as the Netherlands pointed towards a possible mistake in the reporting. It may also partly result from the changes in delineation between the two RBMPs (the overall number of surface water bodies has decreased from 724 in the first RBMP to 711 in the second RBMP).

A direct comparison between the first and second RBMPs with regards to the number of surface water bodies in good status, failing to achieve good status and unknown status is not possible because the Netherlands used the more stringent environmental quality standards in the revised Directive (2013/39/EU) as the basis for the assessment in the second RBMP.

No information on the date of expected achievement of good chemical status was reported in the first RBMPs. The revised EQS Directive (2013/39/EU) sets for 2021 the objective of good chemical status in relation to the seven Priority Substances with more stringent environmental quality standards; in relation to the majority of Priority Substances, the objective remains 2015 (with the possibility, in each case to apply exemptions or less stringent objectives when duly justified). Good chemical status of surface water bodies is not expected to be achieved by the end of the third planning cycle in any of the RBDs in the Netherlands. Overall more than 50 % of surface water bodies in the Netherlands are expected to be failing to achieve good chemical status at the end of 2027.

Natural background concentrations for metals and their compounds are taken into consideration where such concentrations prevent compliance with the relevant environmental quality standard in all four RBDs of the Netherlands. The RBMPs indicate that this is a change in approach from the first RBMPs and is a factor that makes direct comparison of the results between the cycles difficult.

## 4.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *The Netherlands should develop the necessary monitoring for Priority Substances in a non-water matrix (such as biota or sediments). In particular, mercury, hexachlorobenzene and hexachlorobutadiene should be monitored in biota for comparison with the biota standards in the EQS Directive, unless water environmental quality standard providing an equivalent level of protection are derived. It should be clear from the plans which Priority Substances are preventing the attainment of good chemical status. The requirement for trend monitoring of Priority Substances in sediment or biota as specified for several substances in EQS Directive Article 3(3) will need to be reflected in the next RBMPs.*

  Assessment: There is no monitoring data reported of Priority Substances in biota or sediment for any water bodies in the Netherlands. Mercury, hexachlorobenzene and hexachlorobutadiene were not monitored in biota but in water, for assessment against alternative standards said by the Netherlands to be as protective as the biota standards.

  The Netherlands does not monitor any Priority Substances in sediment or biota for trend assessment. The Netherlands reports the use of monitoring in the water column for trend assessment.

  The Netherlands has used the more stringent environmental quality standards in the revised EQS Directive (2013/39/EU) and has reported the substances causing the failure of good chemical status in associated water bodies.

  This recommendation has been partially fulfilled.

# Topic 5 Monitoring, assessment and classification of quantitative status of groundwater bodies

## 5.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 5.1.1 Monitoring of quantitative status in groundwater

The total number of groundwater bodies in the Netherlands is 23 (Table 2.2). The number of groundwater bodies and the total groundwater body area have not changed between the two reporting cycles.

All groundwater bodies are subject to monitoring for quantitative status (Table 5.1) as they were previously in the first RBMP. The proportion of water bodies monitored is shown in Table 5.2. The number of monitoring sites for quantitative status is listed in Table 5.3 and shows a decrease by 10 % from 1 045 in the first RBMP to 936 in the second RBMP. The decrease concerns two of four river basin districts (the Meuse and Rhine river basin districts).

Of 23 groundwater bodies 15 are identified as drinking water protected areas, allocated in all river basin districts.

***Table 5.1 Number of water bodies in the Netherlands directly monitored and the purpose of monitoring***

| RBD | Total ground-water bodies directly monitored | Monitoring Purpose | | | | | |
|---|---|---|---|---|---|---|---|
| | | CHE - Chemical status | DRI - Groundwater abstraction site for human consumption | OPE – Operational monitoring | QUA – Quantitative status | SUR – Surveillance monitoring | TRE – Chemical trend assessment |
| NLEM | 2 | | 1 | 1 | 2 | 2 | 2 |
| NLMS | 5 | 2 | 4 | 4 | 5 | 5 | 5 |
| NLRN | 11 | | 10 | 10 | 11 | 11 | 11 |
| NLSC | 5 | | 2 | 2 | 5 | 5 | 5 |

*Source: WISE electronic reports*

*Table 5.2 Proportion of groundwater bodies in the Netherlands monitored for quantitative status*

| RBD | No of groundwater bodies with quantitative monitoring | Total No. groundwater bodies | % of total groundwater bodies monitored for quantitative status |
|---|---|---|---|
| NLEM | 2 | 2 | 100.00 % |
| NLMS | 5 | 5 | 100.00 % |
| NLRN | 11 | 11 | 100.00 % |
| NLSC | 5 | 5 | 100.00 % |

*Source: WISE electronic reports*

*Table 5.3 Number of groundwater monitoring sites in the Netherlands and their purpose*

| RBD | Total ground-water monitoring sites | Monitoring Purpose | | | | | |
|---|---|---|---|---|---|---|---|
| | | CHE - Chemical status | DRI - Groundwater abstraction site for human consumption | OPE – Operational monitoring | QUA - Quantitative status | SUR - Surveillance monitoring | TRE - Chemical trend assessment |
| NLEM | 92 | (59) | 7 | 7 | 33 | 85 | 52 |
| NLMS | 531 | 26(372) | 54 | 54 | 161 | 479 | 320 |
| NLRN | 1393 | (702) | 138 | 138 | 713 | 1 255 | 564 |
| NLSC | 62 | (40) | 5 | 5 | 29 | 57 | 35 |

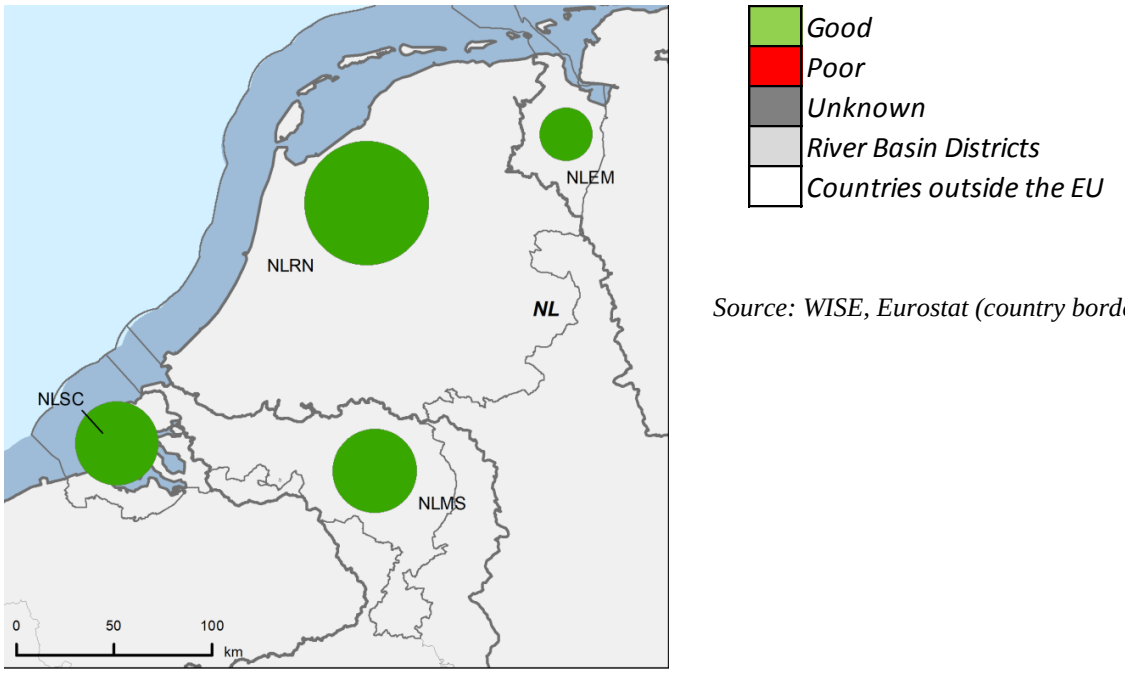
*Source: WISE electronic reporting. The numbers in brackets were subsequently provided by the Netherlands and do not match the data reported to WISE.*

### 5.1.2 Assessment and classification of quantitative status for groundwater

Map 5.1 displays the most recently assessed status quantitative status of groundwater bodies for.

*Map 5.1 Map of the most recently assessed quantitative status of groundwater bodies*

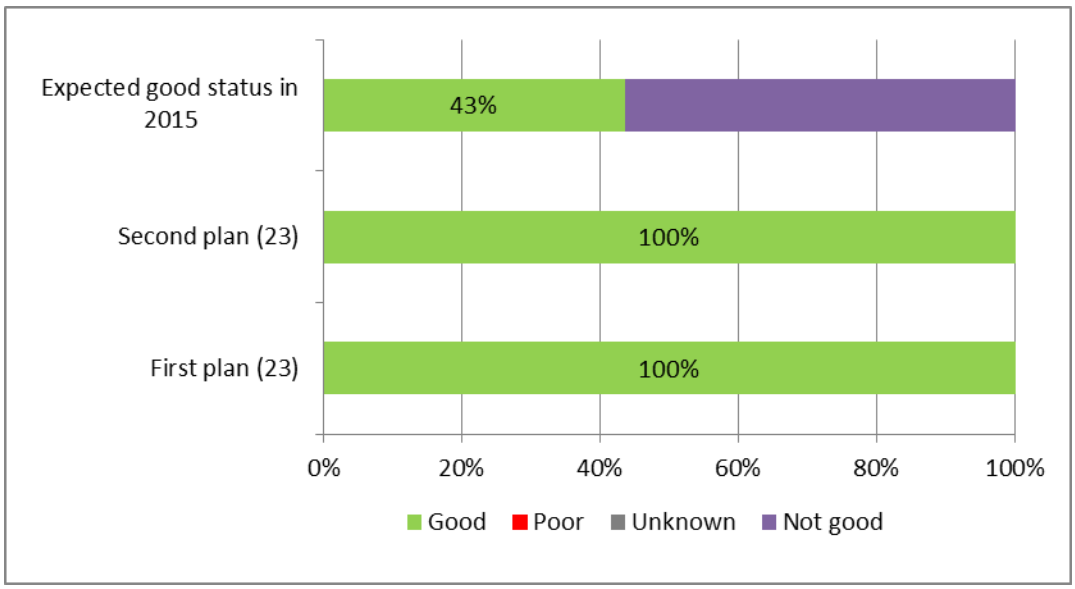
*Note: Standard colours based on WFD Annex V, Article 2.2.4.*




*Source: WISE, Eurostat (country borders)*

It shows that all 23 groundwater bodies (100 %) were of good quantitative status (Figure 5.1) and they had already been in good status in the first RBMP.

***Figure 5.1*** ***Quantitative status of groundwater bodies in the Netherlands for the second RBMP, for the first RBMP and expected in 2015. The number in parenthesis is the number of groundwater bodies for both cycles. Note: the period of the assessment of status for the first RBMP is not known.***




*Source: WISE electronic reports*

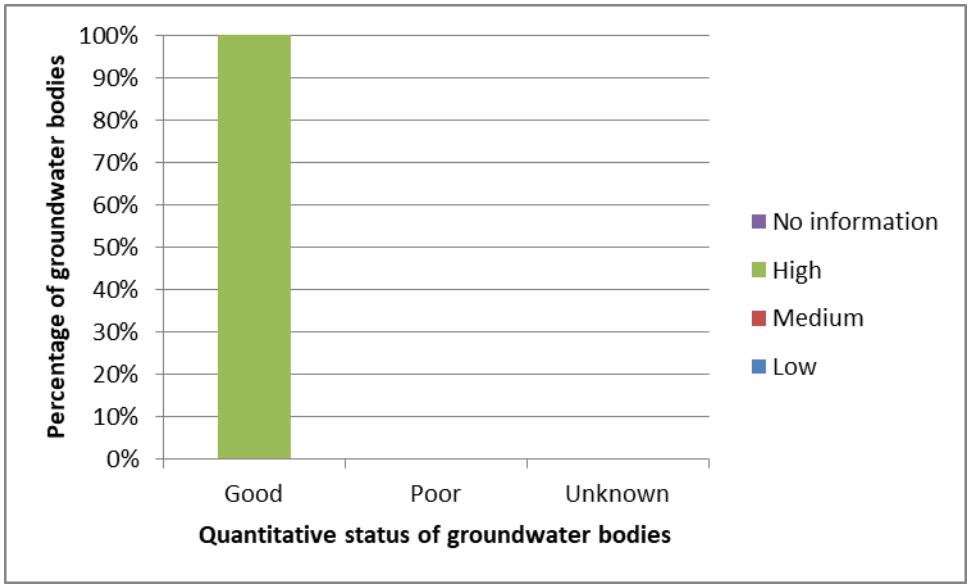
Figure 5.2 shows all groundwater bodies have a high confidence in status classification. All groundwater bodies had a clear status in the first cycle and still have it in the current one. The expected date of achievement of good chemical status in the Netherlands is shown in Figure 5.3.

For all four river basin districts water balance was assessed by a comparison of annual average groundwater abstraction against the 'available groundwater resource' for every groundwater body.

In all river basin districts the criterion of 'available groundwater resource' has been fully applied in accordance with WFD Article 2(27). In all river basin districts all environmental objectives have been considered in the status assessment.

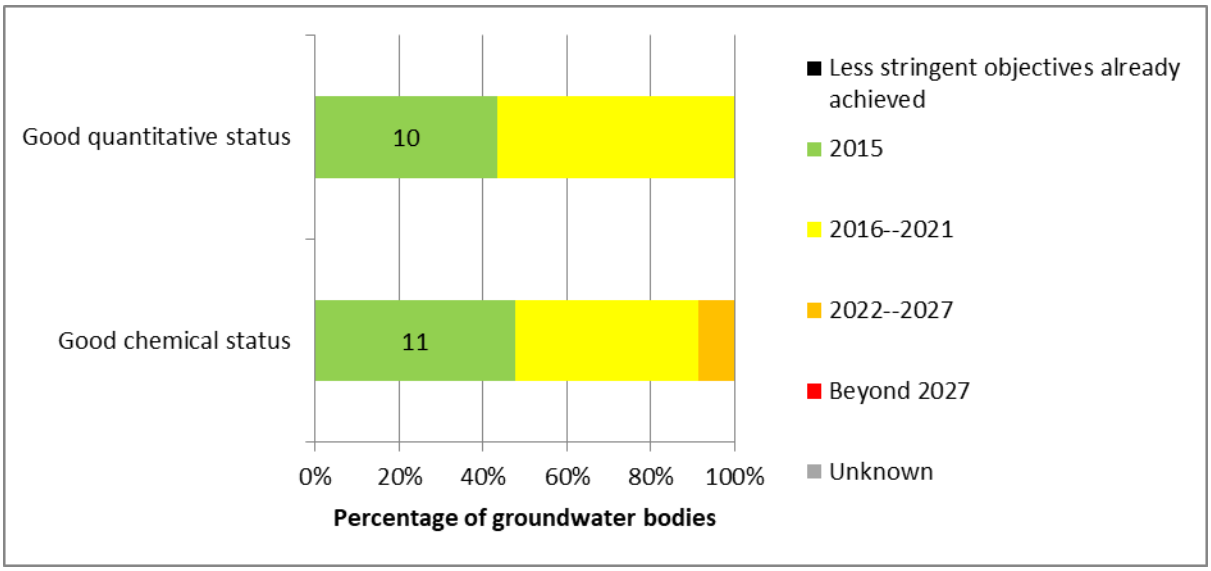
There is no groundwater body at risk of failing good quantitative status.

*Figure 5.2 Confidence in the classification of quantitative status of groundwater bodies in the Netherlands based on the most recent assessment of status*




*Source: WISE electronic reports*

*Figure 5.3 Expected date of achievement of good quantitative and good chemical status of groundwater bodies in the Netherlands. 23 groundwater bodies delineated for second RBMP*




*Source: WISE electronic reports*

### 5.1.3 Consideration of groundwater associated surface waters and/or groundwater dependent ecosystems

In all river basin districts groundwater associated surface waters have been reported, are not related to risk and they have been considered in status assessment.

For all river basin districts groundwater dependent terrestrial ecosystems have been reported, are not related to risk and have been considered in status assessment. Also, the needs of these ecosystems have been considered in status assessment in all river basin districts.

## 5.2 Main changes in implementation and compliance since the first cycle

The data reported in WISE did not identify any changes between the first and the second RBMP. All 23 groundwater bodies remained unchanged since the first RBMP.

The RBMPs and background documents assessment revealed that there is no separate chapter in each of the RBMPs that summarise the changes in the RBMP compared to the first cycle. However, throughout the documents, there are references to changes or adaptations that have been carried out. The documents need to therefore be read completely and thoroughly in order to obtain an understanding of specific changes.

## 5.3 Progress with Commission recommendations

There were no Commission recommendations based on the first RBMPs and first PoM for this topic.

# Topic 6 Monitoring, assessment and classification of chemical status of groundwater bodies

## 6.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 6.1.1 Monitoring of chemical status in groundwater

The total number of groundwater bodies in the Netherlands is 23 (Table 2.2). All groundwater bodies are subject to surveillance monitoring (Table 5.1) and 17 groundwater bodies are subject to operational monitoring.

Neither the number of groundwater bodies nor the total groundwater body area has changed between the reporting cycles.

The number of groundwater bodies with surveillance monitoring remained at 23 in the first RBMP and in the second RBMP. The number of monitoring sites is listed in Table 5.3 and shows an increase from 1 164 in the first RBMP to 1 876 in the second RBMP. The number of operational monitoring sites has decreased since the first RBMP, from 213 (in nine groundwater bodies) to 204 (in 17 groundwater bodies).

There was no groundwater body identified at risk of failing good chemical status but some substances were reported to cause risk. Except for nitrate in the Meuse RBD, none of the other WFD core parameters of ammonium, electrical conductivity, oxygen and pH is monitored[38].

### 6.1.2 Assessment and classification of chemical status in groundwater

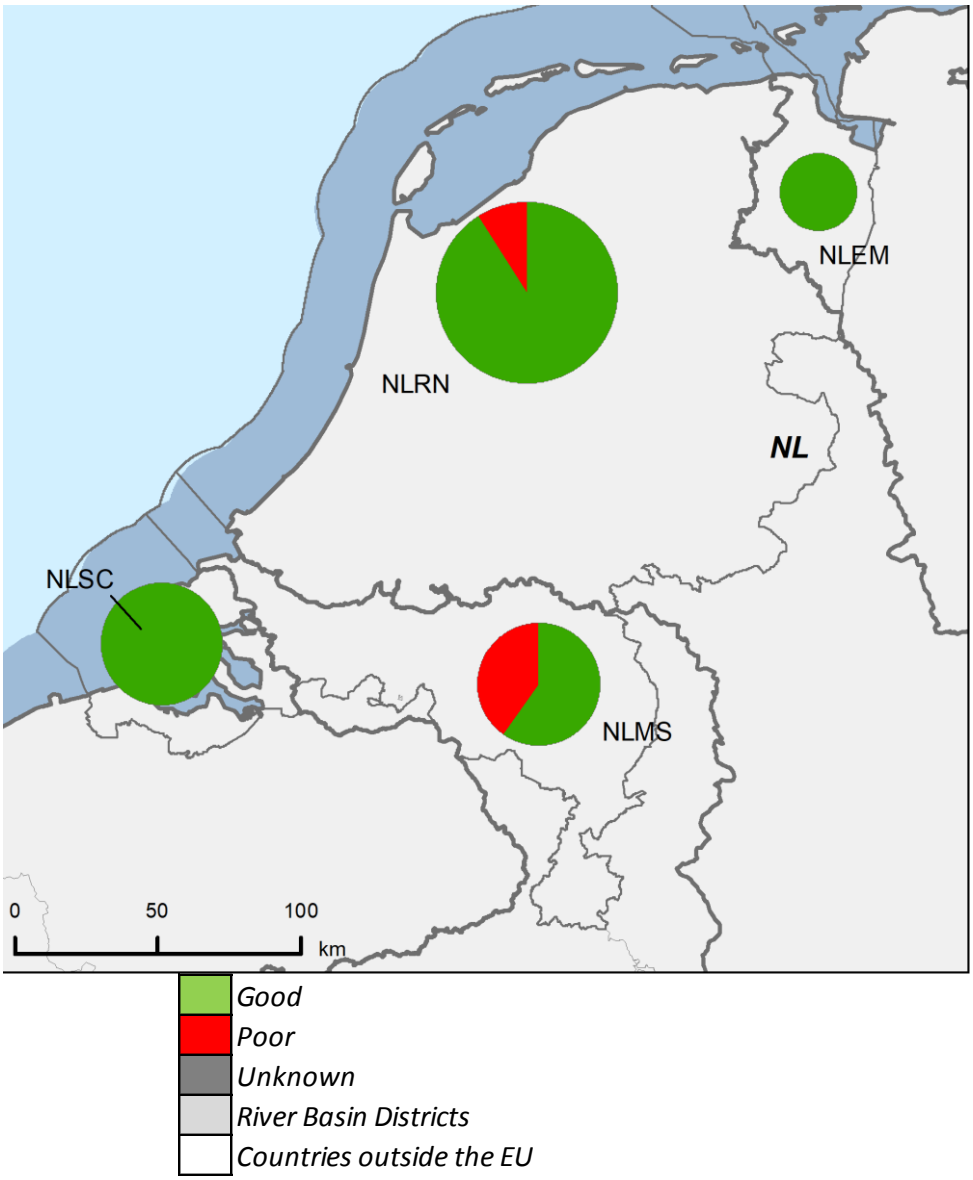
Map 6.1 and Figure 6.1 display the chemical status of groundwater bodies for the most recently assessed status. It shows that 20 of 23 groundwater bodies (87 %) were of good chemical status, and the remaining three groundwater bodies (13 %) are failing good status. In terms of area this means that about 3.7 % are failing good chemical status.

Figure 6.2 shows the confidence in status classifications. All groundwater bodies had and still have a clear status, in the first and in the second RBMP.

[38] The Netherlands subsequently clarified, that in fact all WFD core parameters are monitored and there seems to be a reporting error.

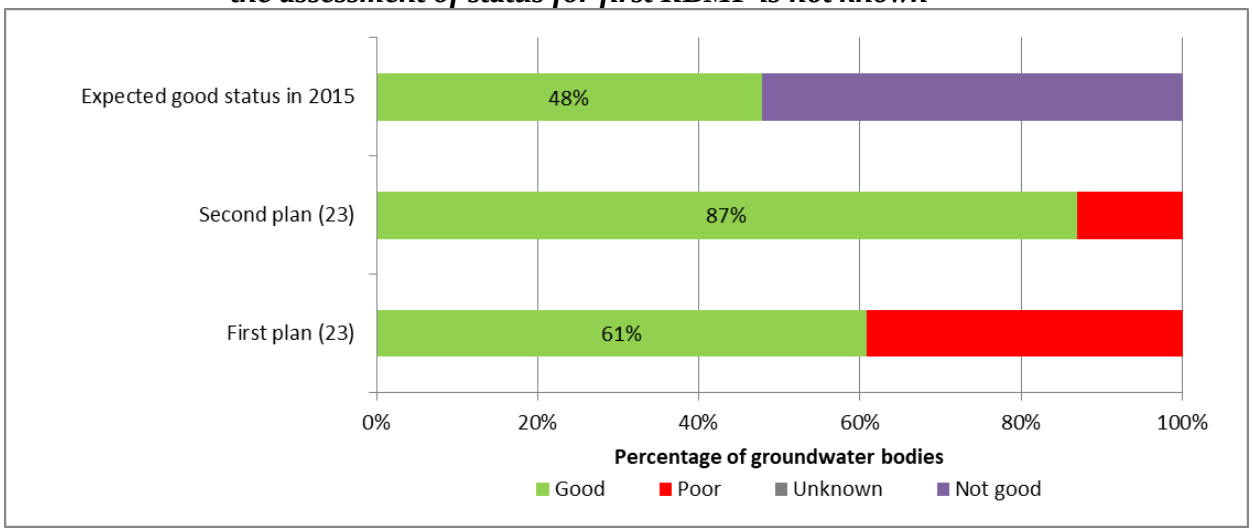
***Map 6.1*** ***Map of chemical status of groundwater bodies in the Netherlands based on the most recently assessed status of the groundwater water bodies***

*Note: Standard colours based on WFD Annex V, Article 2.4.5.*



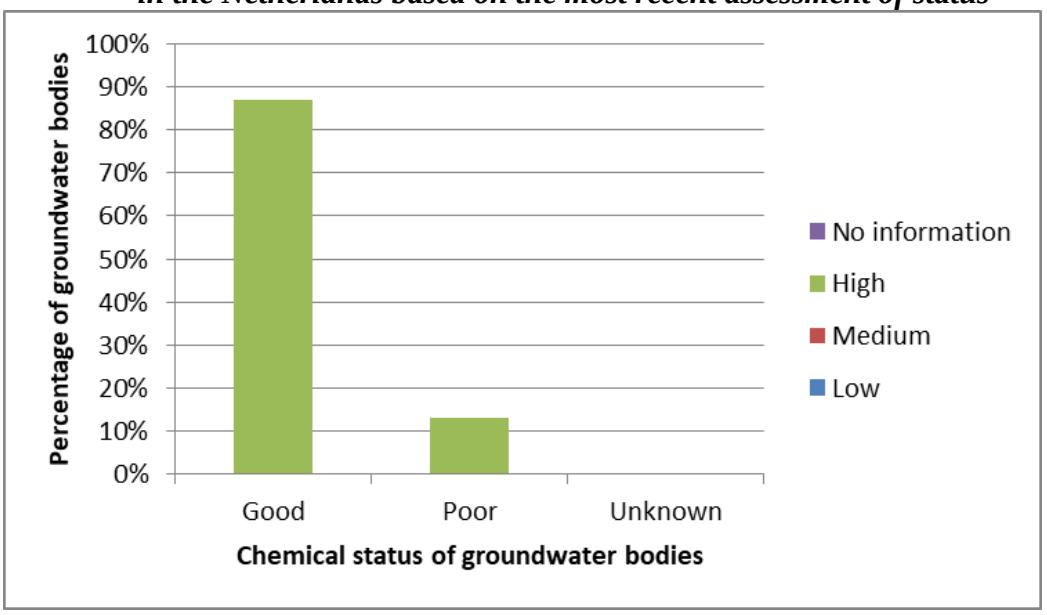

*Source: WISE, Eurostat (country borders)*

***Figure 6.1*** ***Chemical status of groundwater bodies in the Netherlands for the second RBMP, for the first RBMP and expected in 2015[39]. The number in brackets is the number of groundwater bodies for both cycles. Note the period of the assessment of status for the second RBMP was 2007 to 2013. The year of the assessment of status for first RBMP is not known***




*Source: WISE electronic reporting*

***Figure 6.2*** ***Confidence in the classification of chemical status of groundwater bodies in the Netherlands based on the most recent assessment of status***




*Source: WISE electronic reports*

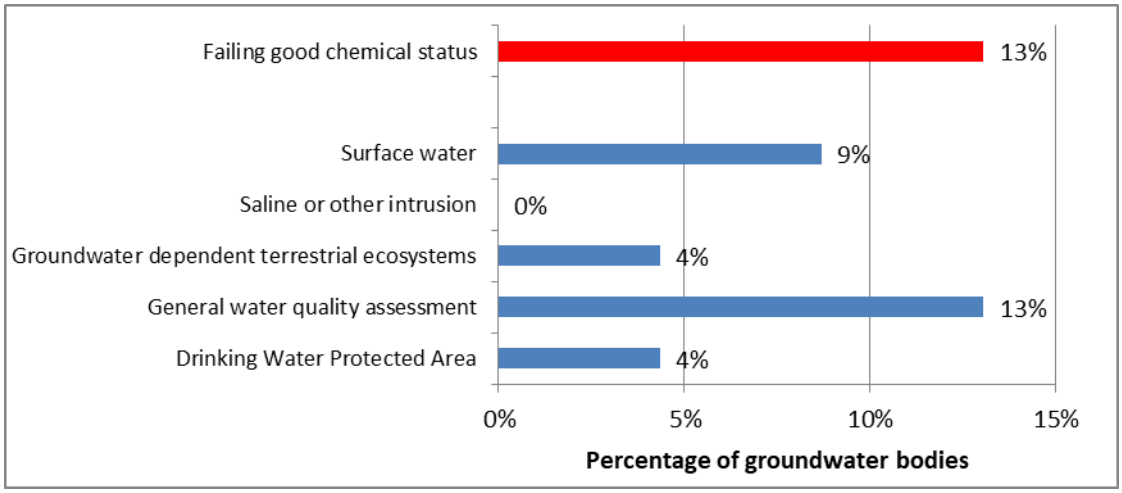
The total number of groundwater bodies failing good chemical status decreased since the first RBMP from nine (39 %) to three (13 %) groundwater bodies (Figure 25) (from 30 % to 4 % of the total groundwater body area). The RBMP and background documents assessment did not

[39] The Netherlands informed the Commission that this is partly due to changes in the reporting methodology.

find any explanation for this improvement[40]. The expected date of achievement of good chemical status in the Netherlands is shown in Figure 5.3.

Reasons for the failure of good chemical status of groundwater bodies are shown in Figure 6.3. For three groundwater bodies the general assessment of the chemical status for the groundwater body as a whole was failed. This assessment considers the significant environmental risk from pollutants across a groundwater body and a significant impairment of the ability to support human uses. One groundwater body failed the drinking water test which means that the requirements of Drinking Water Protected Areas had not been met. Two groundwater bodies are failing the groundwater associated surface water test which means that there is diminution of the status of a groundwater associated surface water. One groundwater body is failing the groundwater dependent terrestrial ecosystem test which means that there is damage to groundwater dependent terrestrial ecosystems.

***Figure 6.3 Reasons for failing good chemical status in the Netherlands for the most recent assessment of status***




*Source: WISE electronic reporting*

**Notes:**

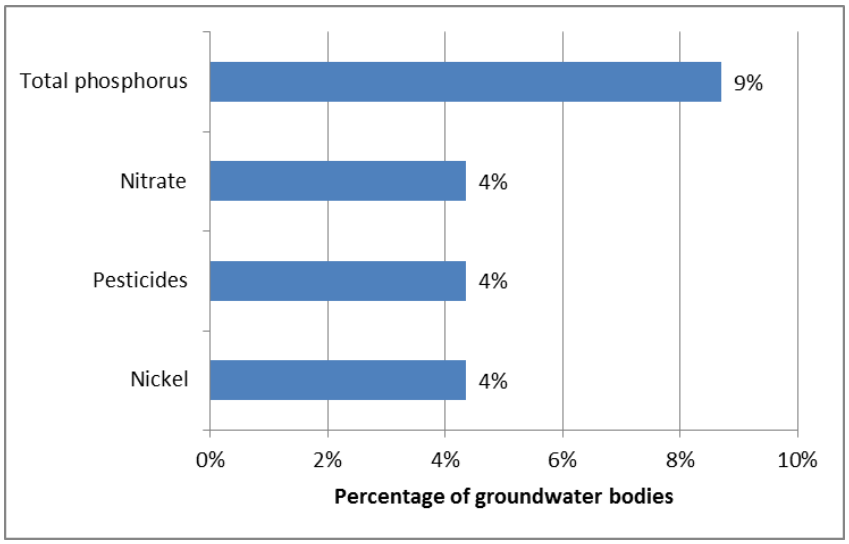
'Surface water' = Failure to achieve Environmental Objectives (Article 4 WFD) in associated surface water bodies or significant diminution of the ecological or chemical status of such surface water bodies.
'Groundwater dependent terrestrial ecosystems' = Significant damage to terrestrial ecosystems which depend directly on the groundwater body.
'Saline or other intrusion' = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.

'Drinking Water Protected Area' = Deterioration in quality of waters for human consumption.
'General water quality assessment' = Significant impairment of human uses; significant environmental risk from pollutants across the groundwater body.
The percentages presented are relative to the total number of groundwater bodies

[40] The Netherlands subsequently clarified, that the explanation might be found in the different methodology used.

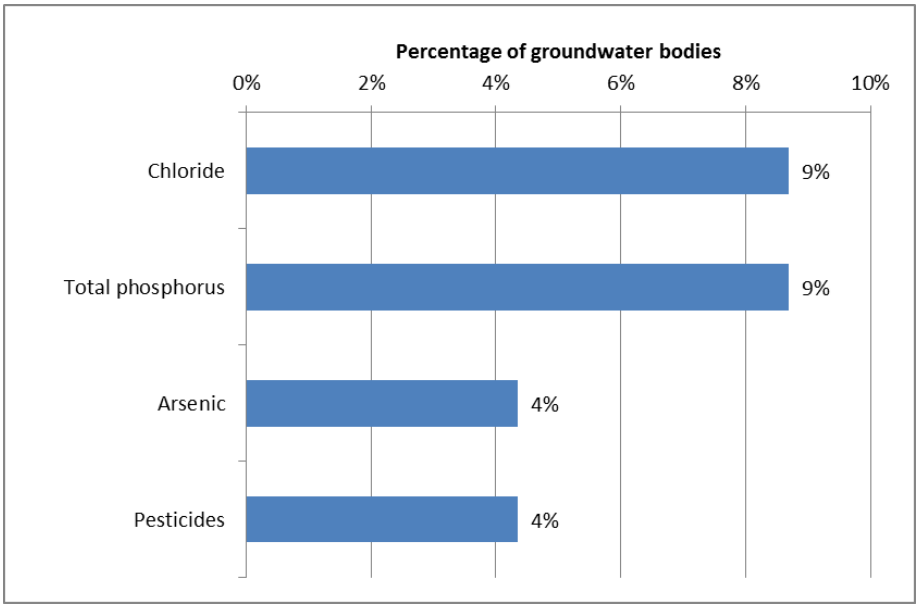
Figure 6.4 shows the top 10 pollutants causing failure of status and sustained upward trends. Figure 6.5 shows the pollutants causing failure of status and the causing a sustained upward trend.

***Figure 6.4 Top groundwater pollutants causing failure of good chemical status in the Netherlands***




*Source: WISE electronic reporting*
*Note: only four pollutants reported causing failure.*

***Figure 6.5 Top pollutants with upward trends in groundwater bodies in the Netherlands***




*Source: WISE electronic reporting*

The calculation of the extent of exceedance of a groundwater quality standard or a groundwater threshold value is in all four RBDs based on the number of monitoring sites in the groundwater body.

Few pollutants or indicators of pollution were reported as causing a risk of failure of good chemical status but no groundwater bodies were identified at risk of failing good chemical status. Groundwater threshold values have not been established for these pollutants[41,42]. The RBMP and assessment of associated background documents did not find any indication that the Groundwater Directive[43] Annex II substances have been considered. In all RBDs natural background levels have been considered in the establishment of groundwater threshold values.

A trend and trend reversal methodology is available and assessments have been performed in all RBDs.

### 6.1.3 Consideration of groundwater associated surface waters and/ or groundwater dependent ecosystems

In all RBDs groundwater associated surface waters have been reported, they are not related to risk and diminution and damage to these ecosystems have been considered in status assessment in all RBDs.

Groundwater dependent terrestrial ecosystems have been reported in all RBDs, they are not related to risk and they have been considered in status assessment in all RBDs.

It was reported that groundwater associated aquatic ecosystems and groundwater dependent terrestrial ecosystems have been partially considered in the establishment of groundwater threshold values. Nevertheless, there is no groundwater body reported at risk.

## 6.2 Main changes in implementation and compliance since the first cycle

The monitoring situation remains comprehensive although the number of monitoring sites was slightly reduced.

The status situation improved significantly as the groundwater body area failing good status dropped from 30 % of the first RBMP to only 4 % of the second RBMP. An explanation for this improvement was not found in the RBMP and supporting background documents.

[41] The Netherlands clarified that the threshold values are already established ( https://www.waterkwaliteitsportaal.nl/Beheer/Data/Achtergronddocumenten) and informed that work is ongoing to evaluate and update the threshold values.

[42] The Netherlands subsequently clarified that there might have been a misunderstanding in the electronic reporting. For three groundwater bodies, which are at poor status but not at risk, indeed indicators have been reported.

[43] Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006L0118-20140711

The Netherlands subsequently explained that the improvement might be due to the fact that more data were available for the second RBMPs compared with the first one. Also the change in the assessment methods between the first and second RBMPs was an additional factor that led to this improvement.

## 6.3 Progress with Commission recommendations

There were no Commission recommendations based on the first RBMPs and first PoM for this topic.

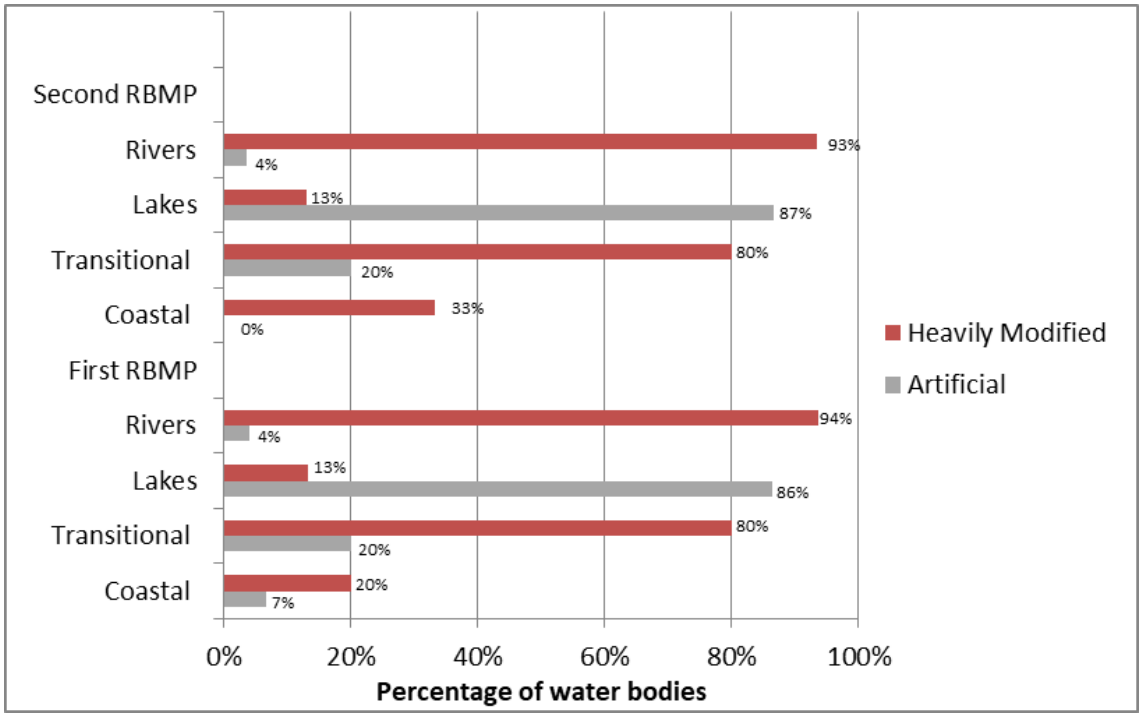
# Topic 7 Designation of Heavily Modified and Artificial Water Bodies and definition of Good Ecological Potential

## 7.1 Assessment of implementation and compliance with WFD requirements in the second cycle for designation

### 7.1.1 Designation of Heavily Modified and Artificial Water Bodies

In the Netherlands 41.6 % of the surface water bodies are designated as heavily modified water bodies and 56.4 % as artificial water bodies (Figure 7.1).

***Figure 7.1 Proportion of total water bodies in each category in the Netherlands that has been designated as heavily modified or artificial***




*Source: WISE electronic reports*

The main water uses for water bodies (in all categories) that are designated as heavily modified are flood protection and transport. The wider environment is also used as reason for heavily modified water bodies designation for sixteen heavily modified lakes, seven heavily modified rivers and two heavily modified transitional water bodies.

The main physical alterations of river heavily modified water bodies are channelisation/straightening/bed stabilisation/bank reinforcement, weirs/dams/reservoirs and

land drainage. The main physical alterations of heavily modified water bodies in the other water categories are channelisation/straightening/bed stabilisation/bank reinforcement, weirs/dams/reservoirs and locks.

The RBMPs contain brief descriptions of how significant adverse effects of restoration measures on the use and the wider environment have been defined (as part of the methodology). Further details on the assessment of significant adverse effects of restoration measures (WFD article 4(3)(a)) and of "other means" (WFD article 4(3)(b)) at water body level can be found in factsheets provided on a portal (Waterkwaliteitsportaal).

### 7.1.2 Definition of Good Ecological Potential for Heavily Modified and Artificial Water Bodies

Good ecological potential is reported to be defined at water body level in all four RBDs, using a hybrid approach which combines elements of the Common Implementation Strategy Guidance approach (approach based on biological quality elements as illustrated in Common Implementation Strategy Guidance No 4[44]) and the Prague approach (based on the identification of mitigation measures).

Good ecological potential is also reported to have been defined in terms of biology. The biological quality element for which biological values have been derived to define maximum ecological potential and good ecological potential are benthic invertebrates, fish, phytoplankton and other aquatic flora. According to the WISE report, a comparison between good ecological potential and good ecological status has been made. The good ecological potential definition for biological quality elements is based upon the assessment of biological quality element values for good ecological status of the closest comparable water body type, but with maximum values for good ecological potential that may be lower than those for good ecological status (at least for one biological quality element the GEP value is below GES).

Mitigation measures for defining good ecological potential have been reported in WISE for all four RBDs. The expected ecological changes due to the mitigation measures are described in a qualitative way with reference to biology.

Biological quality element assessment methods sensitive to hydrological and morphological changes are reported for rivers, lakes, transitional waters and coastal waters. For rivers, methods for assessing fish and, for coastal waters, methods for assessing angiosperms and

[44] https://circabc.europa.eu/sd/a/f9b057f4-4a91-46a3-b69a-e23b4cada8ef/Guidance%20No%204%20-%20heavily%20modified%20water%20bodies%20-%20HMWB%20(WG%202.2).pdf

benthic invertebrates are reported as sensitive to altered habitats due to hydrological and morphological changes.

## 7.2 Main changes in implementation and compliance since the first cycle

There are only minor changes in the designations of heavily modified water bodies and artificial water body since the first RBMP for rivers, lakes and coastal waters. No changes are noted for transitional waters (see Figure 7.1).

For river heavily modified water bodies, there is only a small reduction in their number in the Meuse RBD and the Rhine RBD (respectively, two and six heavily modified water bodies fewer). For river artificial water bodies, there are minor changes in the Meuse RBD (one additional artificial water body) and in the Rhine RBD (two river artificial water bodies fewer).

For lake heavily modified water bodies, there are no major changes; in the Rhine RBD, there is one heavily modified lake water body fewer compared to the first cycle. For lake artificial water bodies, there are no major changes either; in the Meuse RBD, there are three additional lake artificial water bodies, while in the Rhine RBD, there is one lake artificial water body fewer.

For coastal waters, there are no changes in heavily modified water body designations. The only coastal artificial water body, which was designated in the first cycle in the Scheldt RBD, has now been de-designated.

Concerning the good ecological potential definition, no changes to the methodology have been noted. The RBMPs refer to a methodology paper dating to 2005, which was used in the first RBMPs.

## 7.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation (report 2015): *Revise the designation of heavily modified water bodies in the second RBMPs to ensure that the restoration of water bodies is a strong driver for the improvement of the status of water bodies.*

- Recommendation (report 2012): *The designation of heavily modified water bodies should comply with all the requirements of Article 4(3). The assessment of 'significant adverse effects' on their use or the environment and the lack of 'significantly better environmental options' should be specifically mentioned in the RBMPs.*

  Assessment: The RBMPs contain brief descriptions of how significant adverse effects of restoration measures on the use and the wider environment have been defined (as part of the methodology). The Netherlands has also set up a system of factsheets with detailed information for each water body on the outcomes of assessments under WFD articles 4(3)(a) and 4(3)(b). These factsheets contain descriptions of the assessment of restoration measures and their significant adverse effects on the use and the wider environment as well as on the assessment of "other means" to achieve the beneficial objectives of the modifications, in order to reach decisions on the designation.

  Only minor changes have been noted to the numbers of designations of heavily modified water bodies and artificial water body for rivers, lakes and coastal waters. This cannot be expected for artificial water bodies – in the Netherlands this concerns mostly man-made channels and ditches. As mentioned above, the RBMPs include reference to a portal with a system of factsheets with detailed information for each water body and a description of the outcomes of the designation tests. The motivations behind non-considerations of restoration measures and "other means" are described.

  Therefore, this recommendation is considered as fulfilled.

# Topic 8 Environmental objectives and exemptions

## 8.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 8.1.1 Environmental objectives

Environmental objectives are defined in Article 4 of the WFD. The aim is long-term sustainable water management based on a high level of protection of the aquatic environment. Article 4(1) defines the WFD general objective to be achieved in all surface and groundwater bodies, i.e. good status by 2015. Within that general objective, specific environmental objectives are defined for heavily modified water bodies (good ecological potential and good chemical status by 2015[45]), groundwaters (good chemical and quantitative status by 2015) and for Protected Areas (achievement of the objectives of the associated Directive by 2015 unless otherwise specified).

Environmental objectives for ecological and chemical status in surface water and chemical and quantitative status in groundwater have been reported in all RBDs. A significant number of exemptions is still applied in the Netherlands.

Member States are also required to specify additional environmental objectives and standards in Protected Areas where these are required to ensure that the requirements of the associated Directives are met. An assessment of such additional objectives for the Netherlands is provided in Chapter 15 of this report.

Assessments of the current status of surface and groundwater bodies in the Netherlands are provided elsewhere in this report: for ecological status/potential of surface waters (Chapter 3); chemical status of surface waters (Chapter 4); quantitative status of groundwater bodies (Chapter 5); chemical status of groundwater bodies (Chapter 6); status of surface and groundwater bodies associated with Protected Areas (Chapter 15).

For the second RBMPs, Member States are required to report the date by which they expect each surface and groundwater body to meet its environmental objectives. This information is summarised for the Netherlands elsewhere in this report: for ecological status/potential of surface waters (Chapter 3); chemical status of surface waters (Chapter 4); quantitative status of groundwater bodies (Chapter 5); chemical status of groundwater bodies (Chapter 6).

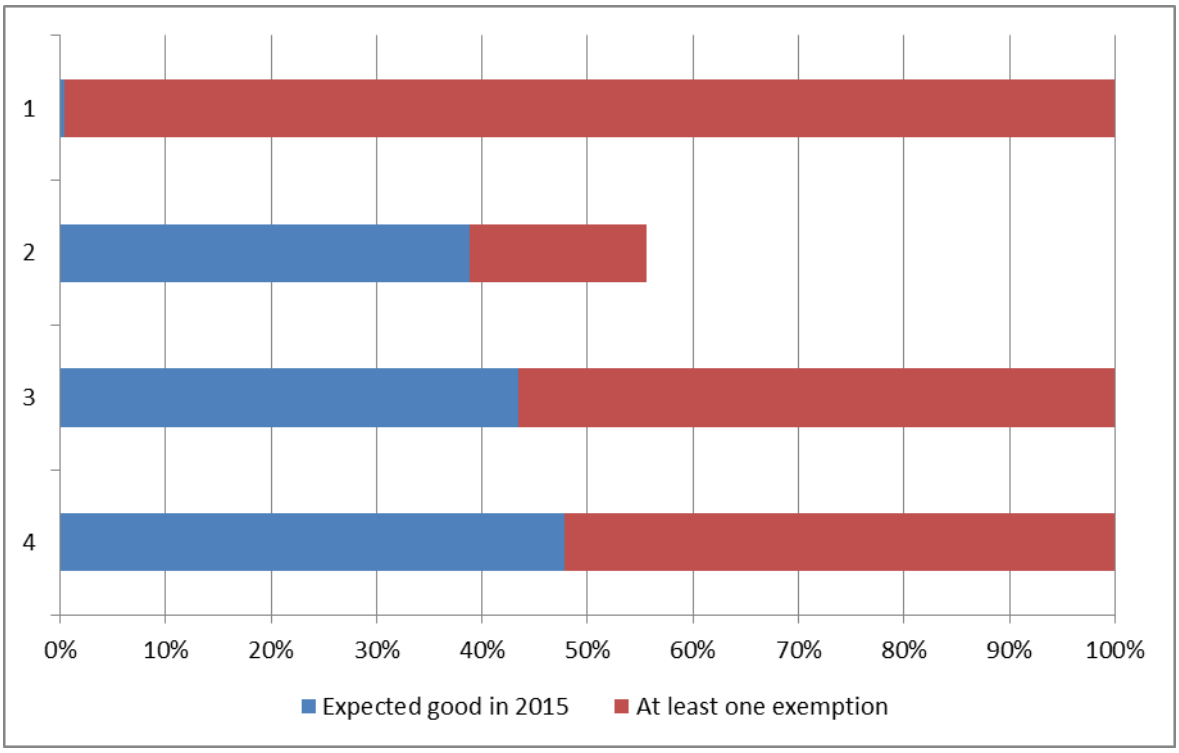
[45] For priority substances newly introduced by Directive 2013/39/EU, good status should be reached by 2027, and for the 2008 priority substances, for which the Environmental Quality Standards were revised by Directive 2013/39/EU, good status should be reached in 2021.

### 8.1.2 Exemptions

Where environmental objectives are not yet achieved, exemptions can be applied if the respective conditions are met and the required justifications are provided in the RBMP.

Figure 8.1 summarises the percentage of water bodies expected to be at least in good status in 2015 and those subject to the use of at least one exemption in the Netherlands for the four main sets of environmental objectives. The Netherlands informed, in the frame of the assessment, that the "forecast method" has been applied, where exemptions are applied based on the expected status in 2021 taking into account the effects of the implementation of the PoM. According to the reported data, exemptions are most widely applied in relation to ecological status/potential status objectives.

***Figure 8.1*** ***Water bodies reported by The Netherlands expected to be in at least good status in 2015 and use of exemptions. 1 = Surface water body ecological status/potential; 2 = Surface water body chemical status; 3 = Groundwater body quantitative status; 4 = Groundwater body chemical status***



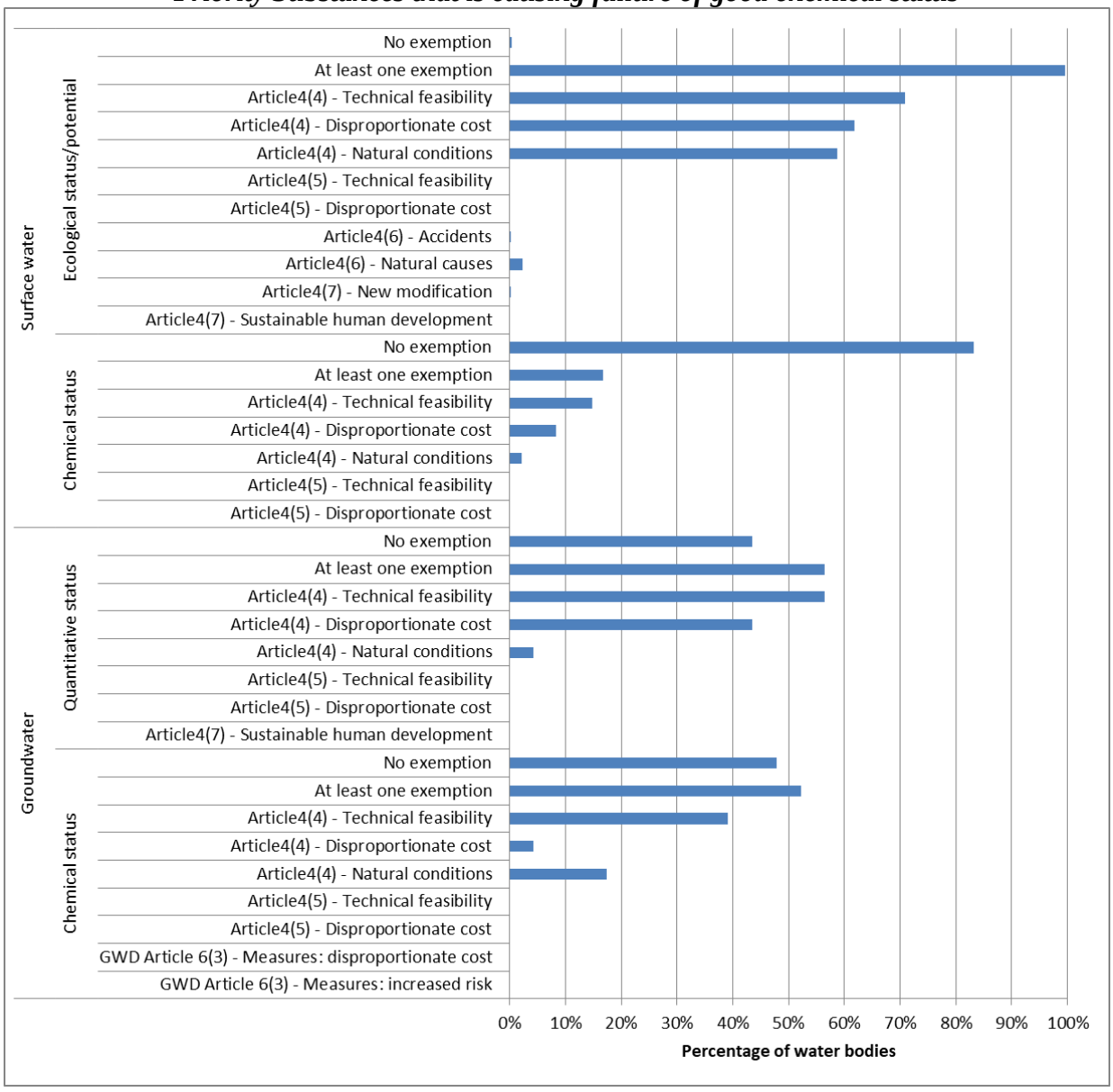

*Source: WISE electronic reports. For some water bodies the date for achievement of good status is unknown.*

Article 4 of the WFD allows for different exemptions to the objectives, provided a set of conditions is fulfilled. These exemptions include the provisions in Article 4(4) - extension of deadlines beyond 2015; Article 4(5) - less stringent objectives; Article 4(6) - temporary deterioration; and Article 4(7) - deterioration / non-achievement of good status / potential due

to new modifications / new sustainable human development activities. Article 4(4) exemptions may be justified by: disproportionate cost, technical feasibility or natural conditions, and Article 4(5) by disproportionate cost or technical feasibility.

Figure 8.2 summarises the percentage of water bodies subject to each type of exemption (and reason) in relation to the four types of environmental objective in the Netherlands.

***Figure 8.2*** ***Type of exemptions applied to surface water and groundwater bodies for the second RBMP in the Netherlands. Note: ecological status and groundwater quantitative status exemptions are reported at the water body level. Chemical exemptions for groundwater are reported at the level of each pollutant causing failure of good chemical status, and for surface waters for each Priority Substances that is causing failure of good chemical status***




*Source: WISE electronic reports*

The Netherlands subsequently informed the Commission that a system of factsheets exists which contains information relevant to the exemptions for all individual water bodies. Even if the factsheets have been reported to WISE they could not be assessed due to technical problems at the time of the assessment (broken links)[46].

***Application of Article 4(4)***

The number of exemptions under Article 4(4) has increased. Two water bodies were expected to achieve good ecological status/potential in 2015. The Netherlands informed in the frame of the assessment that for chemical status, Article 4(4) exemptions are applied to 100 % of the surface water bodies due to ubiquitous substances.

As in the first RBMP, the exemptions according to Article 4(4) were justified on grounds of technical feasibility, disproportionate costs and natural conditions.

For technical feasibility a range of justifications are provided, for example the uncertainty of available land due to voluntary terms and making use of concurrence of projects.

Disproportionate costs have been justified by affordability and cost-benefit assessment in groundwaters and by affordability and social and sectoral impacts in surface waters. The RBMPs mention disproportionate costs in a generic way referring to the water body factsheets for further details. For some water bodies the costs were put in perspective of a disproportional increase in local taxes (of the regional water authorities), and measures were therefore postponed.

The reported justifications for natural conditions are remaining diffuse pollution from leaching pollutants present in the environment (e.g. sediments) after the source has been reduced and the recovery time of ecosystems.

The main pressures to surface waters leading to the justification of exemptions arose from a broad range of activities including urbanisation, industry, agriculture, litter, abstraction and morphological activities causing changes in hydro-morphology (Table 8.1). The main drivers behind these pressures were transport and agriculture. The impacts causing the exemptions were for all RBDs nutrient pollution, altered habitats due to morphological changes and chemical pollution.

46 https://www.waterkwaliteitsportaal.nl/Beheer/Data/Publiek?viewName=Factsheets&year=2015&month=December

*Table 8.1* ***Pressure on surface water bodies responsible for Priority Substances in the Netherlands failing to achieve good chemical status and for which exemptions have been applied***

| Significant pressure on surface water bodies | Failing Priority Substances | Article 4(4) - Technical feasibility exemptions | Article 4(4) - Disproportionate cost exemptions | Article 4(4) - Natural conditions exemptions |
|---|---|---|---|---|
| | Number | Number | Number | Number |
| 1.1 - Point - Urban waste water | 6 | 56 | 46 | 3 |
| 1.2 - Point - Storm overflows | 5 | 15 | 6 | 3 |
| 1.3 - Point - IED plants | 6 | 21 | 19 | 0 |
| 1.9 - Point - Other | 4 | 4 | 4 | 0 |
| 2.1 - Diffuse - Urban run-off | 2 | 25 | 0 | 1 |
| 2.2 - Diffuse - Agricultural | 8 | 74 | 24 | 19 |
| 2.4 - Diffuse - Transport | 6 | 24 | 19 | 1 |
| 2.6 - Diffuse - Discharges not connected to sewerage network | 5 | 5 | 5 | 0 |
| 2.7 - Diffuse - Atmospheric deposition | 8 | 67 | 46 | 5 |
| 3.1 - Abstraction or flow diversion - Agriculture | 5 | 19 | 13 | 5 |
| 3.3 - Abstraction or flow diversion - Industry | 7 | 29 | 28 | 0 |
| 3.4 - Abstraction or flow diversion - Cooling water | 6 | 26 | 24 | 0 |
| 3.7 - Abstraction or flow diversion - Other | 6 | 32 | 32 | 0 |
| 4.1.1 - Physical alteration of channel/bed/riparian area/shore - Flood protection | 8 | 85 | 74 | 3 |
| 4.1.2 - Physical alteration of channel/bed/riparian area/shore - Agriculture | 4 | 7 | 1 | 5 |
| 4.1.3 - Physical alteration of channel/bed/riparian area/shore - Navigation | 6 | 16 | 16 | 0 |
| 4.1.4 - Physical alteration of channel/bed/riparian area/shore - Other | 7 | 63 | 48 | 0 |
| 4.2.2 - Dams, barriers and locks - Flood protection | 7 | 123 | 122 | 0 |
| 4.2.7 - Dams, barriers and locks - Navigation | 1 | 3 | 0 | 2 |
| 4.2.8 - Dams, barriers and locks - Other | 9 | 159 | 119 | 15 |
| 4.3.1 - Hydrological alteration - Agriculture | 5 | 8 | 0 | 3 |
| 4.3.2 - Hydrological alteration - Transport | 5 | 5 | 5 | 0 |
| 4.3.5 - Hydrological alteration - Aquaculture | 7 | 25 | 25 | 0 |
| 4.3.6 - Hydrological alteration - Other | 8 | 135 | 117 | 13 |
| 4.4 - Hydromorphological alteration - Physical loss of whole or part of the water | 7 | 80 | 75 | 0 |

| Significant pressure on surface water bodies | Failing Priority Substances | Article 4(4) - Technical feasibility exemptions | Article 4(4) - Disproportionate cost exemptions | Article 4(4) - Natural conditions exemptions |
|---|---|---|---|---|
| | Number | Number | Number | Number |
| body | | | | |
| 5.1 - Introduced species and diseases | 7 | 120 | 120 | 1 |
| 5.2 - Exploitation or removal of animals or plants | 6 | 32 | 31 | 2 |
| 5.3 - Litter or fly tipping | 6 | 53 | 47 | 0 |
| 7 - Anthropogenic pressure - Other | 11 | 130 | 85 | 12 |
| 9 - Anthropogenic pressure - Historical pollution | 8 | 42 | 32 | 4 |

*Source: WISE electronic reports*

The main pressures on groundwater leading to the justification of exemptions were point and diffuse pollution (Table 8.2). The main driver behind this being agriculture leading to chemical pollution and a damage to groundwater-dependent terrestrial ecosystems for chemical/quantitative reasons.

***Table 8.2 Pressure responsible for pollutants in the Netherlands failing to achieve good chemical status in groundwater and for which exemptions have been applied***

| Significant pressure on groundwater | Number of failing pollutants | Number of exemptions |
|---|---|---|
| | | Article4(4) - Technical feasibility |
| 1.9 - Point - Other | 4 | 5 |
| 2.2 - Diffuse - Agricultural | 1 | 1 |

*Source: WISE electronic reports*

### *Application of Article 4(5)*

Article 4(5) was not used in the first cycle, nor in the second cycle.

### *Application of Article 4(6)*

Article 4(6) has been applied in all RBDs in surface water because of natural causes (extreme floods and prolonged droughts) and in the Rhine RBD also because of accidents. However, the information in the respective RBMPs versus WISE is contradictory for the Rhine, Ems, Meuse and Scheldt RBMPs. The Netherlands subsequently clarified that the numbers included in the RBMP were incorrect and that this exemption was applied in two cases in the Scheldt, eleven in the Rhine, four in the Meuse and one in the Ems.

The information and descriptions in these RBMPs outline that in the first cycle, no Article 4(6) exemptions were applied. For the Rhine RBD basin it was mentioned that exemptions were applied in four water bodies for reasons of natural circumstances and accidents. No further detailed information was found to describe which circumstances are declared exceptional and no indicators either, in the respective RBMPs or background documents. The Netherlands subsequently confirmed that the detailed information may be found in the factsheets, which were not accessible during this assessment.

***Application of Article 4(7)***

Article 4(7) has been applied in the Rhine RBD in two lake water bodies due to new modifications. During the assessment the Netherland clarified that further details can be found in factsheets on water body level. Even if the factsheets have been reported to WISE they could not be assessed due to technical problems at the time of the assessment (broken links) [47].

***Application of Article 6(3) of the Groundwater Directive***

No exemptions according to Article 6(3) of the Groundwater Directive have been applied.

## 8.2 Main changes in implementation and compliance since the first cycle

Article 4(6) and Article 4(7) were not applied in the first cycle but have been applied in the second cycle. The number of exemptions under Article 4(4) has increased. Two water bodies were expected to achieve good ecological status/potential in 2015.

## 8.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM reports requested action on the following:

- Recommendation: *A large number of exemptions have been applied in this first cycle of RBMPs. While the WFD does provide for exemptions, specific criteria must be fulfilled for their use to be justified. The application of exemptions needs to be more transparent and the reasons for the exemptions should be clearly justified in the plans, in particular for those based on technical infeasibility and disproportionate costs.*

  *Assessment*: The number of exemptions has not decreased. The reasons for exemptions are provided at the water body level. For the other aspects of the recommendation not

[47] https://www.waterkwaliteitsportaal.nl/Beheer/Data/Publiek?viewName=Factsheets&year=2015&month=December

enough information on progress regarding this recommendation could be found in the reported plans and the background documents for which the reported link was broken. However, the Netherlands subsequently clarified during the assessment that for each water body a factsheet with detailed justifications for each exemption has been developed. This recommendation can therefore be considered as fulfilled.

- Recommendation: *The high number of exemptions applied in these first RBMPs is a cause for concern. The Netherlands should take all necessary measures to bring down the number of exemptions for the next cycle, including the needed improvements in the characterisation process, monitoring networks and status assessment methods, as well as reducing significantly the degree of uncertainty*.

  *Assessment*: The number of exemptions has not decreased; therefore, this recommendation has not been fulfilled. However, progress is made for a number of the parameters, and a sound PoM has been defined to ensure further improvements in status of all water bodies

- Recommendation: *It is unclear whether there are other new physical modifications planned besides those reported in the RBMPs. If this is the case, the use of exemptions under Article 4(7) should be based on a thorough assessment of all the steps as requested by the WFD, in particular an assessment on whether the project is of overriding public interest and whether the benefits to society outweigh the environmental degradation, and the absence of alternatives that would be a better environmental option. Furthermore, these projects may only be carried out when all possible measures are taken to mitigate the adverse impact on the status of the water. All conditions for the application of Article 4(7) in individual projects must be included and justified in the RBMPs as early in the project planning as possible.*

  *Assessment*: Not enough information on progress regarding this recommendation could be found in the reported plans and the background documents. Even if the factsheets were reported to WISE they could not be assessed due to technical problems at the time of the assessment (broken links)[48]. However, the Netherlands subsequently clarified during the assessment that for each water body a factsheet with detailed justifications for each exemption has been developed.

- Recommendation: *Exemptions should be adequately justified at water body level.*

[48] https://www.waterkwaliteitsportaal.nl/Beheer/Data/Publiek?viewName=Factsheets&year=2015&month=December

*Assessment*: See assessment above.

- Recommendation: *Make efforts to reduce the use of exemptions and maintain an ambitious approach to WFD implementation. The Netherlands should adequately justify the exemptions applied in the RBMPs including a proper assessment of alternative solutions and all necessary mitigation measures.*

  *Assessment*: See assessment above.

# Topic 9 Programme of measures

The aim of this chapter is to provide an overview of the PoM reported by Member States; more specific information on measures relating to specific pressures (for example arising from agriculture) is provided in subsequent chapters.

The Key Types of Measure (KTM) referred to in this section are groups of measures identified by Member States in the Programme of Measures, which target the same pressure or purpose. The individual measures included in the Programme of Measure (being part of the RBMP) are grouped into Key Types of Measure for the purpose of reporting. The same individual measure can be part of more than one Key Types of Measure because it may be multi-purpose, but also because the Key Types of Measure are not completely independent silos. Key Types of Measure have been introduced to simplify the reporting of measures and to reduce the very large number of Supplementary Measures reported by some Member States (WFD Reporting Guidance 2016).

A Key Type of Measure may be one national measure but it would typically comprise more than one national measure. The 25 predefined Key Types of Measure are listed in the WFD Reporting Guidance 2016.

The Key Types of Measure should be fully implemented and made operational within the RBMP planning period to address specific pressures or chemical substances and achieve the environmental objectives.

## 9.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 9.1.1 General issues

An indication as to whether or not measures have been fully implemented and made operational is when they have been reported as being planned to tackle significant pressures (at the Key Types of Measure level). Significant pressures are also reported at the water body level. It would therefore be expected that there would be measures planned in the RBMP to tackle all significant pressures. In general the reported significant pressures are well covered with operational KTMs.

For groundwater the reported significant pressures are covered with operational KTMs, e.g. all pressures are covered for the Ems and the Rhine RBDs (except one significant “other” pressure, i.e. saline intrusion in the Rhine RBD). For the Meuse, diffuse urban and agricultural

pressures are not covered, but these may be addressed with the operational KTMs for individual substances (MTBE, nickel, phosphorus, nitrate, and pesticides). No significant pressure has been reported for the Scheldt RBD. Some KTMs not apparently related to significant pressures have been included, i.e. groundwater recharge in the Meuse RBD, and total phosphorus and arsenic in the Rhine RBD.

For surface water in the Rhine RBD all the reported significant pressures are covered with operational KTMs (except abstraction/flow diversion for agriculture). A KTM has been reported to address hydrological alterations for aquaculture, but this has not been not listed as a significant pressure. Large numbers of individual substances, including Priority Substances, have also been listed as being covered by operational KTMs. The listing of the significant pressures includes large numbers of other pressures, apparently at water body level, but this seems to relate mainly to the multi-pressure environment, rather than "significant other pressures".

The Netherlands have mapped 24 national basic measures against 12 predefined KTMs, and a further six national basic measures have been mapped against four nationally developed KTMs. A total of 71 national supplementary measures have been mapped against 15 predefined KTMs and 22 nationally defined KTMs[49]. All of the measures are applicable to all four RBDs. The basic measure types have also been reported.

Measures are reported against all the requirements of Article 11(3) of the WFD (Table 18) and links to further information on Article 11(3)(c-k) basic measures for all RBDs are provided in WISE.

KTMs reported to be mapped against national measures (18 predefined and a further 26 defined by the Netherlands – see footnote - identical for all RBDs) are considerably higher than the numbers reported as tackling significant pressures, which are very similar in all RBDs (8 or 9 KTMs and nine to eleven national measures under KTM 99-Other in each RBD). All the KTMs reported as tackling significant pressures in each RBD have had national basic and/or supplementary measures mapped against them, but not all national measures are reported as tackling significant pressures and therefore may not yet have been put into operation. All of the requirements of Article 11(3) have been fulfilled by the measures reported (see Table 18).

[49] The Netherlands subsequently clarified that this was a preliminary mapping and will be improved. Due to the late and complex reporting specification on this topic not enough time was available to fully implement the use of KTM's in the Netherlands national dataflows and national system.

No information was reported with regard to the number of water bodies failing to achieve objectives due to individual pressures.

Individual chemical pollutants causing groundwater bodies to fail to be of good status, the number of groundwater bodies affected and the KTMs used to tackle them have been reported to WISE for the Rhine and Meuse RBDs only. There is no information on the number of surface water bodies failing to achieve good status due to River Basin Specific Pollutants, but KTMs to address River Basin Specific Pollutants have been reported. Information on the priority substances and the number of water bodies causing failure of WFD objectives and the KTMs used to tackle all of them has been reported for surface water for all four RBDs. For most of the substances KTM 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" is used. The exceptions are isoproturon, which is tackled with KTM 3 - "Reduce pesticides pollution from agriculture", and cadmium and its compounds, which are tackled with KTM 21 - "Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure".

Gap analyses have been presented for all the significant pressures which have been reported as being covered by measures in all RBDs. Quantitative pressure indicators and gap values for 2015, 2021 and 2027, are in place at water body level, together with explanations of other pressures affecting individual water bodies. Qualitative indicators for the level of progress expected in the implementation of KTMs have also been presented but no measure indicators or gap values have been provided for these. This is in accordance with what was included by the Netherlands in their Annex 0.

The indicators of the gap to good status have been reported as either the number of water bodies failing environmental quality standards, or the number of water bodies in which the pressure contributes to failing to achieve good status. For groundwater, most gaps are expected to be closed by 2021, and all by 2027 in all RBDs. For surface waters, the gap to good status is expected to be reduced for most pressures, but few are expected to be fully addressed by 2027. In the Rhine RBD, for example, only three of the gap values (dams, barriers, locks for irrigation and navigation, and unknown anthropogenic pressures) and some for individual substances are expected to be zero by 2027. The situation is somewhat better for the Ems RBD, where about 50 % of the gap values are expected at zero by 2027 (none by 2021).

Cost-effectiveness analysis 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. In the first cycle cost-effectiveness analysis had been undertaken for measures in the most important sectors. For the second cycle quantitative cost-effectiveness analysis has

been carried out in all four RBDs. The RBMP and background document assessment indicated that the cost-effectiveness of measures was assessed at a generic level for categories of measures, and that there was no specific prioritisation of measures based on cost-effectiveness analysis.

A critical factor in the success of the implementation of the PoM is the availability of funding to support the investments required. Investment costs for the years 2009-2015 have been reported for all four RBDs (€2 200 m at Member State level) as a total for Articles 11(3)(a-l)/11(4)/11(5) only (measures required to implement Community legislation for the protection of water under Article 11(3)(a) and all other measures).

For 2016-2021 investment costs have been reported to WISE for all four RBDs as a total for Article 11(3)(b-l), 11(4) and 11(5) (all other measures) only (€766.6 m at RBD level, no annual costs were reported). Depreciation was taken into account in both cycles.

European Union investment expenditure for the first and second cycles has been reported as "not available" for the four RBDs. However, the Netherlands have indicated that all cost data were available but not in the format required for reporting to WISE.

A clear financial commitment has been secured for the implementation of PoM in all four RBDs. On a sectoral basis, commitments have been secured in all four RBDs for Agriculture, Industry, Urban, Recreation and Flood Protection, but not for Hydropower. Transport, Energy, and Aquaculture which were identified as "not applicable" in all RBDs.

It was reported that co-ordination of the preparation of all RBMPs and PoM with the Marine Strategy Framework Directive had taken place in all four RBDs, and that joint consultation on the RBMPs and the Marine Strategy Framework Directive had been undertaken. Consideration has been given to the need for additional or more stringent measures beyond those required by the WFD in order to contribute to the achievement of the relevant Marine Strategy Framework Directive objectives in coastal and marine environments, with required additional measures reported as "dealing with litter".

KTMs that are relevant to the Marine Strategy Framework Directive have also been listed for all four RBDs, with an indication of the type and number of measures, but not indicating the pressures they are addressing.

Whilst the RBMPs and Floods Directive Flood Risk Management Plans have not been integrated into single plans in any of the four RBDs, all included:

- Joint consultation of RBMPs and Flood Risk Management Plans;
- Consideration of the objectives and requirements of the Floods Directive in the second RBMPs and PoM;
- Win-win measures in terms of achieving the objectives of the WFD and Floods Directive, Drought management and use of Natural Water Retention Measures;
- The design of new and existing structural measures, such as flood defences, storage dams and tidal barriers, adapted to take account of WFD environmental objectives, as well as;
- Financial commitments for the implementation of PoM in the flood protection areas, and;
- The application of WFD Article 9(4) to impoundment for flood protection.

### 9.1.2 Measures related to other significant pressures

Gap analyses for other significant pressures have been reported for surface water in all four RBDs (groundwater in the Rhine RBD only). These were unknown, historical and other anthropogenic pressures, introduction of new species, exploitation of animals and plants, and litter/fly tipping. KTM 99 - "Other key type measure reported under PoM - (Administrative) measures which should help in achieving good status or facilitate the implementation of other measures from the PoM" are applied to all of these pressures. Examples of the measures included under this KTM include active fish/shellfish stock management, active vegetation management, measures to prevent or limit groundwater contamination, other measures at the source and other generic measures.

### 9.1.3 Mapping of national measures to Key Types of Measure

It was expected that Member States would be able to report their PoM by associating their national measures with predefined KTMs. The KTMs are expected to deliver the bulk of the improvements through reduction in pressures required to achieve WFD environmental objectives. Member States are required to report on the national measures associated with the KTMs, and whether the national measures are basic (Article 11(3)(a) or Article 11(3)(b-l)) or supplementary (Article 11(4)).

Table 9.1 summarises the number of national measures that have been mapped to the relevant KTMs in the Netherlands. Also shown is the number of RBDs for which the KTM has been reported. Table 9.2 then summarises the type of basic measures associated with the national measures mapped against the KTM.

*Table 9.1 Mapping of the types of national measures to Key Types of Measure in the Netherlands* [50]

| Key Type of Measure | National basic measures | National supplementary measures | Number of RBDs where reported |
|---|---|---|---|
| KTM1 - Construction or upgrades of wastewater treatment plants | 2 | 2 | 4 |
| KTM10 - Water pricing policy measures for the implementation of the recovery of cost of water services from industry | 1 | | 4 |
| KTM11 - Water pricing policy measures for the implementation of the recovery of cost of water services from agriculture | 1 | | 4 |
| KTM13 - Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc) | 3 | 3 | 4 |
| KTM14 - Research, improvement of knowledge base reducing uncertainty | | 1 | 4 |
| KTM15 - 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 | 3 | 1 | 4 |
| KTM17 - Measures to reduce sediment from soil erosion and surface run-off | | 1 | 4 |
| KTM19 - Measures to prevent or control the adverse impacts of recreation including angling | | 1 | 4 |
| KTM2 - Reduce nutrient pollution from agriculture | 2 | 2 | 4 |
| KTM20 - Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants | 1 | 1 | 4 |
| KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure | 5 | 10 | 4 |
| KTM24 - Adaptation to climate change | | 1 | 4 |
| KTM3 - Reduce pesticides pollution from agriculture. | 2 | 2 | 4 |
| KTM4 - Remediation of contaminated sites (historical pollution including sediments, groundwater, soil) | | 5 | 4 |
| KTM5 - Improving longitudinal continuity (e.g. establishing fish passes, demolishing old dams) | | 1 | 4 |
| KTM6 - Improving hydromorphological conditions of water bodies other than longitudinal continuity | 1 | 12 | 4 |
| KTM7 - Improvements in flow regime and/or establishment of ecological flows | 2 | 4 | 4 |
| KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households | 1 | | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Active fish stock/ shellfish stock management | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Active vegetation management | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Change agriculture destination | | 1 | 4 |

[50] The Netherlands subsequently clarified that this was a preliminary mapping and will be improved. Due to the late and complex reporting specification on this topic not enough time was available to fully implement the use of KTM's in the Netherlands national dataflows and national system.

| Key Type of Measure | National basic measures | National supplementary measures | Number of RBDs where reported |
|---|---|---|---|
| KTM99 - Other key type measure reported under Programme of Measure - Change/develop (new) legislation | | 2 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Change/develop (new) policy | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Establish purification wetlands | | 2 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Establish special habitats for fish | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Establish special habitats for flora and fauna | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Financial measures | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Measures providing more room for rivers | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Measures to counter groundwater depletion | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Measures to prevent accidents | 3 | | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Measures to prevent exposure of swimmers to contamination | 1 | | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Measures to prevent or limit groundwater contamination | 1 | | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Measures to prevent or limit the input of pollution from industry | 1 | | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Nutrient measures at the source (broader than just agriculture) | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other advisory services | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other generic measures | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other immission measures | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other landscaping measures | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other management measures | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other measures at the source | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other policy measures | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Other spatial planning measures | | 1 | 4 |

| Key Type of Measure | National basic measures | National supplementary measures | Number of RBDs where reported |
|---|---|---|---|
| KTM99 - Other key type measure reported under Programme of Measure - resolving untreated discharges | | 1 | 4 |
| KTM99 - Other key type measure reported under Programme of Measure - Source based measures to reduce plant protection product emissions (broader than just agriculture) | | 1 | 4 |
| **Total number of Mapped Measures** | **30** | **71** | **4** |

*Source: Member States reports to WISE*

*Table 9.2 Type of basic measure mapped to Key Type of Measures in the Netherlands*

| Key Type of Measure | Basic Measure Type | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Accidental pollution | Controls water abstraction | Cost recovery water services | Efficient water use | Habitats or Birds | Hydromorphology | IPPC IED | Nitrates | Other | Point source discharges | Pollutants diffuse | Pollutants direct groundwater | Protection water abstraction | Recharge augmentation groundwaters | Surface Priority Substances | Urban Waste Water |
| KTM1 - Construction or upgrades of wastewater treatment plants | | | | | | | | | | 1 | | | | | | 1 |
| KTM10 - Water pricing policy measures for the implementation of the recovery of cost of water services from industry | | | 1 | | | | | | | | | | | | | |
| KTM11 - Water pricing policy measures for the implementation of the recovery of cost of water services from agriculture | | | 1 | | | | | | | | | | | | | |
| KTM13 - Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc) | | | | | | | | | | | | | 3 | | | |
| KTM15 - 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 | | | | | | | | | | 1 | | | | | 2 | |
| KTM2 - Reduce nutrient pollution from agriculture | | | | | | | | 1 | | | 1 | | | | | |
| KTM20 - Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants | | | | | 1 | | | | | | | | | | | |
| KTM21 - Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure | | | | | | | | | 2 | | 2 | 1 | | | | |
| KTM3 - Reduce pesticides pollution from agriculture. | | | | | | | | | | | 2 | | | | | |
| KTM6 - Improving hydromorphological conditions of water bodies other than longitudinal continuity | | | | | | 1 | | | | | | | | | | |
| KTM7 - Improvements in flow regime and/or establishment of ecological flows | | 1 | | | | | | | | | | | | 1 | | |
| KTM8 - Water efficiency, technical measures for irrigation, industry, energy and households | | | | 1 | | | | | | | | | | | | |
| KTM99 - Other key type measure reported under PoM | 3 | 1 | | | | | 1 | | 1 | | | 1 | | 1 | | |

*Source: Member States reports to WISE*

**Key**

| |
|---|
| 'Accidental pollution' = Article 11(3)(l): Any measures required to prevent significant losses of pollutants from technical installations and to prevent and/or reduce the impact of accidental pollution incidents. |
| 'Controls water abstraction' = Article 11(3)(e): Controls over the abstraction of fresh surface water and groundwater and impoundment of fresh surface waters including a register or registers of water abstractions and a requirement for prior authorisation of abstraction and impoundment. |
| 'Cost recovery water services' = Article 11(3)(b): Measures for the recovery of cost of water services (Article 9). |
| 'Efficient water use' = Article 11(3)(c): Measures to promote efficient and sustainable water use. |
| 'Habitats or Birds' = Habitats Directive (92/43/EEC) or Birds Directive (2009/147/EC) |
| 'Hydromorphology' = Article 11(3)(i): Measures to control any other significant adverse impact on the status of water, and in particular hydromorphological impacts. |
| 'IPPC IED' = Integrated Pollution Prevention Control Directive (96/61/EC) and the Industrial Emissions Directive (2010/75/EU) . |
| 'Nitrates' = Nitrates Directive (91/676/EEC). |
| 'Other' = Other Directives mentioned in Part A of Annex VI of the WFD. |
| 'Point source discharges' = Article 11(3)(g): Requirement for prior regulation of point source discharges liable to cause pollution. |
| 'Pollutants diffuse' = Article 11(3)(h): Measures to prevent or control the input of pollutants from diffuse sources liable to cause pollution. |
| 'Pollutants direct groundwater' = Article 11(3)(j): Prohibition of direct discharge of pollutants into groundwater. |
| 'Protection water abstraction' = Article 11(3)(d): Measures for the protection of water abstracted for drinking water (Article 7) including those to reduce the level of purification required for the production of drinking water. |
| 'Recharge augmentation groundwaters' = Article 11(3)(f): Controls, including a requirement for prior authorisation of artificial recharge or augmentation of groundwater bodies. |
| 'Surface Priority Substances' = Article 11(3)(k): Measures to eliminate pollution of surface waters by Priority Substances and to reduce pollution from other substances that would otherwise prevent the achievement of the objectives laid down in Article 4. |
| 'Urban Waste Water' = Urban Waste Water Treatment Directive (91/271/EEC). |

### 9.1.4 Pressures for which gaps to be filled to achieve WFD objectives have been reported and the Key Types of Measure planned to achieve objectives

Member States are required to report the gaps that need to be filled to achieve WFD environmental objectives in terms of all significant pressures on surface waters and groundwaters, in terms of Priority Substances causing failure of good chemical status and in terms of River Basin Specific Pollutants causing failure of good ecological status/potential. Member States were asked to report predefined indicators of the gaps to be filled or other indicators where relevant. Values for the gap indicators were required for 2015 and 2021, and were optional for 2027.

The information reported in WISE on the gaps to fulfil to achieve good ecological status include detailed data on the significant pressures on surface and groundwaters that may cause failure on the environmental objectives. For chemical status, the Member States reported the specific chemical substances causing failure.

This information is reported at the sub-unit level. Sub-units are smaller geographic areas within particular RBDs identified by Member States. Not all Member States have defined and reported sub-units.

Member States were required to report which KTMs are to be made operational to reduce the gaps to levels compatible with the achievement of WFD environmental objectives. A number of indicators were predefined for each KTM. Values of the indicators for the second and subsequent planning cycles were also to be reported to give an indication of the expected progress and achievements: the values for 2027 could be optionally reported. This means that the value of the indicator will be reduced with time as measures are implemented. A value of zero is comparable with 100 % good ecological status or potential or good chemical status.

This information was reported at sub-unit level, or at RBDs level if sub-units have not been reported by the Member State.

## 9.2 Main changes in implementation and compliance since the first cycle

The level of implementation of the first cycle of PoM in the Netherlands was reported as “all measures completed” for all four RBDs. Obstacles were reported as “Lack of finance”, “Not cost-effective” and “Land availability” in all RBDs. Whilst no summary of progress has been provided, significant progress seems to have been made in linking measures to pressures and providing gap analyses with quantitative gap indicators for meeting objectives and at least qualitative information of the measures to address them, as well as financial commitments for

implementing the PoM. However, it is not clear, whether the PoM are sufficiently ambitious (in a large number of surface water bodies it is anticipated that a number of significant pressures will not have been fully addressed by 2027). An analysis of the planned measures has been carried out, in particular for the preparation of the third plans, but it is acknowledged that a quantitative anaylisis would be difficult with the available scientific knowledge.

## 9.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *Develop a clear link between the measures identified in the Programme of Measures and their contribution to the achievement of the WFD objectives.*

  Assessment: Measures have been linked to pressures and gap analyses have been carried out for all pressures in terms of number of water bodies failing environmental quality standard or number of water bodies in which the pressure contributes to failing to achieve good status, including at water body level, with explanations of other pressures affecting individual water bodies. This recommendation has been fulfilled.

- Recommendation: *Ensure that the RBMPs clearly identify the gap to good status, and that the Programme of Measures are designed and implemented to close that gap. It should be assessed, how much of the pressures (and their corresponding sources) have to be reduced to achieve the WFD objectives. The Netherlands should clearly define gaps for individual pressures and water bodies. Exemptions should be adequately justified at water body level.*

  Assessment: Qualitative information on the gap to good status has been provided for the appropriate measures. There were no quantitative indicators for the measures provided due to the multi-pressure environment, as mentioned in the Annex 0 reported by the Netherlands.

  This recommendation has been fulfilled in respect of Topic 9 (subject to the Annex 0). (See Topic 8 for the justification of exemptions).

- Recommendation: *The Programme of Measures should contain all the relevant measures to be applied in the RBD. Many of these measures are only described in the sub-basin plans, which results in a quite general Programme of Measures in the RBMPs and in a lack of specificity concerning the measures to be implemented. The RBMPs will benefit*

*from more detail on how the implementation of the Programme of Measures will lead to the achievement of objectives under Article 4. This will require more information on scope of measures, financing, timescales, etc. In addition, budgetary cuts decided after the adoption of the plan have cast serious doubts on the implementation of the planned measures. Adequate financing for the Programme of Measures should be provided to make it possible to achieve the objectives of the adopted RBMPs.*

- Assessment: Many details of measures to tackle specific pressures have been provided, including the gap analyses and a clear financial commitment has been secured for the implementation of PoM in all four RBDs. However, it is not clear, whether these are adequate and whether the programmes are sufficiently ambitious as many of the pressures are estimated to not be fully addressed by 2027. An analysis of the planned measures has been carried out, in particular for the preparation of the third plans, but it is acknowledged that a quantitative anaylisis would be difficult with the available scientific knowledge.

It is clear that progress is being made and that this recommendation has been partially fulfilled.

- Recommendation: *Provide an inventory of the different sources of pressures in the second RBMPs and define ambitious measures based on the pressures and impacts analysis and status assessment of water bodies. The choice of measures should reflect the significance of the pressure.*

- Assessment: Many details of measures to tackle specific pressures have been provided, including the gap analyses and a clear financial commitment that has been secured for the implementation of PoM in all four RBDs. However, it is not clear, whether these are adequate and whether the programmes are sufficiently ambitious as many of the pressures are estimated to not be fully addressed by 2027. An analysis of the planned measures has been carried out, in particular for the preparation of the third plans, but it is acknowledged that a quantitative anaylisis would be difficult with the available scientific knowledge. It is clear that progress is being made and that this this recommendation has been partially fulfilled.

# Topic 10 Measures related to abstractions and water scarcity

## 10.1 Assessment of implementation and compliance with WFD requirements in the second cycle

### 10.1.1 Water exploitation and trends

Water abstraction pressure is relevant for some areas of the Netherlands with 17 % of surface water bodies in the Meuse RBD and 18 % in the Rhine RBD facing significant abstraction pressures. However, no information has been reported regarding water quantity, including water abstractions or the Water Exploitation Index +, nor has information been reported yet to support the European State of the Environment Report in relation to Water Quantity. Water scarcity issues are not considered relevant at the international level, and no specific water resource allocation and management plans have been implemented. Water abstraction (understood as consumptive use) has not been identified as a significant pressure at the RBD level (or in significant portions of the RBD).

### 10.1.2 Main uses for water consumption

No data have been reported for the uses of water consumption, as water quantity pressures are not reported as significant.

### 10.1.3 Measures related to abstractions and water scarcity

Water abstraction is an integral part of the Dutch water management. Regarding basic measures (Article 11(3)(e)), in the Netherlands there is a permitting regime and a register of abstractions for surface water and groundwater, and a concession, authorisation and/or permitting regime to control water impoundment but no register of impoundments; and, small abstractions are exempted from permitting and controls.

Measures on Article 11(3)(c) have been implemented in the first cycle, and new measures or significant changes are planned for the 2016-2021 period.

Measures for the prior authorisation of artificial recharge or augmentation of groundwater bodies (Article 11(3)(f)) have been implemented in the previous cycle, and new measures or significant changes are also planned for the next period.

Complementary measures associated to KTM 99 - "Other key type measure reported under PoM - (Administrative) measures which should help achieving the good status or facilitate the implementation of other measures from the PoM" are reported to tackle significant abstraction pressures. Re-use is a measure not foreseen in any RBDs.

Regarding basic measures (Article 11(3)(e)), in the Netherlands there is a concession, authorisation and/or permitting regime to control water impoundment but no register of impoundments; and, small abstractions are exempted from these controls. Measures on this topic have been implemented in the first cycle, and new measures or significant changes are planned for the 2016-2021 period.

## 10.2 Main changes in implementation and compliance since the first cycle

No significant change has been detected. However, changes in applying Article 11(3)(c) and (f) are foreseen.

## 10.3 Progress with Commission recommendations

There were no Commission recommendations based on the first RBMPs and PoM for this topic.

# Topic 11 Measures related to pollution from agriculture

## 11.1 Assessment of implementation and compliance with WFD requirements in the second cycle

The pressures from agriculture (diffuse pollution and hydromorphological changes) have not changed since the first cycle and the type of measures applied are essentially the same. Only for groundwater bodies in the Scheldt RBD, there are no relevant pressures from point or diffuse sources with respect to meeting the objectives of the WFD.

The Netherlands subsequently provided clarification that a gap analysis has been carried out and results published in 2013. The results of the gap analysis should also be seen in the context of the process of the Delta-approach to intensify efforts in reducing diffuse pressures in the Netherlands from agriculture. Work in this direction is still ongoing and work is performed as regards additional measures to tackle pressures from agriculture, especially as regards nutrients and work under the Nitrates Directive[51]. For this, at the moment regional analyses are carried out, which will be integrated in a national analysis in 2019. The results will feed into the third RBMPs and in the 7th Nitrates Action programme.

KTM 2 - Reduce nutrient pollution from agriculture (basic (the minimum requirement to be complied with) and supplementary) and KTM 3 - Reduce pesticides pollution from agriculture (basic and supplementary) are applied in all RBDs. KTM 17 - Measures to reduce sediment from soil erosion and surface run-off are found in all RBDs as supplementary measures.

KTM 13 - Drinking water protection measures (e.g. establishment of safeguard zones, buffer zones etc.) (basic and supplementary) are reported for all RBDs. Safeguard zones around drinking water protection areas have been established in all RBMPs. It is stated that if extraction of water takes places for human consumption, then the whole water body is designated as a protected area. Further details are not provided. Further, there are several measures in the RBMPs that aim to control point and diffuse pollution. However, the link with drinking water supply is not directly mentioned, although these might also have a beneficial effect on the wider environment and on drinking water supply.

[51] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31991L0676

The description of the measures in the RBMP is very concise and does not allow an adequate judgement to be made as to whether a measure is voluntarily or not[52].

General binding rules to control diffuse pollution from agriculture are established in all RBDs for nitrates, phosphates and pesticides. Implementation of basic measures Article 11(3)(h) for the control of diffuse pollution from agriculture at source follows the same rules across all the RBDs.

Farmers/Farmers' Unions have been consulted under the Public Consultation process in all RBDs.

Financing of agricultural measures is secured in all RBDs. The RBMP mentions Horizon2020, Common Agricultural Policy, Structural and Cohesion Funds and national funds for funding measures.

## 11.2 Main changes in implementation and compliance since the first cycle

The pressures from agriculture (diffuse pollution and hydromorphological changes) have not changed[53] since the first cycle and the type of measures applied are essentially the same. A gap assessment was missing in the first cycle and is also missing in the second cycle although the link between pressures and measures has been established.

## 11.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *Agriculture is indicated as exerting a significant pressure on the water resource in the Netherlands. This should be translated into a clear strategy that defines the basic and mandatory measures that all farmers should adhere to and the additional supplementary measures that can be financed. This should be developed with the farmers' community to ensure technical feasibility and acceptance. The*

[52] According to information subsequently provided by the Netherlands, farmers that want to participate in the Deltaplan Agricultural Water management can sign up voluntarily. This offers them the opportunity to look for tailor-made solutions to contribute to WFD and other policy objectives. However, if they participate in the programme, they are obliged to implement the measures they agree to. If they do not take these measures, they will have to implement more generic measures that are considered to be effective in their situation, but since they are not tailor made, they can be more costly for them to implement. Therefore, there is a strong incentive to participate in this voluntary scheme. Tailor-made measures that are proven to be (cost) effective will be secured (e.g. in regulation), to get a level-playing-field and to connect innovators / early adaptors with the others.

[53] According to information subsequently provided by the Netherlands the pressures from agriculture may not have changed in terms of number but they have changed in terms of the magnitude of the pressure for a water body.

*baseline for water protection in the agriculture sector needs to be very clear so that all farmers know the rules, and the authorities in charge of the Common Agricultural Policy funds can adequately set up Rural Development Programmes and cross compliance water requirements.*

Assessment: The RBMPs include a reference to the "Deltaplan Agrarisch Waterbeheer". This is a plan with specific measures to improve pollution from agriculture (e.g. nutrients) via additional measures. The exact details of this plan were not available for further assessment[54]. It is unclear if the definition of basic/mandatory measures for agriculture have been included in this plan or another. The recommendation has partially been fulfilled.

- Recommendation: *Take measures to remove pollution from nitrogen and phosphorous at a reasonable economic level because the main source of the diffuse pressures in the Netherlands is agriculture.*

  Assessment: The Netherlands subsequently has provided to the Commission the following information relevant to this recommendation: a gap assessment has been performed. However, knowledge on how measures contribute to reaching the good ecological status will continue to improve over time. This is a cyclical process and work is going on at the moment.

  In addition, according to the assessment, Article 13(h) measures are reported. Funding sources are provided in a generic way.

  Although the type of assessment carried out for this Member State report does not allow this conclusion, based on the additional information subsequently provided by the Netherlands this recommendation is largely fulfilled.

- Recommendation: *Assess the effectiveness of the existing measures and identify which additional measures are needed to close the gap in the implementation of the Nitrates Directive and the WFD.*

  Assessment: As mentioned above, the Netherlands has subsequently provided clarification that a gap analysis has been carried out and results published in 2013. The results of the gap analysis should also be seen in the context of the process of the Delta-approach to intensify efforts in reducing diffuse pressures in the Netherlands is

[54] According to information subsequently provided by the Netherlands, current progress of the individual projects can be found here: www.agrarischwaterbeheer.nl

agriculture. Work in this direction is still ongoing and work is performed as regards additional measures to tackle pressures from agriculture, especially as regards nutrients and work under the Nitrates Directive. For this, at the moment regional analysis are carried out, which will be integrated in a national analysis in 2019. The results will feed into the third RBMPs and in the 7th Nitrates Action program.

Although the type of assessment carried out for this Member State report does not allow this conclusion, based on the additional information subsequently provided by the Netherlands, it is considered that this recommendation is partially fulfilled.

- Recommendation: *Develop a clear strategy in the RBMPs for pollution from agriculture (mainly nutrients but also pesticides) and define the basic/mandatory measures – besides the 5th National Action Programme – that all farmers should adhere to, and the additional supplementary measures that can be financed. This should be developed in cooperation with the farming community to ensure technical feasibility and acceptance.*

  Assessment: There is a summary that relates to this recommendation of estimated progress in the respective RBMPs, but it cannot be concluded that this was communicated to the European Commission in advance of the signing of the National Action Programme. According to information subsequently provided by the Netherlands, in the 6th National Action Programme drinking water and Water Framework Directive objectives are included. In addition, the update of the strategy has been elaborated in the PoM of the second RBMPs. Based on the additional information subsequently provided by the Netherlands, it is considered that the recommendation has been largely fulfilled.

- Recommendation*: Ensure that point and diffuse sources of pollution in the agricultural sector are controlled.*

  Assessment: See assessment above

# Topic 12 Measures related to pollution from sectors other than agriculture

## 12.1 Assessment of implementation and compliance with WFD requirements in the second cycle

In the context of this topic, pollution is considered in terms of nutrients, organic matter, sediment, saline discharges and chemicals (Priority Substances, River Basin Specific Pollutants, groundwater pollutants and other physico-chemical parameters) arising from all sectors and sources apart from agriculture.

Key types of measures (KTM) are groups of measures identified by Member States in their Programmes of Measures which target the same pressure or purpose. A KTM could be limited to one national measure, but it would typically comprise more than one national measure. The same individual measure can also be part of more than one KTM because it may be multipurpose but also because the KTMs are not completely independent of one another.

The following KTMs relevant to non-agricultural sources of pollution causing failure of WFD objectives have been reported for all RBDs in the Netherlands:

- KTM 1 - "Construction or upgrades of wastewater treatment plants"
- KTM 4 - "Remediation of contaminated sites (historical pollution including sediments, groundwater, soil)"
- KTM 14 - "Research, improvement of knowledge base reducing uncertainty"
- KTM 21 - "Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure"
- KTM 99 – “Other key type measures reported under PoM”, including measures to prevent or limit groundwater contamination, resolving untreated discharges, measures to prevent or limit input of pollution from industry, other generic measures and other policy measures).

The WFD specifies that Programmes of Measures shall include, as a minimum, “basic measures” and, where necessary to achieve objectives, “supplementary measures” when basic measures are not enough to address specific significant pressures (see chapter 9 in this report).

The Netherlands has indicated the number of basic and supplementary measures per RBD for each KTM mentioned above.

The Netherlands provided more targeted information on basic measures required under Article 11(3)(c to k). Basic measures corresponding to Article 11(3)(g), i.e. the use of authorisation and/or permitting regimes to control wastewater point source discharges, and the operation of a register of wastewater discharges, are reported for all RBDs for surface and groundwater. There are no thresholds below which wastewater discharges do not require permits and are not subject to registration in the Netherlands and there is a prohibition of all direct discharges to groundwater.

Measures to eliminate/reduce pollution from Priority Substances and other substances have been identified in all Dutch RBDs.

## 12.2 Main changes in implementation and compliance since the first cycle

Only basic substance-specific measures were described in the first RBMPs. These measures were described very generally and there was no information on supplementary measures for specific chemical substances.

In the second RBMP, KTMs have been reported for significant pressures from specific Priority Substances causing non-compliance in all Dutch RBDs, which is a clear step forward compared to the general reporting of six years ago.

It is also reported that measures are introduced for the Priority Substances and River Basin Specific Pollutants causing failure in surface water bodies, and for the pollutants causing failure of good chemical status of groundwater.

## 12.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *Include in its second RBMPs substance-specific measures to reduce chemical pollution.*

  Assessment: KTMs have been reported for significant pressures from individual Priority Substances causing non achievement of good status in all RBDs.

The reported information indicates that substance-specific measures are in place for each of the Priority Substances and River Basin Specific Pollutants causing failure in surface water bodies, and for each of the pollutants causing failure of good chemical status of groundwater in all assessed RBMPs.

An examination of the RBMPs for the presence of indications of a gap analysis indicates that a gap analysis on measures for specific substances has been performed, i.e. the effects of measures to reach good status have been assessed to examine if they will be sufficient to reach good status. As an example it can be mentioned that it is indicated in the RBMP for the Meuse that gaps may remain in the assessment of good status for certain pollutants, because sources of these pollutants are diffuse, or come from atmospheric deposition, and good ecological status might not be reached in 2021 or 2027. The measures are mostly mandatory. It appears that the funding of measures is secured and arises from several government budgets: e.g. Deltafund (up to 2027) and supplemented by European Union sources of funding. This recommendation is fulfilled, however a gap to good status remains in some cases.

# Topic 13 Measures related to hydromorphology

## 13.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Significant hydromorphological pressures and operational KTM to tackle these pressures are reported in all four RBDs. In this respect, only KTM 99 - "Other key type measure reported under PoM - (Administrative) measures which should help achieving the good status or facilitate the implementation of other measures from the PoM" is reported.

Overall management objectives in terms of river continuity have been set in all RBDs (but no quantitative objectives are set).

There were a large and diverse number of measures related to hydromorophological alterations in the second RBMPs. As an indication, the measures include among others the following types: fish ladders, bypass channels, habitat restoration, sediment/debris management, removal of structures, lowering of river banks, inundation of flood plains, and restoration of modified bed structures.

The sectors related to significant physical alterations are mainly flood protection and agriculture. In addition, for several water bodies, the sector/driver is indicated as "other", i.e. not specified as a key sector in the WISE reporting. The main sectors related to dams, barriers and locks are flood protection and "other" sectors/drivers, which are not specified as a key sector in the WISE reporting. The main sectors related to significant hydrological alterations are agriculture and “other” sectors/drivers.

In terms of basic measures planned to tackle hydromorphological pressures, there is an authorisation and/or permitting regime in place to control physical modifications in all RBDs, which covers changes to the riparian area of water bodies according to WFD article 11(3)(i) in all RBDs. However, there is no register of physical modifications of water bodies in any RBD.

Win-win measures in terms of achieving the objectives of the WFD and Floods Directive, drought management and use of Natural Water Retention Measures are reported to be included in the PoM of all RBDs. The specific KTM 23 - "Natural water retention measures" is not specifically reported. Nonetheless, reference is made to the inclusion of integrated approaches (including Natural Water Retention Measures and green infrastructure) in several water-related strategies and plans, which will have consequences for the implementation of Natural Water Retention Measures in all RBMPs.

The design of new and existing structural measures, such as flood defences, storage dams and tidal barriers, is also reported to have been adapted to take into account WFD objectives in all RBDs.

Ecological flows have been derived and implemented for all relevant water bodies. The national measures include several measures to guarantee ecological flow. However, no specific information was found in the RBMPs on the establishment of ecological flows being addressed by specific regulations or reference to the Common Implementation Strategy guidance No. 31[55] on ecological flows.

Indicators on the gap to be filled for significant hydromorphological pressures are reported for 2015, 2021 and 2027. From the information available, it can be concluded that between 2015 and 2021, it is expected that there will be no progress in terms of closing the gap for hydromorphological pressures in three RBDs (the Ems RBD, the Meuse RBD and the Scheldt RBD). Only in one RBD (the Rhine RBD), it is expected that there will be some progress with a reduction of 10 % to 35 % in the number of water bodies failing the objectives due to physical alterations from agriculture, dams and barriers and other hydromorphological alterations.

The main progress in terms of closing the gap for hydromorphological pressures is expected between 2021 and 2027, whereby for many pressures a reduction of the pressure by 50 % up to 100 % is foreseen compared to 2015 levels. At the same time, however, for many hydrological alterations only a small reduction of the pressure will be achieved by 2027.

## 13.2 Main changes in implementation and compliance since the first cycle

The links of pressures to drivers and operational measures are clearer compared to the first RBMPs, due to the improved reporting in WISE.

The RBMP for the Rhine highlights the progress made with hydromorphological measures. Marked progress includes the reconnection of water bodies in the floodplain with the river, while measures to improve structural hydromorphological diversity of the banks are lagging behind in terms of progress since the first RBMPs.

[55] https://circabc.europa.eu/sd/a/4063d635-957b-4b6f-bfd4-b51b0acb2570/Guidance%20No%2031%20-%20Ecological%20flows%20%28final%20version%29.pdf

## 13.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *Consider and prioritise the use of green infrastructure and/or natural water retention measures that provide a range of environmental (improvements in water quality, flood protection, habitat conservation etc.), social and economic benefits which can be in many cases more cost-effective than grey infrastructure.*

  Assessment: The specific KTM 23 - "Natural water retention measures" is not specifically reported to address significant pressures in any RBD. At the same time, reference is made to the inclusion of integrated approaches (including Natural Water Retention Measures and green infrastructure) in several water-related strategies and plans, which will have consequences for the implementation of Natural Water Retention Measures in all RBMPs.

  Therefore, as there is evidence on the intention to consider, as well as the actual use of green infrastructure and Natural Water Retention Measures, this recommendation is considered to be fulfilled.

# Topic 14 Economic analysis and water pricing policies

## 14.1 Assessment of implementation and compliance with WFD requirements in the second cycle and main changes in implementation and compliance

A broad definition of water services is used by the Netherlands. These include: production and delivery of drinking water; collection and removal of rainwater and sewage; sewage treatment; groundwater management, and; regional water management. The following water services were reported to WISE: drinking water abstraction, treatment and distribution, and the four "other" services of "groundwater management including self-services", "regional water quantity management including self-services and regional flood protection", "sewage collection including self-services" and "wastewater treatment including self-services". The Netherlands has not designated hydropower, flood protection (for waters under national management), shipping and recreation as water services.

It is indicated in WISE that all uses - households, industry and agriculture - contribute to cost recovery of the water services.

Each RBMP contains a general description of cost recovery, and cost recovery rates are provided. For each of the water services, it has been determined who is responsible for offering this service, which sector makes use of the service and how much of it, the involved costs for offering the water service and the amount required to be recovered from each user. Cost recovery rates are between 96 % and 104 %. Deviations from 100 % represent yearly differences, but 100 % is reached on average over a longer period. It is reported that the costs are recovered via regional or local charges and via drinking water contributions.

Regarding the integration of environmental and resource costs in the costs recovered, it is reported in WISE that calculations of environmental and resource costs are derived for all water services, that these costs are considered as internalised.

Regarding resource costs, it is stated that because the water system management provides sufficient water for each water user under normal circumstances, there is no significant shortage of water at a large scale. Resource costs are therefore estimated and calculated, but are negligible and not considered further in cost recovery calculations.

It is stated that the “adequacy” of contribution of different water uses is guaranteed. Similarly, it is stated that the Polluter Pays Principle has been taken into account.

The economic analysis is reported as updated.

## 14.2 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- *Recommendation (from 2012): The cost-recovery should address a broad range of water services, including impoundments, abstraction, storage, treatment and distribution of surface waters, and collection, treatment and discharge of waste water, also when they are 'self-services', for instance self-abstraction for agriculture. The cost recovery should be transparently presented for all relevant user sectors, and environment and resource costs shall be included in the costs recovered. Information should also be provided on the incentive function of water pricing for all water services, with the aim of ensuring the efficient use of water. Information on how the polluter pays principle has been taken into account should be provided in the RBMPs.*

  Assessment: In the RBMPs of the Netherlands, the following water services are identified: production and delivery of drinking water, collection and removal of rainwater and sewage, sewage treatment, groundwater management, regional water management. In WISE, the following water services are reported: drinking water abstraction, treatment and distribution, and the four "other" services "groundwater management including self-services", "regional water quantity management including self-services and regional flood protection", "sewage collection including self-services" and "wastewater treatment including self-services".

  This covers a broad range of water services as mentioned on the recommendation.

  It is stated in the RBMPs that all significant pressures are covered by the water services. However, there is no explanation, justification or information in the RBMPs how this identification took place.

  Each RBMP contains a general description on cost recovery, and cost recovery rates are provided. For each of the water services it has been reported who is responsible for the offering of this service, which sector makes use of the service and how much, the involved costs for offering the water service and how much is required to be recovered

from each user. Cost recovery rates are between 96 % and 104 %. Deviations from 100 % are yearly differences, but 100 % is reached on average over a longer period. It is reported that the costs are recovered via regional or local charges and via drinking water contributions.

Details on how adequacy of contributions of the different water users are determined are provided in the background document[56].

Regarding the integration of environmental and resource costs in the costs recovered, it is reported in WISE that calculations are carried out on environmental and resource costs for all water services, that these costs are considered as internalised, and that the resource costs are considered to be "not significant". It is reported in each of the RBMPs that a significant part of the costs of water services for environmental protection can be seen as environmental costs. These costs are included in existing payments by users, and are internalised environmental costs. Costs for additional measures can be seen as the not-internalised part of environmental costs. The moment that these measures are implemented, costs are being transferred and recovered in the contributions from different users. This way, also this not yet internalised part of the environmental costs will eventually be internalised.

Regarding resource costs, it is stated that because the water system management provides sufficient water for each water user under normal circumstances, there is no significant shortage of water at a large scale. Resource costs are therefore estimated and calculated, but are negligible and these are not further considered in payments by users or taxation. As mentioned in Section 14.1, it is stated that the "adequacy" of contribution is guaranteed. Similarly, it is stated that the Polluter Pays Principle is been taken into account in this way although no further justification of this statement was available[57].

Progress on the European Commission's recommendation can be noted, e.g. regarding the broad definition of water services and cost recovery calculations, environmental and resource costs, the Polluter Pays Principle and "adequateness". The recommendations is therefore considered to be fulfilled.

[56] Sterk Consulting, Kostenterugwinning van waterdiensten (2013). https://www.waterkwaliteitsportaal.nl/documenten/december2015publiek/SGBP2/Sterk-Kostenterugwinning_van_waterdiensten_2013.pdf

[57] In July 2018, the Netherlands subsequently noted that no significant cross-subsidisation takes place between the water users agriculture, industry and households, and that the Netherlands therefore applied the polluter pays principle in the correct way.

# Topic 15 Considerations specific to Protected Areas (identification, monitoring, objectives and measures)

## 15.1 Assessment of implementation and compliance with WFD requirements in the second cycle

Protected Areas have been designated for the Drinking Water, Bathing Water, Habitats and Birds Directives as well as for areas designated for the protection of economically significant aquatic species in surface waters. The whole country is designated as nutrient sensitive area under the Nitrates or Urban Waste Water Treatment Directive. The same designations mainly apply to groundwaters (Table 15.1).

***Table 15.1 Number of protected areas of all types in each RBD of The Netherlands, for surface and groundwater***

| Protected Area type | Number of Protected Areas Associated with | | | | |
|---|---|---|---|---|---|
| | Rivers | Lakes | Transitional | Coastal | Groundwater |
| Abstraction of water intended for human consumption under Article 7 | 5 | 2 | 1 | | 16 |
| Recreational waters, including areas designated as bathing waters under Directive 76/160/EEC[58] | 55 | 117 | 12 | 78 | |
| Protection of species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 79/409/EEC (Birds)[59] | 15 | 42 | 3 | 6 | 30 |
| Protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC (Habitats)[60] | 51 | 38 | 4 | 7 | 116 |

[58] Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007

[59] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147

[60] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043

| Protected Area type | Number of Protected Areas Associated with | | | | |
|---|---|---|---|---|---|
| | Rivers | Lakes | Transitional | Coastal | Groundwater |
| Nutrient-sensitive areas, including areas designated as vulnerable zones under Directive 91/676/EEC (Nitrates Directive) and areas designated as sensitive areas under Directive 91/271/EEC (Urban Wastewater Treatment Directive)[61] | Whole territory | Whole territory | Whole territory | Whole territory | Whole territory |
| Areas designated for the protection of economically significant aquatic species | | 1 | 1 | 4 | |

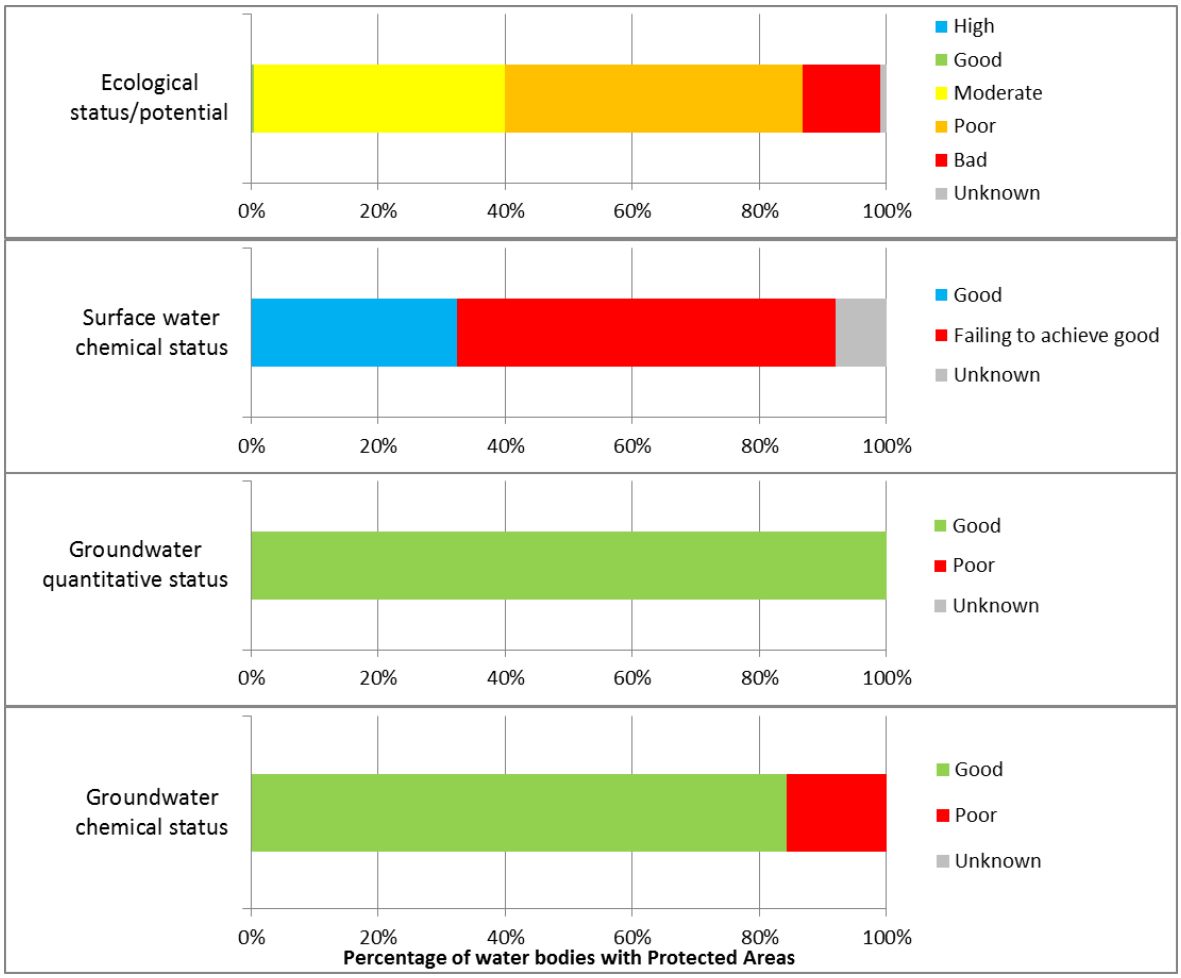
*Source: Member States reports to WISE*

The status assessment is reported to have high or medium confidence although this cannot be verified by information related to specific monitoring of all Protected Areas.

A good overview of the status (chemical and ecological and for groundwater also quantitative) of water bodies associated with Protected Areas is reported (Figure 15.1).

[61] Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0271

***Figure 15.1 Status of water bodies associated with the Protected Areas report for the Netherlands. Note: based on status/potential aggregated for all water bodies associated with all Protected Areas***




*Source: WISE electronic reports*

The Netherlands reported that additional objectives have been set for Protected Areas designated in relation to Shellfish and Drinking Water Directive Protected Areas (both surface and groundwater) but not for those relating to Bathing Water Directive or economically significant aquatic species[62].

For the Habitats and Birds Protected Areas (both surface water and groundwater dependent), the Netherlands reports that a default approach has been used to set additional objectives. The Netherlands subsequently informed the Commission that most of the Protected Areas under the

[62] The Netherlands subsequently clarified that monitoring information for Bathing water, Nitrate, UWWTD or MSFD are available and are reported under the respective Directives, so as to avoid double reporting.

management plans of the Birds and Habitats Directives are finalised and in operation. It should be noted that for groundwater dependent Habitats and Birds Protected Areas, the protected areas are divided into two categories: objective met and objective not met. For surface waters no information is provided as to whether objectives have been met for sites relating to the Birds and Habitats Directives as work is on-going. Objectives for shellfish waters are reported to have been met, but not all objectives are reported to have been met for Drinking Water Protected Areas. For groundwaters across the four RBDs, a mixed response is presented with not all objectives having been met for Birds, Habitats and Drinking Water related protected areas[63].

The Netherlands did not report that any additional objectives have been set for the remaining types of Protected Areas[64].

A monitoring programme for groundwater associated Drinking Water Protected Areas has been reported, but no monitoring was reported for groundwater dependent habitats or rivers.

A closer examination of the RBMPs has not revealed any information about the implementation of additional measures[65] for any of the types of Protected Area except for the use of safeguard zones for the protection of drinking water. However, the Netherlands subsequently informed the Commission that for most Protected Areas under the Birds and Habitats Directives, the relevant management plans are finalised and operational.

Also the use of safeguard zones is mentioned for the protection of drinking water, but there will be significant changes to them implemented as a result of this second cycle of River Basin Management Plans.

No monitoring data have been reported for surface waters and for groundwater monitoring data is only reported for drinking water areas (Table 5.1).

[63] The Netherlands subsequently highlighted that the reporting for the Habitats Directive will be updated in 2019.

[64] The Netherlands subsequently clarified that for the Habitats and Birds Protected Areas reference is made to the so-called 'Aanwijzingsbesluiten'. All but one of the "aanwijzingsbesluiten" are finalized and therefore information is available on what is protected (birds, vegetation, animals and habitats) and which objective should be realised. Habitat types and species are affected by the quality and quantity of surface- and /or groundwater. The specific requirements for habitat types and species are given in so-called "profielendocumenten".

[65] The Netherlands subsequently highlighted that in paragraph 1.2 of the Program of Measures of the RBMPs reference is made to management plans for the protected areas under the Bird- and HabitatDirective (see also https://www.synbiosys.alterra.nl/natura2000/gebiedendatabase.aspx?subj=actualiteitbeheerplannen). These management plans contain information about the implementation of additional measures. Specifically special requirements for permitting in these areas are mentioned. Moreover, the management plans themselves contain several other measures to protect or restore habitats and species.

Exemptions have been applied only in relation to Article 7 Drinking Water Protected Areas (seven out of nine).

## 15.2 Main changes in implementation and compliance since the first cycle

The number of bathing water sites has significantly changed from the first RBMP (644 sites) to the second RBMP (262 sites). For the remaining Protected Area types only minor changes in numbers of sites are reported.

In the first RBMP, specific monitoring programmes for areas related to the drinking water (surface and groundwater), Birds, Habitats and Shellfish Directives were reported. In the second RBMP reporting, specific monitoring has only been reported for groundwater drinking water areas[66].

## 15.3 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

- Recommendation: *Include additional measures for protected areas in the second River Basin Management Plans.*

  Assessment: The examination of the RBMPs has not provided information about additional measures for protected areas except that safeguard zones have been established for drinking water protected areas. The Netherlands clarified that the information on these areas was reported under the reporting obligations of the relevant Directives. For Habitats and Birds areas[67], the Netherlands confirmed that the relevant management plans are developed and implemented in most of the areas, but this has not yet been fully done in all.

  The recommendation has been partially fulfilled.

[66] The Netherlands subsequently clarified that the lack of reporting probably relates to the fact that there has been no change since the first RBMP.

[67] The Netherlands subsequently informed the Commission that "reference is made to the management plans for each protected area," and that "some plans have not been finalised".

# Topic 16 Adaptation to drought and climate change

## 16.1 Requirements in the second cycle

### 16.1.1 Climate Change

Climate change was considered in several ways in all RBDs and it is stated that the guidance on how to adapt to climate change (Common Implementation Strategy Guidance Document Number 24[68]) was used. Climate change was considered for the preferential selection of robust adaptation measures and checking the effectiveness of the measures. It was further considered in flood risk and drought management and water scarcity. Climate change was also used for maximising cross-sectoral benefits and for minimising negative effects across sectors and for detecting climate change signals.

KTM 24 - "Adaptation to climate change" is not reported to have been made operational to address significant pressures in any of the RBDs. National measures are also mapped against KTM 24 in all RBDs. Although KTM 24 is not made operational to address significant pressures in any of the RBDs, there is reference to a background document on the climate robustness of measures which was previously developed the first RBMPs. Specific sub-plans addressing climate are also reported for all RBDs in the Netherlands.

### 16.1.2 Effects and impacts of prolonged droughts, as well as related measures

Even though there is no legal obligation to prepare Drought Management Plans, many Member States have prepared them in order to cope with droughts. According to the 2012 Topic Report on Water Scarcity and Drought in RBMPs[69], droughts are not relevant for the country. However, exemptions have been applied following Article 4(6) due to prolonged droughts for all four RBDs. Furthermore, sub-plans addressing water scarcity and droughts have been reported for all RBDs in the second cycle. This is in agreement with the finding in the 2012 Topic report that such plans or key elements were in place.

## 16.2 Progress with Commission recommendations

The Commission recommendations based on the first RBMPs and first PoM requested action on the following:

[68] https://circabc.europa.eu/sd/a/a88369ef-df4d-43b1-8c8c-306ac7c2d6e1/Guidance%20document%20n%2024%20-%20River%20Basin%20Management%20in%20a%20Changing%20Climate_FINAL.pdf

[69] http://ec.europa.eu/environment/water/quantity/pdf/Assessment%20WSD.pdf

- Recommendation: *The issue of adaptation to climate change is very relevant in the Netherlands. It will be advisable that the next Dutch RBMPs integrate the dimension of climate change into the development and implementation of the measures, including in meter allocation systems.*

  The Common Implementation Strategy guidance was used for climate proofing of measures and it is stated that climate change was considered for the preferential selection of robust adaptation measures and for checking the effectiveness of measures. No specific mention of meter allocation systems can be identified but overall it is considered that progress has been made and this recommendation has largely been fulfilled.