To answer this, we draw on interview and desk study data to explore factors that hinder growth of AE systems as well as factors that contribute to or hinder successful implementation, especially in the early phases of the Interreg North Sea WaterWarmth pilot projects.

The report focuses on the AE pilot projects in the Interreg North Sea WaterWarmth Project. It is based on interviews and documents from these pilots. We asked a set of key questions to understand how AE pilots are managed and what helps or hinders their success. We paid special attention to the struggles the pilots faced, and the factors that helped them succeed, grow and mature.

We studied nine pilot projects using an exploratory case study method. First, we collected in-depth information about the pilot projects' operations in April 2024. Then, we held a workshop in Caen in May 2024, followed by interviews in Fall 2024 with pilot leads and other key persons involved in the projects. The results are presented first per pilot case and then presented following a multi-case analysis across all nine. We end with key takeaways and policy suggestions.

Key findings:

All nine pilot projects faced barriers but also experienced helpful enablers. A major challenge in every case was unclear or complex policy and regulations. Rules for AE systems were often confusing or inconsistent. However, working closely with public government and policy makers was seen as a positive factor, especially at the start of the projects.

Another issue was the lack of a clear internal vision within the projects. Without a strong vision, it was hard to create a solid business plan, which made obtaining the necessary funding more difficult. Many projects struggled with financial support, including problems getting bank guarantees or covering costs for equipment and permits.

In some countries, AE technology is still new, making it difficult to convince permitting authorities, banks and other potential funders that the projects are reliable. Several of the pilot teams also lacked technical knowledge. However, this could often be solved by learning from similar projects nearby or abroad. Sharing experiences and peer-to-peer feedback helped projects become stronger.

Government support (e.g., subsidy) for fossil fueled heating was another barrier. It disincentivizes clean energy solutions like AE, creating unfair competition. Some stakeholders also doubted AE systems, showing reluctance or skepticism toward renewable energy in general. On top of that, lack of public awareness was a problem. In some cases, important stakeholders held back useful information instead of sharing it, which slowed down progress.

What helped the projects succeed:

Strong actor-networks and collaboration between stakeholders were key to project success. Good communication helped stakeholders and project team workers understand the project goals and what was expected of them.

By analyzing both the barriers, enablers and opportunities, this report lays the groundwork for the next phase: Deliverable 6.4, which will focus on strategies and policy pathways to overcome these challenges. This might include new policy tools, policy combinations (i.e. policy mixes), and other ways to strengthen visioning, collaboration, stakeholder involvement, pathway and roadmap development towards further niche development of AE heating system innovation.

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