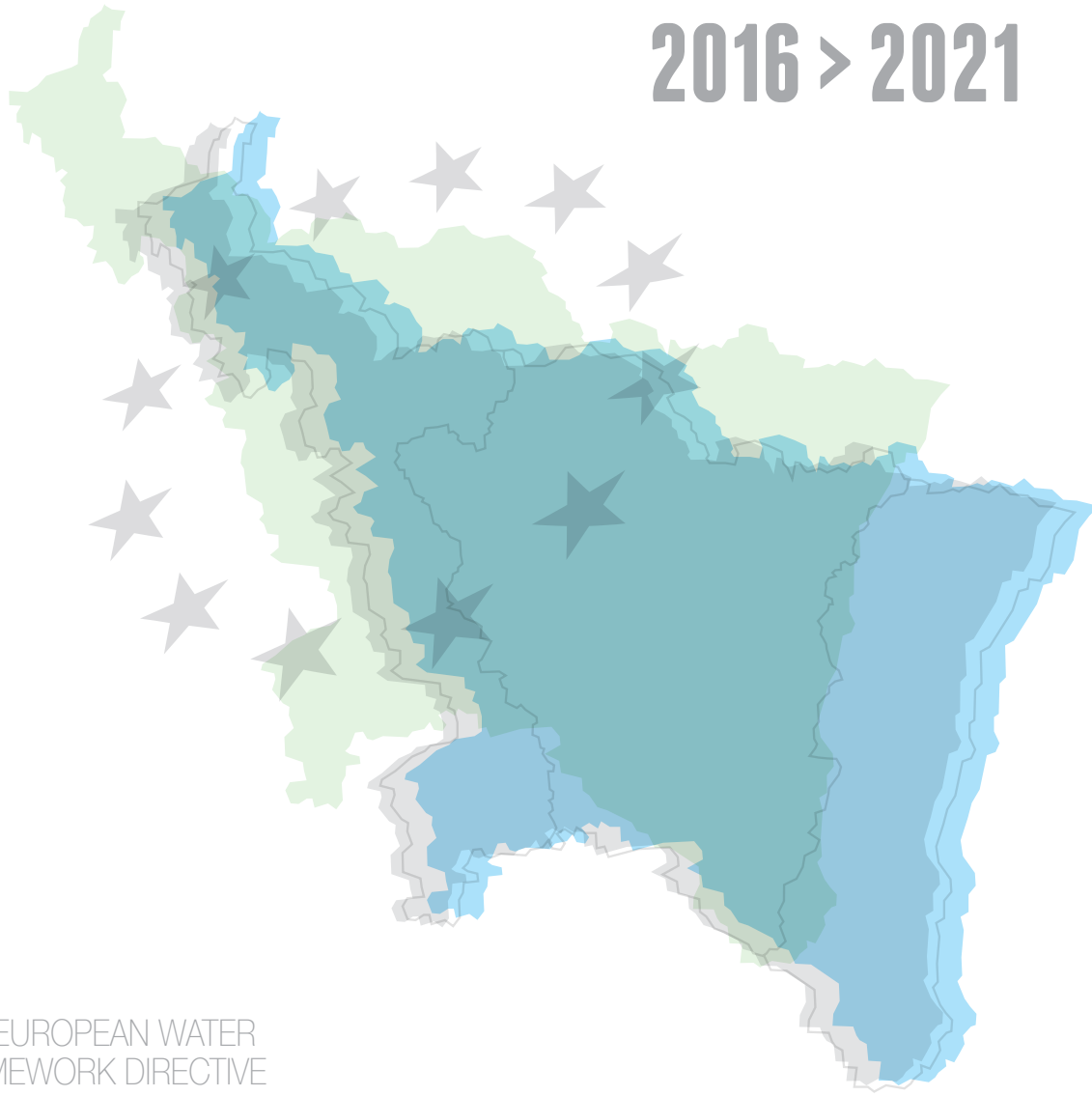
MEUSE

SDAGE 2016 > 2021



THE EUROPEAN WATER FRAMEWORK DIRECTIVE

Project of SDAGE 2016-2021
for the “Meuse” district
French part

“Meuse” SDAGE

Summary of the management plan and programme of measures for the Meuse international district French part

JANUARY 2015

LE PRÉFET COORDONNATEUR DE BASSIN

BASSIN RHIN-MEUSE

COMITÉ DE BASSIN RHIN•MEUSE

Contents

1. Introduction

In accordance with the European directive of 27 June 2001 (regarding the assessment of the impact of certain plans and programmes on the environment) and article L. 122-9 of the French Environment Code, the draft SDAGE (Master plan for the organisation of the development and management of water resources), programmes of measures and flood risk management plans (PGRI) for the Meuse international district must be submitted for consultation to other Member States concerned by each district. In the case of the Meuse district, this involves Belgium and the Netherlands.

The 2016-2021 Meuse district management plan is an update of the 2010-2015 management plan validated in 2009.

1.1. Articulation between the four planning tools resulting from the WFD

Application of the WFD rests on four planning tools:

- Situation reports, prepared in 2013, the role of which is to define the important questions relating to water management and to make a diagnosis of the factors influencing the status of aquatic environments.
- The Management Plan (included in the SDAGE for the French part of districts concerning France), which inter alia defines the environmental targets arising from the WFD, and in this context sets the level of ambition for the quality of aquatic environments and the corresponding deadlines.
- The programme of measures, which defines specific actions, national or local, regulatory or not, to be implemented to reach this level of ambition.
- The monitoring programme, which amongst other things, is used to check that environmental targets are achieved.

The programme of measures thus makes the SDAGE (Management Plan) operational. Both documents are therefore inseparable.

In addition, both these documents are derived directly from the Situation Report and constitute a response to the important issues that have been identified.

1.2. General organisation implemented to update the SDAGE and programme of measures

The 2016-2021 Meuse district management plan is an update of the 2010-2015 management plan validated in 2009.

The general organisation introduced to implement the WFD in the Rhine/Meuse basin relies on four levels:

- A ***technical development*** level that is part of a joint construction process involving Government Departments and the Basin Committee (water parliament at basin level).
- A ***control and coordination*** level: provided by the Basin Technical Secretariat (STB) with involvement from the French Water Agency, the Basin Delegation and ONEMA (French national office for water and aquatic environments), a representative of the main Government departments and public establishments directly involved in the implementation of the WFD. It:
    - monitors and organises the preparation of draft SDAGEs and programmes of measures. It provides a methodological framework.
    - prepares draft SDAGEs, in particular on the basis of work by the Planning Commission (set up by the Basin Committee and one of the missions of which is to participate in the preparation and implementation of the **SDAGEs** for the Rhine and the Meuse) and its thematic working groups.
    - gathers proposed measures identified at local level in order to update the draft programme of measures for the Rhine district.

  The Water Agency, the Basin Delegation and the ONEMA as the STB's facilitators ensure the overall coordination and assembly of documents relating to the Rhine district.

- A level involving ***dialogue with the stakeholders***: the stakeholders are associated with the work of updating the Rhine SDAGE and the associated programme of measures in both geographic commissions (open to interested parties and involving the Government Departments – Moselle-Sarre and upper Rhine) and during public consultations and meetings and cross-border consultations.

- A ***decision making*** level: decision making roles are shared between the basin's Coordinating Prefect, the WFD's competent authority and the President of the Basin Committee. The Basin's Coordinating Prefect must approve the SDAGE adopted by the Basin Committee. He/she approves the programme of measures after receiving advice from the Basin Committee.

2. Content of the 2016-2021 management plan (SDAGE and programmes of measures) for the Meuse district and the main changes as compared with cycle 1 (2010-2015)

2.1. Content of the SDAGE and programme of measures

The SDAGE for the Meuse district is composed of:

- **The main SDAGE documents**
    - ***Purpose and scope of the SDAGE (volume 1)***

      This document outlines the update procedure defined for the SDAGE, its legal scope and the links between the WFD, the Flood Directive and the Marine Strategy

Framework Directive. The modes of public information and consultation concerning draft SDAGEs and programmes of measures are also specified.

- ***Water quality and quantity targets (volume 3)***

  This document lists water body quantitative and qualitative targets, targets for the reduction of substances and targets to do with the preservation of protected areas.

- ***The SDAGE's fundamental guiding principles and provisions (volume 4)***

  This volume comprises fundamental guiding principles (guidelines for water policy to ensure balanced water management across the Rhine-Meuse basin) and provisions (terms of implementation of administrative decisions in the area of water).

- ***Consideration of climate change in SDAGEs and programmes of measures (volume 5)***

  This volume presents procedures for the consideration of adaptation to climate change in the SDAGE and programmes of measures (PoM) for the Rhine and Meuse districts.

- ***Map appendix (volume 7)***

  Information relating to surface water and groundwater is explained and localised for each district.

The Programme of measures (PoM)

The programme of measures defines the technical and financial means required to achieve the environmental targets defined in Volume 2 of the SDAGE.

SDAGE accompanying documents

- ***Summary presentation of water management and an inventory of polluting emissions (accompanying document 1- volume 9)***

  In particular, it presents a summary of the 2013 situation report, the inventory of emissions, losses and discharges, a summary of the Register of Protected Areas (attached to the final version), a SAGE progress report (Planning and water management diagram).

- ***Arrangements for water pricing and cost recovery (accompanying document 2 - volume 10)***

  This volume presents factors determining the financing of the water sector, annual costs borne by economic actors, the basin's water accounts and the cost recovery rate.

- ***Summary of the Meuse district programme of measures (accompanying document 3 - volume 12)***

  This represents a summary of the programme of measures (volume not subject to consultation by the public and the meetings).

- ***Summary of the monitoring programme (accompanying document 4 - volume 14)***

As the national order defining the framework for the implementation of monitoring programmes had not been issued at the time of publishing the draft SDAGEs, the 2010-2015 document will be updated following the consultation phase.

- ***Monitoring mechanism to assess the implementation of the SDAGEs (accompanying document 5 - volume 15)***

  As the ministerial order defining the content of the SDAGEs and listing the national monitoring indicators to be used for assessing the implementation of the SDAGEs had not been issued at the time of publishing the draft SDAGEs, the 2010-2015 document will be updated following the consultation phase.

- ***Summary of the arrangements for public information and consultation on the SDAGE and the programmes of measures (accompanying document 6 - volume 16)***

  This volume will be produced after the consultation phase and will contain a description of the consultation process and a summary of the consideration of comments made by the public and at meetings (volume not subject to public consultation and meetings).

- ***Environmental report for the SDAGE (accompanying document 7 - volume 18)***

  This volume results from the application of the European plans and programmes directive. It gives a better appreciation of the impact of the draft SDAGE on the environment in general, beyond the question of water.

- ***Summary of methods and criteria for assessing chemical status and upward trends (accompanying document 8 - volume 19)***

  Pending framing elements from the Ministry of Ecology's Department of water and biodiversity at the time of publishing the draft SDAGEs, this volume will be prepared following the consultation phase. Volume not subject to consultation by the public and meetings.

- ***Guide to good water management practice (accompanying document 9 - volume 20)***

  The good practice guide for the management of aquatic environments is a reading guide for the SDAGEs regarding the ecological management of aquatic environments in the broad sense.

For information, volumes 2, 6, 8, 11, 13 and 17 are specific to the Rhine district.

2.2. How do the SDAGE and programme of measures deal with important questions (issues) resulting from the situation report (2013)?

The SDAGE's (volume 4) fundamental guiding principles and the territorial measures in the programme of measures for the Meuse district set out the important questions (issues) identified in the 2013 inventory.

The SDAGE's (volume 4) fundamental guiding principles are grouped under 6 themes:

- 1: Water and health
- 2: Water and pollution
- 3: Water, nature and biodiversity
- 4: Water and scarcity
- 5: Water and land-use planning
- 6: Water and governance

The territorialised measures in the Programme of measures (PoM) are grouped under the following areas:

- Aquatic environments
- Sanitation
- Industries and artisan activities
- Agriculture
- Resources
- Waste
- Diffuse pollution excluding agriculture
- Governance

These themes and areas are shown in Figure 1 to identify the level of consideration of important issues in the 2016-2021 SDAGE and PoM.

Figure 1: Summary of the consideration of important questions (issues) from the 2013 situation report in the SDAGE and the 2016-2021 programme of measures

Important question from the situation report (2013)	Consideration by the SDAGE and the Programme of measures (PoM)	
Prevention rather than cure	SDAGE	Themes 1, 2, 3, 4, 5 and 6 (volume 4)
	PoM	Areas: aquatic environments, governance
Climate change, an issue of anticipation	SDAGE	Themes 1, 2, 3, 4, 5 and 6 (volume 4) Volume 5
	PoM	Areas: aquatic environments, sanitation, industries and artisan activities, agriculture, resources
The place of water in land-use planning	SDAGE	Themes 1, 2, 3, 4, 5 and 6 (volume 4)
	PoM	-
Strengthening cooperation between countries that share the water of the Rhine and Meuse	SDAGE	Themes 1, 2, 3, 4 and 6 (volume 4)
	PoM	-
Information and the participation of the public and stakeholders: an integral issue	SDAGE	Themes 1, 2, 3, 4, 5 and 6 (volume 4)
	PoM	-

Important question from the situation report (2013)	Consideration by the SDAGE and the Programme of measures (PoM)	
Finding ecological balance	SDAGE	Themes 2, 3, 4 and 5 (volume 4)
	PoM	Area: aquatic environments
Eliminating substances that are hazardous for water and the environment	SDAGE	Themes 1 and 2 (volume 4)
	PoM	Industries and artisan activities Sanitation
Diffuse pollution: encouraging practices compatible with the sustainable protection of water resources and natural aquatic habitats	SDAGE	Themes 1, 2, 3 and 5 (volume 4)
	PoM	Area: agriculture and diffuse pollution excluding agriculture
Urban pollution: optimising the cost/effectiveness relationship and agreeing on priorities in a vision shared between the stakeholders	SDAGE	Themes 2, 5 and 6 (volume 4)
	PoM	-
Validating the right solutions for the future	SDAGE	Themes 1, 2, 3, 4, 5 and 6 (volume 4)
	PoM	-
Saving the resource	SDAGE	Themes 1, 4, 5 and 6 (volume 4)
	PoM	-
A controlled price for water and more balanced contributions	SDAGE	Theme 6 (volume 4)
	PoM	-

Figure 2 summarises the consideration of international issues in the area of water in the 2016-2021 SDAGE and programme of measures for the French part of the Meuse international district.

Figure 2: Issues common to the whole Meuse international district

International issues		Consideration in the 2016-2021 SDAGE and PoM
Meuse international district	Cooperating to strengthen our joint action	Theme 6 of volume 4 of the SDAGE
	Finding ecological balance: restoring the free movement of fish	Themes 3 and 5B of the SDAGE Area: aquatic environments in the PoM
	Finding ecological balance: combining the development of hydroelectricity with the protection of aquatic environments	Theme 3 of the SDAGE
	Continuing efforts to reduce classic pollution in particular from nutrients	Theme 2 of the SDAGE Area: sanitation and agriculture in the PoM
	Reducing diffuse pollution	Theme 2 of the SDAGE Areas: agriculture and diffuse pollution excluding agriculture in the PoM
	Eliminating hazardous substances	Theme 2 of the SDAGE Area: industry and artisan activities in the PoM
	Saving the resource	Theme 4 of the SDAGE Area: resources in the PoM
	Jointly anticipating the impacts of climate change	Themes 1 to 6 of the SDAGE Volume 5 of the SDAGE Areas: aquatic environments, sanitation, industries and resources in the PoM

2.3. How has the impact of climate change been integrated into the SDAGE and the programme of measures?

Concerning the 2016-2021 SDAGE, consideration of the likely effects of climate change is reflected by:

- Firstly, the strengthening of existing fundamental guiding principles in volume 4 of the first 2010-2015 management cycle such as for example:
    - In the case of the theme "Water and pollution", in an urban environment, measures designed to limit pollution during rain (see guiding principle T2 - 03.2) and to reduce runoff (see guiding principle T2 - 04.2.5) have been developed.
- Secondly, new adaptation measures have been incorporated, such as for example: for the theme "Water and scarcity", the Basin Committee recommends that drinking water security plans and thinking in the light of potential conflicts over use in the context of strategies to adapt to climate change, should consider, as from the 2016-2021 management cycle, the most impacted uses in the Meuse district as follows:
    - in the Moselle basin, the drinking water supply for the Metz and Nancy urban areas.
    - in the Meuse basin, cooling of Chooz and Tillange power stations and the drinking water supply in Belgium and the Netherlands.
    - the need for an international low-water plan for the Meuse (alert and management).
    - navigation on the Meuse.
- Finally, a specific volume (volume 5) entitled "Procedures for the consideration of climate change in SDAGEs and programmes of measures for the Rhine and Meuse districts" has been prepared.

The main measures in the 2016-2021 programme of measures playing a role in adaptation to climate change are:

- In the area of urban sanitation, measures designed to limit pollution during rain promoting infiltration.
- In the area of aquatic environments, emphasis has been placed on the restoration of watercourses and wetlands.
- In the agricultural area, the reduction of diffuse inputs and measures to develop sustainable low-input practices are contributing to improving the quality of surface and ground water in summer.
- In the area of resources in the territory covered by the lower Trias sandstone SAGE, the introduction of substitute or complementary resources and water saving measures.

2.4. What is the impact of the SDAGE and Programme of measures (PoM) on the environment?

As part of the environmental analysis under the plans and programmes directive (European Directive of 27 June 2001), each guiding principle in the SDAGE and each measure in the PoM was analysed in the light of the environmental issues presented in Figure 3. This analysis identifies the environmental compartments and issues on which the guiding principle has a potential effect, and whether this effect has a projected impact that is positive or negative.
The evaluation shows that the SDAGE integrates them satisfactorily, the latter having a very positive overall effect on the different environmental components.

The main aspects of this analysis are summarised in Figure 3.

Figure 3: Summary of the effects of the SDAGE on the environment

Issue on which the SDAGE and PoM have an effect	Nature of the SDAGE and the PoM's positive effects on the issue
Human health	- Improves the quality of catchment water and bathing water. - Improves understanding with regard to emerging pollutants. - Reduces health risks linked to water quality and the use of toxic products. - Reduces the use of pesticides and the emission of toxic substances.
Water	- Improves water quality and preserves the quantitative balance through very numerous measures (primary purpose of the SDAGE and PoM). - Gives priority to the recovery of water quality in degraded catchment areas and the prevention of pollution during rain. - Promotes the development of innovative techniques and preventive actions. - Reduces the use of pesticides and the emission of toxic substances.
Biodiversity and landscape	- Helps restore the functionality of these environments. - Contributes to the diversification of landscapes and terrestrial environments by recommendations on land use patterns and the creation of wetlands, while limiting the artificialisation of soils via other guidelines. - Has a positive effect on Natura 2000 sites of lake, river or mixed types.
Risks	- Reduces the risk of flooding by reducing runoff, controlling flow rates in rainy weather, increasing storage capacity in major floodplains and improving the functionality of environments. - Aims in particular to limit occasional or accidental pollution on sites linked to technological risks.
Soils and subsoils	- Promotes the management and treatment of contaminated sites and soils. - Limits the artificialisation of soils.
Waste	- Promotes the spreading sector by restoring confidence through the improvement and monitoring of the quality of sludge. - Reduces waste linked to pesticide packaging.
Air, energy and the greenhouse effect	- Reduces the use of pesticides or toxic substances from contaminated land and soils. - Reduces overall greenhouse gas emissions.
Land use planning	- A strong link with land-use planning with recommendations intended for town planning documents and catchment areas through guidelines on land use patterns, recycling of wasteland and bathing sites.
Climate change	- Consideration of climate change. - Consideration of the evolution of habitats and species, potential hydrological changes. - Helps adaptation to climate change by anticipating changes.

Issue on which the SDAGE and PoM have an effect	Nature of the SDAGE and the PoM's positive effects on the issue
Collective management	- Considers the need for collective management on a suitable scale. - Strengthens dialogue based on joint management tools such as SAGEs or cross-sectoral planning tools such as land development plans (SCOT). - Establishes a link between water and land-use planning stakeholders. - Recommends work on a suitable scale. - Considers the socio-economic dimension of proposed actions. - Promotes the emergence of contracting authorities.
Eco-citizenship	- Promotes the involvement of all. - Strengthens public information and raises the awareness of all the stakeholders concerned. - Encourages eco-responsibility efforts by public stakeholders.

3. Presentation of status targets for water bodies in the Meuse district

3.1. Surface water bodies

3.1.1 Methodological elements

After identifying possible and necessary measures to achieve environmental targets, the question is to know if and when the good status target can be met for each water body.

To justify exemptions from good status in 2015, which are in line with the WFD (article 4 of the WFD), two scenarios then arise in theory:

- either measures to achieve good status do not exist before 2027, in which case a waiver in terms of targets can be requested (a waiver request would for example consist of achieving poor status in 2021 for the "sulphate" parameter and good status for all others for water body X. This is referred to as a less stringent target).

- or measures to achieve good status exist, but it would be technically or economically impossible to implement them or see their effect by 2015. In this case, a waiver may be requested in terms of deadlines, which may not go beyond 2027 (the waiver request would then consist of achieving good status in 2027 for water body Y).

► Situation of deferred deadlines

The reasons admissible under the WFD to apply for these two types of exemptions are three in number:

- Reason 1: technical feasibility: no current technology can be used to achieve good status, or the time required to carry out work required to implement a measure is too long for good status to be achieved by 2015.

- Reason 2: natural conditions: the natural environment itself emits pollutants, so the environment's response time to the measure is too long for good status to be achieved in 2015.

- Reason 3: disproportionate costs: the measures are too expensive to be borne collectively by 2015.

These reasons are cumulative and interact. To set a target for a water body they must be examined concomitantly, type of measure by type of measure.

This has led to an examination of each water body, type of measure by type of measure, to define whether it is affected by each of these three reasons for exemption.

There follows a specific example to illustrate this approach:
Consider a body of water for which:
- The technical period for the implementation of hydromorphological measures is six years.
- The costs of these measures are disproportionately expensive and must be spread over 12 years.
- The environment response time is zero.

The time period for achieving the target will thus be 12 years (the maximum between the six years' technical period and the economic period of 12 years), to which is added if necessary, the environment's response time (which is zero in our example), resulting in a total of 12 years from 2015 to achieve good status. As the status of this water body does not justify measures other than those relating to hydromorphology, the target of good ecological status for this water body has thus been postponed to 2027 due to the direct application of the measures.

► Situation of less stringent targets
For the cycle 1 SDAGE (2010-2015), it was decided at European and national level, only to concentrate on less stringent targets in very exceptional circumstances because of the too distant nature of the 2027 deadline. Thus, in the Rhine-Meuse basin no body of surface water was set a less stringent target.

Exemptions therefore focused on extending deadlines, according to a methodology validated by the Basin Committee after extensive consultation and which did not give rise to questioning by the European Commission. The Basin Committee at its meeting of 25 April 2014 decreed that fixing less stringent ecological and chemical status targets should remain limited and could only be effective if a very strong case was made.

After public consultation, they will be assigned a less stringent target only if, after careful study, a strong argument admissible by the WFD could be provided.

Thus to date, a provisional list of surface water bodies that may be eligible for a less stringent target for certain parameters has been established for the Meuse district. To establish this list, the following approach was followed. For water bodies with a less than good ecological status (2013 situation report, 2010-2011 data for surface water bodies), if

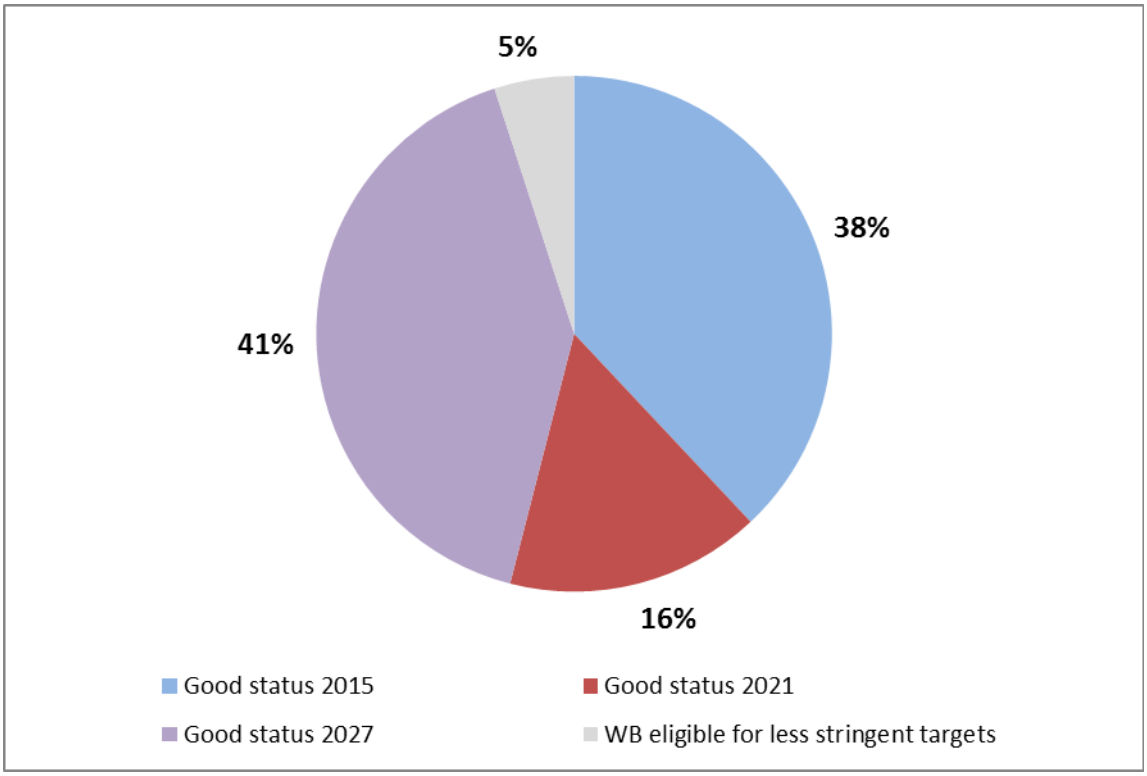
the time period for the estimated costs of the measures to become acceptable is greater than 4 cycles (*beyond 2039*), the water bodies are considered to be eligible for a less strict environmental status target. An expert assessment of the impact of the measures was also taken into account.

3.1.2 Results of ecological status and chemical status targets for surface water bodies in the Meuse District

► Ecological status targets

For the Meuse district, 38% of surface water bodies aim to achieve good status in 2015, 16% in 2021 and 41% in 2027. 5% of water bodies are eligible for a less stringent target (see Figure4).

Figure4: Ecological status targets for surface water bodies in the Meuse district (Total number of water bodies: 145).

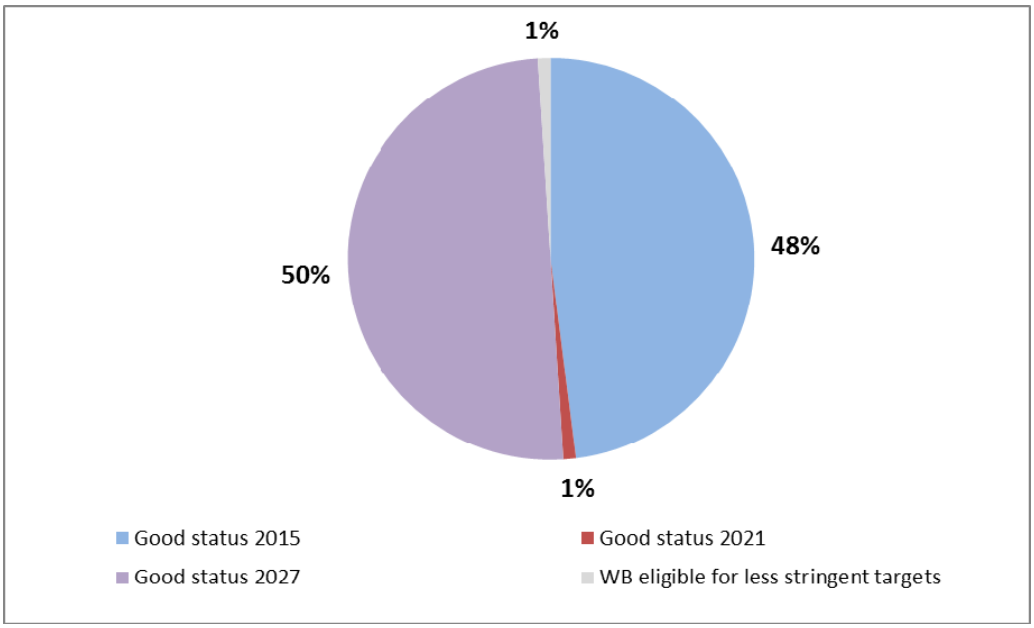


The seven water bodies eligible for a less stringent environmental status target are: ANGER, VAIR 3, VRAINE, AROFFE 1, SCANCE, LOISON 2 and BAR.

► Chemical status targets

For the Meuse district, 48% of surface water bodies aim to achieve good chemical status in 2015, 1% in 2021 and 50% in 2027. 1% of water bodies are identified as being eligible for a less stringent target (see
Figure **5**).

Figure 5: Chemical status targets for surface water bodies in the Meuse district (Number of bodies: 145).



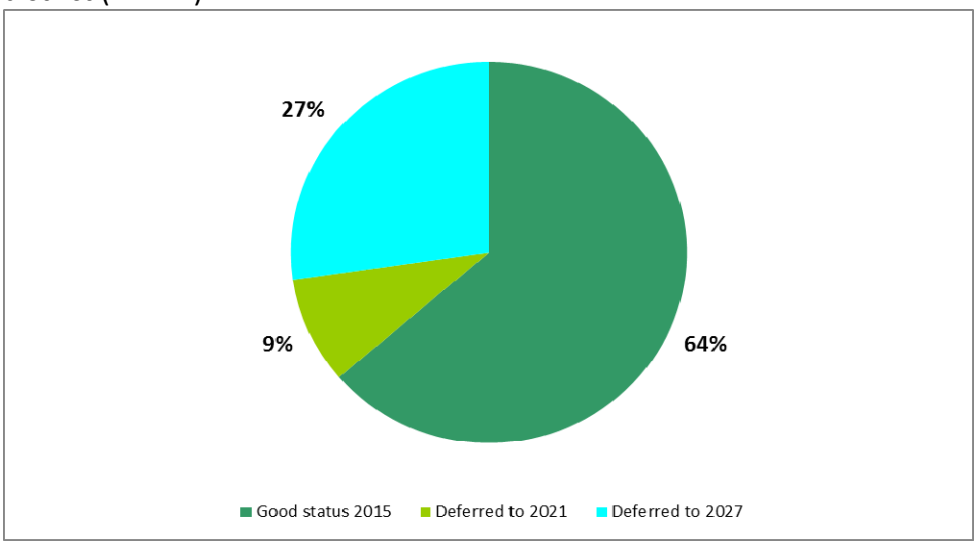
For the Meuse district, a single body of water is a eligible for a less stringent chemical status target. This is the water body called SCANCE.

3.2. Groundwater bodies

► Chemical status targets

For the Meuse district, seven groundwater bodies out of 11 have a 2015 good status target (see Figure 6).

Figure 6: Distribution of chemical status targets for groundwater bodies in the Meuse district (N = 11)



► **Quantitative status targets**
All groundwater bodies in the Meuse district have a 2015 good quantitative status target.

3.3. Targets to reduce substances

As for the 2009 SDAGE (2010-2015 cycle), substances are used to define the ecological status of surface water bodies. This is a matter of metals and pesticides. For the 2015 update of the SDAGE (cycle 2, 2016-2021), this list is subject to change.

Targets for the reduction of emissions, discharges and losses of substances to achieve in 2021 as compared with 2010 emissions are as follows:

- **no specific target in 2021**: this mainly concerns prohibited substances for which there are no longer any emissions, the target of their elimination is therefore considered to be achieved.

- **moderate reduction target of -10%**. This applies to:
    - banned substances but for which there are still sources of emissions because actions are possible on the component to do with losses into the environment from stocks accumulated before the ban.
    - substances for which emission sources are poorly known (diffuse emissions) and for which effective actions are difficult to implement.
    - substances that have just been included on priority hazardous substance or hazardous substance lists, and for which the first actions will be implemented in the programmes of measures for the second 2016-2021 management cycle.

- **ambitious reduction target of -30%**. This applies to permitted substances with identified and manageable emissions and for which actions on the main sources are possible.

- **suppression target possible - 100%**. This is the case for priority hazardous substances identified for cycle 1 (2010-2015). The following can be distinguished:
    - authorised substances with emissions and for which actions are possible on the main sources.
    - substances authorised for some uses or generated non-intentionally with emissions and for which limited action is possible.

The number of substances or families of substances concerned by a reduction target is specified in Figure 7.

Figure 7: Summary of reduction targets for substances in surface water as compared to emissions in 2010 (in numbers of substances).

	Deadline		
Reduction target	**2021**	**2028**	**2033**
-100%	10	3	9
-30%	18	0	0
-10%	20	0	0

The same substance may be set two different reduction targets such as -10% in 2021 and -100% in 2028.

The ten substances assigned a reduction target of 100% in 2021 are the following (see Figure 8):

Figure 8: List of substances assigned a reduction target of 100% in 2021.

Substance	Family
Cadmium	Heavy metals
Mercury	Heavy metals
Pentachlorobenzene	Pesticides
Hexachlorobenzene	Pesticides
Chloralkanes C10-C13	Industrial pollutants
Tributyltin and compounds	Industrial pollutants
PBDEs	Industrial pollutants
Haxachlorobutadiene	Industrial pollutants
Nonylphenols	Industrial pollutants
PAHs	PAHs

4. Presentation of the programme of measures

The programme of measures is not intended to supply an exhaustive list of all actions concerning water. It only includes actions designed to achieve the environmental targets set out in the SDAGE.

4.1. The procedure for preparing the programme of measures

► Joint construction

To strengthen synergies between the administrations concerned and set priorities for joint action, emphasis has been placed on the joint construction of the programme of measures. Thus, identification of measures involved approximately 150 people for the entire Rhine-Meuse basin, from all the government departments and public institutions concerned.

► A programme of measures targeted on priorities

The measures identified were targeted (see priorities defined in Figure 9) to achieve the WFD's environmental targets, at the same time ensuring synergy with the Floods Directive and consideration of climate change.

Figure 9 : The main focus for actions per area defined for the programme of measures

Area	Priority
Aquatic environments	- Continuity: priority to the passability of structures on classified water courses (article L214-17-2 of the Code of the Environment). - Restoration of water courses: a priority with ambitious operations. - Wetlands: a great challenge (acquisition, restoration).
Agriculture	- Recovering the quality of degraded catchments - Adapting practices in areas degraded by nitrates and/or pesticides.
Industries and artisan activities	- Targeting efforts thanks to the emissions inventory
Sanitation	- Addressing the issue of rainfall better - Targeting actions towards water bodies in poor status due to macro-pollutants
All areas	Taking climate change into consideration

► A programme of measures giving consideration to the impacts of climate change

The main impact of climate change on the Rhine-Meuse basin is the accelerated frequency of extreme weather events (floods, low flows, etc.).

In general, measures to reduce source pressures likely to deteriorate water body status, to improve knowledge of the environment and to promote the preservation of aquatic environments are considered by their nature as giving consideration to the impact of climate change.

Elements concerned with adaptation to climate change are integrated as specified in paragraph 2.3.

4.2. Measures

The measures specified in the programme of measures can be broken down into national measures and territorial measures.

► National measures

National measures mainly correspond to basic measures within the meaning of the WFD. These constitute the "minimum requirements" resulting from the application of other European Directives (Article 11.3.a of the WFD and Part A of Appendix VI, such as for example Directive 76/160 /EEC on bathing waters) or arising out of basic national legislation (Articles 11.3b to I in the WFD).

National measures are:

- legislative and regulatory measures defining standards and obligations to implement technical measures (authorisation procedure under Article L. 214-2 of the Environment Code, classification of water courses under article L. 214-17 of this same code and the resulting obligations, drought orders, water distribution areas and distribution of abstraction volumes).
- measures to enforce regulations (water law, facilities classified for environmental protection, nitrate action programmes, the Public Health Code).
- economic and fiscal measures, which implement the cost recovery, the polluter pays and the incentive pricing principle (Article 9 of the WFD), and encourage the implementation of measures or support actors in carrying them out (royalties, intervention programmes, cost recovery, European funding, other financing).

► Territorial measures

Territorial measures specific to each river basin district that correspond to local expressions of basic measures (like for example bringing a local community wastewater plant up to the standards of the requirements in the 'urban waste water' directive to achieve good status) and to complementary measures (for example, the restoration of a watercourse).

They may be:

- administrative. This is a matter of the SDAGE's fundamental guiding principles and provisions (see the SDAGE Volume 4).
- technical. This may be a matter of work (eg: renaturation of watercourses), governance actions (eg: setting up or strengthening a SAGE) or studies (eg: developing a comprehensive scheme for the use of water resources).

4.3. Territorial measures in the programme of measures by area

Territorial measures have been defined to help deal with the pressures identified in the 2013 situation report and which were used to define the issues and fundamental guiding principles contained in the SDAGE. They are presented below by area.

► Territorial measures in the "aquatic environments" area defined for the Meuse district are:

- Measure ***MIA0202***: which consists of conventional watercourse restoration.
- Measure ***MIA0203***: which consists of the large-scale restoration of all the features of a watercourse and its surroundings.
- Measure ***MIA0304***: which consists of developing or removing a structure (to be defined).
- Measure ***MIA0401***: which consists of reducing the impact of a water body or quarry on surface or groundwater.
- Measure ***MIA0402***: which consists of carrying out maintenance or ecological restoration to a water body.
- Measure ***MIA0601***: which consists of obtaining control of a wetland.
- Measure ***MIA0602***: which consists of restoring a wetland.

Territorial measures in the "aquatic environments" area are summarized in Figure **10**, which specifies the fundamental guiding principles of the SDAGE from which they arise.

Figure 10 : Territorial measures for the "aquatic environments" area

Fundamental guiding principles	Measure code	Measure title
T3-O2, T3-O3, T3-O4, T3-O5	MIA0202	Restoration of water courses
T3-O2, T3-O3, T3-O4, T3-O5	MIA0203	Renaturation of water courses
T3-O3, T3-O5	MIA0304	Improvement of the ecological continuity of water courses
T3-O2, T3-O4, T3-O5	MIA 0401	Reducing the impact of water bodies
T3-O2	MIA0402	Implementation of maintenance or ecological restoration for a water body
T3-O7	MIA0601	Land control of wetlands
T3-O2, T3-O3, T3-O4, T3-O7	MIA0602	Restoration of a wetland

► **Territorial measures in the "sanitation" area defined for the Meuse district are:**

- Measure ***ASS0101***: which concerns the production of a comprehensive study and a master plan.
- Measure ***ASS0201***: which concerns work to improve the management and treatment of rainwater.
- Measure ***ASS13*** (0901): which concerns the creation/rehabilitation/improvement of a water treatment station, a discharge point, sludge and drainage residues.

Territorial measures in the "sanitation" area are summarised in Figure 11, which clarifies the fundamental guiding principles of the SDAGE from which they arise.

Figure 11: Territorial measures for the "sanitation" area

Fundamental guiding principles	Measure code	Measure title
T2-O2	ASS0101	Comprehensive study and master plan
T2-O3, T5A-O5, T5B-O1	ASS0201	Strictly rainwater
T2-O1, T2-O3	ASS13	Water treatment station, discharge point, sludge and drainage residues

► Territorial measures in the "industries and artisan activity" area defined for the Meuse district are:

- Measure ***IND0101***: which consists of a comprehensive study and a master plan covering the reduction of pollution associated with industry and artisan activities.
- Measure ***IND0401***: which consists of adapting an industrial discharge collection or processing mechanism with the intention of maintaining and improving its performance.
- Measure ***IND0601***: which consists of introducing measures to reduce pollution mainly linked to industrial sites and "contaminated sites and soils".
- Measure ***IND12***: which consists of introducing clean technology decontamination structures – Mainly for hazardous substances.
- Measure ***IND13***: which consists of reducing pollution excluding hazardous substances.

Territorial measures in the "sanitation" area are summarised in Figure 12, which clarifies the fundamental guiding principles of the SDAGE from which they arise.

Figure 12: Territorial measures for the "industry and artisan activities" area

Fundamental guiding principles	Measure code	Measure title
T2-O1	IND0101	Producing a comprehensive study and a master plan covering the reduction of pollution associated with industry and artisan activities.
T2-01	IND0401	Adapting an industrial discharge collection or processing mechanism with the intention of maintaining and improving its performance.
T2-O1	IND0601	Introducing measures to reduce pollution mainly linked to industrial sites and "contaminated sites and soils".
T2-O1, T2-O2, T2-O3	IND12	Clean technology decontamination structures mainly for hazardous substances.
T2-O1, T2-O3	IND13	Reducing pollution excluding hazardous substances.

► Territorial measures in the "agriculture" area defined for the Meuse district are:

- Measure ***AGR 0202***: which consists of limiting the transfer of inputs and erosion beyond the requirements of the Nitrates Directive.
- Measure ***AGR 0303***: which limits inputs in terms of agricultural pesticides and/or the use of alternative plant health practices.
- Measure ***AGR 0401***: which consists of introducing sustainable practices (organic, grass area, crop rotation, land control).
- Measure ***AGR 05***: which consists of preparing a catchment area action programme.

Territorial measures in the "agricultural" area are summarized in
Figure 13, which specifies the fundamental guiding principles of the SDAGE from which they arise.

Figure 13 : Territorial measures for the "agriculture" area

Fundamental guiding principles	Measure code	Measure title
T2-O4	AGR 0202	Limiting the transfer of inputs and erosion beyond the requirements of the Nitrates Directive.
T2-O4	AGR 0303	Limiting inputs in terms of agricultural pesticides and/or the use of alternative plant health practices.
T2-O4, T2-O6	AGR 0401	Introducing sustainable practices (organic, grass area, crop rotation, land control).
T1-O1, T2-O4, T2-O6	AGR 05	Preparation of a catchment area action programme.

► Territorial measures in the "resources" area defined for the Meuse district are:

- Measure ***RES0101***: which consists of preparing a master plan or a comprehensive study.
- Measure ***RES0202***: which consists of introducing a water saving mechanism for individuals or communities.
- Measure ***RES0701***: which consists of introducing resource substitution.

Territorial measures in the "resources" area are summarised in
Figure **14**, which clarifies the fundamental guiding principles of the SDAGE from which they arise.

Figure 14 : Territorial measures for the "resources" area

Fundamental guiding principles	Measure code	Measure title
T1-O1, T2-O4, T2-O6	RES0101	Preparation of a master plan or a comprehensive study.
T1-O1, T2-01, T2-O5	RES0202	Introducing resource substitution.
T4-O1, T5B-O1	RES 0701	Resource substitution or complementary resources.

► Territorial measure in the "diffuse pollution excluding agriculture" area defined for the Meuse district is: Measure ***COL0201***: which consists of limiting diffuse or occasional inputs of non-agricultural pesticides and/or the use of alternative practices.

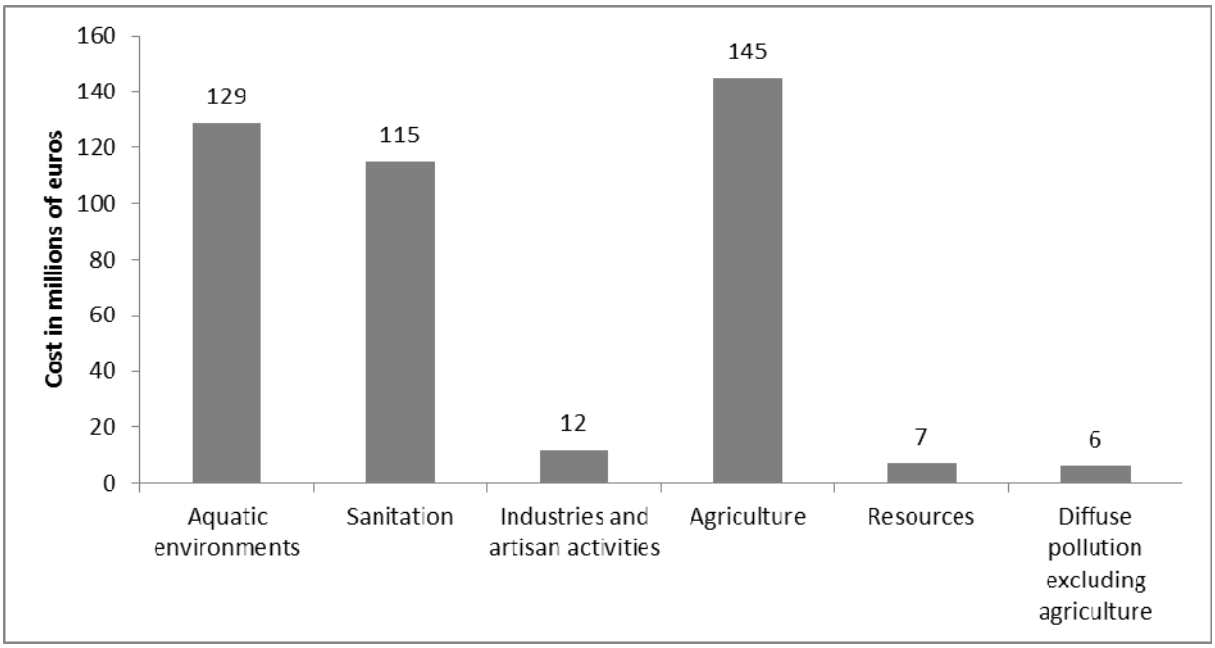
►Territorial measures in the "governance" area
These measures are defined at district level. The work is in progress.

4.4. Cost of the programme of measures

To date, the estimated overall cost of the measures for the period 2016-2027 for the Meuse district is in the region of 400 million euros, 31% of which is for aquatic environments, 28% for sanitation, 3% for industries and artisan activities, 35% for agriculture, 2% for the resource area and 1% for non-agricultural diffuse pollution. Costs for the governance area still need to be established (see Figure 15).

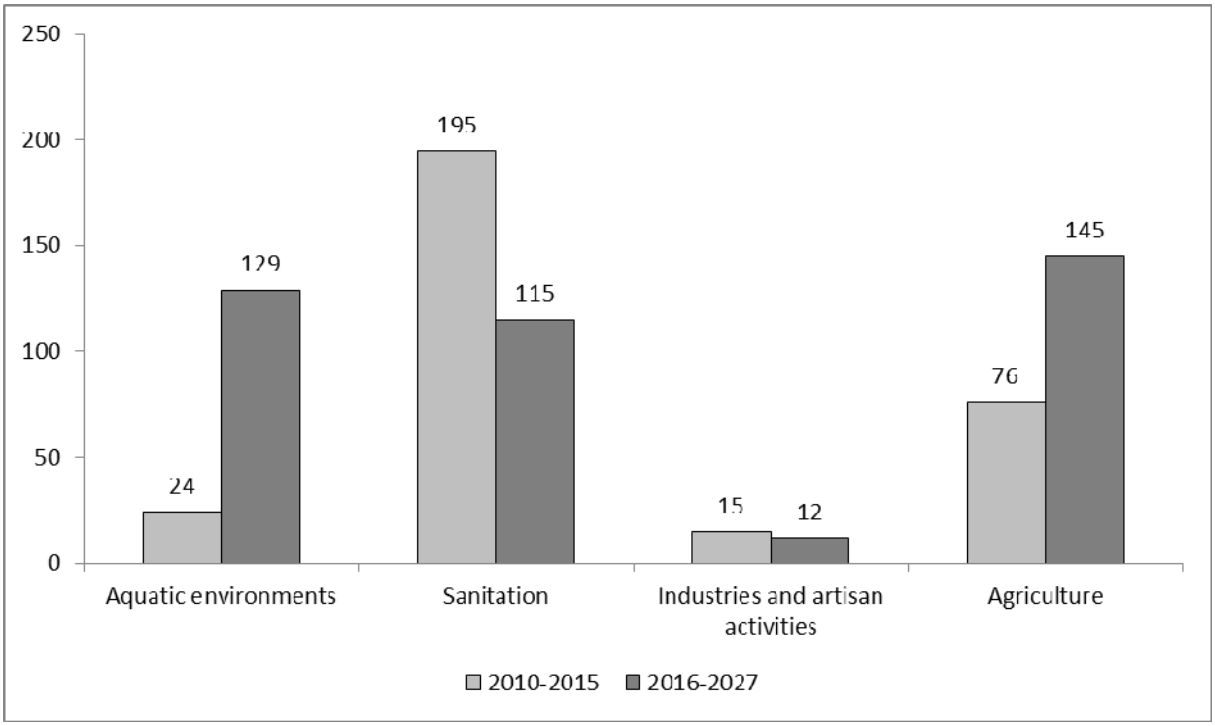
These costs include calculations for nitrate-fixing intermediate crops and the grass strips introduced as part of the Nitrates Directive (2 million euros per year for the period 2016-2027). The cost of adjustments to the amounts of fertilizer used to ensure a balance between plant needs and inputs of any kind (fertilizers, manure, etc.) and the upgrading of livestock buildings to comply with the standards could not be calculated.

Figure 15 : Costs of the measures in millions of euros (2016-2027) for the Meuse district.



Comparing the cost of the measures in cycle 1 (2010-2015) and the cost of those planned for the period 2016-2027, it can be noted that the cost of territorial action in the Aquatic environment and Agriculture areas has increased significantly. For Aquatic environments the average annual cost of the programme of measures was four million euros for cycle 1 (2010-2015) and it is 21 million for the 2016-2027 period. The average annual cost has therefore multiplied by 5 since the preparation of cycle 1 (2010-2015). For the agriculture component, the annual cost of the programme of measures has increased from 13 million euros a year for cycle 1 (2010-2015) for the Meuse district to 24 million euros for the 2016-2027 period, that is an increase of nearly 85% (see Figure 16).

Figure 16: Cost allocation for territorial actions per area for cycle 1 (2010-2015) and for the period 2016-2027.



4.5. Summary sheets for territorial actions.

The programme of measures also includes a general summary sheet for the Meuse district and for each elementary basin in the district. This fact sheet summarizes the following information:

- *at district and work sector level*
  - a table presenting action targets per field to be achieved by the end of the period 2016-2027.
  - a summary of territorial actions and associated costs.

- *at elementary basin level*
  - a map of each water body's drainage basin showing the action challenges for the agriculture, sanitation, industry and artisan activity, aquatic environment and water resource areas and for each surface water body, its status/ecological potential.

  - a table presenting at elementary basin level, the key issues encountered in the five areas of agriculture, sanitation, industry and artisan activities, aquatic environments and water resources (quantitative problem only).

TARGETS TO BE ACHIEVED FOR THE PROGRAMME OF MEASURES EUROPEAN MONITORING INDICATORS IN 2027

Area	European monitoring indicator code	Indicator title	Value
Aquatic environments	5b	**Number** of projects/measures to improve longitudinal continuity	140
	6b	Length **(km)** of watercourses affected by measures to improve hydromorphological conditions (renaturation and restoration).	1,000
Sanitation	1b	**Number of Inhabitant equivalents (IE)** covered by measures exceeding the requirements of the urban waste water directive.	28,500
	1c	**Number** of projects/measures exceeding the requirements of the urban waste water directive.	200
Industries and artisan activities	15c	**Number** of projects/measures for the elimination or reduction of emissions, discharges and losses of priority hazardous substances.	11
	4b	**Number** of sites subject to rehabilitation of contaminated sites measures.	0
Agriculture	2b	**Area (ha)** of agricultural land covered by measures exceeding the requirements of the Nitrates Directive.	30,000
	3b	**Area (ha)** of agricultural land covered by measures to reduce pollution by agricultural pesticides.	63,000
	-	**Number** of priority catchments to be recovered.	130

MEASURES AND ASSOCIATED COSTS

	MEASURE		ACTION TYPE OSMOSIS	PROJECT OWNER	INVESTMENT COSTS		
	OSMOSIS CODE	TITLE			2010-2015	2016-2021	2016-2027
Aquatic environments	MIA02	Watercourse management - excluding structure continuity	MIA0202	Communities	-	4 127 609	6 027 508
			MIA0203	Communities	-	14 719 687	57 109 843
	MIA03	Watercourse management - continuity	MIA0304	Communities	-	18 637 691	35 027 083
	MIA04	Water body management	MIA0401	Communities	-	62 695	208 695
			MIA0402	Communities	-	549 803	648 171
	MIA06	Wetland management	MIA0601	Communities	-	7 594 150	16 519 498
			MIA0602	Communities	-	5 243 540	13 818 553
				Total Cost	24 158 962	50 935 175	129 359 352
Sanitation	ASS01	Comprehensive study and master plan	ASS0101	Communities	-	-	-
	ASS02	Strictly rainwater	ASS0201	Communities	-	10 343 779	11 401 791
	ASS13	Water treatment station, discharge point, sludge and drainage residues	ASS0901	Communities	-	71 687 725	103 623 828
				Total cost	194 730 619	82 031 504	115 025 618
Industries and artisan activities	IND01	Comprehensive study and master plan	IND0101	Industries	-	315 000	320 000
	IND04	Performance maintenance mechanism	IND0401	Industries	-	-	-
	IND06	Contaminated sites and soils	IND0601	Industries	-	-	-
	IND12	Clean technology decontamination structures Mainly hazardous substances.	-	Industries and artisan activities	-	6 331 500	7 786 000
	IND13	Clean technology decontamination structure Mainly excluding hazardous substances.	-	Industries	-	2 250 000	4 200 000
				Total Cost	14 979 387	8 896 500	12 306 000

Agriculture	AGR02	Measures to reduce transfer and erosion	AGR0202	Farmers	-	14 322 000	28 644 000
	AGR03	Measures to reduce diffuse inputs	AGR0303	Farmers	-	22 774 500	43 677 695
	AGR04	Measures to develop low input sustainable practices	AGR0401	Farmers	-	13 093 758	26 187 516
	AGR05	Preparation of a catchment area action programme	-	Farmers	-	31 580 491	46 023 663
				Total Cost	76 196 301	81 770 749	144 532 874
Resources	RES01	Comprehensive study and master plan	RES0101	Communities	-	517 634	708 920
	RES02	Water saving	-	Communities	-	1 579 645	1 579 645
	RES07	Resource substitution or complementary resources.	RES0701	Communities	-	3,040,817 - 4,541,480	3,040,817 - 4,541,480
				Total Cost	0	5 138 096	5 329 382
						6 638 759	6 830 045
Diffuse pollution excluding agriculture	COL01	Comprehensive study and master plan (reducing diffuse pollution excluding agriculture)	COL0101	Communities	-	-	-
	COL02	Limitation of the use of pesticides	COL0201	Communities	-	4 708 794	6 327 797
				Total Cost	-	4 708 794	6 327 797
Governance	GOU01	Cross-sector study	GOU0101	Communities	-	-	-
	GOU02	Concerted management	GOU0201	Communities	-	-	-
			GOU0202	Communities	-	-	-
	GOU03	Training, consultancy, awareness raising or facilitation measures	GOU0301	Basin committee	-	-	-
	GOU06	Governance - knowledge of others	GOU0601	Basin committee	-	-	-
				Total Cost	12 465 713	-	-
TOTAL COST					322 530 982	233 480 818	412 881 023
						234 981 481	414 381 686

N.B.:
All costs are expressed in Euros.
Work to calculate the cost of Governance measures is in progress. Values shown below are subject to change therefore. As a reminder, these measures are prepared at district level.

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AGENCE DE L'EAU
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