

7

DISTRICTS
RHINE &
MEUSE

SDAGE

2022 > 2027

**EUROPEAN WATER
FRAMEWORK DIRECTIVE**

Rhine and Meuse
Water Management
& Use Master Plan

Summary of the Programme of Measures for the Rhine and Meuse districts

VOLUME 7

**Rhine and Meuse
Water Management & Use Master Plan (SDAGE)**

**Volume 7:
Summary of the Programme of Measures
for the Rhine and Meuse districts**

Introduction

With the exception of environmental reports (volumes 11 and 12), information about the Rhine and Meuse districts has been brought together in the same document.

The water management and use master plan (SDAGE) is made up of three volumes:

- **Volume 1:** Scope and purpose of the SDAGE
- **Volume 2:** Water quality and quantity goals
- **Volume 3:** Fundamental orientations and arrangements

Besides, the SDAGE also includes:

- **An appendix that forms integral part of the SDAGE and has the same legal effects**
 - **Volume 4:** Appendix with map of the Rhine and Meuse districts
- **Ten accompanying documents:**
 - **Volume 5:** Summary presentation of water management and inventory of pollutant emissions in the Rhine and Meuse districts
 - **Volume 6:** Arrangements for water pricing and cost recovery in the Rhine and Meuse districts
 - **Volume 7:** Summary of the Programmes of Measures for the Rhine and Meuse districts
 - **Volume 8:** Summary of the programmes of monitoring for the Rhine and Meuse districts
 - **Volume 9:** Follow-up arrangements for assessing the implementation of the SDAGE in the Rhine and Meuse districts
 - **Volume 10:** Summary of arrangements made for public information and consultation in respect of the SDAGE and the Programme of Measures for the Rhine and Meuse districts
 - **Volumes 11 and 12:** Environmental reports, SDAGEs for the Rhine and Meuse districts
 - Two distinct volumes for the Rhine district (volume 11) and for the Meuse district (volume 12)
 - **Volume 13:** Summary of the methods and criteria used to assess the chemical status and upward trends of the Rhine and Meuse districts
 - **Volume 14:** Good practices guide for the management of aquatic environments in the Rhine and Meuse districts
 - **Volume 15:** The local water competency organisation strategy (SOCLE)

N.B. :

Under the ministerial order of 16 May 2005 as amended demarcating basins or groups of basins in order to prepare and update water management and use master plans:

- Five municipalities of the Haut-Rhin *département* (Chavannes-sur-l'Etang, Magny, Montreux-Jeune, Montreux-Vieux and Romagny) are hydrographically part of the Rhone-Mediterranean basin, but are in the Rhine district from the standpoint of administration;
- Five municipalities in the Vosges *département* (Avranville, Bréchainville, Chermisey, Grand and Trampot) are hydrographically part of the Seine-Normandy basin, but are in the Meuse district from the standpoint of administration.

For those municipalities and the associated bodies of water, the planning documents (SDAGE, Programmes of Measures, situation review and register of protected areas) that apply are those of the Rhine and Meuse basin.

Information relating to the Sambre (tributary of the Meuse) is contained in the planning documents of the Artois-Picardy basin.

Information relating to the Orbe and the Jougna (tributary of the Orbe), which are hydrographically part of the Rhine basin but are administratively part of the Rhone-Mediterranean basin, is contained in the planning documents of the Rhone-Mediterranean basin.

List of acronyms used:

- WFD: Water Framework Directive
- OFB: French office for biodiversity
- SAGE: Water management and use plan
- SDAGE: Water management and use master plan
- STB: Technical secretariat for the basin

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1. Articulation between the Programme of Measures and other tools derived from the WFD

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

The application of the WFD relies on four planning tools:

- The situation review prepared in 2019, which is designed to define the major water management issues and diagnose the factors that influence the status of aquatic environments;
- The management plan (included in the SDAGE as regards the French part of districts lying in France), which particularly defines the environmental goals resulting from the WFD, and, as such, sets the level of ambition for the aquatic environment quality to achieve and the corresponding time frames;
- The Programme of Measures, which defines concrete national or local action, whether or not regulatory, that must be implemented to achieve the ambition;
- The programme of monitoring, which makes it possible among others to verify that environmental goals are indeed met.

The Programme of Measures thus makes the SDAGE (management plan) operational. The two documents can therefore not be separated.

Besides, these two documents result directly from the situation review and provide answers to the main questions brought out by it.

1.2. General organisation implemented for updating the SDAGE and the Programme of Measures

The 2022-2027 management plans of the Rhine and Meuse districts are updates of the 2016-2021 management plans that were approved in 2015.

The general organisation put in place for implementing the WFD in the Rhine-Meuse basin relies on four levels:

- A strategic preparation level that is part of a joint construction process between the departments of the State and the river basin committee (water parliament for the basin);
- An overall steering and coordination level, provided by the technical secretariat for the basin (STB), bringing together representatives of the main departments of the State and of the public establishments directly involved in implementing the WFD around the Water Agency, the River Basin Delegation and the French office for biodiversity.

It is responsible for:

- Following up and organising the preparation of draft SDAGEs and Programmes of Measures. It provides a methodology framework;
 - Establishing draft SDAGEs, particularly on the basis of the work of the planning commission (implemented by the river basin committee, with, among its tasks, participation in the preparation and application of the Rhine and Meuse **SDAGEs**) and its themed working groups;
 - Putting together the proposed measures listed on the local level in order to update the draft Programme of Measures of the Rhine and Meuse districts.
- A level of consultation with players: The players contribute to the work for updating the SDAGEs of the Rhine and the Meuse and the associated Programmes of Measures during public consultation and cross-border consultations and meetings;
 - A decision-making level: decision-making roles are shared between the Prefect coordinating the river basin, the competent authority for the WFD and the Chairman of the river basin committee. The Prefect coordinating the river basin approves the SDAGE adopted by the river basin committee. They finalise the Programme of Measures after submitting it to the river basin committee.

2. Content of the 2019-2027 management plan (SDAGE and Programme of Measures) of the Rhine and Meuse districts

2.1. Content of the Programmes of Measures

The management plans for the Rhine and Meuse districts are made up of the following:

▶ **Main documents of the SDAGE**

- ***Scope and purpose of the SDAGE (volume 1)***
This document explains the update procedure defined for the SDAGE, its legal scope, and the existing articulation between the WFD, the Floods Directive and the Marine Strategy Framework Directive. The methods of public information and consultation in respect of draft SDAGEs and the Programmes of Measures.
- ***Water quality and quantity goals (volume 2)***
This document lists the quantity and quality goals of bodies of water, substance reduction goals and goals for the conservation of protected areas.

- ***Fundamental orientations and provisions of the SDAGE (volume 3)***

The volume is made up of the fundamental orientations (broad lines of the water policy to implement for a balanced management of water in the Rhine-Meuse basin) and arrangements (modalities of implementation of governmental decisions in the area of water).

Besides, an appendix that forms integral part of the SDAGE and has the same legal effects is associated with the SDAGE:

- ***Appendix with map of the Rhine and Meuse districts (volume 4)***

Information about surface water and groundwater is provided and localised for each district.

▶ **Accompanying documents of the SDAGE**

- ***Summary presentation of water management and inventory of pollutant emissions in the Rhine and Meuse districts (volume 5)***

In particular, it provides a summary of the situation review of 2019, the inventory of emissions, losses and discharges, a summary of the register of protected areas (to be enclosed with the final version), a statement of the progress of the water management and use plans (SAGEs).

- ***Arrangements for water pricing and cost recovery in the Rhine and Meuse districts (volume 6)***

This volume sets out the determinants of the financing of the water industry, the annual costs borne by the economic players, the basin water accounts and the cost recovery rate.

- ***Summary of the Programmes of Measures for the Rhine and Meuse districts (volume 7)***

This volume provides a summary of the Programme of Measures.

- ***Summary of the programmes of monitoring for the Rhine and Meuse districts (volume 8)***

This is a summary of the programme of monitoring defined for the bodies of surface water and ground water.

- ***Follow-up arrangements for assessing the implementation of the SDAGE in the Rhine and Meuse districts (volume 9)***

This relates to the description of the follow-up arrangements to assess the operational adaptation of the SDAGEs through the use of indicators.

- ***Summary of arrangements made for public information and consultation in respect of the SDAGEs and the Programmes of Measures for the Rhine and Meuse districts (volume 10)***

This volume describes the different consultations carried out for the draft SDAGEs and Programmes of Measures, their main results and their application in the final documents.

- ***Environmental reports of the SDAGEs for the Rhine and Meuse districts (volumes 11 and 12)***

These volumes result from the application of the European directive on the assessment of the effects of certain plans and programmes on the environment¹. They make it possible to better appreciate the effects of the draft SDAGE on the environment in general, beyond the issue of water.

- ***Summary of the methods and criteria used to assess the chemical status and the upward trends of the Rhine and Meuse districts (volume 13)***

This volume brings together the methodology elements relating to bodies of surface water and ground water.

- ***Good practices guide for the management of aquatic environments in the Rhine and Meuse districts (volume 14)***

The good practices guide for the management of aquatic environments is a guide for reading the SDAGE as regards the ecological management of aquatic environments in the wider sense.

- ***The local water competency organisation strategy (SOCLE) (volume 15)***

► **The Programme of Measures (PoM)**

The Programme of Measures defines the technical and financial resources to implement to achieve the environmental goals defined in volume 2 of the SDAGE.

2.2. How do the SDAGE and Programme of Measures handle the important issues derived from the situation review (2019)?

The fundamental orientations of the SDAGE (volume 3) and the localised measures of the Programme of Measures of the Rhine and Meuse district make it possible to adapt the main issues identified in the situation review of 2019.

The fundamental orientations of the SDAGE (volume 3) are grouped in six subjects:

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

¹ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment

- Subject 6: Water and governance.

The localised measures of the Programmes of Measures (PoM) are grouped using the following domains:

- Aquatic environments;
- Sanitation;
- Large and small industry;
- Agriculture;
- Resources;
- Diffuse pollution other than from agriculture;
- Governance.

These subjects and domains are shown in **figure 1** to identify the extent to which important questions are addressed in the 2022-2027 SDAGEs and PoM.

Figure 1: Summary of the addressing of important issues derived from the situation review of 2019 in the 2022-2027 SDAGE and Programme of Measures

Important issue from the situation review (2019)	Addressed by the SDAGE and Programme of Measures (PoM)	
WATER AND CLIMATE CHANGE, AN ISSUE THAT OUTWEIGHS ALL OTHERS: URGENT ACTION IS NEEDED!	SDAGE	Subjects 1, 2, 3, 4, 5 and 6 (volume 3)
	POM	Domains: aquatic environments, sanitation, large and small industry, agriculture, resources
WATER, NATURE AND BIODIVERSITY: CONSERVING THE BIODIVERSITY AND FUNCTIONS OF AQUATIC ENVIRONMENTS, OUR LIFE INSURANCE FOR THE FUTURE	SDAGE	Subjects 2, 3, 4, 5 and 6 (volume 3)
	POM	Domains: aquatic environments, resources
WATER AND HEALTH: PRIORITISING THE DIMINUTION OF PESTICIDES AND OTHER TOXIC SUBSTANCES	SDAGE	Subjects 1, 2, 3, 4, 5 and 6 (volume 3)
	POM	Domains: large and small industry, agriculture, sanitation
WATER AND LOCAL AREAS: WATER AND LIFE AT THE CENTRE OF OUR LIVING ENVIRONMENT	SDAGE	Subjects 1, 2, 3, 4, 5 and 6 (volume 3)
	POM	Domain: aquatic environments
WATER AND MEMORY: MANAGING THE IMPACTS OF THE DISCONTINUATION OF MINE WORKING AND POLLUTION RELATING TO WORLD WARS, KNOWING THE PAST TO BETTER APPROACH THE FUTURE	SDAGE	Subjects 1, 2, 4 and 6 (volume 3)
	POM	
INTERNATIONAL WATERS: CONCERTED MANAGEMENT THAT KNOWS NO BOUNDARIES	SDAGE	Subject 6 (volume 3)
	POM	

Figures 2, 3 and 4 below provide a summary of the addressing of international issues in the area of water by the SDAGEs and the Programmes of Measures of 2022-2027 of the Rhine and Meuse districts.

Figure 2: Issues common to the entire Rhine district

International issues and important questions		Addressed in the 2022-2027 SDAGE and PoM
International district of the Rhine	Restoring biological continuity, increasing the diversity of habitats	Subjects 2, 3, 4, 5 and 6
	Reducing the diffuse inputs that contaminate surface and groundwater (nutrients, plant protection products, metals, hazardous substances from historic pollution and others)	Subject 1, 2 and 5
	Continuing the reduction of conventional pressures due to point industrial and municipal discharges	Subject 1, 2, 5
	Reconciling the uses of water (navigation, energy generation, flood defence, uses with a significant impact on land occupancy and others) with the environmental goals of the WFD	Subjects 5 and 6

Figure 3: Issues specific to the Moselle-Sarre working area

International issues and important questions		Addressed in the 2022-2027 SDAGE and PoM
Moselle-Sarre working area	Taking account of the consequences of climate change	Subjects 1, 2, 3, 4, 5 and 6
	Improving and restoring continuity, particularly to allow fish migration	Subjects 3 and 5
	Conserving and restoring aquatic ecosystems by reducing hydromorphological changes and shortages in the catchment basins of the Moselle and the Sarre	Subjects 3, 4 and 5
	Continuing the reduction of conventional pollution, in particular nutrients (nitrogen and phosphorous) from diffuse sources that have a strong impact on the status of surface water and ground water	Subjects 1, 2 and 3
	Continuing to reduce or even eliminating other water polluting substances	Subjects 1 and 2
	Improving the balance of aquatic environments through measures in mines (coal and iron mining areas)	Subjects 4 and 5
	Reconciling the uses of water such as navigation or hydroelectricity generation and the protection of environments and fish populations	Subjects 5 and 6
	Reconciling flood defence measures or flood risk prevention measures and the environment goals of the WFD	Subject 6

Figure 4: Issues common to the whole Meuse district

International issues and important questions		Addressed in the 2022-2027 SDAGE and PoM
Meuse district	Addressing of climate change	Subjects 1, 2, 3, 4, 5 and 6
	Taking account of the impact of hydromorphological modifications on the free movement of fish	Subject 3
	Discharge of nutrients from point and diffuse sources	Subjects 1 and 2
	Discharge of pollutants from point and diffuse sources	Subjects 1 and 2
	Impact of priority substances and other pollutants (pesticides, solvents, heavy metals, hydrocarbons, medicines) on the aquatic environment	Subjects 2 and 3
	Diffuse discharge of nitrogen and pesticides, essentially from agriculture	Subjects 1 and 2
	Greater frequency and severity of low-flow periods	Subject 4
	Increased risk of flooding	Subjects 4, 5 and 6

2.3. How has the impact of climate change been integrated into the SDAGEs and Programmes of Measures?

The 2022-2027 SDAGE is marked by the predominance of the issue of climate change, an overarching issue with major consequences for all the aspects of water management policies. In the Rhine-Meuse basin, climate change could significantly increase the frequency and intensity of extreme events (floods, low flows, etc.), have lasting effects on some situations and lead to the emergence of tension due to the quantity of water resources.

In that light, in February 2018, the river basin committee adopted the *Adaptation and mitigation plan for the water resources of the Rhine-Meuse basin*. In it, adaptation* and mitigation* are identified as the two inseparable responses to the climate emergency, where both need to be conducted simultaneously.

To that end, the following principles apply for devising each type of action in favour of water and the climate:

- Detecting improper adaptation² by identifying and avoiding what might look like good ideas at first glance;
- Preferring “no-regrets” beneficial measures regardless of the scope of climate change;
- Opting for multifunctional measures and integrated projects, measures with multiple benefits that make it therefore possible to provide solutions to different issues at the same time;
- Moving towards resource-saving solutions (water, land, fossil fuels);
- Sharing the resources fairly and converging towards solidarity between users, by also integrating natural environments.

²: is a situation where vulnerability to climatic events is paradoxically **increased**. This could include, among others, measures that transfer the vulnerability to other areas, parties or periods, reduce the future margin for adaptation (no flexibility: building of a dyke, urbanisation), increase greenhouse gases or affect the water resources.

Those principles were integrated systematically in the whole SDAGE in order to move towards areas that are “CLIMAT’EAU compatibles” (climate and water resilient).

The main measures of the Programmes of Measures of the Rhine and Meuse districts of 2022-2027 that contribute to adaptation to climate change are:

- In urban areas, measures that make it possible to limit pollution due to rainfall by furthering infiltration (ASS02);
- In the domain of aquatic environments, emphasis is laid on the ambitious restoration of water courses (MIA02 and MIA03) and wetlands (MIA0601);
- In the domain of farming, measures for the development of sustainable low-input practices (AGR0401) contribute to improving the quality of surface and ground water and the use of farming systems that are more resilient to climate change;
- Knowledge improvement measures (RES01) designed to better understand pressure on water resources (abstraction), better identify areas with quantitative tension and reinforce the governance of these areas for improved resource management, measures to save water (RES02) or substitute resources (RES0702), measures to reduce leaks from drinking water supply systems (RES0202) and manage drought situations (RES0401 – basic regulatory measures).

2.4. What are the impacts of the SDAGE and the Programme of Measures (PoM) on the environment?

As part of the environmental analysis resulting from Directive 2001/42/EC on the effects of certain plans and programmes on the environment, each orientation of the SDAGE and each measure in the PoM were analysed in view of the environmental issues presented in Volumes 11 and 12 of the 2022-2027 SDAGE. That analysis makes it possible to determine the environmental compartments and the issues on which the orientation has a potential effect, and if the effect has a provisional impact that is more positive or negative.

The assessment reveals that the preparation of the SDAGE covers the issues satisfactorily and leads, overall, to very positive effects on the different components of the environment.

The main aspects of this analysis are summarised in Appendix 1 for the Rhine and Meuse districts.

3. Presentation of the Programme of Measures

The Programme of Measures is not designed with the intention of comprehensively listing all action in the area of water. It only covers action that makes it possible to achieve the environmental goals set in the SDAGE.

3.1. Procedure for the preparation of the Programme of Measures

► A Programme of Measures targeted on priorities

The identified measures have been targeted (see priorities defined in **Figure5** to achieve the environmental goals of the WFD, while ensuring synergy with the Floods Directive and addressing climate change).

Figure5: Mains areas of action by domain defined for the Programme of Measures

Domain	Priority
Aquatic environments	<ul style="list-style-type: none"> - Continuity: priority for the crossability of structures on listed water courses (article L214-17-2 of the Environment Code) - Restoration of water courses: priority for ambitious operations - Wetlands: a key issue (acquisition, restoration)
Agriculture	<ul style="list-style-type: none"> - Restoring the quality of sensitive top-priority deteriorated catchment points - Adapting practices in zones deteriorated by nitrates and/or pesticides
Large and small industry	<ul style="list-style-type: none"> - Targeting efforts with an inventory of emissions
Sanitation	<ul style="list-style-type: none"> - Improving the treatment of pollution by rainfall - Targeting action on bodies of water with a poor status in relation to macro-pollutants
Resources	<ul style="list-style-type: none"> - Improving knowledge - Saving water or substituting resources
All domains	Taking account of climate change

► A Programme of Measures that takes account of the impacts of climate change

The main impacts of climate change on the Rhine-Meuse basin are a heightened frequency of external climate events (floods, low flows, etc.).

In general, measures aimed at reducing pressure that deteriorates the status of bodies of water, improving knowledge of the environment and promoting the conservation of aquatic environments are considered by nature to take account of the impacts of climate change.

Elements of adaptation to climate change have been included in the Programme of Measures.

3.2. Measures

The measures provided in the Programme of Measures are broken down into national measures and local measures.

► National measures

National measures are mainly basic measures in 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 annex VI, such as Directive 76/160/EEC on bathing water) or resulting from the national basic regulations (articles 11.3b to l of the WFD).

National measures are measures under laws and regulations that define standards, obligations to take technical measures, measures for monitoring the application of regulations, economic and tax measures that implement the principle of cost recovery, the “polluter pays” principle and incentive pricing.

► Local measures

Local measures consist in alleviating the pressures that are at the source of a risk of not achieving environmental goals, by a technical intervention on an installation, activity or structure or by restoration work. These may be local programming measures for technical interventions, measures to improve knowledge, governance and organisational measures and training and coordination measures.

They may be implemented in the form of regulatory arrangements, financial incentives and negotiated agreements.

They may be:

- **Administrative.** These are fundamental orientations and arrangements of the SDAGE (see Volume 3 of the SDAGE);
- **Technical.** These could take the form of work (e.g. rewilding a water course), governance action (e.g. putting in place or reinforcing a SAGE) or studies (e.g. preparing an overall plan for the use of water resources).

3.3. Local measures of the Programme of Measures per domain

Local measures have been defined to make it possible to address the significant pressures identified in the 2019 situation review, which have made it possible to define the issues and fundamental orientations contained in the SDAGE. They are presented below for each domain.

- **The local measures of the aquatic environments domain** defined for the Rhine and Meuse districts are:
- Measure MIA0101: which consists in conducting an overall study or master plan aimed at protecting aquatic environments;
 - Measure MIA0202: which consists in conducting a conventional water course restoration operation;
 - Measure MIA0203: which consists in conducting a large-scale operation to restore all the functions of a water course and its appendages;
 - Measure MIA0304: which consists in improving or removing a structure;
 - Measure MIA0401: which consists in reducing the impact of a lake, pond or quarry on surface or ground water;
 - Measure MIA0402: which consists in implementing ecological restoration or maintenance work on a lake or pond;
 - Measure MIA0601: which consists in controlling the ownership of wetlands.

The local measures of the aquatic environments domain are summarised in **figure 6** below, which also specifies the fundamental orientations of the SDAGE from which they are derived.

Figure 6: Local measures for the aquatic environments domain

Fundamental orientations	Code of the measure	Name of the measure
T3-O1; T3-O7	MIA0101	Overall study and master plan
T3-O2, T3-O3, T3-O4, T3-O5; T3-O7	MIA0202	Restoration of a water course
T3-O2, T3-O3, T3-O4, T3-O5; T3-O7	MIA0203	Rewilding of a water course
T3-O3, T3-O5	MIA0304	Improvement of the ecological continuity of a water course
T3-O2, T3-O4, T3-O5	MIA 0401	Reducing the impact of a lake or pond
T3-O2	MIA0402	Implementing ecological restoration or maintenance work on a lake or pond
T3-O7	MIA0601	Control of ownership of wetlands
T3-O2, T3-O3, T3-O4, T3-O7	MIA0602	Restoration of wetlands

► **The local measures of the sanitation domain** defined for the Rhine and Meuse districts are:

- Measure ASS0101 which relates to the conduction of an overall study and a master plan;
- Measure ASS0201: which relates to work for improving the management and treatment of rain water;
- Measure ASS13: which relates to the creation/rehabilitation/improvement of a treatment structure, a discharge point, a treatment structure for sludge and emptied material.

The local measures of the sanitation domain are summarised in **figure 7** below, which also specifies the fundamental orientations of the SDAGE from which they are derived.

Figure 7: Local measures for the sanitation domain

Fundamental orientations	Code of the measure	Name of the measure
T2-O1	ASS0101	Overall study and master plan
T2-O1; T2-O2; T2-O3, T5A-O5, T5B-O1	ASS0201	Rainfall management
T2-O1, T2-O3; T5B-O1	ASS13	New sanitation system or improvement of sanitation system

► **The local measures of the large and small industry domain** defined for the Rhine and Meuse districts are:

- Measure **IND0101** which consists in conducting an overall study or a master plan relating to the reduction of pollution associated with large and small industry;
- Measure **IND0601** which consists in putting in place measures to reduce pollution that is essentially related to industrial sites and polluted sites and soil;
- Measure **IND12** which consists in putting in place pollution control systems using clean technology – chiefly for hazardous substances;
- Measure **IND13**: which consists in reducing pollution other than hazardous substances.

The local measures of the large and small industry disposal domain are summarised in **figure 8** below, which also specifies the fundamental orientations of the SDAGE from which they are derived.

Figure 8: Local measures for the large and small industry domain

Fundamental orientations	Code of the measure	Name of the measure
T2-O1; T2-O2	IND0101	Conducting an overall study or a master plan relating to the reduction of pollution associated with large and small industry
T2-O1	IND0601	Putting in place measures to reduce pollution that is essentially related to industrial sites and polluted sites and soil
T2-O1, T2-O2, T2-O3	IND12	Pollution control systems using clean technology - Mainly for hazardous substances
T2-O1, T2-O3	IND13	Reducing pollution other than hazardous substances

► **The local measures of the agricultural domain** defined for the Rhine and Meuse districts are:

- Measure **AGR 0401** which consists in putting in place sustainable practices (organic farming, grass surfaces, crop rotation, land ownership);
- Measure **AGR 05** which consists in preparing an action programme on the level of a catchment charging area (CCA).

The local measures of the agriculture domain are summarised in **figure 9** below, which further specifies the fundamental orientations of the SDAGE from which they are derived.

Figure9: Local measures for the agriculture domain

Fundamental orientations	Code of the measure	Name of the measure
T2-O4, T2-O6	AGR 0401	Putting in place sustainable practices (organic farming, grass surfaces, crop rotation, land ownership)
T1-O1, T2-O4, T2-O6	AGR 05	Preparation of a CCA (catchment charging area) action programme

► **The local measures of the resources domain** defined for the Rhine and Meuse districts are:

- Measure **RES0101** which consists in preparing a master plan or overall study;
- Measure **RES0201** which consists in putting in place a system for saving water in the domain of agriculture;
- Measure **RES0202** which consists in putting in place a system for saving water intended for private individuals or local authorities;
- Measure **RES0203** which consists in putting in place a system for saving water intended for large and small industry;
- Measure **RES0303** which consists in putting in place the modalities for sharing water resources
- Measure **RES0701** which consists in putting in place substitute resources;
- Measure **RES0702** which consists in putting in place supplementary resources.

The local measures of the resources domain are summarised in **figure 10** below, which also specifies the fundamental orientations of the SDAGE from which they are derived.

Figure 10: Local measures for the resources domain

Fundamental orientations	Code of the measure	Name of the measure
T1-O1, T2-O4, T2-O6; T4-O2	RES0101	Preparation of a master plan or an overall study
T1-O1, T2-O6 T4-O1	RES0201 RES0202 RES0203	Water saving
T4-O1	RES0303	Resource sharing rules
T4-O1, T5B-O1	RES 0701 RES 0702	Substitute or supplementary resources

► **The local measures of the governance domain defined on the scale of the Rhine and Meuse districts are:**

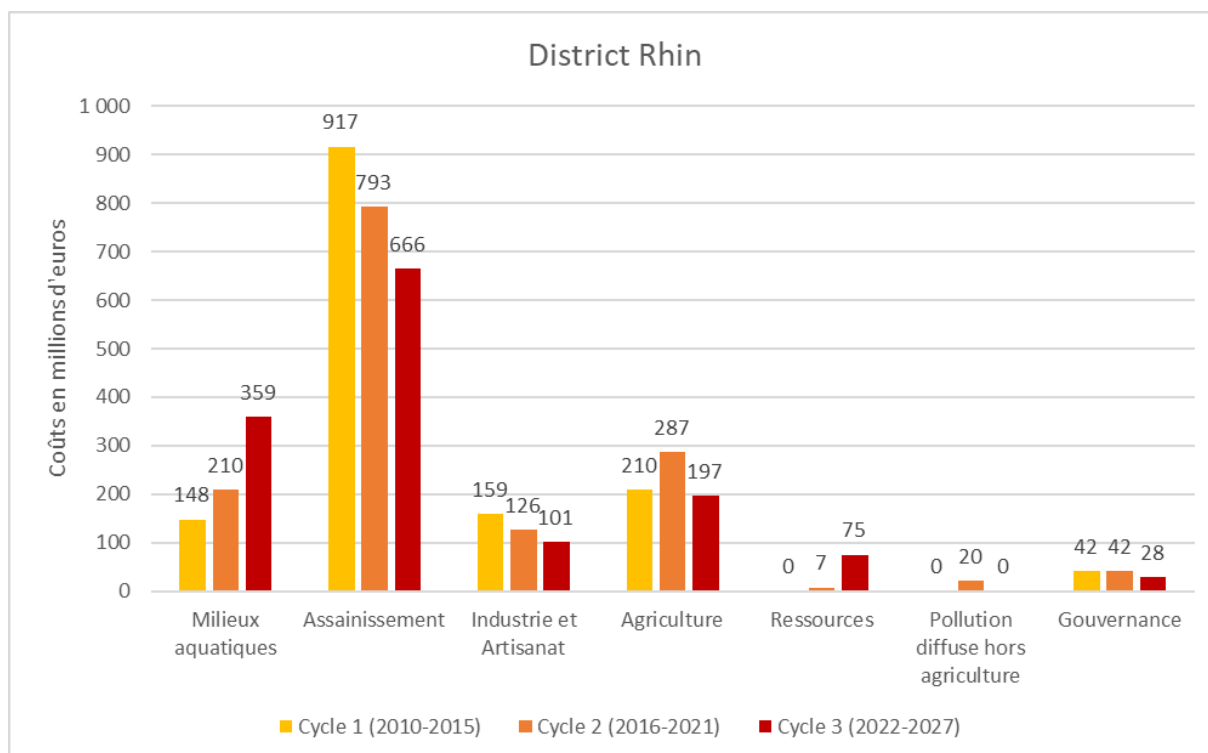
- Measure **GOU0201**, which consists in putting in place or reinforcing a water management and use plan (SAGE);
- Measure **GOU0202** which consists in implementing agreed management tools away from SAGES;
- Measure **GOU03** which consists in informing, training, advising, making aware all type of public about the requirements of the Water Framework Directive (WFD).

3.4. Costs of the Programme of Measures

3.4.1. Rhine district

The overall provisional cost of measures in the 2022-2027 period for the Rhine district is about €1.4 billion, including 25% for aquatic environments, 47% for sanitation, 7% for large and small industry, 14% for agriculture, 5% for resources and 2% for governance.

Figure 11: Provisional cost trends over three management cycles in the Rhine district



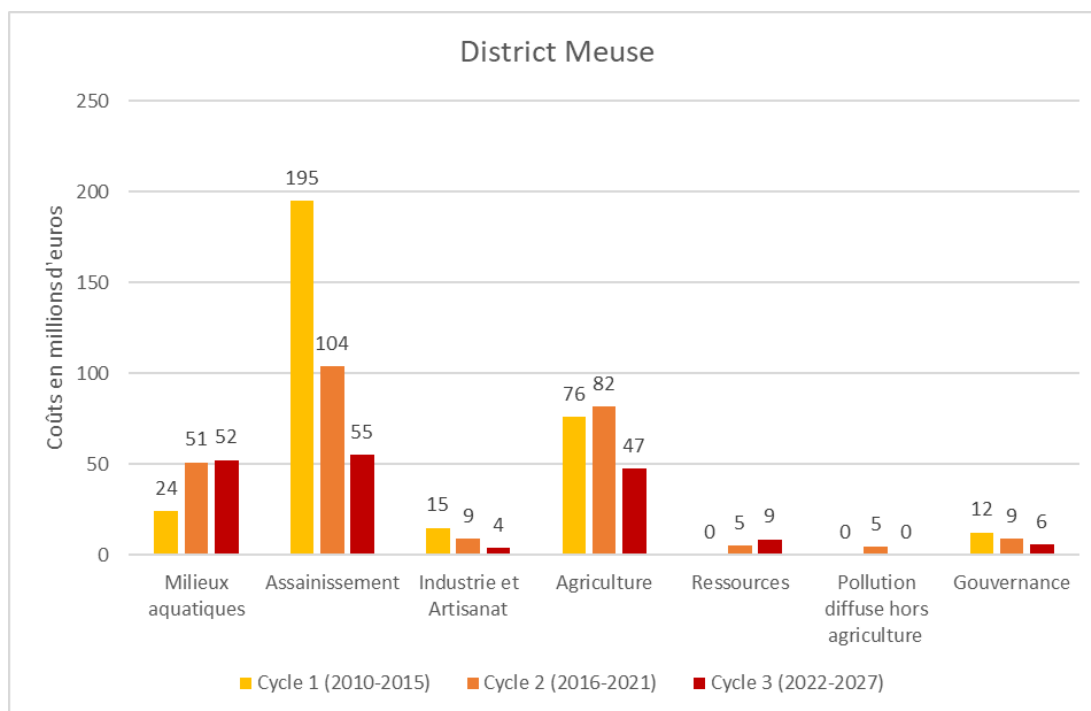
N.B. : The cost of the measures is equal to the total provisional cost. It includes the public grants project owners could expect to receive.

District RHIN	RHINE district
Coût en millions d'euros	Cost in millions of euros
Milieux aquatiques	Aquatic environments
Assainissement	Sanitation
Industrie et artisanat	Large and small industry
Agriculture	Agriculture
Ressources	Resources
Pollution diffuse hors agriculture	Diffuse pollution other than from agriculture
Gouvernance	Governance
Cycle 1 (2010-2015)	Cycle 1 (2010-2015)
Cycle 2 (2016-2022)	Cycle 2 (2016-2022)
Cycle 3 (2022-2027)	Cycle 3 (2022-2027)

3.4.2. Meuse district

The overall provisional cost of measures in the 2022-2027 period for the Meuse district is about €0.2 billion, including 30% for aquatic environments, 32% for sanitation, 2% for large and small industry, 27% for agriculture, 5% for resources and 3% for governance.

Figure12: Provisional cost trends over three management cycles in the Meuse district



N.B. : The cost of the measures is equal to the total provisional cost. It includes the public grants project owners could expect to receive.

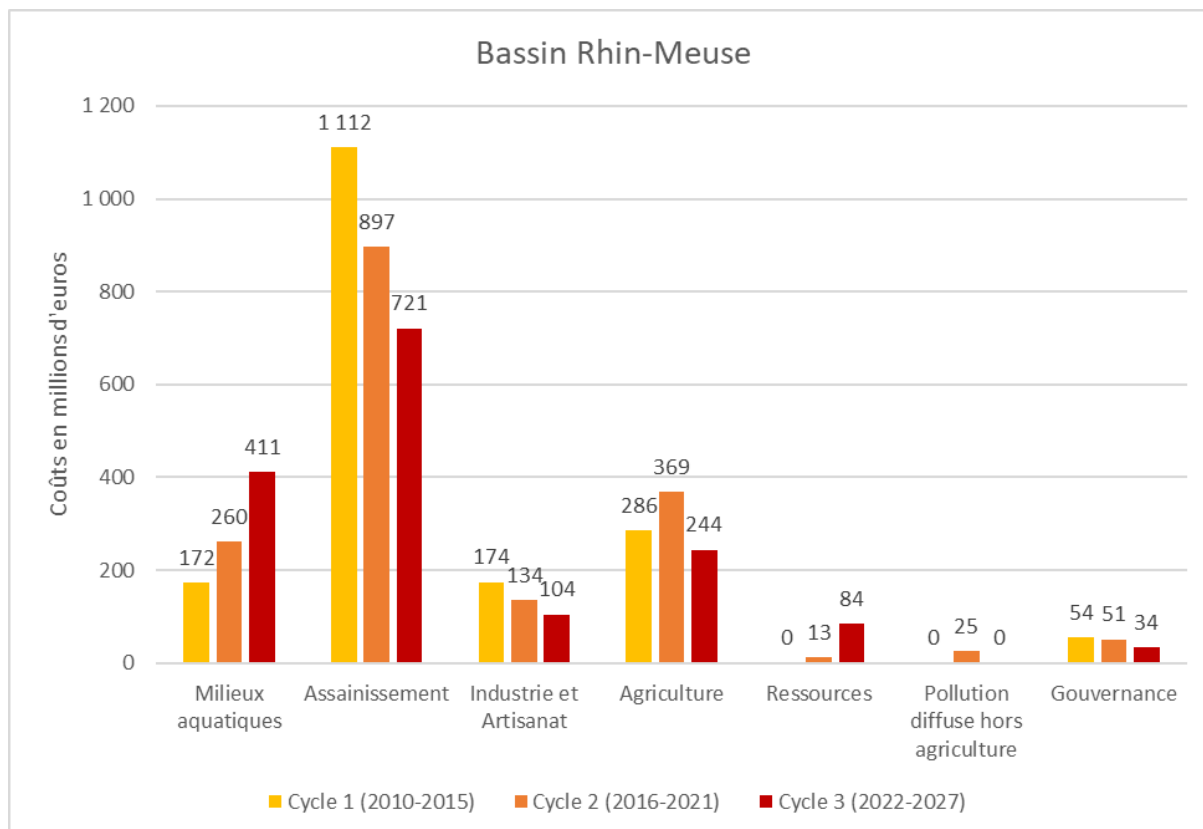
District MEUSE	MEUSE district
Coût en millions d'euros	Cost in millions of euros
Milieux aquatiques	Aquatic environments
Assainissement	Sanitation
Industrie et artisanat	Large and small industry
Agriculture	Agriculture
Ressources	Resources
Pollution diffuse hors agriculture	Diffuse pollution other than from agriculture
Gouvernance	Governance
Cycle 1 (2010-2015)	Cycle 1 (2010-2015)
Cycle 2 (2016-2022)	Cycle 2 (2016-2022)
Cycle 3 (2022-2027)	Cycle 3 (2022-2027)

3.4.3. Rhine-Meuse basin

The total provisional cost of measures for the 2022-2027 period for the Rhine-Meuse basin is about €1.6 billion.

Figure 13 below shows the trends of the provisional costs over three management cycles in the Rhine-Meuse basin

Figure 13: Provisional cost trends over three management cycles in the Rhine-Meuse basin



N.B. : The cost of the measures is equal to the total provisional cost. It includes the public grants project owners could expect to receive.

District RHIN-MEUSE	RHINE-MEUSE district
Coût en millions d'euros	Cost in millions of euros
Milieux aquatiques	Aquatic environments
Assainissement	Sanitation
Industrie et artisanat	Large and small industry
Agriculture	Agriculture
Ressources	Resources
Pollution diffuse hors agriculture	Diffuse pollution other than from agriculture
Gouvernance	Governance
Cycle 1 (2010-2015)	Cycle 1 (2010-2015)
Cycle 2 (2016-2022)	Cycle 2 (2016-2022)
Cycle 3 (2022-2027)	Cycle 3 (2022-2027)

- **Aquatic environments:** the increased cost of the Programme of Measures is due to the inclusion of work for making fish passes on the Rhine, with an increase in the unit costs of work. This subject continues to have priority for climate change resilience.
- **Sanitation:** Significant work has already been completed in this area, which is one of the reasons for the decrease in costs. Besides, work to prevent pollution by rainfall was spread beyond 2027 (due to technical feasibility constraints and disproportionate costs).
- **Large and small industry:** Major uncertainties remain about the levers that could be used in 2027 (diagnosis, action, effectiveness). That has an impact on the estimates of the measures.
- **Agriculture:** A non-negligible part of the measures is covered by regulations, and the estimate for local measures does not therefore take account of that part.
- **Resources:** This is a new issue for the Rhine-Meuse basin. The increase in the cost of the measures is related to the priority given to knowledge about this emerging subject.

3.5. Localised action summary sheets

The Programme of Measures also comprises an overall summary sheet for the Rhine-Meuse basin, the Rhine and Meuse districts and a summary sheet per elementary basin within each of those districts. That general summary sheet recapitulates the following information:

- Relevant domain (aquatic environments, sanitation, large and small industry, agriculture, resources, governance);
- The measurement code as codified in the Osmose standard (national system for following up the operational adaptation of the measures);
- Complete title of the Osmose measure;
- Whenever possible, the type of action according to the codification of the Osmose standard;
- Type of project owner associated with it (local authorities, large and small industry, farmers, etc.);
- The cost of the measures planned for the 2010-2015 and 2016-2021 per Osmose domain, when it exists in the previous PoMs;
- Provisional costs of measures identified for this management cycle 2022-2027.

The summary sheets are presented below:

Summary sheet of the
Rhine district

	Measurements		TYPE OF OSMOSE ACTION	PROJECT OWNER	INVESTMENT COSTS		
	OSMOSE CODE	TITLE			2010-2015	2016-2021	2022-2027
Aquatic environments	MIA01	Overall study and master plan	MIA0101	Local authorities	-		3,136,700
	MIA02	Measures for the hydromorphological restoration of water courses	MIA0202	Local authorities	-	18,143,019	-
			MIA0203	Local authorities	-	63,832,675	233,959,400
	MIA03	Ecological continuity restoration measures	MIA0304	Local authorities	-	78,788,956	112,595,900
	MIA04	Lakes and ponds management measures	MIA0401	Local authorities	-	1,947,244	2,206,600
			MIA0402	Local authorities	-	3,932,732	3,035,500
	MIA06	Wetlands management measures	MIA0601	Local authorities	-	22,387,085	4,316,700
MIA0602			Local authorities	-	20,509,306		
Total cost					147,915,339	209,541,017	359,250,080
Sanitation	ASS01	Overall study and master plan	-	Local authorities	-	-	160,000
	ASS02	System rehabilitation measures	ASS0201	Local authorities	-	323,524,907	473,346,000
	ASS03	Measurements	-	Local authorities	-	469,462,651	192,348,500
	Total cost					916,884,374	792,987,558
Large and small industry	IND01	Overall study and master plan	IND0101	Industry	-	1,410,000	1,082,500
	IND04	Performance maintenance system	IND0401	Industry	-	100,000	-
	IND06	IND06 Measures to reduce pollution from polluted sites and soil	IND0601	Industry	-	19,125,000	2,600,000
	IND012	Measures to reduce hazardous substances	-	Large and small industry	-	96,660,731	75,642,100
	IND013	Measures to reduce pollution other than hazardous substances	-	Industry	-	8,302,500	21,399,700
Total cost					159,086,972	125,598,231	100,724,300
Agriculture	AGR02	Measures to reduce transfer and erosion	AGR0202	Farmers	-	40,908,000	-
	AGR03	Measures to reduce diffuse inputs	AGR0303	Farmers	-	79,899,182	-
	AGR04	Measures to develop sustainable low-input practices	AGR0401	Farmers	-	54,903,598	196,714,300
	AGR05	Preparation of a CC action programme		Farmers	-	111,165,445	-
Total cost					209,827,117	286,876,225	196,714,300
Resources	RES01	Overall study and master plan	RES0101	Local authorities	-	1,085,881	245,000
	RES02	Measures to save water in farming, households, large and small industry	-	Local authorities	-	2,177,013	62,974,900
	RES03	Measures for resource-sharing rules	-	Local authorities	-	-	700,000
	RES07	Setting up of substitute or supplementary resources	RES0701	Local authorities	-	4,190,749	11,090,000
Total cost					-	7,453,643	75,009,900
Diffuse pollution other than from agriculture	COL02	Measures to limit pesticide inputs other than from agriculture	COL0201	Local authorities		20,393,789	
	Total cost					-	20,393,789
Governance	GOU02	Concerted management rules	GOU0201	Local authorities	-	2,916,000	160,000
			GOU0202	Local authorities	-	7,470,000	
	GOU03	Measures to train, advise, raise awareness or coordinate	-	River basin committee	-	31,656,694	27,704,300
Total cost					41,632,287	42,042,694	27,864,300
Total cost					1,475,346,089	1,484,793,157	1,425,418,100

N.B. : All costs are stated in euros

Summary sheet of the Meuse district

	Measurements		TYPE OF OSMOSE ACTION	PROJECT OWNER	INVESTMENT COSTS		
	OSMOSE CODE	TITLE			2010-2015	2016-2021	2022-2027
Aquatic environments	MIA01	Overall study and master plan	MIA0101	Local authorities	-	-	740,200
	MIA02	Measures for the hydromorphological restoration of water courses	MIA0202	Local authorities	-	4,127,609	-
			MIA0203	Local authorities	-	14,719,687	43,155,900
	MIA03	Ecological continuity restoration measures	MIA0304	Local authorities	-	18,637,691	6,053,700
	MIA04	Lakes and ponds management measures	MIA0401	Local authorities	-	62,695	116,700
			MIA0402	Local authorities	-	549,803	319,700
	MIA06	Wetlands management measures	MIA0601	Local authorities	-	7,594,150	1,844,100
MIA0602			Local authorities	-	5,243,540	-	
Total cost					24,158,962	50,935,175	52,230,300
Sanitation	ASS01	Overall study and master plan	-	Local authorities	-	-	80,000
	ASS02	System rehabilitation measures	ASS0201	Local authorities	-	10,343,779	20,115,900
	ASS03	Measurements	-	Local authorities	-	93,385,739	34,800,700
	Total cost					194,730,619	103,729,518
Large and small industry	IND01	Overall study and master plan	IND0101	Industry	-	315,000	145,000
	IND04	Performance maintenance system	IND0401	Industry	-	-	-
	IND06	IND06 Measures to reduce pollution from polluted sites and soil	IND0601	Industry	-	-	-
	IND012	Measures to reduce hazardous substances	-	Large and small industry	-	6,331,500	2,636,000
	IND013	Measures to reduce pollution other than hazardous substances	-	Industry	-	2,250,000	857,000
	Total cost					14,979,387	8,896,500
Agriculture	AGR02	Measures to reduce transfer and erosion	AGR0202	Farmers	-	14,322,000	-
	AGR03	Measures to reduce diffuse inputs	AGR0303	Farmers	-	22,774,500	-
	AGR04	Measures to develop sustainable low-input practices	AGR0401	Farmers	-	13,093,758	47,411,400
	AGR05	Preparation of a CC action programme	-	Farmers	-	31,580,491	-
	Total cost					76,196,301	81,770,749
Resources	RES01	Overall study and master plan	RES0101	Local authorities	-	517,634	125,000
	RES02	Measures to save water in farming, households, large and small industry	-	Local authorities	-	1,579,645	6,843,300
	RES03	Measures for resource-sharing rules	-	Local authorities	-	-	-
	RES07	Setting up of substitute or supplementary resources	RES0701	Local authorities	-	3,040,817	1,660,000
Total cost					-	5,138,096	8,628,300
Diffuse pollution other than from agriculture	COL02	Measures to limit pesticide inputs other than from agriculture	COL0201	Local authorities	-	4,708,794	-
	Total cost					-	4,708,794
Governance	GOU02	Concerted management rules	GOU0201	Local authorities	-	324,000	40,000
			GOU0202	Local authorities	-	830,000	-
	GOU03	Measures to train, advise, raise awareness or coordinate	-	River basin committee	-	7,677,136	5,864,700
	Total cost					12,465,713	8,831,136
Total cost					310,065,269	264,009,968	172,809,300

N.B. : All Costs are stated in Euros

Summary sheet of the Rhine-Meuse district

	Measurements		TYPE OF OSMOSE ACTION	PROJECT OWNER	INVESTMENT COSTS		
	OSMOSE CODE	TITLE			2010-2015	2016-2021	2022-2027
Aquatic environments	MIA01	Overall study and master plan	MIA0101	Local authorities	-	-	3,876,900
	MIA02	Measures for the hydromorphological restoration of water courses	MIA0202	Local authorities	-	22,270,628	-
			MIA0203	Local authorities	-	78,552,362	277,115,300
	MIA03	Ecological continuity restoration measures	MIA0304	Local authorities	-	97,426,647	118,649,600
	MIA04	Lakes and ponds management measures	MIA0401	Local authorities	-	2,009,939	2,323,300
			MIA0402	Local authorities	-	4,482,535	3,355,200
	MIA06	Wetlands management measures	MIA0601	Local authorities	-	29,981,235	6,160,800
MIA0602			Local authorities	-	25,752,846		
Total cost					172,074,301	260,476,192	411,481,100
Sanitation	ASS01	Overall study and master plan	-	Local authorities	-	-	240,000
	ASS02	System rehabilitation measures	ASS0201	Local authorities	-	333,868,686	493,461,900
	ASS03	Measurements	-	Local authorities	-	562,848,390	227,149,200
Total cost					1,111,614,993	896,717,076	720,851,100
Large and small industry	IND01	Overall study and master plan	IND0101	Industry	-	1,725,000	1,227,500
	IND04	Performance maintenance system	IND0401	Industry	-	100,000	
	IND06	IND06 Measures to reduce pollution from polluted sites and soil	IND0601	Industry	-	19,125,000	2,600,000
	IND012	Measures to reduce hazardous substances	-	Large and small industry	-	102,992,231	78,278,100
	IND013	Measures to reduce pollution other than hazardous substances	-	Industry	-	10,552,500	22,256,700
Total cost					174,066,359	134,494,731	104,362,300
Agriculture	AGR02	Measures to reduce transfer and erosion	AGR0202	Farmers	-	55,230,000	
	AGR03	Measures to reduce diffuse inputs	AGR0303	Farmers	-	102,673,682	
	AGR04	Measures to develop sustainable low-input practices	AGR0401	Farmers	-	67,997,356	244,125,700
	AGR05	Preparation of a CC action programme		Farmers	-	142,745,936	-
Total cost					286,023,418	368,646,974	244,125,700
Resources	RES01	Overall study and master plan	RES0101	Local authorities	-	1,603,515	370,000
	RES02	Measures to save water in farming, households, large and small industry		Local authorities	-	3,756,658	69,818,200
	RES03	Measures for resource-sharing rules	-	Local authorities	-	-	700,000
	RES07	Setting up of substitute or supplementary resources	RES0701	Local authorities	-	7,231,566	12,750,000
Total cost					--	12,591,739	83,638,200
Diffuse pollution other than from agriculture	COL02	Measures to limit pesticide inputs other than from agriculture	COL0201	Local authorities		25,102,583	
	Total cost					-	25,102,583

Governance	GOU02	Concerted management rules	GOU0201	Local authorities	-	3,240,000	200,000
			GOU0202	Local authorities	-	8,300,000	-
	GOU03	Measures to train, advise, raise awareness or coordinate	-	River basin committee	-	39,333,830	33,569,000
	Total cost					54,098,000	50,873,830
Total cost					1,785,411,358	1,748,803,125	1,598,227,400

N.B. : All costs are stated in Euros

APPENDICES

Appendix 1:
Table presenting the effects of the SDAGE and PoM on the environment in the Rhine and Meuse districts

Issues on which the SDAGE and PoM have an effect	Type of positive effect of the SDAGE and PoM on the issue
Water resources	<ul style="list-style-type: none"> - Reducing point and diffuse source pollution - Protects or restores water quality in key areas of the basin - Involves local players in the conservation of the quantitative balance of water masses - Restores the functions of aquatic environments and wetlands - Allows the rehabilitation of the quality of deteriorated catchments
Natural environments and biodiversity	<ul style="list-style-type: none"> - Restoration of the functions of these environments - Conservation of natural habitats, particularly wetlands and aquatic habitats - Ecological continuity restoration - Recommendations about land use modes - Wetland creation - Increases the resilience of the area through the conservation of ecosystem services
Mineral resources and soil pollution	<ul style="list-style-type: none"> - Limits the impact of polluted sites and soils on surface water and ground water - Improves the knowledge of methods and knowledge of the levels of contamination and salting out phenomena - Puts in place good practices for gravel pits and draining
Risk of flooding and other risks	<ul style="list-style-type: none"> - Conserves flood regulation services through natural ecosystems - Conserves flood expansion zones, areas for the proper working of water courses and aquatic ecosystems - Controls flows during rainfall by better managing rainwater - Limits point or accidental pollution in sites and better manages abstraction. - Allows the reuse of non-ruined hydroelectric structures
Energy and climate change	<ul style="list-style-type: none"> - Promotes the virtuous development of renewable energy in relation to the management of risks and environments - Improves knowledge of climate change and its effects and the consideration of the adaptation of environments and species, and potential hydrological changes
Climate change	<ul style="list-style-type: none"> - Conserves and restores water resources and aquatic environments in the face of climate change - Conserves or even develops carbon storage capacity - Anticipates and moderates resource usage conflicts and promotes more extensive practices and reduced fertilisation - Improves the management of intermediate flooding and extreme events (droughts) - Limits pollution due to rainfall by furthering infiltration - Allows the development of low-input farming practices
	<ul style="list-style-type: none"> - Improves the monitoring of sludge quality to make fertilising safer
Waste	<ul style="list-style-type: none"> - Improves the natural functions of ecosystems
Landscape and heritage	<ul style="list-style-type: none"> - Promotes the ecological diversity of banks, the restoration of a balanced and diversified river forest system and the conservation of wetlands

Issues on which the SDAGE and PoM have an effect	Type of positive effect of the SDAGE and PoM on the issue
	<ul style="list-style-type: none"> - Strictly limits practices that make water courses less ecologically valuable and more artificial - Restores ecologically deteriorated environments and lists hedgerows important for water management - Protection of natural environments
Land resource	<ul style="list-style-type: none"> - Protection of drinking water catchment areas and their feed areas - Improves the quality of drinking water catchments
Environmental health	<ul style="list-style-type: none"> - Improves the quality of bathing water - Reduces overall water quality health risks by reducing the use of plant protection products - Reduces exposure to toxic risk, particularly polluted sites and soils - Reduces the use of farming inputs, thus leading to less airborne pollution with plant protection products - Protects and restores ecosystems that filter the air - Conserves and rebuilds the flow and expansion capacities of floods, controls rainwater runoff in river basins and prevents the risk of mudslides

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