ENERGY HUB

Powering the clean energy transition

# D2.3

# LIST OF RELEVANT BARRIERS AND RISKS AND MITIGATION MEASURES

## WP2

Pipeline review and methodology improvement

**FINAL VERSION | MAY 2025**

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| **Author(s)** | Miguel Maia & Ricardo Barbosa |
| **Contributing Author(s)** | Aurora Chirchetta (RNAE); Luísa Vilas Boas & Rui Vasconcelos Pinto (TELLES); Ricardo Silva (RdA) |

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# EXECUTIVE SUMMARY

This document provides a structured analysis of the barriers and risks that may affect the implementation of the Powering Energy Hub project and outlines the corresponding mitigation strategies developed to ensure its successful execution. As a continuation and expansion of its predecessor's (PEER) efforts, PEH operates within a complex national framework aimed at advancing energy efficiency and renewable energy deployment across a broader range of building typologies and infrastructure.

Recognising the ambitious scope of the project and its alignment with the European Union's climate and energy objectives, this document sets out a methodological approach to barrier and risk anticipation and response. It integrates operational insights from past experience with targeted consultation involving key stakeholders across institutional, financial, and technical domains. The result is a detailed framework for barrier and risk management, embedded in the project's governance and technical delivery structure.

The content presented herein reflects both the strategic orientation and the practical mechanisms necessary for the robust implementation of the PEH project. By addressing challenges related to timing, quality assurance, financial viability, and stakeholder engagement, the measures proposed contribute directly to safeguarding the project's progression and ensuring its alignment with the defined objectives. This document thus plays a central role in supporting the broader ambition of the PEH project to mobilise investment, scale up energy transition actions, and contribute meaningfully to national and European decarbonisation goals, by enabling large-scale, timely, and effective implementation of energy efficiency upgrades and the adoption of renewable energy sources.

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# GLOSSARY OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AB | Advisory Board |
| AMP-ND | Área Metropolitana do Porto a Norte do Rio Douro (Porto Metropolitan Area North of Douro River) |
| CA | Consortium Agreement |
| D | Deliverable |
| EC | European Commission |
| EE | Energy Efficiency |
| ESCOs | Energy Service Companies |
| EU | European Union |
| GA | Grant Agreement |
| GHG | Greenhouse Gas |
| KPI | Key Performance Indicator |
| OSS | One-Stop-Shop |
| PEH | Powering Energy Hub |
| PEER | Porto Energy ElevatoR |
| PPP | Public-Private-Partnership |
| PV | Photovoltaic |
| WP | Work Package |

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# 1. Introduction

Powering Energy Hub (PEH) is a 3-year long project composed of a Consortium of 4 partners, all based in Portugal. The project development goals are ambitious – to leverage the success of the work initiated in the previous Horizon 2020 project (Porto Energy ElevatoR). To do so, and to achieve the "nearly zero-energy buildings" target set by the European Union, PEH aims to accelerate energy efficiency and renewable energy production investments, not only in the residential sector (as this was the main target of its predecessor), but also on public and private buildings and infrastructures, across the country.

To effectively manage the complexity of the project and minimise the emergence of obstacles and the escalation of risks associated with its implementation, it is essential to establish a risk mitigation procedure aimed at anticipating potential issues and creating resolution mechanisms should they materialise.

A range of risk management tools and strategies will be deployed to enhance both the managerial and technical dimensions of the project. These efforts will involve a blend of in-person and digital approaches, integrated at critical stages of the project lifecycle, with clearly defined roles and responsibilities distributed among the Work Package leaders from each partner institution.

The list of relevant barriers, risks and mitigation measures is intended to anticipate and avoid or minimise the possibility of internal and/or external events negatively impacting the project in terms of time, quality, implementation, and cost. To achieve this, continuous monitoring of the project's progress and its alignment with the initial objectives is of the utmost importance.

Given that the project's framework has a Local and a National approach for the implementation and operationalisation of the Energy Hubs - through physical, in-person, and digital approaches - risks, barriers, and mitigation measures were considered for both scenarios.

The Powering Energy Hub methodology intends to anticipate and develop practical responses to the barriers and risks hindering proper project implementation, based on the experience of its predecessor – Porto Energy ElevatoR (PEER) – financed by Horizon 2020.

That experience involves a brainstorming process between the Consortium and the Advisory Board, as well as interviews and numerous interactions with representatives of promoters (energy managers, legal and financial departments and top management), private and public financing entities, including ESCOs. These activities led to the identification of relevant potential barriers and risks to the project's implementation, as well as the necessary mitigation measures.

Throughout the duration of PEH, the project coordinator will continuously supervise the identified risks, with support from the Consortium and Advisory Board. The objective is to assess any risks related to the final products under study and refined within the project, ensuring product quality

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from a business perspective.

In summary, the purpose of this Deliverable is to identify barriers and risks that could hinder the proper implementation and operationalisation of the Local and National Energy Hubs, while proposing mitigation measures to address any potential issues.

The document is organised as follows: the first section presents the methodology of the PEH project, followed by the list of barriers in Chapter 3, the identified risks and mitigation measures in Chapter 4, and concluded with some final remarks in Chapter 5.

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# 2. The Powering Energy Hub Methodology

Energy efficiency retrofits are key to Europe's climate goals, but progress is slow due to social, technical, and administrative hurdles that make them less attractive than other investments. Considering both the EU's objectives and the identified constraints, PEH developed a methodology aimed at overcoming key barriers such as:

- **Lack of knowledge and awareness**: Energy efficiency, as a concept and value, is not yet a priority. PEH will deliver tailored awareness campaigns targeting different focus groups.
- **High upfront capital expenses**: The costs of renovating construction or building envelope elements for energy efficiency remain high. PEH will implement innovative financial schemes and bundling strategies to reduce upfront capital requirements.
- **High transaction costs**: The process of identifying, developing, and aggregating projects can be expensive for companies. PEH will draw on the insights gained from the H2020 PEER project to implement best practices and will serve as a hub for projects that can be aggregated, helping to minimise transaction costs.
- **Long energy efficiency payback**: For deep renovations, the initial investment can be substantial, with full recovery taking several years. PEH will integrate energy communities and other schemes to shorten payback periods.

Overall, the PEH methodology is developed along three complementary axes, each designed to foster energy efficiency and energy production. A more in-depth description is presented below.

a) **Focus on delivering Energy Efficiency to improve public infrastructure at both AMP-ND and national levels (WP2, WP4 and WP6)**
   - A clear and objective project preparation process designed to elevate the project to an investment-ready level.
   - Emphasis on interventions aimed at reducing building energy demand, including envelope insulation, energy-efficient windows and doors, lighting, and efficient heating and cooling systems, among others

b) **Include renewable energy as an add-on to energy efficiency (WP6)**
   - Promotion of energy cost reductions through decentralised renewable energy sources (e.g., PV, solar thermal, or biomass).
   - Development of energy communities that enable the creation of production units for self-consumption, alongside the integration of other technologies, such as electric mobility infrastructure and energy storage.

c) **Mobilise alternative financial schemes and business models (WP5)**
   - Leveraging innovative financial schemes and integrating them with traditional

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solutions to make investments in energy efficiency and renewable energy both feasible and attractive. Financial structures such as PPPs, blended finance, and ESCO financing will be analysed. When combined with other incentives, these measures can improve the success rate in replication areas.

- Assessing the viability of using certification schemes, such as white certificates (linked to energy savings) and guarantees of origin (linked to renewable energy), along with the combination of different technologies (e.g., integrating storage in energy communities) to enhance financial indicators.

**d) Parallel activities**

- Training and dissemination activities (WP7 and WP8)
    - The project will be backed by an intensive capacity-building programme aimed at various stakeholders, with a particular focus on municipal technical staff, as well as public and private building owners, project developers, ESCOs, and financial institutions.

- Creation of the Energy Hub (WP4)
    - PEH ensures the project's sustainability through a robust business model, including the establishment of a regional energy hub that will drive the replication of the project within the region and potentially expand it to other regions.
    - Local physical OSS (Energy Hubs) will support asset owners, enhancing the capacity established by the PEER project in the Porto metropolitan area.
    - The implementation of a virtual OSS targeting municipalities and municipal companies will foster investment in public energy efficiency projects, ensuring national-level replication. RNAE will facilitate the replication of the virtual OSS through its network of energy agencies.
    - These hubs will serve as an OSS for both public and private building and asset owners, helping them develop and adapt renovation strategies for their properties, while integrating alternative financial schemes and legal models, offering support throughout the entire customer journey.
    - The target audience for both existing and new hubs, particularly the virtual hub, will be expanded to include public authorities. This will not only support the renovation of the housing sector, as is currently the case, but also focus on other public buildings and facilities. The technical and legal support previously provided to housing owners will also be extended to public asset managers, aiding their energy efficiency and renewable energy projects.

- Innovative supporting measures (WP3, WP5 and WP6)
    - Throughout the project implementation, the processes and studies conducted will be supported by a legal team that will review and develop procedures in compliance with Portuguese legislation.

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# 3. List of relevant barriers and mitigation measures

## 3.1. Context

In alignment with the 2021 European Climate Law, Portuguese municipalities are currently developing their Climate Action Plans, outlining strategies to reduce greenhouse gas emissions by 55% by 2030, 65–75% by 2040, and 90% by 2050 - ultimately achieving carbon neutrality. This local ambition, reinforced by Portugal's Climate Law (Law 98/2021), is particularly evident in the Northern Region, where Guimarães and Porto are participating in the EU '100 Climate-Neutral and Smart Cities by 2030' Mission. As a result, a supportive yet demanding framework for carbon neutrality is taking shape across the country. In the Northern Region especially, municipalities recognise the importance of leading by example and driving action. Prioritising interventions in public buildings and positioning them as role models is therefore essential, as they serve as visible examples of the immediate co-benefits of climate action.

## 3.2. Barriers

To lead on climate action, local authorities must be equipped, on the one hand, to support citizens and businesses in implementing private energy-related projects, and on the other, to lead by example by transforming municipal buildings into energy-efficient and renewable energy-generating facilities.

Through the implementation of the Porto Energy ElevatoR (PEER) project, some municipalities within the AMP-ND subregion have already established OSS to assist citizens, thereby addressing some of the initial barriers to energy efficiency and renewable energy investments. Nonetheless, significant challenges remain in ensuring a smooth, inclusive, and carbon-neutral economic transition.

Moreover, other municipal buildings and infrastructure - such as street lighting and water facilities - fell outside the scope of PEER, as it was exclusively directed at the residential sector. In addition, many local authorities lack the technical, legal, and financial resources required to adequately prepare and implement energy-related projects.

The following sections of this chapter compile and expand upon the main identified barriers, categorized accordingly.

### 3.2.1. Information and awareness

One of the primary barriers to the adoption of energy efficiency and renewable energy measures is the lack of knowledge among both public and private asset owners, as well as end-users. Many stakeholders are unfamiliar with the potential of available technologies, the principles of energy

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management, and the operational strategies needed to reduce energy consumption effectively. This lack of understanding often results in limited motivation to act, delayed decision-making, and missed opportunities for improvement.

A key challenge lies in raising awareness among building and infrastructure managers about the performance gap, the difference between the current energy performance of their assets and the potential performance achievable through well-established energy efficiency interventions. Without this clarity, energy improvements are often seen as optional or too complex to prioritise.

Additionally, there remains scepticism regarding the effectiveness and reliability of new technologies, particularly in real-world operational settings. Many asset owners and managers require proven case studies, demonstration projects, or pilot initiatives that can provide practical evidence of how specific technologies and methods deliver measurable results.

Regarding the implementation of decentralised production and self-consumption energy sharing schemes (such as collective self-consumption or renewable energy communities), there is a widespread lack of knowledge. Although these initiatives are generally well perceived, it is often unclear to ordinary citizens and municipalities how to operate and participate, what changes the implementation will bring, and what the consequences will be for day-to-day life.

### 3.2.2. Budget and economic

Public entities often face difficulties in raising funding for energy efficiency and/or decentralised energy generation investments, as they may not be able to fully finance their renovation needs directly through public funding. Additionally, the capacity of most public entities to leverage debt is increasingly constrained, either due to restrictions imposed by the regulatory framework or because of their inability to increase debt levels while still complying with prudent borrowing codes.

These limitations require public entities to prioritise energy efficiency and/or decentralised energy investments, which may lead to smaller projects being overlooked. While the EU has increased the amount of public funds available for energy efficiency, there remains a strong need to further unlock private financing.

Because of this fact, local authorities must be equipped to attract and leverage such investments through mechanisms like ESCO models, Public-Private Partnerships (PPPs), crowdfunding/crowdlending, or other innovative funding schemes.

Moreover, demonstrating the cost-effectiveness of energy efficiency projects, particularly those involving passive measures, remains a challenge. This is due to factors such as volatile energy prices (market risk), a lack of consistent incentives to save, and difficulties in guaranteeing the profitability of investments from both technical and economic perspectives.

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### 3.2.3. Legal and institutional

The implementation of energy efficiency measures and/or decentralised energy projects is often significantly affected by legal, regulatory, and institutional barriers. These obstacles can create uncertainty, increase administrative burden, and ultimately delay or prevent the successful deployment of sustainable energy solutions.

One of the most persistent issues is the lack of clear and stable incentives within the existing legal frameworks to promote energy savings and the integration of renewable energy sources. In many Member States, policy signals remain inconsistent or insufficiently attractive to encourage long-term investments from both public and private actors. This lack of incentive alignment can undermine confidence in the viability of energy efficiency initiatives.

Moreover, complex and rigid procurement procedures present a major institutional barrier, particularly for public authorities when contracting with private companies. Traditional procurement models are often not well-suited to the needs of energy efficiency and/or decentralised energy projects, which may involve performance-based contracts, multi-stakeholder collaboration, or innovative financing arrangements such as Energy Performance Contracting (EPC). The legal uncertainty surrounding these models can lead to delays in project initiation or prevent their adoption altogether.

Regulatory fragmentation across different levels of government (local, regional, national) further complicates project implementation. In some cases, overlapping or contradictory rules may apply, resulting in confusion and inefficiencies. Institutional responsibilities may also be poorly defined, leading to a lack of coordination and accountability among the various actors involved. Therefore, although public policies favour the implementation of these type of projects, as well as the relationship between public and private, in practice there is a whole set of rules that need to be complied with and made compatible, including the legislation applicable to local administration. This articulation requires dealing with a wide range of complex issues, which could ultimately block the structuring of projects involving public entities, either on their own or in association with private organisations.

In addition, limitations in public sector budgeting rules—such as constraints on multi-annual commitments or the classification of energy efficiency investments as current rather than capital expenditure—can discourage long-term planning and the use of innovative financing mechanisms.

### 3.2.4. Logistics

Logistical barriers can pose significant challenges to the timely and effective implementation of energy efficiency and renewable energy projects. These challenges have been particularly evident during recent global emergencies, such as the COVID-19 pandemic or the Russian invasion of Ukraine, which exposed the vulnerability of supply chains and project execution timelines across

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Europe and beyond.

The disruption of global production and transportation networks may lead to shortages and delays in the delivery of essential equipment and materials required for energy retrofitting, construction, and installation of renewable technologies. These disruptions affect not only the availability of components but may also increase costs and extended lead times, undermining project planning and execution.

Additionally, restrictions on mobility and public health measures severely limit access to sites, availability of skilled labour, and the ability to carry out inspections, audits, and hands-on training, all critical aspects of energy efficiency implementation. Project timelines could have to be revised, and in many cases, planned activities must be postponed or restructured.

In sum, geopolitical contingencies or major unforeseen events (such the April 28th blackout, which had a brutal impact on electricity prices right after) can influence the energy market (price fluctuations, delays in equipment deliveries, frequent legislative interventions in energy policy) and cause hesitation to invest, considering that the payback of the investment is based on revenues from electricity production.

### 3.2.5. Summary of barriers and mitigation measures

The following list summarises the key barriers to the effective implementation of PEH, and its corresponding mitigation measures. These measures aim to safeguard the project's progression and ensure its successful outcomes in line with the established objectives.

Table 1. List of identified Barriers

| Type of barrier | Description | Mitigation Measure |
|---|---|---|
| Information and awareness | Lack of familiarity of end user with the topic. | Dissemination and capacity building of stakeholder's actions will be conducted as to improve awareness among the different target groups. |
| | Energy improvements are often seen as optional or too complex to prioritize: infrastructure managers are unaware about the performance gap. | PEH will provide owners and managers with proven case studies, demonstration projects, or pilot initiatives that can provide practical evidence of how specific technologies and methods deliver measurable results. |
| Budget and economic | Project preparation cost. | PEH will provide technical support and standardisation within projects preparation as to help reduce associated costs. |
| | Access to finance to citizen and entities. | PEH will perform continued analyses of finance opportunities, as well as provide innovate finance schemes to improve project promoters access to finance. |

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| Type of barrier | Description | Mitigation Measure |
|---|---|---|
| | Long-term payback times: Potentially not all investment can be paid back by energy savings. | PEH will promote services. access to long-term financing; using grants, e.g., from ESIF as financial means; promote mixing PV (with short payback) with other long-term measures. |
| | High risk during implementation, but low risk during performance period. | PEH will enable the using different forms of financing during project implementation and will carry out monitoring after the renovation works, as to assure performance levels. |
| | ESCOs have limited balance sheet; EPC contracts do not have tangible collaterals. | PEH will allow for "Step in rights" of financial intermediary. |
| Legal and institutional | Unclear incentives, complex procurement procedures, and fragmented regulations, hinder the effective implementation and scaling of energy efficiency measures. | PEH consortium together will promote integrated support (technical, financial, and legal). The developments will be presented to relevant entities such as APESE or ADENE.<br>PEH consortium, together with the several stakeholders (municipalities, associations, local companies and private organisations) should work together to address the legal constraints regarding collective energy efficiency and renewable production, looking for successful interventions which may unlock such constraints. |
| | Long-term licensing procedures | PEH consortium should create communication bridges with the responsible authorities for licensing decentralised production projects and self-consumption energy sharing schemes. PEH importance should be emphasised to promote a timely response. |
| Logistics | Worldwide emergencies or geopolitical events (such COVID-19 outbreak or the armed conflict in Ukraine) affecting energy market | PEH will create a new virtual OSS and reinforce physical OSS already created in the scope of the PEER project, allowing interested parties to reach the Hubs through the online platform if in-person contacts are to be avoided. Also, whenever possible procedures will be implemented using paperless approaches as well as capacity building and dissemination actions will be prepared to be delivered through online platforms.<br>Additionally, through the several scheduled workshops and dissemination activities, all stakeholders (private partners and public entities) are called to participate in the |

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| Type of barrier | Description | Mitigation Measure |
|---|---|---|
| | | process of building the business model. Considering their receptiveness, the contracting procedures may be at all times redesigned or restructured in order to reassure potential reservations and secure the necessary confidence in the investment and development of the project, even in times of war. |

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# 4. Risks and mitigation measures

While the Powering Energy Hub project has identified a series of structural and contextual barriers to implementation, it is equally important to acknowledge and manage the dynamic risks that may arise throughout the project lifecycle. Unlike barriers, which represent known and relatively stable challenges, risks are potential future events, internal or external, that could adversely affect the project's success in terms of time, quality, implementation, or cost.

This chapter outlines the potential risks that may arise during the project implementation, with the goal for ensuring its resiliency, adaptiveness, and alignment with its strategic objectives. As part of the "Task 2.3 – Barriers and Risks Mitigation" it involves identifying, assessing, and managing risks that could compromise the implementation and operationalisation of both Local and National Energy Hubs, but detecting them at an early stage.

The risk management process is conducted under the coordination of the Project Coordinator, who will oversee risk-related activities with the support of the Consortium partners and the Advisory Board. This collaborative effort ensures that risks are systematically evaluated across all project dimensions, particularly in relation to the development and enhancement of the project's final outputs.

Moreover, attention is given to risks that could compromise product quality and business viability, reinforcing the importance of delivering not only technically sound but also market-relevant solutions. Through this proactive and structured approach, the PEH project aims to safeguard its outcomes, maintain high quality standards, and maximise its long-term impact.

The following table presents the 13 identified risks, the Work Package(s) in which they may occur, and a general description of each risk. In addition, a targeted mitigation measure is designed to address each challenge effectively.

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Table 2. List of identified Risks

| Risk number | Risk | Work Package No(s) | Description | Mitigation Measure |
|---|---|---|---|---|
| 1 | General delays | WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8 | Overall project timelines may slip due to unforeseen obstacles, impacting deliverables and milestones such as lack of resources, personnel changes at a project partner, partner leaves Consortium. | The Coordinator will use the approved mechanisms to urgently raise the issue with the management of the partner organisation. If no alternative resource can be found within that partner, the Consortium members will be consulted in an effort to resolve the issue. If no solution is achieved, the Coordinator, in consultation with the Commission, will consider whether a replacement partner can be sought. |
| 2 | Low interest from private investors and ESCOs | WP1, WP5, WP7, WP8 | Low interest from private investors and ESCOs, resulting in difficulty in engaging them and having them implementing energy efficiency investments | Private companies, investors and ESCOs already shown their engagement to PEH objectives through Letters of Support. Also, AdEPorto has contacts with public and private institutions, and it is known that they would like to engage. Both factors considerably de-risk possible low engagements. |
| 3 | Low interest from public and private asset owners | WP2, WP4, WP7, WP8 | Low interest from public and private asset owners, resulting in difficulty in engaging them and having them implementing energy efficiency projects | The project already has the willingness to engage entities from the Porto Metropolitan Municipalities, CIM Cávado and ANMP through Letters of Support. Thus, the project has a considerably lower risk of unsuccessful implementation. Additionally, thanks to the country-wide dissemination of the PEH project by RNAE, more projects will follow those included in the application.<br>In case of risk prevalence, engagement activities might need to be stepped up focusing in reducing insecurities towards the renovation process and mechanisms. |

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| Risk number | Risk | Work Package No(s) | Description | Mitigation Measure |
|---|---|---|---|---|
| 4 | Inadequate message | WP4, WP5, WP7 | Ineffective or unclear communication might lead to misunderstandings or reduced support from stakeholders. | PEH partners have an extensive network with stakeholders from the financial community. In addition, the project's Communication and Dissemination Plan (WP7) includes mechanisms for monitoring progress and measuring the effectiveness of communication and dissemination efforts. |
| 5 | Inadequate coordination | WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8 | Poor coordination among partners could result in inefficiencies, duplicated efforts, or misaligned actions. | The expertise and reputation of the Consortium members and the adoption of innovative approaches (e.g. participatory activities) is key to involving financing institutions and investor networks in targeted dissemination and communication actions developed in the scope of WP5 and WP7. Additionally, a dedicated Investors network will be established within the project, providing a solid base for the ongoing commitment from these stakeholders.<br>Additionally, for internal coordination, Consortium members have regular meetings to ensure that they are aligned with the project's tasks and schedule. |
| 6 | WP resources not well balanced | WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8 | Uneven distribution of resources across Work Packages may cause bottlenecks or underperformance in certain areas | All partners are very experienced in coordination of several projects which is believed to mitigate this risk. Also, the project coordinator has the tools to manage the project and ultimately to change a project partner if there's a recurrent lack of coordination or delays in delivering the expected results. Noteworthy, the project consortium is already working together in Porto Energy Elevator. |
| 7 | Changes in Partners' internal organisation | WP1, WP2, WP3, WP4, | Restructuring or staff turnover within partner organisations may disrupt continuity and | The project team has a broad experience in developing similar projects and considers that the |

| Risk number | Risk | Work Package No(s) | Description | Mitigation Measure |
|---|---|---|---|---|
| | | WP5, WP6, WP7, WP8 | knowledge transfer | project activities are well balanced both within the WP and between partners. Plus, all Consortium members have more than one person involved in the project, so their tasks and responsibilities are duly assured. |
| 8 | Delays in WP implementation | WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8 | Slower than planned execution of specific Work Packages could delay the achievement of key outcomes | The Consortium Agreement ensures that any organizational changes within any partner will not affect the project's implementation or any deliverable. |
| 9 | Low quality standards | WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8 | Deliverables quality below PEH standards could reduce the credibility and impact of project results | AdEPorto manages the project closely using PMP tools, monitors the project calendar implementation regularly and identified project deliverables delays and potential impact on the critical path. |
| 10 | Regulatory barriers | WP3 | Existing laws or complex regulatory environments may hinder project activities or implementation | The project has an Advisory Board to support the quality control of all the deliverables.<br>Dissemination activities are also key efforts to spread solutions and unravel concepts.<br>PEH's legal support should also help unlocking bottlenecks. The consortium includes a specialised law firm (TELLES). |
| 11 | Financial barriers | WP3, WP5, WP6 | Insufficient financial instruments or support mechanisms may limit investment and adoption | The project is mainly based on existing regulatory frameworks. The potential new models will be evaluated and the legal frameworks to be implemented will be developed and discussed with the relevant stakeholders. |
| 12 | Low stakeholder engagement | WP2, WP4, WP7 | Minimal involvement from key actors could weaken project legitimacy and reduce long-term sustainability | The project is supported by solid engineering solutions (WP6) and integrates sound financial schemes (WP5) and legal frameworks (WP3) to deliver projects with |

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| Risk number | Risk | Work Package No(s) | Description | Mitigation Measure |
|---|---|---|---|---|
| | | | | minimum risk and proven profitability.<br>Furthermore, the project foresees the creation of strong partnerships through different means and using the Consortium network and the support of the Advisory Board (WP4). |
| 13 | Low volume of projects | WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8 | A smaller than expected number of pilot or replication projects may limit the overall impact and learning potential | Stakeholders will be invited to the project meetings and regular communication of project results are ensured via newsletter and direct e-mail, reinforcing good practices and success cases. The AB will also provide support on the engagement. The Energy Hubs and the partners websites will also serve as dissemination channels. |

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# 5. Concluding remarks

Following the identification of both the barriers and potential risks to the smooth implementation of the Powering Energy Hub project, the proposed measures are intended to support the project's advancement and secure its successful completion in alignment with the defined objectives.

The PEH project's main objectives are to enable innovative project aggregation models, boost synergies, and increase investment volumes, all of which are critical for engaging the market and overcoming existing barriers. The project's design includes a twofold approach to overcoming obstacles that may hinder its implementation:

- Promoting the implementation of the proposed investment pipeline, with a focus on increasing building renovation rates. This includes executing energy efficiency renovation interventions and installing renewable energy production systems (e.g., energy communities). The goal is to drive substantial energy savings and reduce carbon footprints, contributing to the achievement of EU climate targets.
- Developing and deploying attractive and alternative financial, business, and procurement models that appeal to a wide range of market participants. These models will facilitate market engagement by providing flexible, scalable solutions tailored to diverse stakeholders, including private and public investors, asset owners, and ESCOs.

The mitigation measures identified for both barriers and risks were designed to ensure the continued alignment of the PEH project with its core goals, facilitating the timely and efficient realisation of energy efficiency improvements and renewable energy adoption at scale.

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