Summary of the Management Plan for the Flemish part of the International Scheldt/Meuse River Basin Districts

Non-technical summary

Contents

This document is a summary of the management plans for the Flemish part of the international Scheldt/Meuse river basin districts for the period 2016-2021.

The river basin management plans for the Scheldt and the Meuse consist of different plan parts:

- management plans for the Flemish parts of the international Scheldt/Meuse river basin districts
- eleven basin-specific parts
- six groundwater system-specific parts
- a programme of measures for the river basin management plans
- revised zoning plans and area-wide implementation plans per municipality.

The flood risk management plans do not constitute distinct plan parts, but have been integrated into the "management plans Flemish parts", the "basin-specific parts" and the programme of measures.

The river basin management plans 2016-2021 and the associated background documents are available on www.integraalwaterbeleid.be.

1. General information

The river basin management plans 2016-2021 are based on two European Directives: the Water Framework Directive (WFD) and the Floods Directive (FD). Both Directives have been implemented in Flanders through the Decree on Integrated Water Policy.

The **Water Framework Directive** (2000/60/EC) establishes a legal framework to protect and restore water quality and ensure the sustainable use of water in the long-term. The central objective is to achieve good status of the water system. At this, the principle of cost recovery for water services, based on the 'polluter pays principle' must be taken into account. The Directive sets specific deadlines for achieving good status of the water systems (both surface water and groundwater) and provides for a number of exemptions from the requirement to achieve good status. Measures to achieve good status are included in river basin management plans which had to be established for the first time by the end of 2009 and subsequently have to be revised and re-established every six years.

The **Floods Directive** (2007/60/EC) establishes a legal framework to assess and manage flood risks in order to mitigate the negative impacts that floods may pose to human safety, the environment, cultural heritage and economic activities. Measures to mitigate these negative impacts are included in flood risk management plans, which in Flanders are part of the river basin management plans. These had to be established for the first time by the end of 2015 and will subsequently be revised every six years. The Directives provide for a water management approach at the level of river basin districts (RBD). Flanders is part of the international Scheldt and Meuse river basin districts. The Flemish parts of the international river basin districts consist of 11 sub-basins.

Table 1: General description of the Scheldt and Meuse river basin districts

A river basin district is formed by one or more adjoining river basins with the accompanying ground- and coastal waters	**Scheldt river basin district**	**Meuse river basin district**
Countries	France, Belgium and the Netherlands	France, Luxembourg, Germany, Belgium and the Netherlands
Area	36 500 km², of which 12 026 km² within Flanders	34 500 km², of which 1 601 km² within Flanders
Total length Scheldt/Meuse	350 km, of which approximately 50% in Flanders	950 km, of which approximately 50 km in Flanders
River basins in Flanders	Scheldt, Yser, Bruges Polders	Meuse
Sub-basins in Flanders	10 sub-basins: Yser, Bruges Polders, Ghent Canals, Lower Scheldt, Leie, Upper Scheldt, Dender, Dyle and Zenne, Demer, Nete	1 sub-basin: Meuse
Groundwater systems in Flanders	5 groundwater systems: Aquifer Systems of the Eocene, Paleocene and Chalks; of the Campine Region; of the Quaternary and Tertiary in the Western part of Flanders; of the Coast and Polders; of the Chalks and the Brabant Massif Basement	3 groundwater systems: Aquifer Systems of the Eocene, Paleocene and Chalks; of the Campine Region; of the Meuse Basin

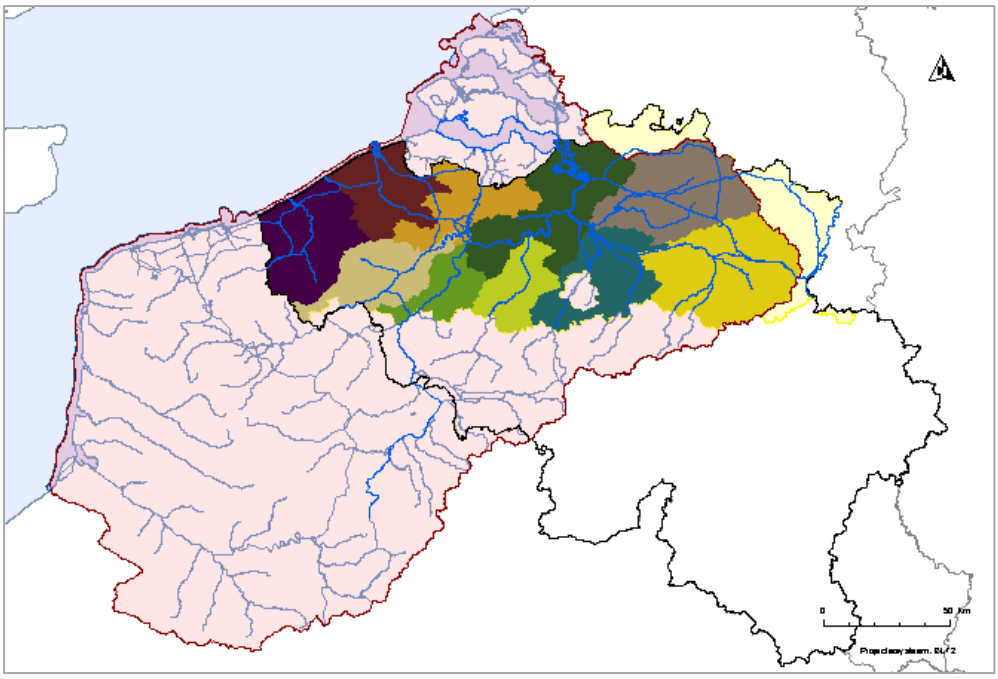

Figure 1: Situation of the international Scheldt river basin district

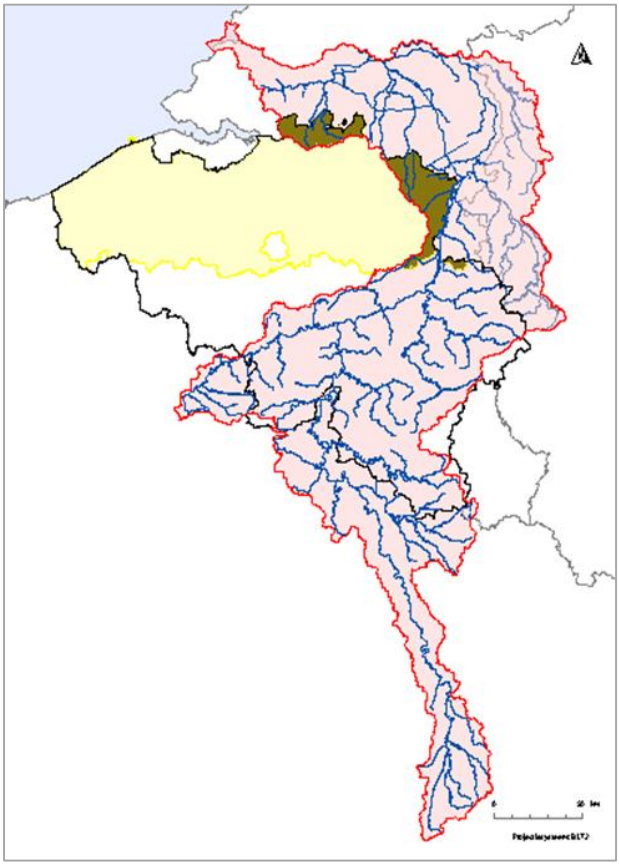

Figure 2: Situation of the international Meuse river basin district

The **multilateral coordination** regarding the implementation of the WFD in the international Scheldt river basin district falls under the Scheldt Treaty concluded between the governments of France, the Federal State of Belgium, the Walloon Region, the Flemish Region, the Brussels-Capital Region and the Netherlands. For this international coordination, the consultative structure of the International Scheldt Commission (ISC) was established.

The multilateral coordination in the international Meuse river basin district falls under the Meuse Treaty concluded between the governments of France, the Federal State of Belgium, the Walloon Region, the Flemish Region, the Brussels-Capital Region, the Netherlands, Germany and Luxembourg. For this international coordination, the consultative structure of the International Meuse Commission (IMC) was established.

After the Floods Directive entered into force, it was decided to entrust also the multilateral coordination of the implementation of this directive to the ISC and the IMC.

The **competent authority** for the implementation of the Water Framework Directive and the Floods Directive in Flanders is the Coordination Committee on Integrated Water Policy (CIW). The CIW prepares the draft river basin management plans for the Scheldt and the Meuse, organises the public consultation, compiles the final draft plans based on the comments and recommendations received, and presents them to the Flemish Government which enacts the river basin management plans.

The **river basin management plans** for Scheldt and Meuse lay down the framework of the integrated water policy for the respective river basin districts, including planned measures, actions, resources and deadlines for achieving the objectives of the Decree on Integrated Water Policy.

In the management plans for the Flemish parts of the Scheldt and Meuse river basin districts, the focus is on the Flemish surface water bodies, i.e. water bodies with a catchment area greater than 50 km², and on groundwaters.

Since the amendments of 19 July 2013 to the Decree on Integrated Water Policy, the river basin management plans have been supplemented with 11 sub-basin-specific parts and 6 groundwater system-specific parts.

The sub-basin-specific parts focus on water policy in the sub-basins and contain actions for the surface water bodies in the sub-basins to achieve the objectives set for the sub-basin. Attention is paid both to the Flemish surface water bodies (catchment area > 50 km²) and to the local surface water bodies (catchment area < 50 km²).

The groundwater system-specific parts take a more in-depth look at the condition of and the pressure on the groundwater systems and formulate actions for the groundwater bodies of the system.

Since the further development and optimisation of the sewerage system are important measures to achieve good water status, the revised zoning plans and the area-wide implementation plans are also part of the river basin management plans.

2. Analyses and protected areas

2.1 Analyses

The analyses characterise the river basin district and describe the influence (pressures and impact) of human activities on the water system, the flood risk and the major economic sectors in the river basin.

The **characterisation** describes the characteristics of the surface water and groundwater systems. The surface waters and the groundwaters are subdivided into water bodies. The same environmental objectives apply within a single water body.

A surface water body belongs to one of the following four categories: rivers, lakes, transitional waters or coastal waters. Each surface water body category is further differentiated into water body types with associated type-specific assessment framework. For each surface water body, it has been checked whether it is a natural, a heavily modified or an artificial water body.

For **natural surface water bodies**, the WFD targets **good chemical status** and **good ecological status** by the end of 2015; for **heavily modified and artificial surface water bodies**, the Directive targets **good chemical status** and **good ecological potential** by the end of 2015. This deadline can be extended twice by 6 years provided the reasons for the application of exemptions are justified.

Table 2: Surface water characteristics

	Scheldt river basin district			**Meuse river basin district**		
Number of Flemish surface water bodies (SWB) per category *Flanders has a total of 195 surface water - bodies.*	River: 155	Artificial	33	River: 15	Artificial	1
		Heavily modified	99		Heavily modified	7
		Natural	23		Natural	7
	Lake: 15	Artificial	14	Lake: 3	Artificial	3
		Heavily modified	1			
	Transitional waters: 6	Artificial	3			
		Heavily modified	3			
	Coastal waters: 1	Natural	1			

The Flemish groundwater is divided into six groundwater systems located at different depths above and alongside each other.

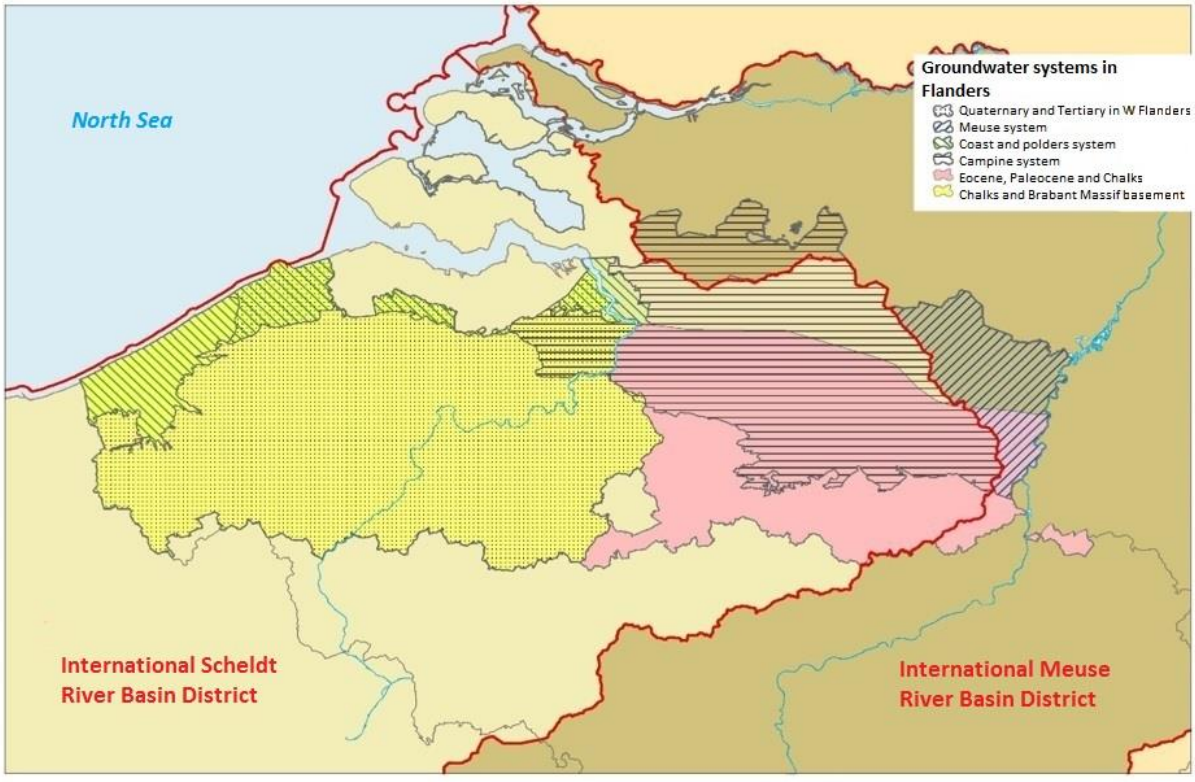

Diagram 3: Groundwater systems in Flanders

Each system is subdivided into groundwater bodies. Groundwater bodies are distinct volumes of groundwater within an aquifer or aquifers. For **groundwater bodies**, the WFD targets **good chemical status** and **good quantitative status** by the end of 2015.

Table 3: Groundwater characteristics

	Scheldt		**Meuse**	
Number of groundwater bodies per groundwater system *Flanders has a total of 42 groundwater bodies.*	Aquifer Systems of the Eocene, Paleocene and Chalks	10	Aquifer Systems of the Eocene, Paleocene and Chalks	5
	Aquifer System of the Campine Region	2	Aquifer System of the Campine Region	2
	Aquifer Systems of the Quaternary and Tertiary in the Western part of Flanders	8	Aquifer System of the Meuse Bassin	3
	Aquifer Systems of the Coast and Polders	5		
	Aquifer Systems of the Chalks and the Brabant Massif Basement	7		

For each sector (such as households, businesses, agriculture, transport, tourism and recreation and the use of hydropower) that has a significant impact on the water status, the **general description of the water use sectors** describes a number of economic evolutions and environmental facts.

The assessment of **pressures and impact** shows that the different sectors have a clear impact on both groundwater and surface water. The main causes are the high population density, the intensive urbanisation, the dense network of transport routes, the high degree of industrialisation, and the intensive agriculture in Flanders.

The pollution of **surface water** by a wide range of substances (organic substances, nutrients, dangerous substances, metals and pesticides) has significantly decreased over the last few decades, but great efforts remain to be made to reach good water status. Households whose wastewater is not treated at a wastewater treatment plant (WWTP) still account for a major share of surface water pollution through the discharge of organic substances and nutrients. WWTPs that mainly treat household wastewater account for an equally large share. What is remarkable is the low share of businesses (sum of industry, energy and trade & services) in surface water pollution caused by organic substances (Figure 4). Surface water pollution due to industrial emissions shows a downward trend thanks to increased treatment efforts by companies.

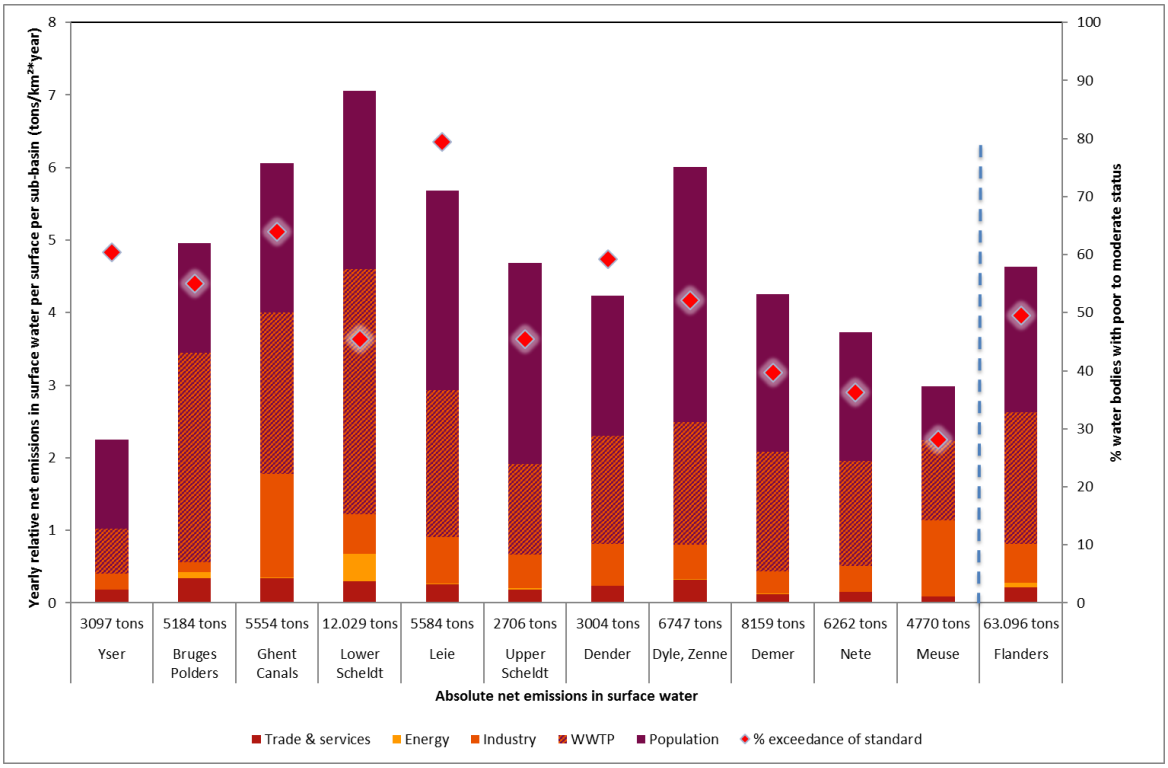

Figure 4: emissions of chemical oxygen demand (COD) and status assessment for dissolved oxygen per sub-basin (2012)

Via fertilisation, agriculture is responsible for the largest share of the total nitrogen load and the total phosphorus load that ends up in the surface water (Figure 5).

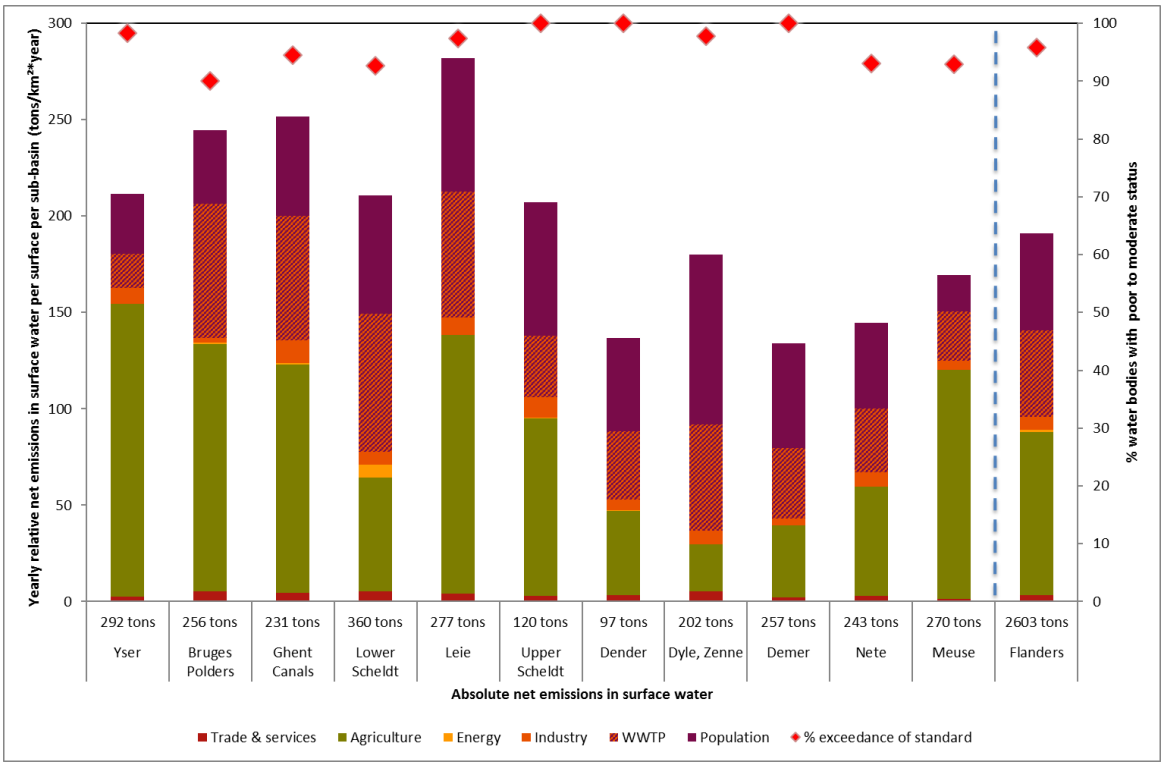

Figure 5: phosphorus emissions and assessment of the phosphorus status per sub-basin (2012)

An important factor determining the ecological status of a watercourse is the hydromorphology (Figure 6). A water body with a natural hydromorphology would contain a wide variety of biotopes and associated organisms. Especially in the second half of the 20th century however, many watercourses in Flanders were straightened, broadened and deepened, allowing water to drain as quickly as possible. Banks were reinforced and weirs were installed to regulate water levels. These changes have a significant impact on fauna and flora. Out of all Flemish water bodies (rivers and transitional waters categories), 49 % score poor to bad, 40 % score moderate and only 9 % score good in terms of hydromorphogical quality.

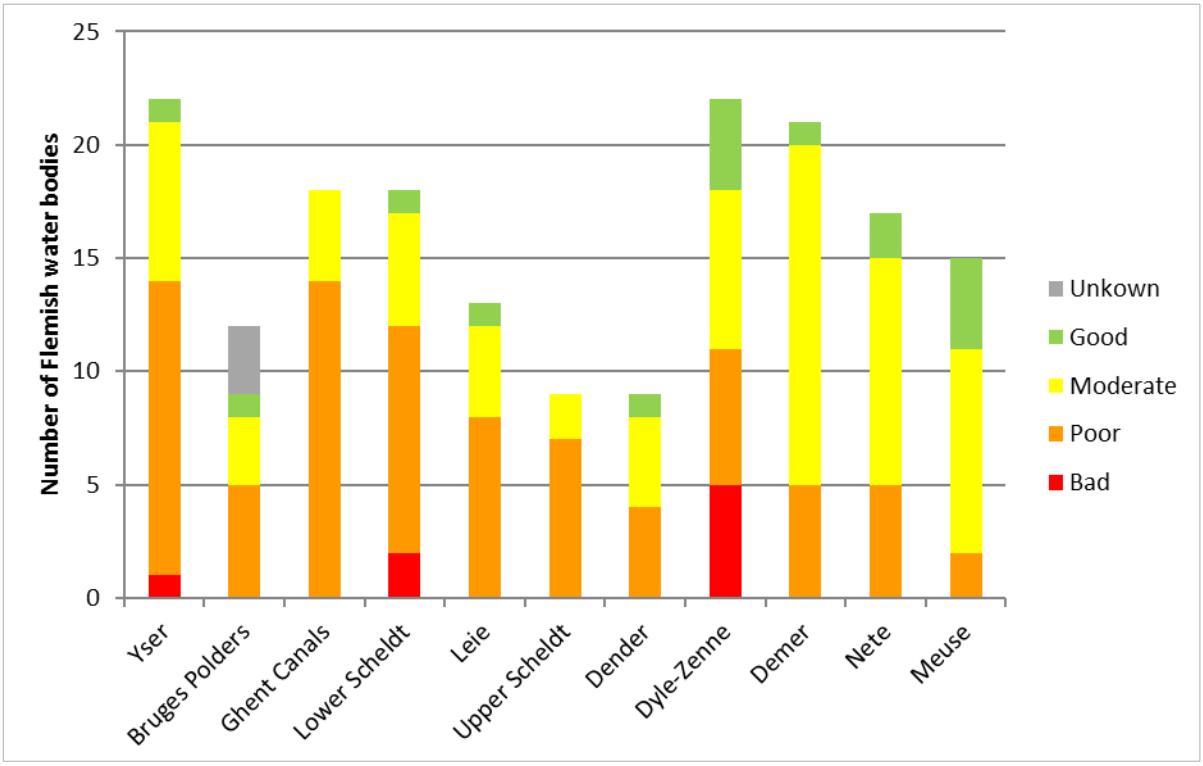

Figure 6: Hydromophological quality assessment (EQC) of Flemish water bodies (rivers and transitional waters categories) per sub-basin in Flanders

Furthermore, surface water abstraction i.e. for the production of drinking water or for use as cooling water creates pressure on surface water quantities. This pressure will be further intensified by the impact of climate change.

Groundwater quality suffers from pollution by e.g. nutrients (Figure 7) and pesticides.

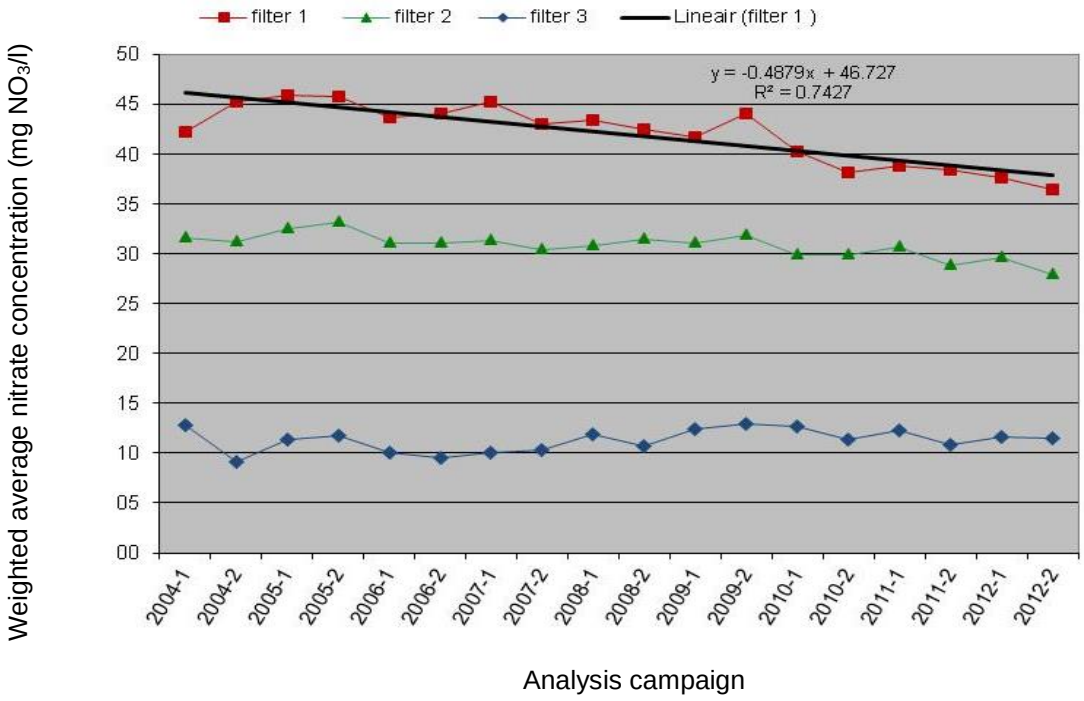

Figure 7: Evolution of the weighted average nitrate concentration in groundwater for the whole of Flanders, subdivided per filter level

A number of groundwater systems are also under quantitative pressure as a result of excessive pumping of water and the limited replenishment thereof. This results in lower groundwater levels.

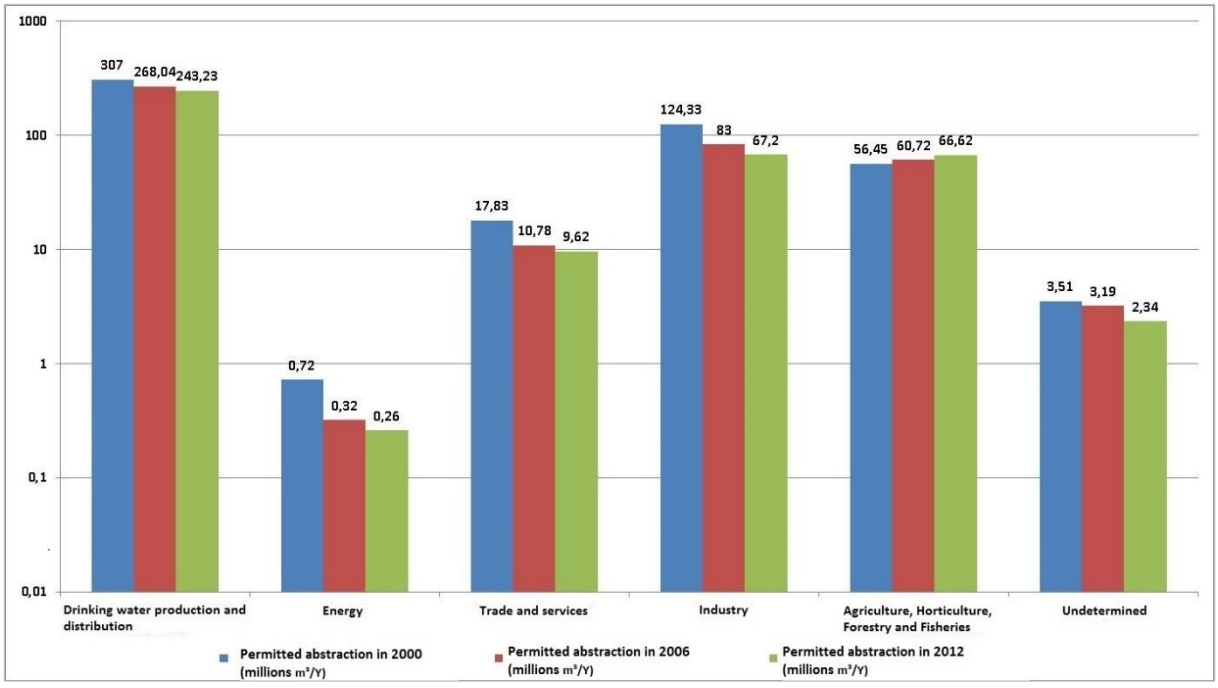

Figure 8: Evolution of permitted groundwater withdrawals 2000-2006-2012

The total permitted abstraction volume of groundwater (Figure 8) has decreased over the period 2000-2006-2012. At the end of 2012, the total permitted volume for groundwater collection was just below 400 million m³ per year, which is 111 million m³ or 22 % less than at the end of 2000.

The **flood risk** was analysed within the framework of the Floods Directive. The flood risk is defined as the combination of flood probability and the consequences of a flood for human health, the environment, the economy and cultural heritage. A distinction is made between floods with a high, medium and low probability, corresponding with a return period of 10 years, 100 years and 1000 years, respectively.

Within Flanders more than 220,000 people are at risk of floods that occur exceptionally (return period of once every 1000 years). More than 70,000 of the inhabitants are also located within the medium flood probability area and more than 11,000 live within the high flood probability area (Figure 9). The majority of these 11.000 inhabitants living in the high flood probability area, reside in the Dyle, Demer and Dender sub-basins. For low probability floods, the majority of inhabitants concerned reside in the sub-basins Bruges Polders, Yser and Lower Scheldt. This difference is due to the impact of floods originating from the sea as a result of coastal breaches, which were also included in the analysis.

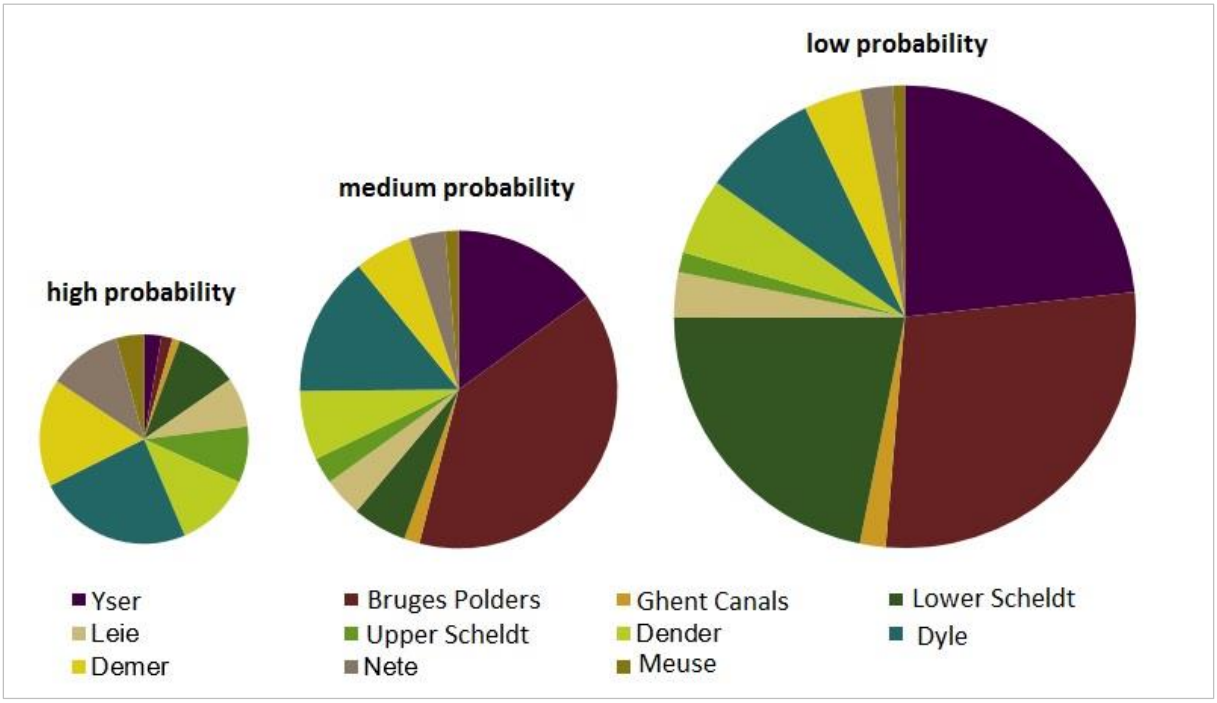

Figure 9: Distribution of inhabitants at risk for each flood risk scenario (high, medium and low probability) per sub-basin in Flanders.

Lastly, an **economic analysis** is provided to determine the cost recovery of the water services. This analysis assesses how the costs incurred for (drinking) water production and distribution as well as for wastewater collection and treatment are distributed over the different water users (households, businesses, agriculture) and the government. The aim is to arrive at a more balanced contribution to the costs by each of these users. In Flanders, the costs for public drinking water production and distribution are fully charged to the users. The cost recovery for drinking water production and distribution thus amounts to 100 %. Public wastewater collection and wastewater treatment costs however, are not fully recovered from the polluters. Cost recovery at the supra-municipal level amounts to 72.5 %. Cost recovery at the municipal level differs from one municipality to the next and varies between 68 % and 232 %.

2.2 Protected areas

In some areas, specific legislation is in place in order to protect the surface water and groundwater against pollution or to protect certain flora and fauna. These “protected areas” concern areas designated for the abstraction of water intended for the production of drinking water, recreational and bathing waters, nutrient sensitive areas and also surface water or groundwater related areas designated for the protection of habitats or ecologically important plant and animal species.

3. Objectives and assessments

3.1 Environmental objectives

The good water status objective is translated into environmental quality standards and environmental quantity objectives for groundwaters and surface waters, as specified in the VLAREM regulation.

The ecological status assessment is based on biological, general physico-chemical and hydromorphological parameters. These parameters are used to determine whether the status of a surface water body is high, good, moderate, poor or bad. For heavily modified and artificial water bodies, a modified status can be formulated in the form of an ecological potential.

The chemical status is defined by a group of chemical substances for which common European quality standards have been established (daughter directive Priority Substances - 2013/39/EC). If all substances meet their standards, the chemical status is assessed as 'good'. If one or more substances do not meet their standard, the chemical status is assessed as 'not good'.

As regards the surface water quantity, environmental quantity objectives are put forward that are aimed at reducing the negative consequences of droughts and floods.

For groundwater, the chemical status is determined on the basis of groundwater quality standards that apply to the whole of Flanders and background levels determined at the water body level. In addition to the quality standards, groundwater quantity objectives have been defined. To assess whether the groundwater quantity is adequate, assessment criteria have been defined that can be used to verify whether the groundwater status is good or poor.

Environmental quality objectives have also been defined for sediments.

In protected areas, achieving only good water status may not be sufficient. The Water Framework Directive requires that the level of protection guaranteed by previous directives is at least maintained or that specific objectives are defined where necessary. That is why in some protected areas more rigorous environmental objectives may apply as a function of the protection these areas enjoy.

3.2 Monitoring and status assessment

Multiple monitoring programmes have been established to ascertain the water status. Monitoring networks are available for surface water quality, surface water quantity (water flow or water level), groundwater quality and quantity, quantity of suspended solids in surface waters, and quality of the sediments. Additional specific monitoring programmes are in place in protected areas.

To assess the water status, the monitoring results are compared with the environmental standards and objectives. For this, the WFD applies the 'one-out-all-out' principle, i.e. when one quality element is not good, the overall status is to be assessed as not good.

Based on this 'one-out-all-out' assessment, no Flemish water body attains a good ecological status or good ecological potential. This is explained by the fact that water bodies often score badly in the field of physico-chemical water quality and hydromorphology. Both characteristics have an impact on biological life in the water body. The following figures show the share of the assessed Flemish water bodies per quality class for the ecological status assessment and the underlying quality elements.

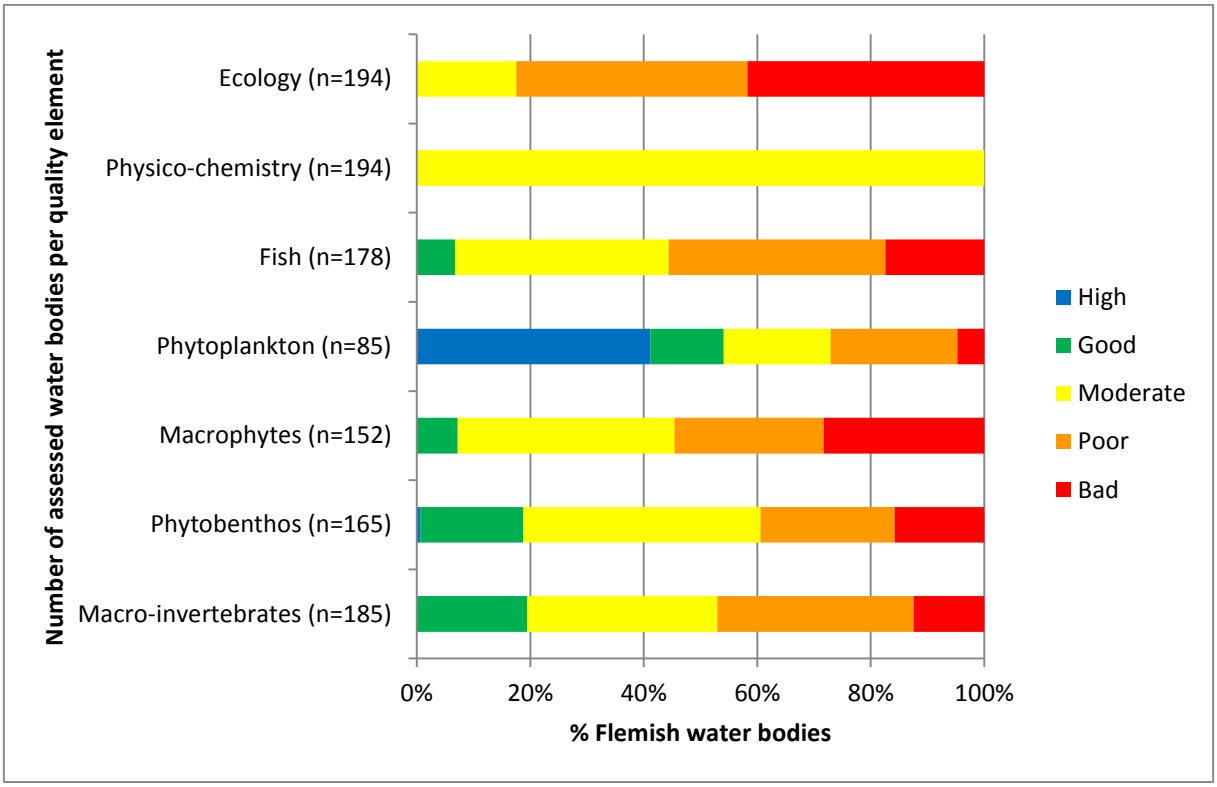

Figure 10: Ecological status assessment Flanders: percentage of water bodies per quality class for each quality element (n = number of sampled water bodies) and final assessment of the ecological status on the basis of "one-out-all-out".

Surface water quantity is also closely monitored. Monitoring results are used to manage the water levels in rivers and canals and allow for timely deployment of storm water infrastructure (retention basins, wetlands) in case of imminent flood hazard.

Groundwater quantity is monitored monthly and groundwater quality at least semi-annually. 34 of the 42 groundwater bodies attain the good quantitative status. 9 of the 42 groundwater bodies attain the good chemical status. Only if a groundwater body reaches both the good quantitative and the good chemical status, the groundwater body has attained the good status. This is the case for 8 groundwater bodies in Flanders (Figure 11).

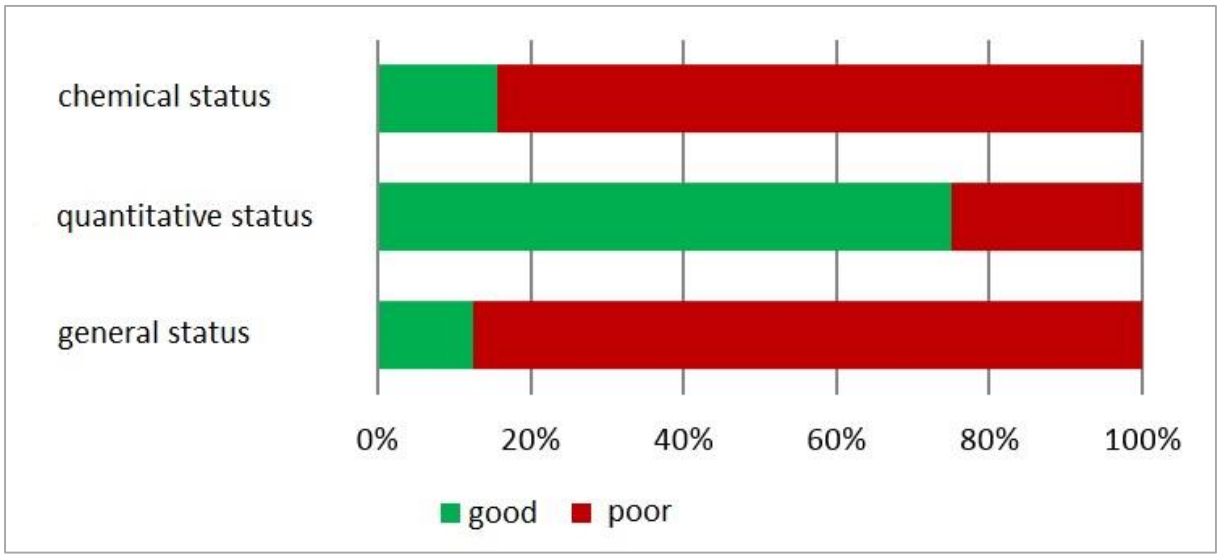

Figure 11: Groundwater status assessment: percentage of groundwater bodies in good or poor status

Furthermore, the quantity of sediment or suspended solids in the water is monitored in a number of erosion sensitive areas. The monitoring results show that the Upper Scheldt and the Dyle, with their catchment areas, have the greatest share in the total sediment influx into the Scheldt.

Finally, the quality of the river sediments is examined. A comparison of the monitoring results with the environmental objectives for sediments shows that 70 % of the sediments are polluted to heavily polluted. 22 % of the sediments are slightly polluted while only 8 % show no pollution.

4. Vision

The **policy objectives** for integrated water policy in Flanders are included in the second water policy paper, which was endorsed by the Flemish government on the 20th of December 2013. The water policy paper outlines the major challenges for integrated water policy, which are described in the water management issues as prescribed by the Water Framework Directive, and the main priorities for future water policy.

The major challenges, for both surface and groundwater, are to achieve good status, guarantee better protection against flooding, and counter the consequences of climate change. Furthermore, the RMBPs must contribute to the conservation of protected species and to a sustainable and safe water supply for man and nature. Financial resources must be used as efficiently as possible and investments in co-operation, consultation and information must be continued.

Pursuant to the Floods Directive, both the causes and the consequential damage of floods are addressed through a mix of protective, preventive and preparatory measures, the so-called **multi layered water safety**.

Given the difficulties to achieve good surface water status -the main objective for all European waters by the Water Framework Directive- anywhere in Flanders, an area-oriented approach to water management with the identification of **priority areas** and **focus areas** has been chosen.

Priority areas are catchment areas of Flemish surface water bodies where reaching good status appears to be feasible by 2021, provided the necessary efforts are made.

Focus areas are catchment areas of Flemish water bodies where reaching good status is deemed feasible by 2027 or where strong local dynamics exist to conduct actions that will significantly contribute to the improvement of the status. 17 Priority areas and 56 focus areas are designated in the river basin management plans 2016-2021.

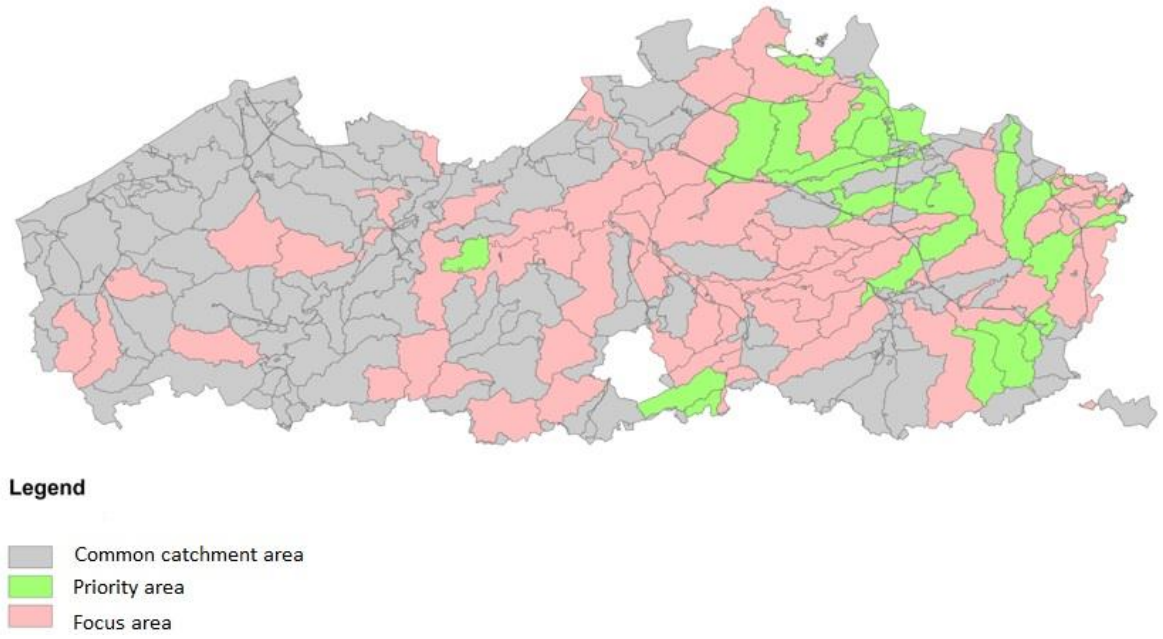

Figure 12: Location of priority areas and focus areas for surface water

For a better coordination between the demand and the supply of groundwater, a differentiated groundwater policy has been developed depending on the status of the groundwater bodies. For groundwater bodies at insufficient quantitative status, action areas and guarding areas have been delineated where **groundwater restoration programmes** will be implemented.

The chapter 'Vision' of the river basin management plans also zooms in on the policy options and the methodologies for the revised zoning plans and the area-wide implementation plans.

Zoning plans lay down a vision on the wastewater treatment method at the municipal level. They show where collective treatment is present and where connection to the sewerage system is mandatory, where collective treatment will be provided in the future, and where individual treatment is mandatory. The first zoning plans were established in 2008-2009. Once established, a zoning plan will be assessed every six years and, where appropriate, revised simultaneously and in accordance with the procedure for establishing the river basin management plans.

The area-wide implementation plans determine the completion deadlines for sewerage projects and individual wastewater treatment systems based on a priority classification linked to the deadlines of the WFD. The demarcation of the municipal and regional treatment tasks in the outlying area (by means of the so-called partition point) is defined and the areas where an exemption from the obligation to construct a separate system, are delineated. The area-wide implementation plans were edited for the first time.

The revised zoning plans and area-wide implementation plans are accessible via a geoportal where the user can zoom in down to plot size."

The Decree of Integrated Water Policy provides the possibility for the demarcation of **floodplains and riparian zones** in the river basin management plans. The river basin management plans 2016-2021 delineate floodplains in the Dender, Dyle-Zenne, Demer, Lower Scheldt and Upper Scheldt basins. No riparian zone projects for the delineation of a riparian zone have been defined in any basin.

Both the Water Framework Directive and the Decree on Integrated Water Management provide for a number of **exemptions for achieving the environmental objectives,** under certain conditions and subject to motivation:

- the deadline for achieving the environmental objectives can be extended by six years, provided the status of the impaired water body does not deteriorate;
- less stringent environmental objectives can be set under specific conditions;
- a temporary deterioration of the status is not in breach of the directive if natural causes or force majeure are involved;
- nor is there any breach if failure to achieve the objectives is the result of new changes and new sustainable activities of human development.

The methodology for the substantiation of exemptions is explained in detail in the chapter 'Vision' of the river basin management plans for Scheldt and Meuse.

5. Programme of measures

Both the Water Framework Directive and the Floods Directive require from the member states measures to achieve the objectives of both directives. Since Flanders decided to integrate the river basin management plans and the flood risk management plans, the measures were combined into one programme of measures. According to Annex II of the Decree of Integrated Water Policy, this programme of measures is divided into 13 thematic groups:

Group 1	European legislation
Group 2	Cost recovery principle and "polluter pays" principle
Group 3	Sustainable water use
Group 4A	Protected areas and wetlands - groundwater
Group 4B	Protected areas and wetlands - surface water
Group 5A	Groundwater quantity
Group 5B	Surface water quantity
Group 6	Flooding
Group 7A	Groundwater pollution
Group 7B	Surface water pollution

Group 8A	Hydromorphology
Group 8B	Sediments
Group 9	Other measures

First, a list of possible measures grounded on these thematic groups was compiled: the **basket of measures**. The analyses, status assessments and water management issues are at the basis of the formulated measures. Next, the basket of measures was translated into actions for the implementation of the proposed measures. The actions that were selected to achieve the objectives of the FD are combined in group 6. The actions that should lead to achievement of the objectives of the WFD are included in the other groups.

The formulated actions are a mix of **water body specific actions** (applicable to one or more water bodies and/or specifically identified areas within one or more water bodies), **sub-basin-wide actions** (applicable to an entire sub-basin), and **generic actions** (applicable to the whole of Flanders).

5.1 Preparation of the WFD action programme

In order to arrive at an affordable and applicable programme of measures, **six scenarios of WFD action packages** were examined in the preliminary drafts of the river basin management plans. Firstly, a list of all actions needed to reach good status was inventoried: the maximal action list. The **WFD actions** of the maximal action list were **prioritised**, both **at action level** and **at area level**.

At action level, a multicriteria analysis was used, in which the cost effectiveness criterion played an important role, alongside other criteria such as feasibility, societal acceptance, consistency with other actions, etc. Based on this multicriteria analysis the actions were divided into two classes. Class I included the actions that were put forward for implementation in the plan period 2016-2021. Class II included the actions that would have to be implemented in the plan period 2022-2027.

The prioritisation from an area-oriented angle took into account the priority areas and focus areas for surface water and the action areas and guarding areas for groundwater. For groundwater bodies at insufficient quantitative status, restoration programmes were compiled. In these groundwater bodies, specific action and monitoring areas where an area-oriented policy is pursued to achieve good status, were identified.

The following scenarios were examined for the Flemish water bodies:

- The **maximal scenario** assumed that all inventoried actions would be implemented during the next plan period (by 2021), regardless of the prioritisation.
- The **ViA** (Flanders in Action) **scenario** implied that most watercourses should have achieved good ecological status by 2020.
- The **priority and focus areas scenario** (PA/FA) emphasised the implementation of actions within the priority and focus areas. Here, the generic and sub-basin-wide class I actions are supplemented with all actions inventoried in the priority and focus areas. For groundwater, this scenario includes all class I actions.
- The **priority areas scenario** emphasised the implementation of actions within the priority areas. Here, the generic and sub-basin-wide class I actions are supplemented with all actions inventoried in the priority areas. For groundwater, this scenario includes all class I actions.
- The **phased scenario** assumed that the implementation of the maximal action list will be spread over the next 2 plan periods, with only class I actions being implemented in the next plan period.
- The **regular resources scenario** assumed that only actions for which no financial efforts are needed will be implemented within the plan period.

Each scenario was analysed in terms of achievement of the objectives (achievement of good water status), costs and disproportionality.

The disproportionality is assessed from 2 perspectives: feasibility (are the costs of the package of measures in proportion to the financial capabilities of industry, agriculture, households and the government?) and reasonableness (are the costs of the package of measures in proportion to the expected contribution to the environmental benefits?). The assessment of the achievement of

objectives was based on the environmental costing module and additional expert assessment. The estimated achievement of objectives varied between 3 % of the surface water bodies in good status by the end of 2021 for the regular resources scenario and two-thirds of the water bodies in good status for the maximal scenario. The estimated additional cost amounted to €299 million per year for the maximal scenario.

The increasing ambition level from a regular resources scenario over a phased scenario to area-oriented scenarios to the maximal scenario, mainly has an impact on affordability for the government. Seen the type of actions to be taken (structural restoration, sediment remediation, etc.), the majority of estimated expenditure is public expenditure.

5.2 Preparation of the FD action programme

Although the actions for the FD and the WFD have different goals, they were maximally aligned with each other. There are, however, differences in approach between the FD and the WFD. First of all, the objectives of the FD are not bound by the deadlines of the WFD. This means that the FD actions can also be implemented in the longer term. Secondly, the actions apply to a different area, and finally, there is the obligation to take into account cost efficiency and climate change. Consequently, the prioritisation methodology used for the FD actions differed from that for the WFD actions.

The prioritisation determines which actions will be implemented first. In the prioritisation, the synergy with the WFD, the economic feasibility, the urgency and the societal risk were taken into account. The final result is a list of actions with low, medium and high priority.

5.3 The programme of measures

Based on the reactions from the public consultation about the river basin management plans and on the results of the disproportionality analysis and taking into account the budgetary context, a **'priority areas, focus areas and class I actions for groundwater' (PA+FA) scenario** was chosen for the final river basin management plans.

For the surface water body specific actions, the emphasis in this scenario is on the implementation of actions in the priority areas and the focus areas. For groundwater, this scenario includes all class I actions. This scenario was modified in a number of respects with regard to the original PA+FA scenario which was proposed for public consultation, to take into account the reactions from the public consultation and to further decrease the additional costs.

As regards the **actions in implementation of the FD**, the **longer-term actions** have also been maintained for the final river basin management plans, because the FD action programme is not linked to the cycles of the WFD.

The programme of measures for the river basin management plans focuses on generic actions. The sub-basin-wide and water body specific actions are addressed in the sub-basin-specific parts and the groundwater system specific parts.

6. Conclusions

6.1 Updates

The conclusions of the RBMP describe the major updates with respect to the river basin management plans 2010-2015. Some important novelties in the river basin management plans 2016-2021 are:

- the integration of the different plans and plan levels: integration of the flood risk management plans, zoning plans and area-wide implementation plans and the more detailed plan parts at sub-basin and groundwater system level;
- for the identification of heavily modified water bodies, beneficial objectives “land drainage” and “water management/water regulation” were additionally taken into account;
- the analysis of pressures and impact is based on analyses and inventories at water body level;
- a detailed emission inventory has been compiled for the priority substances;

- the methodology for the application of the exemptions has been further substantiated.

6.2 Progress in achieving the environmental objectives

Although the RBMP 2010-2015 assumed that seven Flemish surface body waters would have reached good status by 2015, this objective had not yet been achieved at the time of the status assessment (2012-2013). No water body in the Scheldt and Meuse river basin districts attains good ecological status or good ecological potential on the basis of the 'one-out-all-out' principle, according to which the worst quality element is decisive for the overall status assessment.

There is also little evolution in the final assessment as compared to the period 2005-2007 (reference period for the river basin management plans 2010-2015) (Figure 13). The comparison between both reference periods is, however, complicated by the fact that for the period 2010-2012, the individual quality elements were assessed in a greater number of water bodies. Moreover, another method was applied for phytoplankton.

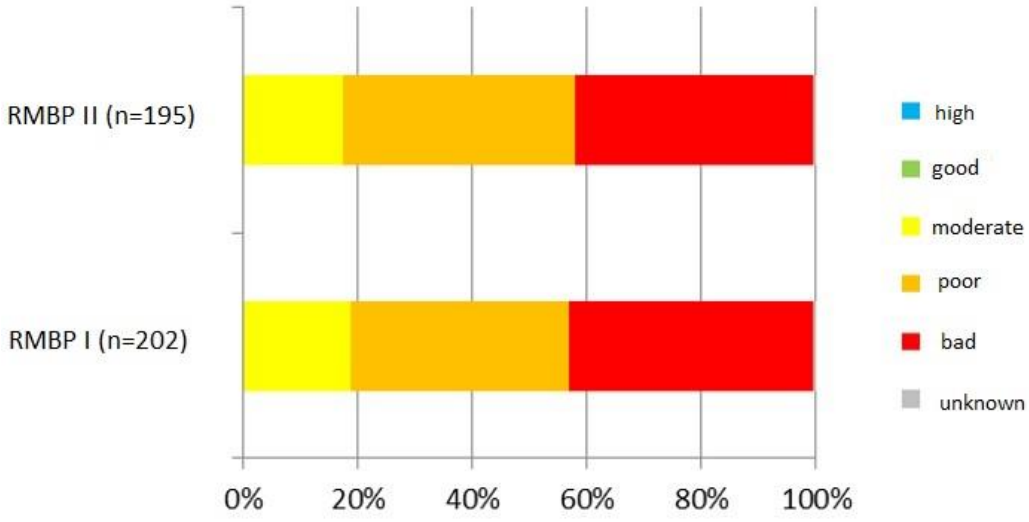

Figure 13: Evolution of ecological status/potential in Flanders on the basis of the one-out-all-out principle (with n = number of water bodies)

The application of the one-out-all-out principle implies that possible improvements in chemical or ecological quality are often not visible. A comparison of the individual quality elements provides a more differentiating view. However, such a comparison is only possible for water bodies that were assessed both in the river basin management plans 2010-2015 and in the river basin management plans 2016-2021.

It shows that there are 71 water bodies whose status is not deteriorating for any of the biological quality elements while at the same time improving for at least one biological quality element, and whose status can therefore be said to be improving.

Of these, 38 are improving for one biological quality element, and 25 for two biological quality elements, 7 are improving for three biological quality elements, and 1 for four biological quality elements.

Figure 14 shows the evolution of the status for each individual biological quality element.

The deterioration recorded in a number of water bodies for individual biological quality elements (macroinvertebrates, macrophytes, phytobenthos and/or fish) may be considered a misclassification because of the natural fluctuations in certain systems, or because more recent monitoring results show that the deterioration has already been reversed.

A comparison of the chemical status over two reference periods is not possible due to the significant differences in methodology (number of monitored substances and application or non-application of extrapolations).

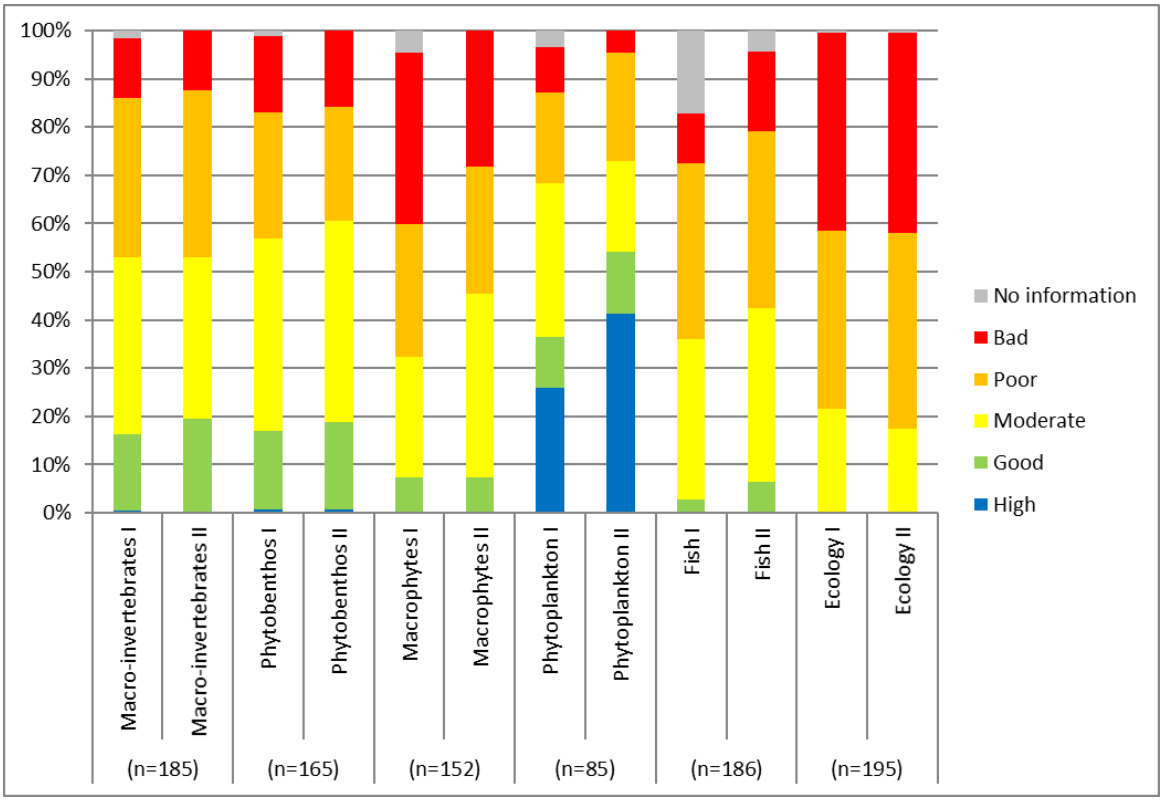

Figure 14: Comparison status assessment per quality element RBMP 2010-2015 versus RBMP 2016-2021 for Flanders (with n = number of water bodies relevant for the specific quality element)

Of the 42 groundwater bodies, 28 water bodies had reached good quantitative status and 11 water bodies good chemical status in 2009. Based on the current status determination, 34 of the 42 groundwater bodies have reached good quantitative status and 9 have reached good chemical status. In general, 8 groundwater bodies have both good quantitative status and good chemical status.

Problematic substances/indicators in terms of achieving good chemical status are pesticides (19/21), potassium (16/21), nitrates (18/19), ammonium (12/12), conductivity (7/10), sulphate (6/10), phosphate (5/9), fluorine (5/7), chloride (4/7), nickel (5/6), arsenic (3/4) and zinc (4/1). The figures indicate the number of groundwater bodies that showed an exceedance in the river basin management plans 2010-2015 and the river basin management plans 2016-2021 respectively.

Further research will have to reveal whether the deterioration of the chemical status is the result of natural or anthropogenic effects or whether misclassification is involved. The background levels were determined on the basis of short-period monitoring. As new monitoring data become available, those background levels will be evaluated and adjusted where necessary.

6.3 Progress in the implementation of the programme of measures 2010-2015

As part of the reporting to the European Commission on the river basin management plans 2016-2021, the degree of implementation and the expenditure of the first programme of measures (2010-2015) were inventoried.

This shows that the majority of the **basic measures** have been completed. Only the investment projects for the wastewater treatment infrastructure have occasionally been delayed due to problems with permits or land acquisition, to alignment with other projects in the case of combined projects or to lack of budgets from local authorities and other partners, etc.

Of the 246 actions implementing the **additional measures**, 73 have been completed, 134 are in progress, and 39 remain to be started up. Financing appears to be the major obstacle to the

implementation of the additional measures. Other reasons for the delay are political decisions, the need for prior additional research, uncertainty regarding the initiator, lack of societal acceptance, delays in the acquisition of permits and expropriations, etc.

The implementation of the 1st programme of measures has led to a number of **successes** including the following:

- Group 2 '**cost recovery and "polluter pays" principle**': A new methodology allows for an analysis of cost recovery for the water service 'public drinking water production and distribution' at the sector level and for a more accurate allocation of municipal wastewater treatment costs to sectors. For a more correct application of the 'polluter pays' principle, the area factors in the tax on groundwater extraction were systematically increased and the tax on water pollution for sewer dischargers was made contingent upon the treatability of the wastewater.
- Group 3 **'sustainable water use**': Awareness-raising campaigns and educational packages incited households to sustainable water use. Companies were put through Water audits and the Flemish Agricultural Investment Fund (VLIF) now also grants the switch to alternative water resources.
- Group 4A '**protected areas and wetlands - groundwater**': A methodology was developed for the status assessment of groundwater dependent terrestrial ecosystems and the code of good practice for the use of pesticides in areas protected for the production of drinking water, was established.
- Group 4B '**protected areas and wetlands - surface water**': After an intensive consultation process, the conservation objectives (CO) for areas falling under the habitat directive and the birds directive areas were established by the Flemish Government at the end of April 2014. The CO are implemented on a phased and programme-based approach. In order to achieve maximum win-wins, the water-related CO efforts having priority are linked to the WFD water bodies.
- Group 5A '**groundwater quality**': The permit and tax policy is now better aligned with the capacity of the groundwater systems. Moreover, a new methodology for status assessment, including new contour maps of groundwater heads and new scenario calculations, was developed. For groundwater bodies at poor quantitative status, restoration programmes were compiled. The legislation on the mandatory use of flow meters and cold/heat storage was amended. Finally, partnership agreements were signed with the Netherlands, France and Wallonia, usually for coordinated study projects.
- Group 6 '**floods**': The methodology for damage and risk approach based on the Floods Directive was developed.
- Group 7A '**groundwater pollution**': The knowledge of groundwater pollution was further developed towards the refinement of the permitting policy and of the standards (with associated background levels and threshold levels) and for improving the remediation methods for polluted sites. In addition, treatment and management plans were drafted to prevent leaching of point source pollution.
- Group 7B '**surface water pollution – agricultural measures**': Initiatives were taken to prevent point discharges of pesticides by correct yard layout and the use of sprayers with water tanks. Also the 'green cover' action as part of the COM for Vegetables and Fruit was implemented successfully.
- Group 7B '**surface water pollution – optimisation of treatment infrastructure**': The majority of the planned sewerage projects have been completed. A number of projects for optimising the existing infrastructure in the central area and the outlying area and for improving the efficiency of WWTPs were implemented on an accelerated basis. A new code of good practice for sewerage systems, including guidelines for overflows, is available.
- Group 8A '**hydromorphology**': Various priority migratory bottlenecks out of the eel management plan and various obstacles out of the priority chart under the Benelux disposition on Fish Migration were eliminated.
- Group 8B '**sediments**': The municipalities receive support in the preparation of an erosion control plan. Efforts have been undertaken to eliminate the backlog in the priority areas and 6 sediment traps were built. The erosion policy is gradually being tightened over the period 2014-2018, as part of the limiting conditions in the Common Agricultural Policy, with additional requirements for parcels with very high or high erosion sensitivity.

- Group 9 '**other measures**': The knowledge of costs and effects of measures, benefits and disproportionality was further developed and applied for the drafting of the river basin management plans 2016-2021.

In addition to this non-exhaustive enumeration of achievements, the programme of measures 2010-2015 included measures that are part of a **continuous policy**, e.g. measures relating to the permitting policy, for which significant progress has been made.

6.4 Exemptions

In principle, the objectives of the Water Framework Directive must be achieved by the end of 2015. The Water Framework Directive does however provide for certain conditions in which exemptions from those objectives are possible.

Extensions of the deadline are possible in cases where achieving good status is not technically feasible, entails disproportionately high costs or when natural circumstances prevent a timely improvement of the status.

For the majority of the Flemish water bodies (178 surface water bodies and 34 groundwater bodies), the river basin management plans 2016-2021 motivate an extension of deadline on the basis of technical infeasibilities, disproportionate costs and/or natural circumstances. A methodology for justification of these exemptions was developed and the applicable exemptions for each water body were evaluated. Expert judgement combined with policy-supporting instruments (the environmental costing module for Water) was used to motivate the exemptions.

Strictly speaking, any deterioration of the status is not permitted. There are however a number of cases of force majeure (e.g. calamities) where a temporary deterioration of the status is not in breach of the WFD, provided the necessary mitigating actions and additional monitoring are undertaken.

However, for 13 Flemish surface water bodies a suspected temporary deterioration is considered to be a misclassification. Those variations were due to natural fluctuations or have been restored in the meantime. Two cases of possible temporary deterioration in two groundwater bodies are being examined further.

Deadline extension until 2027 for technical infeasibility is used as motivation for 63 Flemish surface water bodies. To this end, the Measures Cost Module for Water was used to evaluate the distance to target for the parameters biological oxygen demand (BOD), chemical oxygen demand (COD), total nitrogen (Nt), total phosphorus (Pt), and suspended matter (SM). It should be noted however that sufficient information for the application of this methodology was available for only 145 of the water bodies.

Table 4: Motivation of technical infeasibility at parameter level

Parameter	COD	BOD	Nt	Pt	SM	One-out-all-out
number of WB	15	1	50	61	0	63

Deadline extension until 2027 due to natural circumstances is used as motivation for 154 Flemish surface water bodies and 34 groundwater bodies.

This motivation was used for all surface water bodies whose biological quality in 2015 is assessed to be no better than poor. Natural recolonization within one planning period is quite unlikely unless significant additional regionally focused efforts are foreseen, as is only the case within the priority areas.

For groundwater bodies, deadline extension because of natural circumstances is used as motivation because of the (extremely) slow recovery rates as compared to the deadline of the planning period (slowness of groundwater flows and geochemical processes).

Deadline extension until 2027 because of disproportionate costs is used as motivation for all Flemish surface water bodies except the priority areas as well as for groundwater bodies that have not yet reached good status.

The results of the disproportionality analysis of the programme of measures show that the selected scenario (PA+FA) is affordable for the target groups “households”, “industry”, “agriculture” as well as for “governments”.

The kind of actions to be taken (hydromorphological restoration, sediment remediation, etc.) implies that most of the expenditure related to the implementation of the programme of measures is public expenditure. This expenditure cannot simply be allocated to the target groups in accordance with the polluter/user pays principle nor the benefit-cost principle. As a result of the choice of scenario following the public consultation and the reduction of the additional costs as compared to the original scenarios, however, most affordability issues have also been addressed for the government, at least in the short term. In the longer term however, a sustainable solution needs to be found for the financing of the integrated water management. That is why an action “launch a public debate on the financing of the integrated water management” was added to the programme of measures.

Another possible exemption is the establishment of **less stringent objectives** for specific water bodies when they are so affected by human activity or their natural condition is such that the achievement of these objectives would be infeasible or disproportionately expensive. However, no such less stringent objectives were motivated in the river basin management plans 2016-2021 yet, because the existing knowledge and tools (i.e. models) are not yet refined enough to substantiate such objectives.