



**LIFE Eau
& Climat**

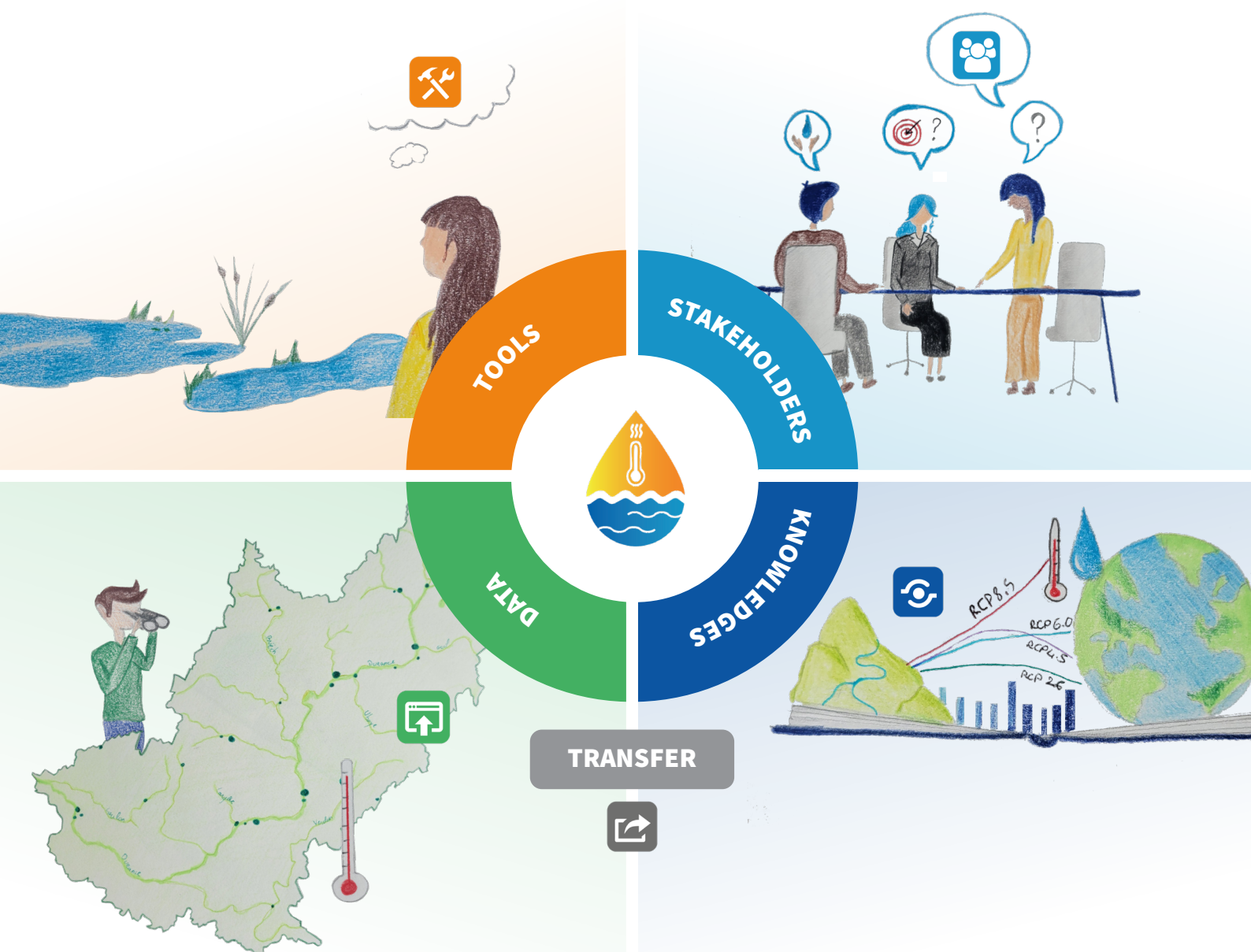
Supporting long-term

local decision-making for climate-adapted Water Management

(LIFE19 GIC/FR/001259)

Layman Report

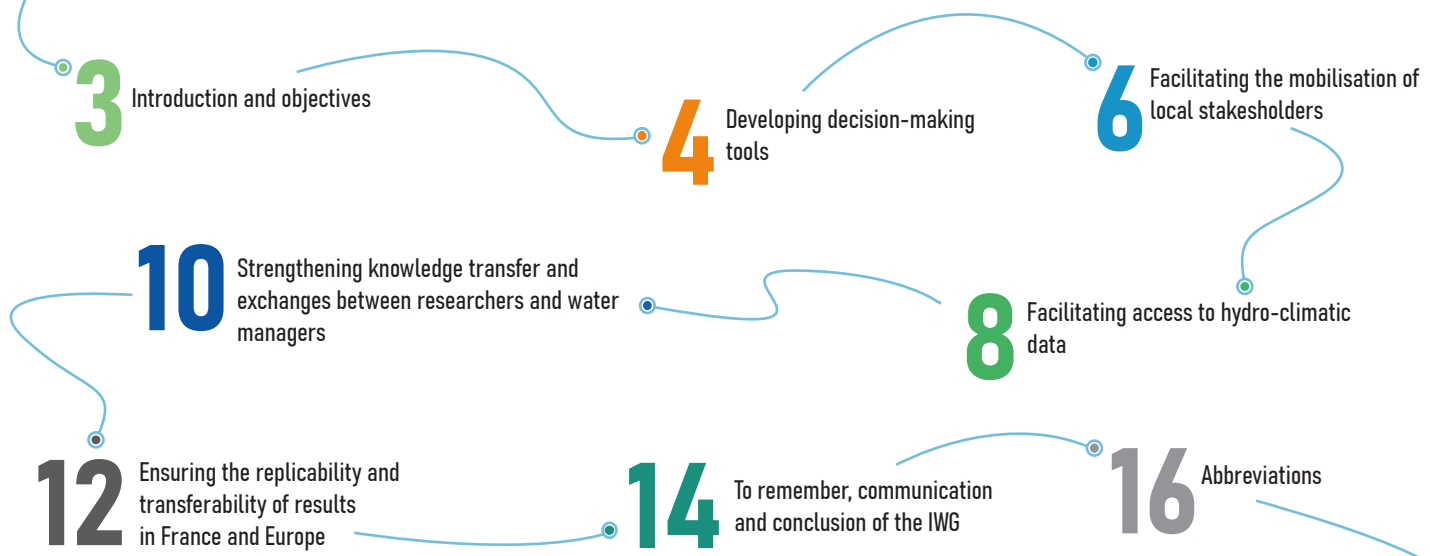
Summary of the LIFE Eau&Climat project



The LIFE Eau&Climat project (LIFE19 GIC/FR/001259)
received funding from the European Union's LIFE
program of the European Union.



TABLE OF CONTENTS

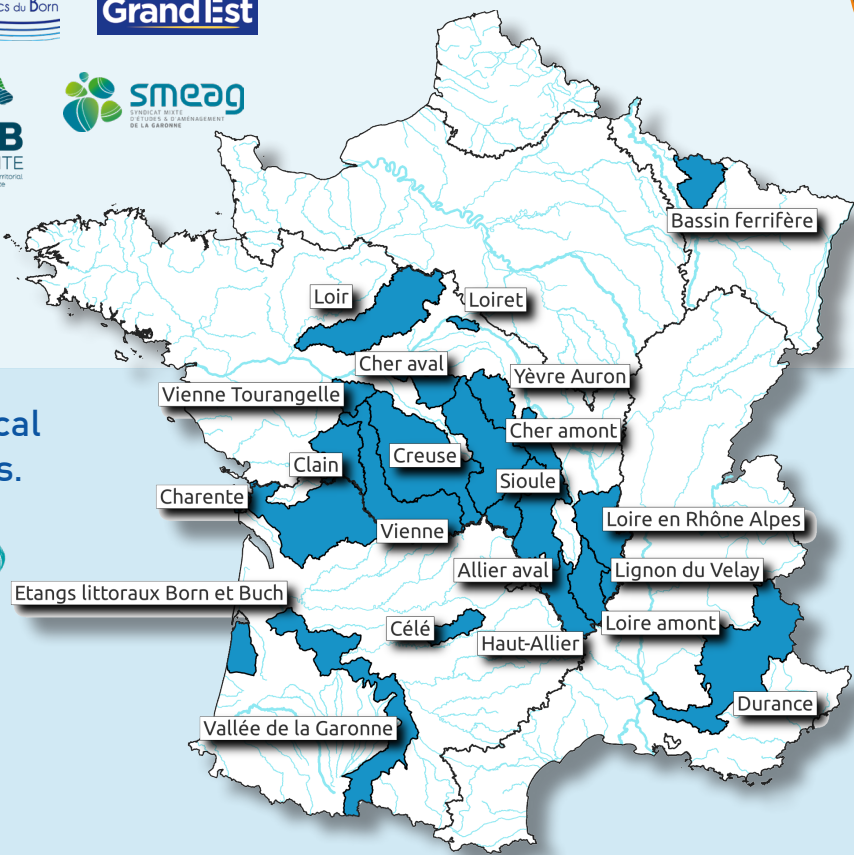


14 PARTNERS

9 local water management organisations, SAGE bodies, implementing actions on their territory.



5 scientific and technical support organisations.



INTRODUCTION AND OBJECTIVES

According to the French Ministry for Ecological Transition and Territorial Cohesion : « *Whatever the emission scenarios, the IPCC estimates that global warming will reach 1.5°C by the early 2030s* ». The consequences of climate change are already visible in France, particularly in terms of the availability of water resources. Increased evapotranspiration, more intense soil droughts, lower river flows, longer periods of low water, etc. Against this backdrop of climate change, those involved in local management of water resources urgently need knowledge of the vulnerabilities of their area and tools to help them adapt.

204

SAGE in 2025.

21

SAGE involved in the LIFE Eau&Climat project.

Source gesteau.fr

The LIFE Eau&Climat project was launched in September 2020 with the aim of meeting the needs of local water management stakeholders in terms of adapting to climate change. It specifically targets SAGE (« Schéma d'Aménagement et de gestion des eau » : water development and management schemes), to enable them to assess the effects of climate change on their territory, take them into account in their planning and implement adaptation measures. The project brings together 14 partners, mainly local water management organisations, supported by bodies providing technical and scientific expertise. 21 SAGE are involved.

Throughout the project, the partners took part in collective discussions. Thanks to this collaboration, guides and tools have been developed to meet the needs of SAGE management bodies, taking account real-world conditions.

The project is divided into five areas of work :

- Developing decision-making tools
- Facilitating the mobilisation of local stakeholders
- Improving access to hydro-climatic data
- Strengthening the transfer of knowledge between researchers and water managers
- Ensuring the replicability and transferability of results in France and Europe



Sonia SIAUVE, LIFE Eau&Climat project manager and coordinator

One of the missions of the International Office of Water is to advise and provide technical support to all those involved in the water sector. OIEau set up and coordinated this project. It is also in charge of mobilising stakeholders and communicating the results in France and Europe. Finally, OIEau ensures that the project's local actions are consistent with current and future regional and national strategies, via the Institutional Working Group (IWG) in which the main French institutions working on water and climate are involved.



DEVELOPING DECISION-MAKING TOOLS

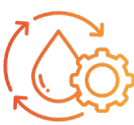


- **Objective :** To produce two tools enabling local water management stakeholders to plan the adaptation of their area to climate change.

Actierra has developed two tools to help local authorities adapt to climate change. The first is a **guide to diagnosing local vulnerability to climate change for SAGE**. By combining an analysis of hydro-climatic trends with an analysis of local characteristics, this guide highlights local issues, by zone, and identifies the most pressing needs in terms of

adapting to climate change. The second consists of the web tool **Traject'Eau** and the **guide to adaptation trajectories**. They are used to draw up a strategy for adapting to climate change and to identify courses of action to be incorporated into local water management planning documents ●

MAIN DELIVERABLES



Assessing vulnerability to climate change for local water management



Climate change adaptation strategies for local water management



The pilot of the action speaks

Stéphane SIMONET,
Director of the Climate
and Territory Unit



We wanted to develop a tool within the reach of those involved in water management, to enable them to mobilise both internally and externally, around the assessment of vulnerabilities to climate change and adaptation planning in situations of uncertainty.



Testimonials from water managers



Maxime PANTAROTTO,
Project Manager for Water, Aquatic Environments and Flood Risks

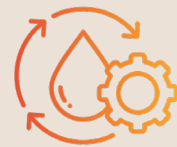
Although the CLE has already used the results of the diagnosis to decide on the need to revise the SAGE, the support work is ongoing to make the most of the results with the partners.



Benoît ROSSIGNOL,
Director of Water Resources

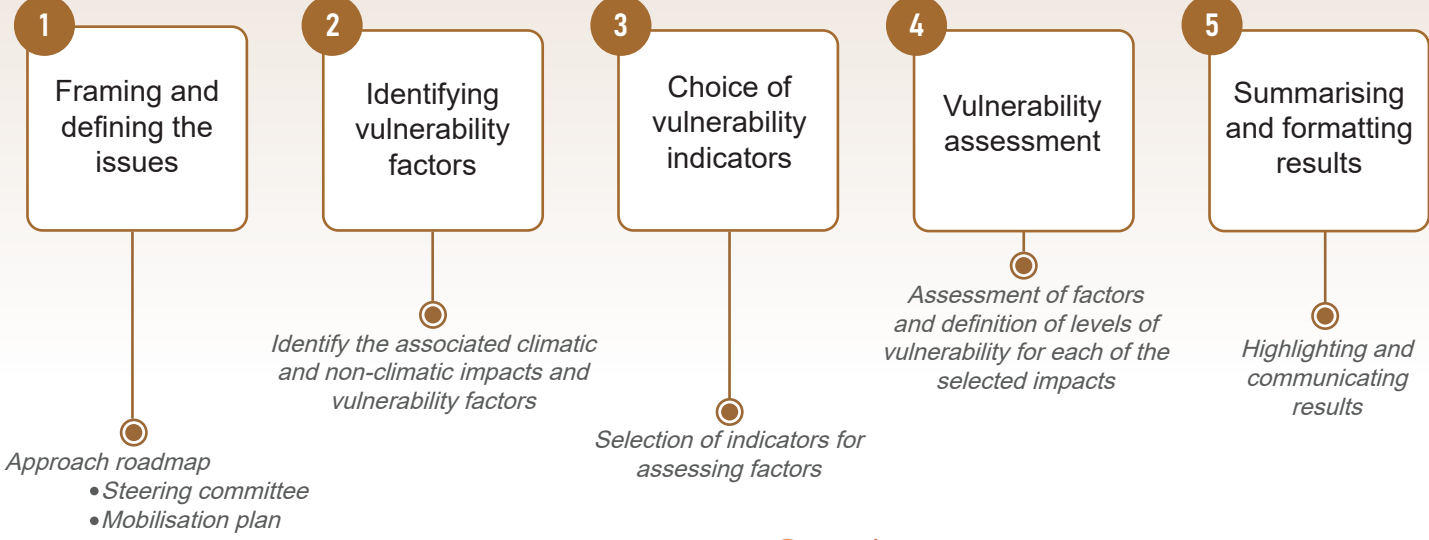


The tools used to diagnose vulnerability and develop an adaptation strategy have been tested by stakeholders in the Sioule and Yèvre-Auron SAGE. The LIFE Eau&Climat project has made it possible to benefit from the scientific and methodological contributions of the partners.



Guide to assessing vulnerability to climate change for local water management.

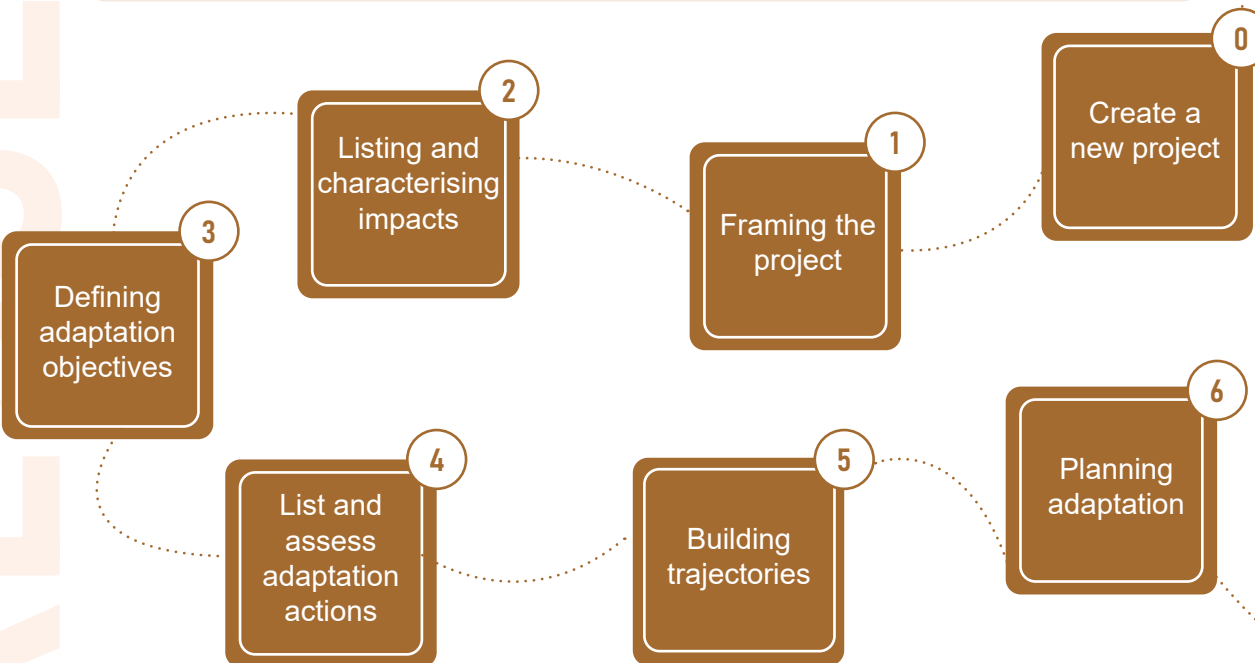
Diagnosis of vulnerabilities, key stages



Traject'Eau and guide to climate change adaptation strategies for local water management.

Adaptation trajectories, key stages

This tool is inspired by ADEME's TACCT (Adaptation Trajectory to Climate Change in Territories) approach, which has been adapted climate change for the specific management of water resources at local level (SAGE or inter-SAGE).



FACILITATING THE MOBILISATION OF LOCAL STAKEHOLDERS



Objective : To analyse local stakeholders’ mobilisation practices in order to implement an approach tailored to their targets and objectives.

Mobilising local stakeholders is an inherent part of adapting to climate change. The complexity of the stakeholders and regions involved means that the approach needs to be structured, in particular to identify the target stakeholders and define the objectives. To facilitate its implementation, a study to analyse practices and extract recommendations was carried out in two stages. Firstly, a survey was conducted among the partners to determine their needs. Based on these initial results, a «mobilising stakeholders» toolbox was designed. It contains a range of materials, methods and tools. Secondly, a study of existing practices and methods was drawn up and compiled in a guide, enriched by feedback from partners

MAIN DELIVERABLES



Guide to mobilising local stakeholders, analysis of practices and recommendations



Toolbox «Mobilising stakeholders»



Feedback on the mobilisation



Anne-Paule METTOUX-PETCHIMOUTOU, Sociological researcher

Experience in mobilising local stakeholders has shown the complexity and richness of these actions. A collective commitment to action is essential if we are to adapt to climate change.



Testimonials from water managers



Émilie DARNE, SAGE Lignon du Velay coordinator



The LIFE project has given us the keys to understanding climate change and its effects on the region’s water resources. This has made the subject more concrete for local stakeholders.



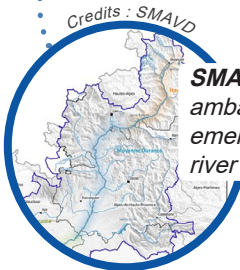
Stéphane LORIOT, Director of EPTB Vienne



The action framework of the LIFE Eau&Climat project, based on expertise and the sharing of experience, has been an opportunity for the EPTB Vienne to consolidate and enrich its strategy for adapting to climate change.



Demonstration actions to mobilise local stakeholders have been set up by the partners. They have been classified into six categories : ambassadors, awareness-raising, promotion, participation, support and communication.



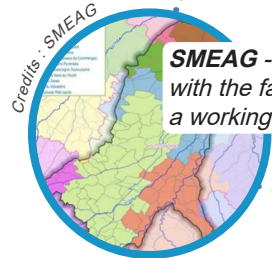
SMAVD - Creation of a group of «relay ambassadors» to encourage the emergence of a shared vision of the river basin.



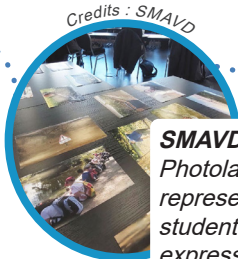
SMEAG - Creation of reference ambassadors (interface between the elected representatives of the geographical commissions and those of the CLE).

EPAGE Loire-Lignon - Creation of an educational trail for the general public on the theme of «water resources and climate change».

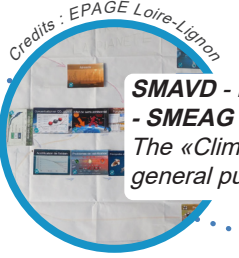
EPAGE Loire-Lignon - An escape game to raise awareness of climate change among the general public.



SMEAG - Organisation of meetings with the farming profession to develop a working dynamic.



SMAVD - EPAGE Loire-Lignon - Photolanguage activities for elected representatives and secondary school students to encourage debate and free expression on the subject of «water resources and climate change».



SMAVD - EPAGE Loire-Lignon - SMEAG - Animation The «Climate Fresco» for the general public.



SMEAG - Local consultation workshops with elected representatives as part of a socio-economic study to assess the impact of climate change.

SMBVLB - Participatory approach as part of a strategy to adapt to climate change.



EPTB Vienne - Guide to adaptation actions to limit the impact of climate change on water resources, aimed at local authorities.



SmCLm - Support for local authorities in installing water recovery systems and projects to adapt their water bodies to climate change. Support for livestock farmers to assess the most appropriate grassland practices for the consequences of climate change.



EPTB Vienne - Three seminars on water and climate change organised in the Vienne basin and around thirty public meetings, symposia, presentations to local medias...



SMAVD - Web interface «Vigie Durance Verdon» for the general public to observe the state of the resource and its needs in real time.

Ambassadors

Raising awareness

Animation

Participation

Guidance and support

Communication

IMPROVING ACCESS TO HYDRO-CLIMATIC DATA



Objective : To enable local players to identify the relevant data (types and sources) for taking account of the impacts of climate change in regional water management, and to facilitate access to this data and its proper use.

Hydro-climatic data (temperature, rainfall, evapotranspiration, etc.) and hydrological data (flows, piezometric levels, observations of dry periods, etc.) are the main source of information on climate change and its impact on water resources and aquatic environments. They are essential for water management, whether to determine the current state of

the environment or to make projections for planning and adapting to climate change. To facilitate access to this data, Météo-France has created the **DRIAS-Eau** portal. Some partners have taken action to collect and disseminate data through **observatories**, while others have tested new sources of data and modelling in their studies ●

MAIN DELIVERABLES



National hydrological data portal
«DRIAS-Eau, the future of water»



«SAGE and climate»
observatories,
feedback and recommendations



The pilot of the action speaks

Jean Michel SOUBEYROUX,
Deputy Director of Climatology

Developed with water stakeholders, the DRIAS-Eau portal provides access to a large amount of data and information on hydrological projections to support adaptation actions in the regions.

Testimonials from water managers

Delphine ROUSSET,
Project Manager

The LIFE Eau&Climat project has enabled us to exchange views with other local and scientific partners on how to build our observatory, and specifically on data governance.

Smavd Pacal DUMOULIN,
Head of Water Resources

The LIFE Eau&Climat project has enabled us to experiment with a new approach using satellite images, with very satisfactory results, in order to gain a better understanding of and monitor changes in water requirements for irrigation in our region.

Caroline MAUMUS,
Territorial coordinator

The LIFE Eau&Climat programme has enabled SmCLm to initiate actions to adapt to climate change in line with the challenges facing our region, namely livestock farming, water resource management and the preservation of aquatic environments.



DRIAS-EAU PORTAL

<https://www.drias-eau.fr/>

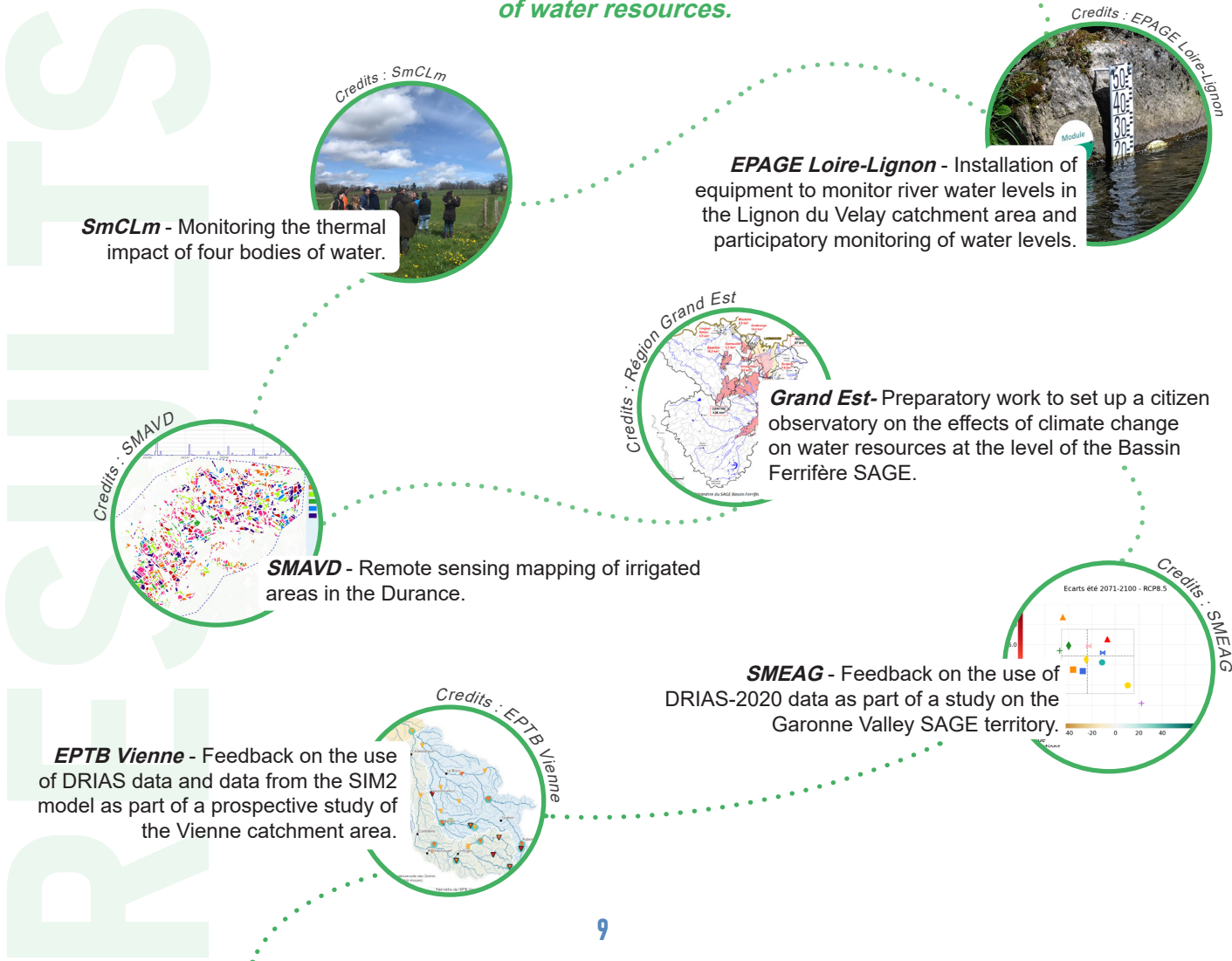
Launched in March 2023, the DRIAS-Eau portal, an offshoot of DRIAS-Climat, is designed to provide local data on hydrological projections for surface water and groundwater. The information is available in various formats: cartographic, graphic or digital. To make it easier to use the results, the DRIAS-Eau portal offers a Support section, including a guide to use and best practice. The data and information come from the Explore2 national project.



SAGE AND CLIMATE OBSERVATORIES,
FEEDBACK AND RECOMMENDATIONS

Water observatories, including those of the SAGE, are ideal places to gather and disseminate local hydro-climatic data. This guide is intended for SAGE and, more generally, for all those involved in water management. It takes stock of SAGE observatories and provides an overview of other types of climate-related observatory. Based on feedback from the implementation and management of SAGE observatories, it proposes recommendations and relevant data and indicators on the theme of «water and climate».

Examples of the collection, development and use of data
(of different kinds and sources) by partners, for the management
of water resources.



STRENGTHENING KNOWLEDGE TRANSFER AND EXCHANGES BETWEEN RESEARCHERS AND MANAGERS



Objective : To develop links between researchers and stakeholders in the field, and to facilitate the appropriation of research results by making the information understandable to local stakeholders.

Knowledge of climate change and its impact on hydrology is constantly evolving thanks to research and field studies. Strengthening exchanges between researchers and water managers allows for better dissemination of knowledge, while supplying research with local operational feedback. During the project, INRAE assisted several partners in carrying out prospective studies on water

resources, and then drew on these experiences to draft the guide «*Conducting a retrospective and prospective study on water resources*». In addition, OIEau offers a collection of «*water and climate change*» projects, giving an overview of the actions carried out in research and/or operational projects on this topic in France, as well as in Europe and internationally

MAIN DELIVERABLES



White paper on hydro-climatic modelling: «*Conducting a retrospective and prospective study on water resources*».



Collection of «*water and climate change*» projects



The pilot of the action speaks

Jean-Philippe VIDAL,
Hydroclimatologist,
INRAE Research Director

Providing scientific support to water managers and consultancy firms has proved to be a crucial requirement in defining and conducting studies into the impact of climate change - past and future - on hydrology in local areas.

Testimonials from water managers

Syndicat Mixte du
Bassin Versant des Lacs du Born

Aurélien VERSTRAET,
Head of the Environment and Ecological Transition Unit
SAGE Coordinator



Thanks to the LIFE Eau&Climat project, and specifically to the scientific support we received and the advice we received on mobilising stakeholders, we were able to complete our local foresight study and are confident in the development of our concerted strategy for adapting to climate change.



Amélie JUGNIOT,
Hydrogeology Project Manager



Modelling provides knowledge that needs to be made more widely available, and a valuable decision-making aid for finalising the action programme. All the more important work remains to be done to implement it.



WHITE PAPER

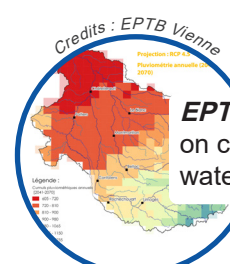
«*Conducting a retrospective and prospective study on water resources*»

This white paper is a guide to quantifying past and future changes in water resources (flows, groundwater levels), in a catchment area without human influences (abstractions, dams, etc.). The reader is guided through the preparation of their study : positioning in relation to the context, definition of the territory, data collection, identification of hydrological models. The reader is then guided through the process of assessing past trends in the region and taking on board the many projections. The white paper is supported by concrete examples and additional resources.

Examples of actions to promote the transfer of knowledge and exchanges between water managers and researchers.



SMBVLB - Prospective study on the effects of climate change on water resources and assistance in drawing up an adaptation plan.



EPTB Vienne - Prospective study on climate change and its effects on water resources in the Vienne basin.

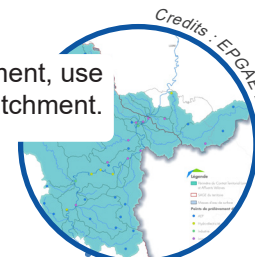


EP Loire - Water manager/ researcher exchange days.

EPAGE Loire-Lignon - Study of the hydrology, environment, use and climate (HMUC) of the Lignon catchment.



SMEAG - Socio-economic assessment of the impacts of climate change on water uses and aquatic and wetland environments.



INRAE - SMAVD

«*Les mots pour le dire*»: Training courses on climate change, to ensure a good understanding of the understanding of the basic concepts climate change.



ENSURING THE REPLICABILITY AND TRANSFERABILITY OF RESULTS IN FRANCE AND EUROPE



Objective : Replicate the results of the project in other French and European regions and transfer them to local water resource management stakeholders.

The results of the LIFE Eau&Climat project are public and open to all, so that other water managers can seize them and use them in their efforts to adapt to climate change. A project monitoring committee made up of institutional stakeholders has ensured that the results are transferable to other regions

and consistent with national policies and with the major French river basins. Information and training sessions have been organised by Aquanova in collaboration with the Water Agencies in order to present the tools produced and provide support in using them •

MAIN DELIVERABLES



Information sessions

Information sessions for SAGE stakeholders, co-organised with the Water Agencies are designed to inform and explain the results of the project and the tools produced.



Training sessions

The training sessions are intended for water managers, consultancy firms and agents from decentralised government departments who have to handle hydro-climatic data. These training sessions will enable them to get to grips with the tools produced during the project.



The pilot of the action speaks

Agnès MARTIN-COCHER,
Europe and Innovation



Aquanova has worked on the replicability of results in France and Europe. Meetings have been organised, both face-to-face and remotely, and these have been very well received, highlighting the importance of bringing people together to discuss these issues.



IWG: Institutional Working Group

To ensure relevance and consistency with regional and national water policies, an institutional working group was set up. The role of this IWG was to validate the results of the project as it progressed, and to propose any modifications with a view to deployment in other SAGES or other types of management contract. The members of the group were



Transfer of results to France

Training sessions on 30 May 2024 in Paris
and 6 June 2024 in Toulouse

Information session at the Agence de l'eau
Adour-Garonne on 16 November 2023
in Toulouse



Final feedback seminar
28 June 2024 in Paris at the offices of the Ministry of
Ecological Transition and Territorial Cohesion

Transferring results to Europe

- Participation in the general assemblies of Euro-INBO (European branch of the International Network of Basin Organisations), in 2021 and 2022. Organisation of a participatory workshop and presentation of the various results in plenary sessions.
- Collective reflection, with European managers, on the added value of creating a European Validation Committee (EVC) to monitor the project's progress.
- Presentation of the project and its main results on various occasions, including the 9th World Water Forum (Dakar, 23 March 2022) and at the MasterClass Europe, Belgian Environment Agency (22 December 2022).
- Liaison with the Water Smart Territories partnership, which aims to strengthen the innovation capacity of European regions : organisation of a peer-learning workshop on the results of the project on 28 March 2024.
- Some documents produced during the project were translated into English.



Sonia SIAUVE, LIFE Eau&Climat project
coordinator at Euro-INBO
on 26 September 2022 in Annecy

TO REMEMBER



To enable local water managers to cope with and adapt to the impacts of climate change, tools needed to be developed, firstly to diagnose vulnerabilities and secondly to develop climate change adaptation strategies in the form of trajectories.



It is preferable to define trajectories to trigger actions at the right time (thresholds) and programme them over the long term to aim for real resilience of the area, rather than favouring one-off actions with no medium- or long-term vision.



Mobilising **local stakeholders** is a key challenge for any project to adapt to climate change. A mobilisation approach is based on a shared vision, individual and collective commitment and an **awareness of the importance of action**. An essential element of a local strategy, it is structured around target players and precise, clear and transparent objectives.



It is important to **facilitate access to data and information on hydrological projections for all stakeholders**. The DRIAS-Eau portal enables water data to be used rapidly in territorial prospective studies and promotes the development of water-related climate services. The DRIAS-Eau portal's support services, developed in close collaboration with water stakeholders, including the hotline and feedback from users, ensure that **users get to grips with the data and make proper use of it**.



The **SAGE observatories** are an appropriate tool for centralising and disseminating local hydrological data (river flows, piezometric levels, observations of dry periods, etc.) and hydro-climatic data (temperature, rainfall, evapotranspiration, etc.). Making the most of the data (through maps, key figures, computer graphics, etc.) makes it easier for non-experts to understand, and enables it to be used to mobilise stakeholders and aid decision-making.



In the vast majority of situations, a study of the **natural water resources, past and future**, of a given area can be carried out simply using the results of national research projects, mainly Makaho (<https://makaho.sk8.inrae.fr/>) for past trends and Explore2 via the DRIAS-Eau portal for future projections. **The recommended approach is detailed in the White Paper**.



A national **pooling/articulation** of all prospective hydro-climatic studies, in terms of sharing knowledge, know-how and scientific choices, would be beneficial to all those involved in water management, whether technicians or elected representatives. **At regional level, interaction between water managers**, including feedback from experience, would enable the entire community of managers to develop their skills in this area.



The involvement of French water and climate-related institutions throughout the project, via the Institutional Working Group (IWG) set up, was essential to ensure the consistency of the actions carried out between the different levels of management and decision-making: from local to national.



Ongoing training for water managers and elected representatives on climate change and its impact on water resources is essential, as knowledge is evolving rapidly and understanding the issues is a prerequisite for taking action to adapt.

COMMUNICATION

Find out more about the results of the LIFE Water&Climate project on various media !



GEST'EAU
La communauté des acteurs de gestion intégrée de l'eau

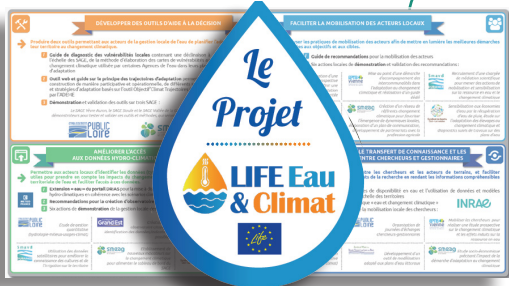
The Gest'eau resource centre on SAGE and environmental contracts has a section dedicated to the LIFE Eau&Climat project, where all the results are available.



To summarise the main tools and experiments, results sheets provide an overview of the context, objectives and methods used.



Each of the partners has a poster to present its actions within the LIFE Eau&Climat project.



A brochure sets out the project's different areas of work, their objectives and the main results expected.

Find out more about the project on : <https://www.gesteau.fr/life-eau-climat/communication>



THE IWG CONCLUSION

The LIFE Eau&Climat project has enabled water managers to improve their scientific knowledge of the impact of climate change, and to integrate it more effectively into decision-making. The project has also created opportunities for managers and scientists to exchange best practices. The involvement of local partners has also enabled the results of the project to be disseminated effectively, as the management structures have passed on the information to their networks, based on concrete examples from the local areas. Finally, the monitoring of the project by the public operators, through the Institutional Working Group (IWG), made a major contribution to the exchanges and links between the water and climate players, which added to the cross-disciplinary nature of the project, particularly in the context of the preparation of the PNACC3 (3rd national plan for adaptation to climate change).

Institutional Working Group of the LIFE Eau&Climat project (IWG)

ABBREVIATIONS

CLE : Local water commission

EPAGE Loire-Lignon : Public establishment for water management Loire-Lignon

EP Loire : Loire Public Establishment

EPTB Charente : Territorial public establishment of the Charente basin

EPTB Vienne : Territorial public establishment of the Vienne basin

IWG : Institutional Working Group

HMUC : Hydrology - Environments - Uses - Climate

INRAE : National Research Institute for Agriculture, Food and the Environment

OiEau : International Water Office

SAGE : Water Development and Management Plan

SMAVD : Joint development union of the Durance valley

SMBVLB : Joint union of the Born lakes watershed

SMEAG : Joint study and development union of the Garonne

SmCLm : Median Célé-Lot mixed union

GENERAL INFORMATION

Reference : LIFE19 GIC/FR/001259

Name : Supporting long-term local decision-making for climate-adapted Water Management

Abbreviation : LIFE Eau&Climat

Co-ordinating organisation : Office International de l'Eau

Contact : Sonia Siauve (s.siauve@oieau.fr)

Partners : OiEau, Actierra, EPTB Charente, EP Loire, EPTB Vienne, EPAGE Loire-Lignon, Région Grand-Est, Aquanova, INRAE, Météo-France, SMAVD, SMBVLB, SMEAG, SmCLm.

Time : 1st September 2020 to 28 February 2025

Location : France

Total budget : 3.7 million, including 2 million from the LIFE programme

To find out more :

 <https://www.gesteau.fr/life-eau-climat>

 life-eau-climat@oieau.fr

 [Gest'eau](#)

 [@gesteau](#)



Authors : Elisa BEZIER (OiEau), Audrey BORNANCIN-PLANTIER (OiEau), Anne-Paule METTOUX-PETCHIMOUTOU (OiEau), Sonia SIAUVE (OiEau) et contribution de tous les partenaires du projet.

Page layout : Elisa BEZIER (OiEau)

Video testimonials : Sonia SIAUVE (OiEau), Stéphane SIMONET (Actierra), Maxime PANTAROTTO (SMEAG), Anne-Paule METTOUX-PETCHIMOUTOU (OiEau), Émilie DARNE (Epage-Loire Lignon), Stéphane LORIOT (EPTB Vienne), Pascal DUMOULIN (SMAVD), Caroline MAUMUS (SmCLm), Aurélie VERSTRAET (SMBVLB), Amélie JUGNIOT (EPTB Charente).

Iconography : <https://fr.freepik.com/>

This document is printed on recycled paper - do not litter.

Publication date : final version, may 2025

With the financial
support of :

