

ACCESSIBLE CLIMATE-CONSCIOUS ESSENTIAL SERVICES (A.C.C.E.S.)

► POLICY REPORT

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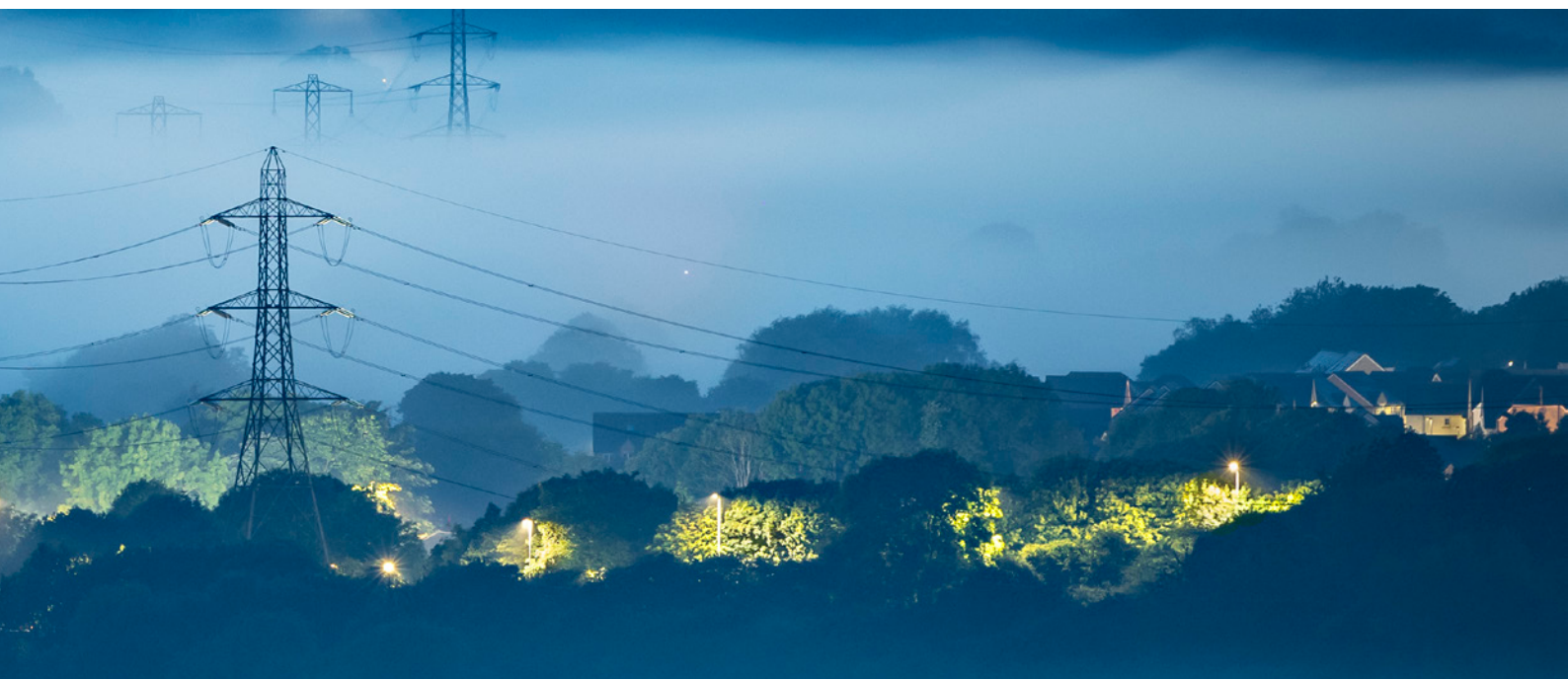


INTRODUCTION

Services of General Interest (SGIs) form the foundation of Europe's social and economic well-being. Essential services – including energy, housing and water– are under growing pressure. Climate change, infrastructure gaps, and affordability crises are converging, placing vulnerable citizens and local service providers under strain.

The “Accessible Climate-Conscious Essential Services (A.C.C.E.S.)” project, co-funded by the European Commission, was implemented by SGI Europe in partnership with Union Sociale pour l'Habitat (USH), Bundesverband der Energie- und Wasserwirtschaft (BDEW) and Union Française de l'Électricité (UFE) over a period of two-years.

The present report focuses on the needs of providers of services of general interest operating in the water (drinking water and waste water), energy (electric power generation, transmission and distribution, gas supply, heating and cooling systems), and housing sectors across Europe. The document draws on direct contributions from more than 40 public and private service providers, detailing critical challenges faced by essential service providers in their efforts to maintain service quality, accessibility, supply security and affordability while adapting to intensifying climate change impacts. The findings demonstrate that while each sector faces unique challenges, several transversal issues require coordinated policy responses at European, national and local levels and presents a call to action by recommending very specific areas for policy intervention.



DEFINITIONS OF KEY TERMS:

- › **Services of General Interest (SGIs)** refers to services that public authorities classify as essential to ensure social and territorial cohesion and public well-being. They include both economic and non-economic services, ranging from utilities such as energy, water, transport, and postal services to core social services such as education, healthcare, housing, and social welfare. In line with Treaty provisions (Article 14 TFEU and Protocol 26 on services of general interest), public authorities “shall take care that such services operate on the basis of principles and conditions, particularly economic and financial conditions, which enable them to fulfil their missions”.
- › **Essential services** is a term first introduced in 2017 by the European Pillar of Social Rights and is often used interchangeably with SGIs in this report, referring to the basic services that are fundamental to citizens’ daily lives and wellbeing. For this report, we focus specifically on the water, energy, and housing sectors.



CLIMATE CHANGE IMPACTS ON ESSENTIAL SERVICES

Climate change is disrupting the foundation of Europe's essential services – energy, housing and water – with increasingly severe and overlapping effects.

Rising temperatures, droughts, floods and changing precipitation patterns, and more frequent extreme weather events are placing extraordinary stress on critical systems across Europe. In Spain, more than six million people recently faced water restrictions, while deadly flooding in Valencia caused extensive damage and left 800,000 residents without safe drinking water. Energy systems face mounting challenges, including reduced hydropower output, thermal generation inefficiencies during heatwaves, and increasing grid instability. Housing providers are under pressure to meet both energy efficiency targets and growing climate resilience demands, yet renovation costs often exceed the capacity of public budgets.



Infrastructure vulnerability. Climate change is no longer a future threat but a present reality significantly impacting essential infrastructures. Much of Europe's water and energy infrastructure was built between the 1920s and 1970s and is now reaching the end of its operational life. Energy distribution systems alone require an estimated €67 billion in investments by 2050 to withstand climate impacts. In housing, infrastructure faces equally substantial challenges and renovation needs are growing faster than implementation capacity. These vulnerabilities are compounded by the interconnected nature of essential services—where breakdowns in one system (e.g., energy) often cascade into others (e.g., water, housing). Additional level of complexity is added by the recent realization that critical infrastructures are exposed not only to climate hazards but major security risks including cyber-attacks targeting operational technology systems, physical sabotage of critical installations, and geopolitical threats that can disrupt supply chains and service delivery. These compounding challenges further increase infrastructure vulnerability.

Affordability is under pressure and is becoming a barrier to resilience. As climate impacts increase service strain, costs are rising—felt especially by the most vulnerable. Energy poverty affects 17.4% of European households periodically. Housing affordability is increasingly out of reach, particularly for young people, low-income earners, and private tenants, who are often excluded from energy-efficient buildings or renovation support, widening the social divide in resilience. Water affordability has the potential to become an additional stressor due to increasing investment needs and regulatory obligations. This affordability challenge exists across all three sectors and throughout Europe.

Additionally, despite strong EU ambition for climate adaptation and service quality, **implementation barriers persist** at national and local levels. Municipal utilities and smaller providers often lack the technical capacity, funding mechanisms, and regulatory certainty needed to implement complex directives. In the water sector, especially in countries where water utilities are run at a local level, some municipalities struggle to implement technical directives without adequate support. Policy instability further complicates long-term investment planning, as infrastructure improvements require funding commitments that extend beyond political cycles.

TRANSVERSAL CHALLENGES AND FINDINGS

The A.C.C.E.S. project revealed that many of the challenges facing water, energy, and housing are not just sector-specific—they are deeply interconnected. Addressing them effectively will require integrated approaches that reflect their shared vulnerabilities, policy overlaps, and structural constraints. Five key cross-cutting issues emerged from the research and stakeholder consultations.

➤ FINANCIAL CHALLENGES AND INVESTMENT GAPS

Financial constraints represent a major barrier to adaptation across all sectors. The scale of required investments often exceeds the financial capacity of essential service providers, particularly smaller utilities and social housing providers. This gap between adaptation needs and financial resources exists across all three sectors and throughout Europe. Water infrastructure replacement costs range from €11 billion (Netherlands) to €145 billion (France) for drinking water alone. France reports housing renovation costs estimated at €9 billion annually, while simultaneously needing €60 billion for new construction. These investment needs far exceed available resources, particularly for providers with limited revenue-generating capacity.

➤ CROSS-SECTORAL IMPACTS AND SECURITY CONCERNS

Essential services are tightly interlinked and the need for increased cross-sectoral planning cannot be disregarded. Infrastructure failures do not occur in isolation: when critical thresholds are exceeded, failures in one system rapidly propagate to others, magnifying impacts and complicating recovery efforts. Energy is required for water treatment and distribution, telecommunications depend on energy, and housing habitability relies on all these services functioning properly. Traditional sector-specific planning approaches fail to capture these interconnections, potentially creating blind spots in resilience strategies.

➤ AFFORDABILITY AND ACCESSIBILITY CONCERNS

Maintaining affordable and accessible essential services while investing in climate adaptation presents a significant challenge. Evidence from research shows that affordability concerns exist throughout Europe, though with regional variations. Energy poverty affects 17.4% of households at least once during 2020-2023, with income being the primary determinant, though housing quality and energy efficiency play crucial roles.

Housing accessibility research confirms that housing problems particularly affect young people, low-income earners, and private tenants, who often have limited access to energy-efficient buildings. Water costs represent roughly 1-2% of household income on average, but investment needs to comply with new regulatory measures and climate impacts have the potential to significantly increase costs. This affordability crisis affects all three sectors, requiring integrated policy responses that protect vulnerable populations while enabling necessary climate adaptation investments.

► POLICY IMPLEMENTATION AND GOVERNANCE CHALLENGES

While the EU has established ambitious policy frameworks for climate adaptation and essential services quality, implementation faces significant barriers at national and local levels. Technical capacity constraints affect many providers, particularly smaller entities. For example, in the water sector, over 1,800 municipalities in Spain face challenges implementing complex EU directives without adequate technical support. Similarly, Ireland's experience with Storm Éowyn demonstrated insufficient local technical capacity to repair grid damage without assistance from other countries.

Policy instability complicates long-term investment planning. Infrastructure investments typically span decades, but policy frameworks and funding mechanisms often change with political cycles. France's National Climate Change Adaptation Plan based on a 4°C warming trajectory provides an example of longer-term planning, with transmission system operator RTE planning €20 billion in adaptation investments by 2040.

Coordination gaps between policy domains (water, energy, buildings) remain significant. Workshop participants consistently identified the need for better alignment between EU climate objectives and practical implementation at local levels, as well as improved coordination between different policy domains.

► PUBLIC ENGAGEMENT AND AWARENESS

Public understanding and support are essential for successful implementation of climate adaptation measures, yet technical complexities and communication gaps often limit meaningful engagement. Several housing providers noted that energy renovations often underperform in practice because of behavioral factors not addressed during implementation. This “rebound effect” illustrates how technical improvements can be undermined without resident education and involvement.

Experience from many housing sector providers shows that actual energy consumption doesn't always align with theoretical performance after renovations, demonstrating the importance of monitoring real consumption patterns and educating residents. This highlights how behavior can undermine technical improvements without proper engagement.

Transparency in investment planning emerged as a critical need. Italy's national benchmarking system for water utilities –with specific resilience indicators for drought resilience and flood impact– provides an example of creating transparency around adaptation investments and their impacts.

Participatory approaches show promise, as demonstrated by Zaragoza's housing authority which has developed comprehensive indicator systems measuring not just technical performance but also social impact, tenant satisfaction, and community benefits. These examples show that transparency and participation are not secondary concerns—they are essential tools for building public confidence and securing long-term success.



SECTOR-SPECIFIC CHALLENGES AND FINDINGS

► HOUSING SECTOR: KEY CHALLENGES

Funding gaps for energy efficiency and decarbonation improvements represent a major barrier to housing adaptation. France reported housing renovation costs estimated at €9 billion annually, with simultaneous needs for new construction reaching €60 billion. These investment needs far exceed available resources, particularly for social housing providers with limited revenue-generating capacity.

Accessibility for vulnerable groups remains a challenge, particularly for energy-efficient and low carbon housing. Research confirms that housing problems disproportionately affect young people, low-income earners, and private tenants, who often have limited access to energy-efficient buildings. The Austrian model demonstrates how social housing can provide better protection, with significantly lower housing cost burdens compared to the private rental sector.

Renovation complexity extends beyond simple funding issues to include technical and social challenges. Brussels housing authorities reported that theoretical energy performance often doesn't match actual results post-renovation, highlighting the need for resident education and monitoring of actual consumption. Balancing climate objectives with affordability and avoiding displacement during renovation works remains challenging.

➤ WATER SECTOR: KEY CHALLENGES

Quality deterioration and pollution prevention represent growing concerns. New threats from persistent pollutants, primarily per- and polyfluoroalkyl substances (PFAS), widely used, long lasting chemicals, components of which break down very slowly over time or as in the case of PFAS not at all, require stricter source control rather than end-of-pipe treatment solutions. Workshop discussions highlighted that advanced treatment methods like reverse osmosis come with significant challenges, including 30% additional water requirements and concentrated waste disposal challenges. Specific incineration facilities are necessary.

Water scarcity and stress affect increasing portions of Europe. Spain reported severe water restrictions affecting 6 million people across 200 municipalities in December 2023. Climate projections indicate these challenges will intensify and expand geographically, requiring diversified adaptation strategies including water reuse (Spain reuses approximately 343 hm³ (million cubic meters) per year) and efficiency improvements.

Infrastructure investment needs are substantial, with aging networks requiring renewal. German data indicates investments and prices are not keeping pace with rising construction costs, effectively reducing real investment levels. The contradiction between water sector's high fixed costs versus predominantly variable revenues creates tension between revenue security and conservation incentives.

➤ ENERGY SECTOR: KEY CHALLENGES

Grid resilience and adaptation require substantial investments. France's transmission system operator plans to invest €20 billion by 2040 to adapt 80% of the transmission grid only to climate change, while the distribution system operator plans €25 billion in the same period. Distribution system operators across Europe need an estimated between 402 and 650 billion € by 2030, which gives an idea of the huge amount of financial resources to be injected into both renovating, expanding and adapting the infrastructure to climate change.

Balancing electrification with system resilience presents challenges. Ireland's experience with Storm Éowyn raised questions about the resilience of an increasingly electrified society during prolonged outages, though commitment to renewable targets (80% by 2030) remains strong. Local utilities face particular implementation challenges, with calculations from Germany showing a significant gap between climate neutrality targets (2045) and realistic implementation timelines (2055-2075) based on current conditions.

Affordability during transition requires careful policy design. While Eurelectric projections suggest long-term savings from electrification (35-40% decreased energy bills by 2050), the transition requires addressing high upfront costs, particularly for vulnerable customers. Housing costs significantly exacerbate income inequality and energy poverty, highlighting again the interconnections between sectors.

It's important to note that "energy services" in this context encompasses the full spectrum of energy-related utilities and functions including electricity generation, transmission and distribution, gas supply, heating and cooling systems, and related consumer services – not limited to electricity alone. This broad definition highlights the complexity of ensuring resilience across the entire energy value chain.

POLICY RECOMMENDATIONS

Based on the research findings, this report presents targeted recommendations to address both transversal and sector-specific challenges. These recommendations are organized by target audience to facilitate implementation.

➤ TO THE EUROPEAN COMMISSION

- **Establish an integrated EU infrastructure resilience framework** that coordinates housing, energy, and water sectors to ensure synchronized climate adaptation planning and implementation. This framework should recognize the interconnected nature of essential services and address cascading vulnerabilities between systems and contribute towards building resilience that would serve both climate and the ever growing security challenges.
- **Create dedicated climate adaptation funding mechanisms** specifically for essential services infrastructure, separate from existing cohesion and regional development funds. These mechanisms should address the significant investment gaps identified (€9 billion annually for housing renovations, €67 billion by 2050 for energy distribution grids) and provide particular support for regions most vulnerable to climate impacts.
- **Reform economic governance rules** to recognize essential services investments as strategic infrastructure deserving different fiscal treatment. This would provide greater flexibility for necessary adaptation investments, particularly for social housing and municipal utilities facing significant constraints.
- **Enhance the technical assistance** offered to Member States for implementing complex directives related to essential services. This should address the implementation gaps identified in the water sector (where municipalities struggle with implementation) and support knowledge transfer between regions with different adaptation experiences.
- **Establish a European alliance for climate-conscious essential services**, bringing together policy, industrial, R&D, and training dimensions. This would integrate technical and transversal skills development needed for the adaptation of essential services, following the model of successful green skills alliances, without neglecting the more traditional technical and industrial, and still indispensable jobs.

➤ TO MEMBER STATES

- **Develop national climate adaptation plans** for essential services with the involvement of social partners and service providers. These plans should serve as a reference for bottom-up approaches developed at the local level while aligning with European frameworks.

- **Build synergies between industrial and training policies** through investments and development plans which consider the design of training paths aimed at building skills that enable climate adaptation innovation in essential services.
- **Strengthen coordination mechanisms** between national authorities, regulatory bodies, and local service providers to ensure consistent implementation of water, energy, and housing directives and policies.
- **Create financial incentives** for climate-resilient investments in essential services, including blended finance mechanisms combining public grants, low-interest loans, and private investment. Special provisions should target areas most vulnerable to climate impacts.
- **Implement affordable and accessible essential services monitoring frameworks** that track both climate resilience and social impacts across sectors. These should include standardized affordability metrics such as service costs as percentage of income for different household types.
- **Support knowledge transfer networks** between experienced and emerging professionals in essential services sectors, addressing the workforce development needs identified in all three sectors.

➤ TO SGI PROVIDERS

- **Develop comprehensive asset management systems** for proactive infrastructure planning and climate adaptation. These systems should identify and address vulnerabilities before service disruptions occur, particularly focusing on aging infrastructure.
- **Implement integrated efficiency programs** which include the measures taken to increase energy and water conservation in residential and commercial buildings.
- **Establish education programs** for consumers on resource-efficient practices to address the “rebound effect” where improved building efficiency doesn’t translate to expected savings. These programs should be particularly targeted at vulnerable groups.
- **Create transparent communication channels** regarding adaptation plans, expected benefits, potential disruptions, and investments. Transparency builds public support for necessary rate adjustments to fund climate adaptation.
- **Participate in knowledge exchange platforms** between utilities, authorities, and consumers to promote understanding of challenges and solutions. This addresses the identified need for improved coordination and shared learning.
- **Adopt holistic approaches when designing employee training**, recognizing that the segregation between occupations has decreased within sectors, requiring employees to broaden their expertise in problem-solving, digital skills, communication, and creative thinking.

CONCLUSION

The essential services sectors of water, energy, and housing face unprecedented challenges as climate impacts accelerate while economic and social pressures intensify. This research demonstrates that these challenges require integrated approaches that recognize the interconnections between sectors and balance technical solutions with social equity considerations.

Successful adaptation requires coordination between European, national, and local policies, supported by appropriate funding mechanisms and knowledge exchange. A closer coordination is needed to address the challenge to mobilize the capital to invest in the infrastructure without raising tariffs drastically for consumers to ensure guarantee their human rights to water, energy and housing and to contribute to a fairer society during the transition into the climate-conscious and resilient economy.

The recommendations presented in this report offer a pathway toward more resilient, inclusive, and sustainable essential services in Europe. By implementing these recommendations, policymakers can ensure that climate adaptation enhances rather than undermines the European commitment to high-quality services accessible to all citizens. Importantly, strengthening resilience today will deliver dual benefits – addressing both climate adaptation needs and growing security challenges facing critical infrastructure across Europe.



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