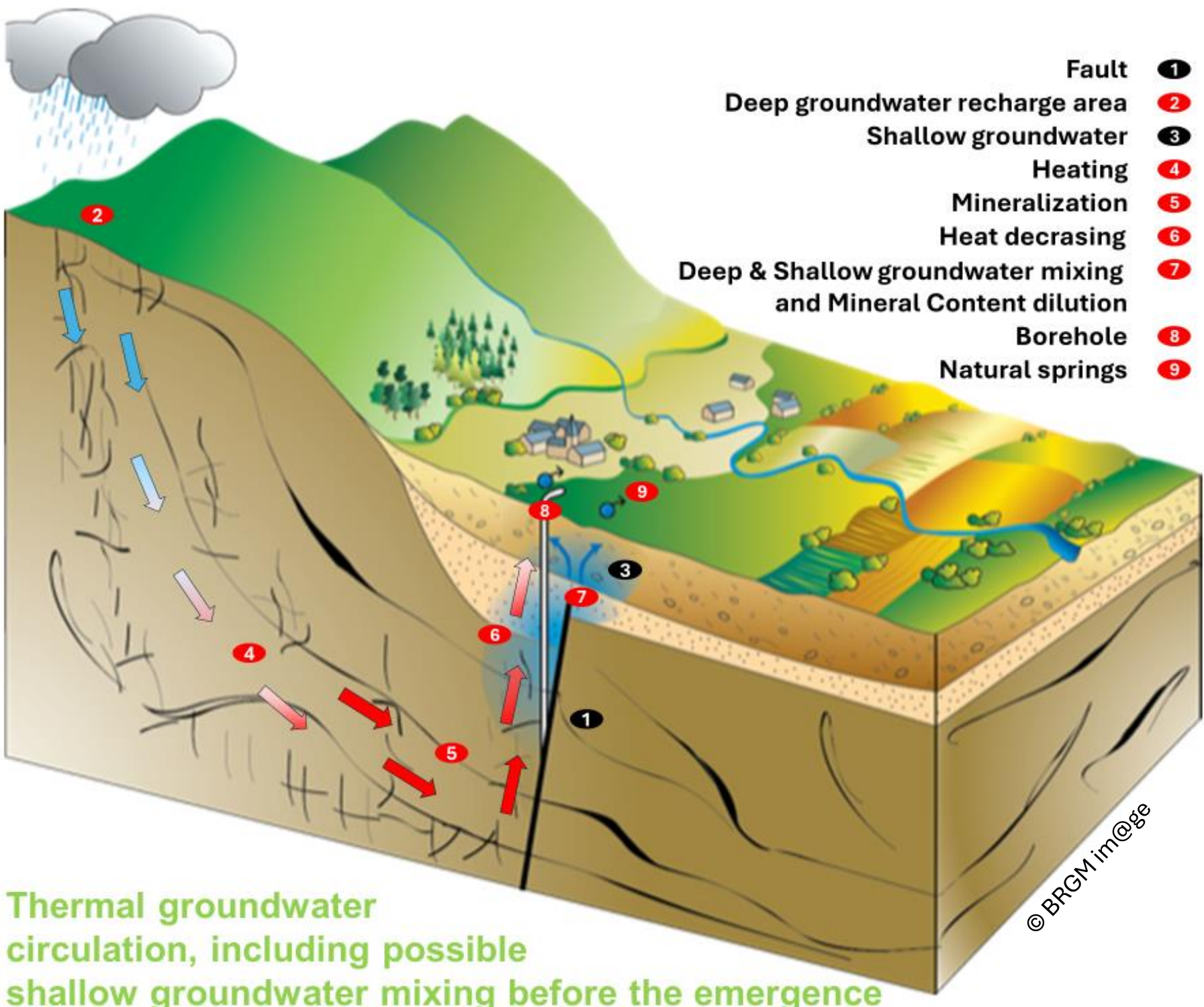


WHY THIS PROJECT?

Hot springs are complex, fragile and fundamental resources for the spa economy, mainly in rural areas. The exploitation of their properties has been the **driving force** behind the development of numerous cities. Depending on the geology of their reservoirs and in particular of the near surface pathway, the long-term downward water budget trends related to **climate change** could alter the current quality of the hot springs, jeopardizing the future of the **spas operational continuity**. The **ThermEcoWat** consortium believes that this natural heritage must be preserved through **proactive measures**.



Thermal groundwater circulation, including possible shallow groundwater mixing before the emergence

THE ISSUE The climate observation systems have classified 2020, 2022, 2019, 2015, and 2014 as the five hottest years in Europe over the past four decades. In the SUDOE region, 2022 was the warmest year since 1950. The projected **long-term decline in precipitation** in the SUDOE region may alter the natural properties of thermal springs, by changes in of shallow and deep groundwater mixing, impacting their anthropogenic ecosystem. Currently, there is **no data assessing the impact of climate change**, nor is there any adaptation strategy in place to **anticipate its socio-economic consequences**. Data on groundwater quality, climate change vulnerability, and territorial adaptive capacity are heterogeneous, exacerbating the economic divide. Migration movements and indirect impacts of climate change, as such as pandemic crises, may further intensify **stress on water resources and the economy**.

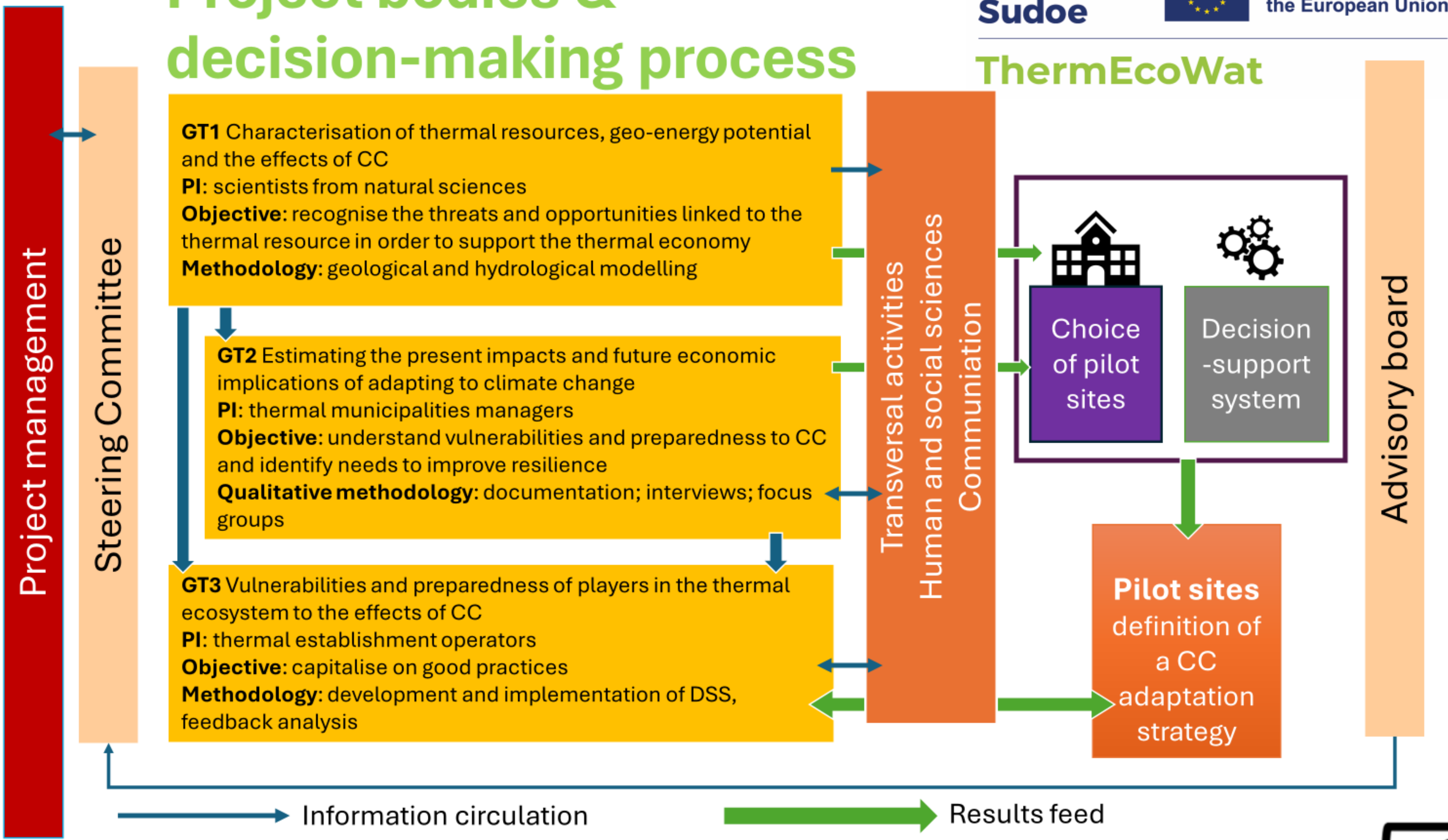
MAIN OBJECTIVE

There are no data nor methods to assess this potential impact and no adaptation strategy to anticipate its socio-economic effects. The **ThermEcoWat** project aims to implement **cross-cutting actions** involving scientists, public authorities, and economic stakeholders to provide **tools for collaborative governance**.

THE CONSORTIUM

The **ThermEcoWat** project brings together three key categories of stakeholders involved in the management of thermal waters and their socio-economic ecosystem in the **SUDOE region**. Thermal operators are represented by the **São Pedro do Sul Thermal Baths (Portugal)** and associated partners, including regional and national associations of thermal operators. Community needs are addressed by the thermal city of **Caldes de Montbui** and the **Diputación de Ourense (Spain)**, which identify the needs and benefits for thermal communities. The **ThermAuvergne Association (France)** will coordinate the project and manage communication together with **Geoplat**. Regarding expertise in groundwater and geothermal energy, national or regional public services such as **BRGM**, **ICGC** and **LNEG** are involved, each contributing to specific aspects of the project. National agencies for energy and water resources are participating as associated partners. Geoscientists, city managers and entrepreneur collaborate to secure the environmental and economic ecosystems that depend on them.

Project bodies & decision-making process



EXPECTED RESULTS

The **ThermEcoWat** main expected products are:

- a **joint strategy** for improving the **resilience to climate change** of thermal territories in Southern Europe and beyond;
- a toolbox for aiding decision makers in adopting informed choices and developing **adaptation action plans**, tailored on the local characteristics.

Within the scope on **ThermEcoWat**, dedicated **social analyses** and collaborative governance tools will be developed to drive **adaptation capacity** by using hot springs **renewable energy** for increasing SUDOE communities' **resilience to climate change**, taking into consideration compatibilities and constraints induced by the drawbacks of **deep geothermal energy**.

Toolbox and Products

THE APPROACH From estimating the **resilience of spa towns** and thermal spas in several territories of partners' countries, in the context of climate change, **ThermEcoWat** approach seeks to enhance **coordination in the use of hot springs** by promoting the **value of endogenous resources**. Last technologies for low-temperature geothermal resources and **heat storage** may impulse a **decarbonized economy** based on hot springs or the spa's waste heat, without compromising their current use. An improved spa's **wastewater management** can mitigate water scarcity impacts during drought events. We believe that improving the valorization of thermal springs may not only make spa ecosystems more resilient to climate change, but even boost the **innovation in water and energy management** for the surrounding territories.

THERMECOWAT IN A FEW NUMBERS



2.028.076 €
Total budget



01 January 2024
30 December 2026



8 Partners
3 Pilot sites

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RÉPUBLIQUE FRANÇAISE



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