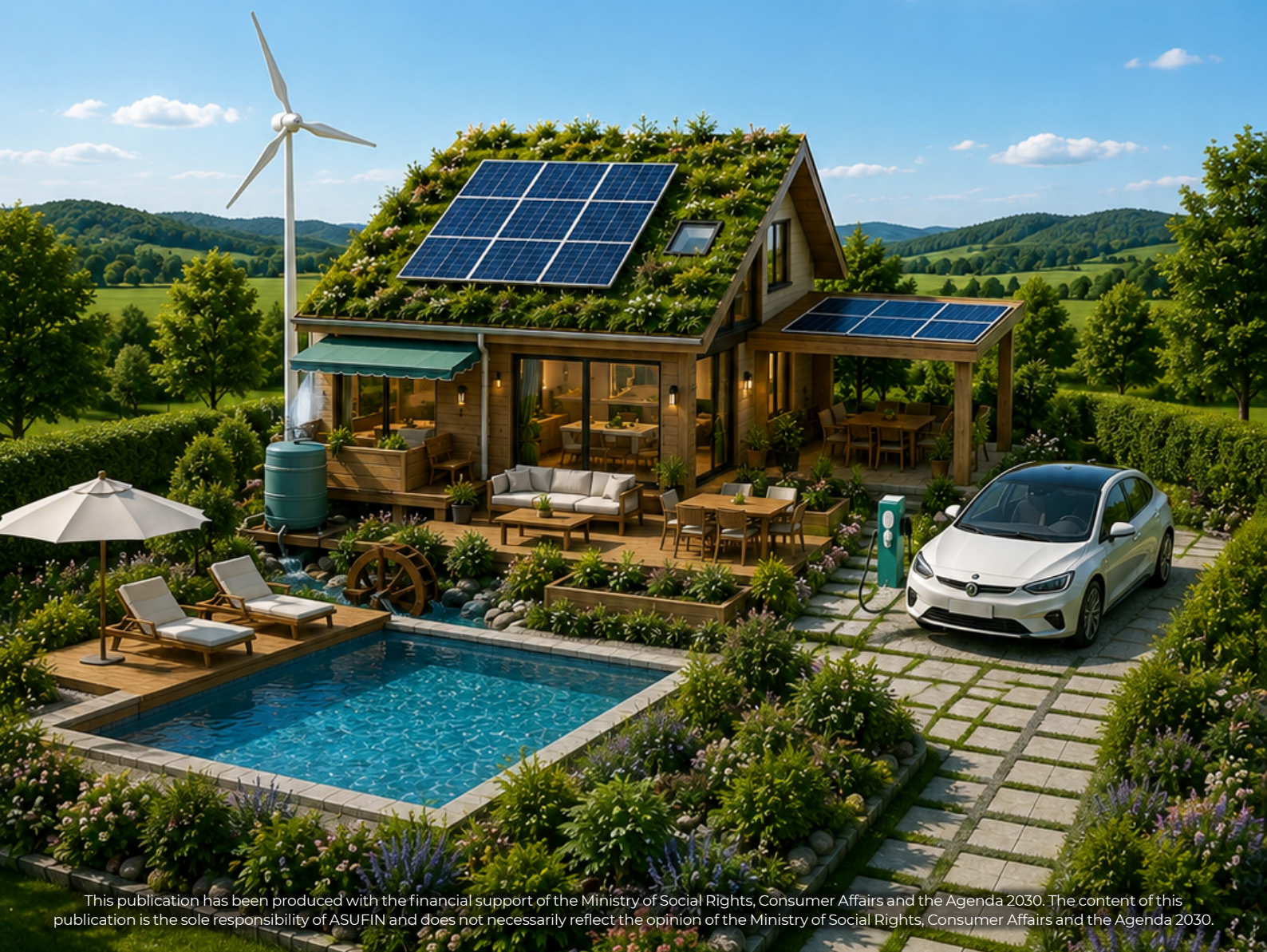


Green financing

Tools and levers to facilitate public access to sustainable housing



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About **ASUFIN**

ASUFIN the Association of Financial Users, founded in 2009 to defend and protect financial consumers. Registered in the **REACU**, (Spanish Register of Consumer and User Associations), it is a member of the **CCU** (Spanish Council of Consumers and Users), the **BEUC** (*Bureau Européen des Unions de Consommateurs*), the largest European organization of consumer associations, and **Finance Watch**.

ASUFIN is represented, through its President Patricia Suárez, on the (**BSG**) of the European Banking Authority (**EBA**) and the Financial Services User Group (**FSUG**) of the European Commission's **DG FISMA** where she holds the vice-presidency.

At the national level, **ASUFIN** is actively involved in promoting green finance through **Spainsif**.

It is part of the **Finance for All** Program coordinated by the **Bank of Spain** and the **CNMV** (National Securities Market Commission). Within this framework, the association develops, among others, financial and digital education programs, as well as on over-indebtedness and responsible lending, housing, insurance, investment and sustainable finance, within the framework of the Agenda 2030. For all these reasons, she received the **2021 Lifetime Achievement Award in Financial Education** from the Finance for All program.

About **this project**

ASUFIN's Green Finance project stems from the clear need to **improve access to green housing for citizens, who often face critical obstacles such as a lack of initial savings and difficulty in accessing financing**. These drawbacks directly affect the most vulnerable beneficiaries, such as households and homeowners' associations. To mitigate these barriers, it is essential to design and implement specific, results-oriented proposals that focus, in particular, on the renovation of the existing housing stock. Therefore, **ASUFIN** is presenting this paper, which develops the **tools and the activation of specific levers** to facilitate access to sustainable housing.

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Executive summary

The Economic Report¹ of the Platform for the Decarbonization of Heating and Cooling, published in March 2026, comprehensively quantified for the first time the cost of transforming Spain's housing stock with the aim of providing a solid technical basis to guide public planning and investment decisions in the sector between now and 2050: around €20 billion per year until 2050, divided equally between building envelope renovation and equipment replacement, with a proposed split of 61% private investment and 39% public investment. This report seeks to answer a follow-up question: **What specific tools and levers are used to mobilize this investment, and how is it ensured that it reaches the entire Spanish population, particularly households that currently cannot access the conventional financial market?**

The window of opportunity has a deadline. The Next Generation EU funds, which have financed most of the residential renovation work in Spain since 2021, are coming to an end. At the same time, Spain is drawing up its first National Building Renovation Plan, and the EU ETS II, which will apply to the use of fossil fuels for heating, is expected to come into force in 2028. Designing the policies and instruments that will enable the transformation of Spain's housing stock and continue the work begun by the extraordinary European funds is a short-term task with a long-term focus.

The Spanish model has historically relied on direct subsidies and qualified loans that quickly run out depending on the political cycle. But **financing the transition involves an ecosystem of stakeholders** — banks, insurance companies, energy service companies, property managers, homeowners' associations, and government agencies at various levels — that must be coordinated in the right sequence for any mechanism to work at scale. Because one of the primary goals is to be able to scale solutions so that we can transform the homes we live in into decarbonized homes with greater thermal comfort for their occupants.

This report proposes a catalog of seven specific mechanisms, organized into three blocks: direct financing instruments for households and homeowners' associations — including a property-linked financing system based on the censo consignativo [redeemable rentcharge], a green mortgage with conditional novation, an on-bill payment scheme for equipment replacement, and a public loan that unlocks renovation in heterogeneous homeowners' associations (PRENBADEM)—; market infrastructure and macro-financial levers —a reform of the Energy Savings Certificates system towards a securitizable asset, and a proposal for a preferential ECB interest rate for green credit—; and an initial enabling condition: effective compliance with the obligation to publish home energy performance certificates.

¹<https://www.plataformacaloryfrio.es/analisis-economico/>

Not all mechanisms work equally well for all households. The report cross-references the catalog with the five household profiles – high, medium, and low consumption, energy poverty, and homes without heating – to show which instrument could correspond to each ability to pay and each type of intervention, with a special focus on homeowners' associations where neighbors with different pay ranges live together.

Nor are they all equally mature. The report ranks the seven mechanisms according to their urgency and difficulty of implementation: from compliance with the CAE's regulations and the widespread adoption of the PRENBADEM (which can now be used with an administrative decision) to a reform of the CAE system or a possible ECB liquidity instrument, which require more time for institutional development or depend on decisions beyond Spain's control.

The report concludes with six recommendations aimed jointly at public authorities and the financial sector: to design the new National Building Renovation Plan as a stable architecture; to resolve information conditions first before scaling up financial products; to explicitly protect vulnerable households and diverse communities; to leverage existing legal frameworks before legislating from scratch; to create an inter-institutional coordination body; and to escalate barriers that cannot be resolved solely within Spain to the European level.

01

Introduction

1.1. Why this report, and why now?

In March 2026, the Platform for the Decarbonization of Heating and Cooling published its Economic Report, an analysis that for the first time quantifies the cost of transforming Spain's housing stock, including both the building envelope and the heating, cooling, and domestic hot water (DHW) systems. Its conclusions are clear: achieving the Zero Emissions Scenario — consistent with not exceeding 1.5°C of global warming — is not only possible, but also about €60 billion cheaper by 2050 than continuing on the current trajectory. However, the investment needed is not insignificant: around 20 billion Euros per year over the next 25 years, divided equally between the renovation of building envelopes and the replacement of HVAC and DHW systems.

Many reports have analyzed what needs to be done to transform Spain's housing stock and when, while the Economic Report has sought to quantify how much it costs. Many others have analyzed the existing barriers – market, financial, regulatory, and social – and have proposed alternatives to overcome them. Once this horizon has been defined, one essential question remains, which is no less crucial for the transition to occur at the necessary speed and with the necessary fairness: What instruments and levers are needed?

This report aims to answer that question. The goal is to identify, analyze, and propose specific financial mechanisms that can mobilize the required investment, reduce the economic barriers that households currently face — especially the most vulnerable — and provide public authorities and the financial sector with a catalog of operational instruments, not just general principles.

The urgency of this exercise is also marked by a specific timeline. In 2026, several deadlines converge, making this year a regulatory and financial turning point. In other words, the main public funding mechanism that has supported renovation in Spain is about to end, just as regulations are starting to demand more and the cost of inaction is starting to rise. Designing the mechanisms that must occupy that space now is not a long-term task: it is a task for this year.

1.2. What this report provides

This work is not starting from scratch. It is explicitly supported by various references:

The Renewable Heating Roadmap² (Platform for the Decarbonization of Heating and Cooling, June 2024), which proposes a plan to transform the **residential heating and DHW sector in Spain by 2050**.

The report Investing in the Comprehensive Energy Transformation of the Residential Sector: A Strategic Opportunity for the Country. Economic analysis of the renovation and decarbonization of heating, cooling, and DHW in Spain³ (Platform for the Decarbonization of Heating and Cooling, March 2026), from which the quantitative assessment is taken: how much the transition costs – taking into account renewable heating solutions and cooling needs – how it is divided between CAPEX (including both the replacement of heating, cooling, and DHW systems and measures related to improving the building envelope) and OPEX, and what overall distribution between public and private investment is feasible.

The report *Analysis of Financial Vehicles Available for Building Renovation: Current Status, Bottlenecks, and Proposals to Accelerate Their Implementation*⁴ (Alinnea, June 2025), which identifies the main bottlenecks slowing down the financing of renovation in Spain.

The report *Promoting Financing for Housing Renovation and Decarbonization*⁵ (Alinnea and Spainsif, November 2025), which provides a comprehensive map of existing financial instruments in Spain and their main regulatory, data, and market barriers.

The report *Unlocking the Trillions: Public–Private innovation to deliver the EU Renovation Wave ambition*⁶ (Green Finance Institute Spain, 2024), which focuses on public–private partnership mechanisms to scale up renovation financing.

The report *Social Profiles and Financing of Energy Renovation in Housing*⁷ (Susana Martín Belmonte, REVO Prosperidad Sostenible, 2024), which studies the social profiles of Spain's housing stock and its ability to cope with renovation investment, in order to identify the most suitable type of financing for each profile.

This report makes a twofold specific contribution. First of all, to provide a possible catalog of specific mechanisms — some already existing and in the process of being improved, others genuinely new to the Spanish market — evaluated with the same level of detail: objective, scope of application, barriers addressed, design conditions, necessary regulatory levers, beneficiaries, potential impact, and difficulty of implementation. Second, it explicitly links each mechanism to the different profiles that can be targeted, and provides a possible roadmap for how they could be implemented, focusing on the connections and constraints of each proposal.

² <https://www.plataformacaloryfrio.es/hoja-de-ruta-calefaccion-renovable/>

³ <https://www.plataformacaloryfrio.es/analisis-economico/>

⁴ <https://www.alinnea.org/es/publicacion/identificacion-de-vehiculos-de-financiacion-para-la-rehabilitacion-de-edificios-resultado-del-grupo-de-trabajo-de-alinnea/>

⁵ <https://www.alinnea.org/es/publicacion/fomentando-la-financiacion-para-la-rehabilitacion-de-viviendas-y-su-descarbonizacion/>

⁶ <https://www.greenfinanceinstitute.com/wp-content/uploads/2024/10/Desbloqueando-los-billones-Innovacion-publico-privada-para-alcanzar-el-objetivo-de-la-ola-de-renovacion-en-la-UE.pdf>

⁷ <https://www.revoproprosper.org/perfiles-sociales-y-financiacion-de-la-renovacion-energetica-de-las-viviendas/>

1.3. Target audience

This report is intended for two audiences that, in practice, must act in a coordinated manner for any of these mechanisms to work: **public authorities**, which are responsible for the regulatory, fiscal and guarantee framework that makes these instruments viable, and the **financial sector**, which is responsible for designing, offering and scaling them. That is why each mechanism is presented with its two inseparable sides: the public lever that enables it and the financial product that materializes it.

1.4. Report structure

Following this introductory chapter, the report is organized into:

- **Chapter 2.**

It summarizes the scale of the challenge in figures and presents the diversity of the housing stock as a theme cutting across the analysis.

- **Chapter 3.**

It describes the European and Spanish regulatory frameworks and explains why 2026 and the following years represent a window of opportunity.

- **Chapter 4.**

It systematizes the structural barriers that currently hinder the financing of the transition and that serve as justification for the proposed mechanisms.

- **Chapter 5.**

It presents the multiplicity of stakeholders involved in the process and explains why this complexity shapes the design of any financial mechanism.

- **Chapter 6.**

The core of the report, which presents the catalog of financial mechanisms organized into three blocks — instruments for direct financing to households and communities, market infrastructure and macro-financial levers, and enabling conditions for information and regulatory compliance.

- **Chapter 7.**

Cross-reference the household profiles in Chapter 2 with the mechanisms in Chapter 6 to guide their practical application.

- **Chapter 8.**

Arrange the mechanisms over time according to their urgency and difficulty of implementation.

- **Chapter 9 and 10.**

Recommendations and conclusions.

02

Scaling the challenge: the figures and diversity of the housing stock

It is worth scaling our starting point. According to estimates from the National Integrated Energy and Climate Plan (PNIEC)⁸, Spain must renovate 1.38 million homes by 2030 to contribute to the energy demand reduction targets for the residential sector. The indicative annual forecast rose from just over 50,000 homes in 2021 to 300,000 in 2030, a rate much higher than that achieved so far. At the same time, Spain has more than 4.2 million residential properties with an energy performance certificate (EPC), of which more than 86% have an E rating or lower — a snapshot that confirms the size of the housing stock awaiting renovation.

On the mobilizable investment side, the available figures suggest that private capital interested in this type of asset is not, in principle, the problem: the total addressable market in Spain is estimated at 9.4 million homes with an E, F, or G rating; in 2023 alone, residential renovation activity reached an all-time high of €33 billion; and, at the European level, the investment needed for energy renovation between 2020 and 2050 is estimated at €3.5 trillion. The problem, therefore, is not so much the lack of capital as the lack of channels that connect that capital to the housing stock under conditions that households and communities can afford. Chapter 4 is devoted to diagnosing these channels and their barriers.

Another important point is to correctly size the housing stock and not consider it a homogeneous block; that is, to segment the main dwellings to enable the promotion of mechanisms and alternatives based on different payment capacities, credit risk profiles, and different intervention needs, for example, based on different energy consumption levels. Not all homes have the same characteristics and needs, and designing policies and mechanisms with this in mind is essential to address the various issues. Chapter 7 of this report revisits a possible segmentation to cross-reference it with the catalog of mechanisms in Chapter 6.

⁸ Ministry for Ecological Transition and the Demographic Challenge (MITECO) (2024). National Integrated Energy and Climate Plan 2023–2030. Madrid: MITECO. Available at: https://www.miteco.gob.es/content/dam/miteco/es/energia/files-1/pniec-2023-2030/PNIEC_2024_240924.pdf

03

Regulatory framework and window of opportunity

3.1. The European Framework

The central regulatory instrument is Directive (EU) 2024/1275⁹, a recast version of the Energy Performance of Buildings Directive (EPBD), adopted in May 2024. It reinforces the "energy efficiency first" principle and, for the first time with this level of detail, incorporates the decarbonization target for the entire building stock, both existing and newly built.

The most relevant provisions for this report are:

- Each Member State must adopt its own **national trajectory** (National Building Renovation Plan, PNRE) in 2026, which replaces the Long-Term Renovation Strategies (ERESEE), with interim targets for reducing average residential primary energy consumption by 16% by 2030 and between 20% and 22% by 2035. It also states that Member States shall ensure that at least 55% of the reduction in average primary energy use referred to in the third paragraph is achieved through the renovation of 43% of the least efficient residential buildings.
- **Article 17** requires Member States to put in place financial incentives and the measures needed to mobilize private financing, and **Article 18** requires the establishment of one-stop shops for advice and technical support for renovation.

In addition, European Commission Recommendation C/2023/1553¹⁰ on the transposition of Article 30 of the Energy Efficiency Directive specifically guides the development of frameworks to ensure non-discrimination in energy efficiency loans, the creation of risk reduction schemes for green financial products, and the integration of financing systems linked to taxes or energy bills—guidance that is directly reflected in several of the mechanisms analyzed in Chapter 6 of this report, particularly those linked to on-bill payment and property-linked financing¹¹.

The European financial framework is moving in parallel. The Taxonomy Regulation (EU 2020/852)¹², the Regulation on sustainability-related disclosures in the financial services sector (EU 2019/2088)¹³, and, most recently, the Capital Requirements Regulation 3 (CRR3)¹⁴.

⁹ Directive (EU) 2024/1275 of the European Parliament and of the Council of April 24, 2024, on the energy performance of buildings (recast). <https://eur-lex.europa.eu/legal-content/ES/ALL/?uri=CELEX:32024L1275>

¹⁰ European Commission Recommendation C/2023/1553, 2023 of December 12, 2023 on the transposition of Article 30, on National Energy Efficiency Funds and financial and technical support, of Directive (EU) 2023/1791 on energy efficiency ("recast EED"). https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=OJ:C_202301553

¹¹ Fundación Instituto de Empresa, "Fomentando la financiación para la rehabilitación de viviendas y su descarbonización", Ideas para la acción, Madrid, Alinnea, 2025. https://www.spainsif.es/wp-content/uploads/2025/11/alinnea_IdeasParaLaAccion_RehabilitacionViviendas_fin.pdf

¹² Regulation (EU) 2020/852 of the European Parliament and of the Council of June 18, 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088. <https://eur-lex.europa.eu/legal-content/ES/ALL/?uri=CELEX:32020R0852>

¹³ Regulation (EU) 2019/2088 of the European Parliament and of the Council of November 27, 2019 on sustainability-related disclosures in the financial services sector. <https://eur-lex.europa.eu/legal-content/ES/ALL/?uri=CELEX:32019R2088>

¹⁴ Regulation (EU) 2024/1623 of the European Parliament and of the Council of May 31, 2024, amending Regulation (EU) No. 575/2013 as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor. <https://eur-lex.europa.eu/legal-content/ES/ALL/?uri=CELEX:32024R1623>

and the Capital Requirements Directive 4 (CRR3/CRD VI), applicable from January 2025 and January 2026 respectively) require financial institutions to increasingly disclose their exposure to climate risks and their alignment with the green taxonomy. This has an important practical consequence for this report: **the availability of energy efficiency data per home directly affects the ability of financial institutions to offer green products on favorable terms**, because without ESCs they cannot demonstrate the asset's alignment with the taxonomy nor, consequently, benefit from any potential reduction in capital requirements. This is why this report devotes a specific section, within the catalogue of mechanisms, to the enabling conditions relating to information and regulatory compliance.

3.2. The Spanish framework and the vacuum that will open up in 2026

In Spain, energy retrofitting has been funded since 2021 mainly through Next Generation EU funds channeled by the Recovery and Resilience Facility (RRF): Component 2 of the Recovery, Transformation and Resilience Plan (RTRP) – the Housing Retrofitting and Urban Regeneration Plan – mobilized an estimated total investment of €15.36 billion, of which €9.52 billion was managed by the Ministry of Housing and Urban Agenda. These have been joined by the IDAE's PREE and PREE 5000 programs, ICO (Official Credit Institute) lines such as the ICO Verde Mediation Line RRF or the ICO MIVAU Line of guarantees for residential renovation, and specific subsidies for social housing.

This entire network of public funding linked to European funds will end in 2026. This is one of the most decisive regulatory factors for the design of this report: it is a matter of defining what replaces and improves a public funding system that until now has largely been the only one available to a large number of households.

In this context, the new PNRE that Spain must submit to the European Commission in 2026 is not just a technical planning exercise: it is an opportunity to design, from the outset, a stable financing architecture—combining grants, public loans, guarantees, and policy levers—that does not depend on the ad hoc availability of extraordinary European funds. The catalog of levers in Chapter 6 aims to contribute to this architecture.

3.3. The carbon price as a new factor

An additional element, and a relatively new one in the public debate, is the entry into force of the Emissions Trading System extended to buildings and road transport (EU ETS II). Its direct effect will be an increase in the price of fossil fuels used for heating and DHW. This factor changes the calculation of the return on investment in decarbonization: households that today calculate the return on replacing a gas boiler with a heat pump based on current energy prices systematically underestimate future savings. This is an additional — and urgent — argument in favor of the financial mechanisms being designed now integrating this price trajectory into their viability models from the outset, rather than discovering it as a surprise in a few years' time.

04

Structural barriers to financing

Before presenting the catalog of levers, it is advisable to systematize some of the barriers that currently prevent transition financing from flowing at the pace and with the equity required by the challenge described in Chapter 2. This systematization is not an academic exercise: each mechanism in Chapter 6 is explicitly presented as a response to one or more of these barriers, and this chapter can be used as a roadmap for reading the next one.

4.1. Upfront investment barrier

Investing in deep renovation or even in simply replacing an air conditioning or DHW system exceeds the available savings of a very significant number of Spanish households, even when the payback period is reasonably short. Traditional subsidy schemes exacerbate this problem rather than solve it: they often require an upfront outlay by the household, with subsequent reimbursement at uncertain intervals, which simply shifts the liquidity problem they are intended to solve.

4.2. Barrier of personal debt and risk associated with the sale

A large number of households with sufficient financial means to make the investment are still reluctant to take on personal debt to renovate a home that they could sell before paying off the loan. Conventional credit instruments do not resolve this uncertainty: the debt remains tied to the borrower, not to the property, which discourages investment in a market with high housing turnover.

4.3. Barrier to collective decision-making in homeowners' associations

Around 64% of Spain's housing stock is in multi-unit buildings, where any work on common areas requires the agreement of the homeowners' association. Despite the amendments made to Law 49/1960 of July 21 on multi-owned property related to the carrying out of works or actions that contribute to improving energy efficiency, the economic heterogeneity within the same building — where owners with ample financial means can coexist with vulnerable owners or owners facing unforeseen difficulties — and the lack of mechanisms to address this situation often act in practice as a veto.

4.4. Solvency and liquidity barrier for vulnerable groups

Households in energy poverty — and those requiring the greatest direct public investment — by definition have problems with solvency, liquidity, or both. Conventional credit products, designed to operate on the basis of standard bank scoring, systematically exclude this group, which is precisely the one that most needs intervention for reasons of health, comfort and the relative cost of energy compared to its income.

4.5. Information and energy data barrier

The financial system needs reliable data on energy consumption, efficiency, and savings to design, price, and monitor green financial products. Today, that information is, at best, incomplete. According to a study by Miguel Ángel Barra Quesada (Master's Thesis, UNED, 2025) based on the prudential disclosure data (Pillar 3) published in 2025 by a sample of Spanish banks, and included in the report by Alinnea and Spainsif (2025), 53.0% of the residential collateral portfolio of these banks lacks an energy performance certificate (EPC) — with a very wide dispersion among banks — and the portfolio of loans granted specifically for building renovation represents, on a weighted average, just 0.42% of its total assets. This lack of energy data prevents entities from reporting a higher percentage of their operations as aligned with the criteria of the EU Taxonomy Regulation¹⁵. Added to this is a problem at source: the widespread failure to comply with the legal obligation to display the energy label in offers for sale and rental, which deprives the market — buyer, seller, and financier — of the information that should theoretically be available from the outset.

4.6. Barriers of size, price and legal certainty of assets linked to energy savings.

Instruments such as Energy Savings Certificates (CAEs), in their current design, are not large enough in economic terms to act as a real financing lever: as they only certify the savings from the first year of a measure, their value does not significantly alter the financial equation of a deep renovation project. In addition, there is no public reference price, no creditworthy counterparty for forward contracts, and no legal, tax, or accounting framework that allows it to be pledged or used as collateral. The result is that an asset designed to make financing for energy efficiency cheaper now has hardly any capacity to mobilize additional private capital.

4.7. Regulatory and prudential barrier

The European capital requirements framework (Basel Pillar 1, Capital Requirements Regulation) does not yet explicitly recognize a lower capital requirement for green loans or for mortgages linked to energy efficiency, even though these assets generally present a lower climate transition risk¹⁶. Without this recognition, financial institutions lack a prudential incentive — beyond reputational or commercial ones — to prioritize these types of transactions over other capital allocation alternatives.

4.8. Barrier of administrative complexity and fragmentation

The processes for applying for, approving and disbursing public grants are currently fragmented among national, regional and local governments, with disparate eligibility criteria and processing times that sometimes exceed the duration of the project itself. This complexity disproportionately affects groups with fewer resources to navigate it — precisely those who need help the most — and discourages the participation of private intermediaries (banks, energy service companies, property managers) that could act as a channel for accessing this public funding.

¹⁵ Barra Quesada, M. Á. (2025). *Prudential transparency requirements relating to ESG risks for credit institutions. Analysis of prudentially relevant information relating to ESG risks disclosed by listed Spanish credit institutions* [Master's Degree Thesis, Advisor: Pablo Esteban Sánchez]. UNED. Cited in: Alinnea and Spainsif (2025). *Promoting funding for the renovation of homes and their decarbonization. Ideas for action*. Madrid: alinnea. Available at: https://www.alinnea.org/wp-content/uploads/2025/11/alinnea_IdeasParaLaAccion_RehabilitacionViviendas_fin.pdf

¹⁶ Fundación Instituto de Empresa, "Fomentando la financiación para la rehabilitación de viviendas y su descarbonización" [Fostering financing for housing renovation and decarbonisation], Ideas for action, Madrid, Alinnea, 2025. https://www.spainsif.es/wp-content/uploads/2025/11/alinnea_IdeasParaLaAccion_RehabilitacionViviendas_fin.pdf

05

The multiplicity of stakeholders: an ecosystem, not a linear chain

5.1. Why this report needs a stakeholder map

It is reasonable to think of financing the energy transition of the housing stock as a two-party relationship: a household that needs to invest and an entity that lends it the money or gives it a grant. However, none of the mechanisms analyzed in Chapter 6 depends on a single actor: each requires the coordinated intervention of several actors, both public and private, operating with different logics, incentives, and time horizons. In addition to the owner and the institutional investor, a PLF/NEW-PACE (H01) requires the approval of the first-ranking mortgage lender, a notary to notarize the lien, a registrar to register it, and clear guidance from the competent tax authority on its tax treatment. An on-bill equipment replacement scheme (H03) requires, in addition to the household, an energy company or an accredited ESCO, an CAE verifier, and recognition of the certified savings. The PRENBADEM (H04) requires the owner, the homeowners' association, the bank that finances the community loan, and the government agency that grants and guarantees the complementary public loan in the land registry.

This multiplicity is not a design flaw of the instruments: it is a structural feature of the object being financed itself. Unlike other financeable assets — a car, industrial equipment — a home combines an often collective ownership structure (homeowners' associations), a fragmented intermediation market (agencies, property managers, appraisers), a multilevel regulatory system (state, regional, local), and an atomized material implementation sector (installers, construction companies, certifiers). Any financial mechanism that ignores this complexity — that assumes, for example, that all it takes is designing a good banking product to get investment flowing — is bound to fall short of the challenge described in Chapter 2.

5.2. Stakeholders map

Building on the work of the Financia en Verde (ASUFIN) project, this report seeks to identify some of the key players in the residential energy transition financing ecosystem, grouped into three spheres. Although efforts have been made to make this mapping as comprehensive as possible, it is likely that some actors will be left out of this general classification, so it is necessary to analyze, for each specific mechanism, which actors are actually involved.

Private financial and market sphere

- Insurance Carriers
- Banks and financial institutions
- Specialized funds
- Retail banking or retail financial sector

Technical and energy implementation sphere

- Builders
- Rehabilitation companies
- Energy Service Companies (ESCOs)
- Energy companies
- Property managers

Public and social sphere

- Public Administrations (local, regional and state)
- Public housing and land companies
- Social Entities

In addition, there is the household or homeowners' association itself, which is not a passive recipient of funding, but rather the party that ultimately needs to understand, decide on, and – in the case of associations – collectively approve each transaction.

5.3. Three reasons why this multiplicity matters

1

No single actor can unlock the transition.

The diagnosis in Chapter 4 confirms this mechanism by mechanism: The barrier of collective decision-making (4.3) is not resolved solely with a better banking product, but with an instrument—such as PRENBADEM (H04)—which also requires the approval of the government, the bank, and the community at the same time. The information barrier (4.5) is not resolved solely by the willingness of financial institutions to use EPC data, but also by the actions of the Ministry of Consumer Affairs, the Autonomous Communities, and real estate portals (H07). Designing public policy or a financial product by considering only one stakeholder at a time systematically leads to an incomplete solution.

2

The sequence and coordination among stakeholders determines the speed of the transition, not just its scale.

Chapter 3 has shown that 2026 is a window of opportunity. A well-designed but poorly sequenced mechanism—for example, a reform of the CAE system (H06) that comes before the pledge registry exists, or vice versa—loses critical months of implementation, not due to a design flaw, but due to a lack of coordination among the stakeholders who must act in the correct order. This is why Recommendation 9.5 of this report proposes a specific inter-agency coordination body.

3

Each actor responds to different incentives, and the design of the mechanisms must explicitly recognize this rather than take it for granted.

A bank needs favorable prudential treatment to prioritize green credit over other capital allocation alternatives (Barrier 4.7); an ESCO needs to be able to anticipate the value of a CAE before the actual savings are verified so as not to assume a liquidity risk that is not its responsibility (see H03); an institutional investor needs an asset with an observable price and a solvent counterparty in order to be able to add it to its portfolio (see H06); a homeowners' association needs to ensure that the risk of the neighbor with the lowest ability to pay does not fall on the rest (see H04). None of these incentives is illegitimate, nor should they be assumed to be resolved: each fact sheet in Chapter 6 actually dedicates a specific section to “necessary levers” precisely to make explicit what each stakeholder needs to participate.

06

Financial mechanisms

6.0. How to read this chapter

Each of the mechanisms below addresses one or more of the barriers described in Chapter 4, and mobilizes several of the actors introduced in Chapter 5. They are not alternatives to each other, but rather complementary parts of the same architecture: some act directly on the household or the homeowners' association (6.1), others on the market infrastructure and the macrofinancial conditions that make these products cheaper and more scalable (6.2), and others on the information and regulatory compliance conditions without which none of the above can function at scale (6.3).

Each card is presented in the same format: objective, scope of application, description, barrier it addresses, design measures and conditions, necessary levers, beneficiaries, potential impact, difficulty of implementation, and additional comments.

6.1. Direct financing instruments for households and communities

This block brings together the mechanisms that a household, a homeowners' association, or an individual homeowner would use directly to finance an intervention, whether it be a deep renovation or the replacement of an HVAC system.

They are listed in order of decreasing scope of the funded intervention: from comprehensive renovation (H01) to the specific replacement of equipment (H03), via the intermediate step of mortgage novation (H02) and the specific instrument that resolves blockages in heterogeneous communities (H04).

H 01.

Property linked finance
(PLF/NEW PACE).

H 02. Green mortgage.

Conditional novation clauses.

H 03. On-Bill financing for equipment replacement.

On-Bill Financing with CAEs.

H 04. PRENBADEM.

Public-Private Financing for the Renovation of Multi-Unit Buildings.

H 01.

Property Linked- Finance (PLF/ NEW PACE)*Developed by Pablo Esteban and Jimena Muzio***Purpose**

Unlocking funding for the deep energy renovation of the building stock through the redeemable rentcharge, a right in rem already set out in Articles 1.604–1.664 of the Civil Code, reactivated as a Property-Linked Financing (PLF) instrument.

The payment obligation is linked to the property and not to the owner. This eliminates the upfront payment barrier, avoids creating personal debt, and allows for the aggregation of rent portfolios for securitization or placement among institutional investors seeking long-term, inflation-indexed income.

Scope of application

Financing offer instrument as a **cross-cutting lever for rehabilitation**.

Applicable to:

**Single-unit and multi-unit homes.**

Owned or rented, including social and affordable housing.

**Commercial, tertiary and industrial buildings.**

(Especially relevant due to the higher ticket price and the possibility of characterizing the fee as OpEx.)

**Public assets and social housing.**

(Institutional ESG mandates, low expected default rates).

**Homeowners' associations.**

Where each owner assumes their share individually and transferably.

Compatible with existing mortgages on the property (without preferential priority over first-ranking mortgage lenders already registered), **with lease agreements**, and **with public-private co-investment structures**.

Description

Property-Linked Financing (PLF) is a mechanism in which payment obligations are linked to the property, not to the owner, so that they are automatically transferred to the buyer when the property is sold, without the need for renegotiation. The proposed Spanish variant, NEW-PACE, is legally based on the censo consignativo [redeemable rentcharge] in the Civil Code, adapted as the "PACE Fee", which allows it to be implemented without any legislative reform.

A redeemable rentcharge is a right in rem over income whereby the property owner receives a capital sum in cash from an investor (rent-chargee/creditor) in exchange for encumbering the property with the payment of a periodic rent charge. The provision of capital is definitive: the property owner (censatario) is under no obligation to repay it, and the investor (censualista) cannot demand early reimbursement or accelerate the debt; their sole right is to claim accrued and unpaid rent charges.

Key structural features:

- **No down payment:**

It finances 100% of the direct costs of renovation and associated costs, including the pre-financing of possible grants.

- **Obligation linked to the property:**

It is automatically transferred to the buyer in the event of a sale, with no need for renegotiation (the buyer is liable for unpaid fees from the last two years, extendable up to five years by agreement, a system similar to property tax).

- **Non-amortizing capital:**

No acceleration in the event of default or repayment of principal. The investor's return derives solely from the stream of periodic rent charges and, where applicable, from the voluntary redemption.

- **Flexible fixed, variable or mixed fee:**

For example, fixed for the first 5 years; from year 6, indexed to the national CPI (INE) with a cap of 4%. Monthly, quarterly, semi-annual or annual payment as agreed.

- **Lock-up and redemption option:**

Lock-up or non-withdrawal period of up to 20 years. Once the agreed period has elapsed, the owner may redeem the rentcharge at the lower of the initial capital or the NPV of the outstanding installments until the agreed term, only at the option of the property owner, and never at the investor's insistence. Alternatively, the payments continue until the agreed term (up to 70 years or in perpetuity).

- **Compatible with:**

Existing mortgages, lease agreements, and management of buildings with multiple owners (homeowners' associations).

Barrier addressed

This instrument simultaneously addresses the three main barriers that hold back deep, large-scale energy retrofits:



Lack of initial capital:

It covers 100% of the costs with no upfront payment, eliminating the most common reason why homeowners don't undertake major renovations.



Personal debt risk:

As it is linked to the property and not to the owner, the rentcharge does not, in principle, count as a personal debt of the owner for bank scoring purposes, nor does it entail a risk of foreclosure on the capital. It expands the pool of beneficiaries to homeowners with a low credit profile, since the guarantee is the property itself.



Gap between installment and savings:

As it is possible to opt for very long terms in line with the useful life of the renovation being financed, the fee is lower than any installment under another financing product, and the savings can be significantly higher than the fees, generating positive net income from year one.



Uncertainty regarding the sale:

Automatic transferability to the new owner eliminates the problem of an owner who doesn't want to invest because "he'll probably sell in two years anyway." The tenant list is transferred with the property in a transparent manner, boosting the liquidity of the real estate market.



Split Incentive:

In rental buildings, the owner can pass on the periodic fee to the tenants as a proportional common expense, resolving the misalignment between who pays for the improvement and who benefits from the savings.

Measures

Recommended design conditions for adapting the censo consignativo [Redeemable rentcharge] to energy retrofits:

- 1 **Financial coverage:**
Capital earmarked to cover the total cost of deep energy renovation (building envelope, installations, renewables), including technical fees and energy certification.
- 2 **Energy eligibility:**
Minimum increase in the energy rating (CEE) and verifiable estimate of savings in kWh/m²/year before and after the work.
- 3 **Fee flexibility:**
Flexible fee structure to adapt to any of the segments, with the possibility of integrating public subsidies (PRTR, Recovery Plan) and Energy Savings Certificates (CAEs) to reduce the net effective cost.
- 4 **Term and cancellation:**
Lock-up period of up to 20 years, after which the owner can voluntarily redeem the rentcharge at the lower of the principal or the NPV of outstanding installments. Maximum term of the annuity: up to 70 years or in perpetuity. Allows partial redemptions in order to apply the subsidy received after renovation, if applicable.
- 5 **Register inscription:**
The lien is registered in the Property Registry, guaranteeing its enforceability against third parties and its automatic transfer. Incorporation by means of a notarized public deed.
- 6 **Enforcement in the event of non-payment:**
In the event of unpaid fees, (i) an in rem action is brought against the encumbered property and/or (ii) personal action against the property owner's assets. There is no special procedure equivalent to foreclosure; ordinary monetary enforcement applies. There shall be no early maturity of future installments or foreclosure of the principal (except for forced redemption under Article 1660 CC).

Beneficiaries

Recommended design conditions for adapting the censo consignativo [Redeemable rentcharge] to energy retrofits:



Homeowners.

Access to financing without personal debt, without the risk of capital foreclosure, and with an installment designed not to exceed the energy savings generated.



Vulnerable and low-income households.

The indefinite and very long-term nature of the register and the possibility of integrating subsidies make deep retrofitting accessible to people who do not have access to conventional credit.



Homeowners' associations:

Each owner assumes their share individually and transferably; possibility of passing on the fee to tenants as a common expense.



Institutional investors:

Access to long-term predictable cash flows, indexed to the CPI (structural protection against inflation higher than nominal fixed income), backed by a real right over the property. Individual and transferable form.



Public Administration:

Tool to scale up renovation by relying on private capital, reserving direct subsidies for the most vulnerable groups.



Tertiary sector and SMEs:

Higher average ticket per transaction and the possibility of treating the fee as an operating expense (opex) rather than debt.

Potential impact

○ Total addressable market (Spain).

9.4 million homes with an E, F, or G rating; estimated investment needed of ~€300 billion (IMF); residential renovation activity in 2023: all-time high of €33 billion M. In Europe, the investment needed for energy renovation from 2020 to 2050 is estimated at €3.5 trillion.

○ International precedent.

The C-PACE market in the U.S. grew from virtually zero in 2009 to more than \$35 billion cumulatively in 2025, with a projection of \$50 billion by 2030 and already with leading institutional investors such as Nuveen Green Capital. The censo consignativo [redeemable rentcharge] puts Spain on an equivalent trajectory without the need for new legislation.

- **Unlocking large-scale deep energy retrofits.**

By simultaneously removing the barrier of the down payment, the risk of personal debt, the need to adapt to the terms of the useful life, and the uncertainty of selling, this instrument reaches segments of homeowners that no other financial instrument reaches.

- **Mobilization of long-term private capital.**

The aggregation and securitization of portfolios makes it possible to attract more than €4 trillion in assets under management (AUM) from European pension funds with a real income mandate to residential rehabilitation, multiplying the impact of every public euro invested.

- **Environmental and social impact.**

Significant reduction in CO2 emissions and energy consumption of the housing stock, with a direct impact on household energy bills, especially for the most vulnerable households.

Necessary levers



Legal feasibility confirmed:

Uría Menéndez has analyzed the redeemable rentcharge as an AML instrument. Conclusion: This is a legally viable structure; its implementation requires overcoming tax and operational challenges through binding consultations with the DGT Tax Authority (VAT, ITPAJD, PIT, pending resolution) and clear registry criteria. An enhanced framework for transparency and essential consumer protection, especially in transactions with consumers and homeowners' associations.



Financial institutions:

Standard consent protocol for first-lien mortgage lenders, given that the land register does not grant preference over mortgages already registered. Standardization of notarial and registry documentation to reduce origination costs.



Public co-financing:

Integration with subsidies (PRTR, NECP, future EU Social Climate Fund 2026–2032) and CAEs to reduce the net cost for the most vulnerable segments.



Capital market:

Aggregation vehicle and, where applicable, securitization of loan portfolios to provide liquidity to originator investors. Centralized census registry (Iberclear style), OTC secondary trading platform, and independent credit rating as key steps to make the instrument an institutional asset class.



Pilot critical mass:

Achieve a sufficient number of pilot transactions before considering portfolio aggregation at scale.

Difficulty of implementation

● ● ● ● ● Medium-high

Although significantly less than that of creating a new legal entity, precisely because the redeemable rentcharge already exists in our legal system.

The main challenges are coordination, taxation, operational standardization, and building trust, not creating regulations from scratch.

STRENGTHS OF THE INSTRUMENT:**Enhanced collateral:**

In rem nature.

The lien is attached to the property and not to the owner, reducing the risk of structural default.

Facilitates transmission:

The purchaser assumes the ground rent, which allows the asset to be turned over without extinguishing the guarantee and enhances the liquidity of the real estate market.

Accessibility and inclusion:

Accessible to homeowners with a low credit profile; expands the pool of beneficiaries

OPERATIONAL CHALLENGES AND RISKS:**Limited legal experience:**

A rarely used legal concept, with limited administrative and case law experience. Uncertainty in interpretation requires binding consultations with the DGT (Tax Authority) and clear registry criteria.

Limited execution:

The foreclosure procedure is not directly applicable; the ordinary monetary enforcement procedure must be used (except in some chartered territories and Catalonia), which extends the time frames for recovering unpaid fees.

Complexity with consumers and homeowners' associations:

Implementation in these segments presents significant legal challenges that require a specific and strengthened consumer protection framework.

Tax and accounting treatment:

Tax and accounting treatment currently being confirmed, initially more advantageous than financing via a loan or mortgage.

Other comments

This fact sheet adapts the original proposal for property-linked financing to focus specifically on the Redeemable rentcharge as a legal instrument available under Spanish law, within the framework of the **NEW-PACE** (New European Way for Property-Linked Finance Solutions) project, funded by the European Union's LIFE program. The legal analysis has been commissioned from Uría Menéndez.

Roadmap:

September 2026:

Testing of the instrument with Registrars and Notaries.

November 2026:

Meeting with the DGT (Tax Authority) regarding tax queries pending resolution.

Q1 2027:

Launch of pilot test (first real operations of renovation financing through redeemable rentcharge).

Q3 2027:

Potential comparative law study in other European jurisdictions.

H 02.

Green mortgage. Conditional novation clauses*Developed by Pablo Esteban***Purpose**

Unlock mortgage financing for energy retrofits and/or deep renovations of existing homes through green clauses for conditional novation that link the improvement of financial costs to compliance with verifiable energy efficiency criteria.

Overcome the difficulties in approving the extension and novation of an existing mortgage on a home to finance long-term investments in measures for the energy retrofit and deep renovation of buildings and homes. Mortgage extensions are rarely granted for this type of investment, or are not viable due to the fees and expenses they entail.

Scope of Application

Financing offer con carácter de **palanca transversal de rehabilitación**.

Applicable to:



The purchase of a home or an existing home (mainly built before 2000).

Owned with an **active mortgage**, **single-family** or in **multi-owned buildings**. In order to finance investments in refurbishment and/or deep renovation that the property will undergo in the future.



Primarily **aimed at the middle-income segment** with homes of low energy ratings (E, F, G).

Compatible with the **free market** and **affordable housing**.

Description

The instrument consists of incorporating a conditional green novation clause into the standard terms and conditions of mortgages. This clause allows the terms of the loan (interest rate, term or amount) to be modified when the owner undertakes a major renovation or comprehensive energy retrofit of the property that results in an improvement and increase in the energy rating, and after submitting the project with an estimate of verifiable energy savings.

- **Novation** can be combined with PERTE grants or similar, national or European funds or subsidies such as Next Generation, public guarantee programs, or future Energy Savings Certificates (CAEs) to reduce the outstanding principal or financial costs.
- **The activation of the green** novation clause would be subject to the existence of such investments, provided that the Loan-to-Value (LTV) ratio, which measures the relationship between the amount of the mortgage loan and the appraised value of the property, remains below 80%, and the installment to be paid remains within the 35% limit of net income.

Barrier addressed

The main obstacle addressed in this fact sheet is the lack of a specific financial product that links comprehensive energy retrofits or deep renovations to an automatic improvement in mortgage terms. Currently, owners with active mortgages have no direct financial incentive to undertake deep renovation works, and obtaining additional financing requires a complex and expensive renegotiation process (appraisal, stamp duty, notary fees) that also does not provide any incentive for approval by the financial institution.

This measure aims to address:



The lack of initial savings among homeowners to undertake the investment needed for comprehensive energy retrofits or deep renovations of their homes.



Access to long-term financing with collateral on the home for comprehensive energy retrofit projects or deep renovation of the home and/or building.



The low level of integration between public support (grants, CAEs) and bank financing, which makes it difficult for middle-income households to afford investments of €15,000–40,000 typical of a comprehensive renovation.



The low profitability of mortgage novation for the financial institution, which makes it difficult to market and obtain bank approval.

Measures

Eligibility requirements to activate the novation:

- 1 **Improvement threshold:**
Minimum increase of two levels in the energy rating of the EPC (pre- and post-renovation).
- 2 **Professional validation:**
Submission of a certificate from a qualified technician with an estimate of the expected annual energy savings (kWh/m²).
- 3 **External support:**
Mandatory integration with subsidies and future CAEs for partial repayment of principal or interest rate reduction.
- 4 **Collateral Margin:**
Post-novation LTV not exceeding 80% of the updated appraised value.
- 5 **Debt control:**
Possibility of extending the remaining term so that the resulting installment does not exceed 35% of the borrower's net disposable income.
- 6 **Eligibles works:**
Building envelope (façade, roof, windows), HVAC systems, and integrated renewable energy systems.

Beneficiaries



Owners of primary residences.

With an active mortgage, especially:



Middle-income households.

(Between €30,000 and €60,000 gross/year) with limited ability to save in order to undertake works without financing.



Homeowners over 25 years old:

With energy rating E, F, or G.



Financial institutions:

Improvement in the quality of the mortgage portfolio by reducing the climate transition risk associated with low-efficiency properties.

Necessary levers



Tax:

Exemption from Stamp Duty (AJD) on mortgage novations linked to certified energy retrofits.



Contractual:

Provide standard clauses and processing procedures to reduce the administrative, notary and registration costs that novations may entail.



Regulatory (financial):

Allow lenders not to require a new appraisal when there are no objective indications that the LTV will exceed 80%, thereby simplifying the process and reducing costs for the borrower.

Grant special prudential treatment consistent with improving the quality of the mortgage portfolio by reducing the climate transition risk associated with low-efficiency properties and entailing lower prudential capital consumption requirements for this type of mortgage lending.



Regulation:

Enable the pledging of receivables arising from residential Energy Savings Certificates (CAEs) in favor of the financial institution, as collateral or a repayment mechanism.



Institutional:

Communication protocol between CAE registries, grant managers and banks to verify the compatibility and cumulation of aid.

Potential impact

If implemented at scale:

○ **Capital activation.**

Mobilization of private investment in deep renovation in the existing housing segment with the greatest potential (low energy efficiency + homeowners with an active mortgage).

○ **Consistent deadlines.**

Mobilization of long-term mortgage financing consistent with the long useful life of comprehensive rehabilitation and deep renovation measures for buildings and homes.

○ **Decarbonization.**

Significant reduction in CO₂ emissions and energy consumption in the residential complex.

- **Energy relief.**

Improving long-term energy affordability by reducing household energy bills.

- **Sectoral stimulus.**

Pull effect on the retrofit industry (installers, builders, certifiers).

- **Regulatory alignment.**

Alignment with the objectives of the National Building Renovation Plan (PNRE) and the European Energy Performance of Buildings Directive (EPBD 2024).

Difficulty of implementation

● ● ● ● ● Medium

The main elements are:

Limited legal change:

Requires regulatory changes of limited scope (AJD (Stamp Duty), Mortgage Act, CAE Regulations).

Institutional synergy:

There is no need to create new agencies, but rather to coordinate existing stakeholders (Bank of Spain, Ministry of Finance, MITECO, financial institutions).

Sectoral agreement:

The standard clauses may be developed through a sectoral agreement within the framework of the AEB/CECA.

Banking adoption:

The greatest implementation risk is the low initial adoption by financial institutions if there is no clear incentive or regulatory mandate.

● ● ● ● ● High

With regard to financial prudential regulation, as it is largely the responsibility of European supervisors.

Further remarks

This measure complements other green financing options (guarantee funds, green bonds, ICO renovation lines) and is more effective if implemented together. Integration with CAEs is particularly relevant as their regulatory development progresses in Spain.

H 03.

Invoice payment plans for equipment replacement. On Bill Financing with CAEs

Developed by Pablo Esteban



Purpose

Unlock the replacement of air conditioning systems (cooling-heating) and domestic hot water (DHW/heat pump) systems in Spanish residential buildings through an **on-bill financing** scheme (payment on the energy bill) that:

- Eliminate the barrier of the initial outlay.
- Integrate the reimbursement with the energy savings generated.
- Leverages Energy Savings Certificates (CAEs) as a mechanism to reduce net costs for consumers
- Pays special attention to vulnerable households through the Social CAE.

Scope of application

Financing instrument as a **cross-cutting lever for rehabilitation**.

Applicable to:



General single-unit and multi-unit housing.

Owned or rented.

Particularly **relevant for the segment involving the replacement of individual equipment** or central air conditioning and DHW systems with high obsolescence and low performance.

It is not the right instrument to finance deep building envelope renovations or comprehensive refurbishment projects.

Description

The **on-bill financing** scheme for equipment replacement is a financing model in which the energy provider or distributor — or an ESCO (Energy Service Company) on its behalf — finances the purchase and installation of efficient equipment and recovers the investment through a periodic fee included in the customer's energy bill. The savings on the bill generated by the new equipment partially or fully offset this fee, and bill neutrality can be achieved from the first month.

The model has **structural advantages** over conventional grant or bank loan schemes:

- **Bill neutrality:**
If the energy savings equal or exceed the financing fee, the consumer gets new equipment at no additional net cost, eliminating the perception of financial sacrifice.
- **Operational simplicity:**
The payment is integrated into the existing invoice, with no need to arrange a bank loan, open a specific account, or wait for a post-investment grant to be paid.
- **Trusted channel:**
For many consumers, financing an upgrade through their usual energy provider causes less psychological friction than taking out a loan with a financial institution.
- **Favorable financial terms:**
Negotiation at the corporate level by the energy supplier or the ESCO makes it possible to obtain better interest rates and terms than those available to an individual consumer.
- **Behavioral savings incentive:**
Consumers who see their total bill reduced have an incentive to maintain and optimize the use of the equipment, improving the actual return on investment.
- **Access to consumption data:**
Energy providers have historical information on each customer's consumption, which enables them to segment the market, estimate potential savings, and design personalized offers at scale.

Integration with CAEs: Energy Savings Certificates generated by replacing equipment can be monetized to reduce the cost of the investment or the monthly fee, improving the economic viability of the scheme. The Social CAE allows additional multipliers to be applied for vulnerable households, improving affordability in that segment.

Recognized limitation of the model: On-bill financing is effective for equipment replacement measures with short payback periods (3–10 years) and good rates of return. It is not the right vehicle to finance deep, comprehensive renovations (building envelope, systems, combined renewables), where the technical complexity and the volume of investment exceed the current capabilities of energy providers as originators of financing.

Barrier addressed

The on-bill program addresses three simultaneous barriers that slow down the replacement of outdated equipment in the residential stock:



Upfront investment barrier.

Replacing a boiler, an air conditioning system, or a DHW heat pump represents an investment of €3,000–€15,000 that many households cannot afford out of their own savings, even when the payback period is short and the energy savings are significant.



Barrier of financial complexity.

Bank loans for small amounts have unfavorable terms (high rates, high fees) and complex processes that discourage consumers. Public grants require upfront disbursement and subsequent reimbursement with uncertain timelines. On-bill eliminates both problems by integrating payment into the existing bill with a single process.



Information barrier.

Consumers are unaware of the true cost of their outdated equipment, the savings that replacement would generate, and the financing options available. Energy providers, having historical consumption data for each customer, can model the expected savings and present the offer in a personalized, transparent, and understandable way.

Measurements

Recommended design conditions for the on-bill scheme:

- 1 **Estimated savings included in the budget:**
Every quote for replacing equipment must include an estimate of the expected annual energy savings (in kWh and in €), the carbon footprint generated, and the payback period, presented in a way that is easy for the consumer to understand.
- 2 **Monthly installment aligned with savings:**
The repayment plan must be designed so that the monthly installment is offset by the savings on the bill generated by the new equipment, striving as much as possible for it to be equal to or less than the savings on the bill generated by the new equipment, thereby ensuring bill neutrality or improvement from the first month.
- 3 **Term aligned with the useful life of the equipment:** The financing term should not exceed the technical useful life of the equipment (typically 10–15 years for boilers and HVAC equipment, 15–20 years for DHW heat pumps).

H3. On-bill financing for equipment replacement. *On-Bill Financing with CAEs*

- 4 Integration of CAEs:**
 The CAEs generated by the replacement are monetized and applied as a reduction of the financed principal or of the monthly installment, improving the economic viability of the scheme. The Social CAE is applied with additional multipliers for vulnerable households.
- 5 Measurement and control equipment:**
 Mandatory installation of remote metering devices that allow the customer to monitor their consumption in real time and verify the savings generated, and that facilitate the auditing and accreditation of CAEs.
- 6 Accreditation of ESCOs:**
 Only ESCOs with proven technical accreditation, the capacity to assume the performance risk of the installed equipment, and savings or scheme surety insurance that guarantees the performance and energy savings of the installed equipment may operate under this scheme.
- 7 Integration with grants and aid:**
 The scheme must be compatible with existing public aid (PERTE, Next Generation EU, regional programs), which can be applied as a reduction of the financed capital or as an advance on CAEs.

Beneficiaries


Homeowners and renters.

Access to efficient HVAC and DHW systems with no upfront cost, with a monthly fee offset or neutralized by savings on energy bills.


Vulnerable households.

Access to the program with improved terms through Social CAE with multipliers, subsidies, and specific tax exemptions.


Energy Service Companies (ESCOs):

Opening of a mass market in the residential segment with structured financing, access to CAEs, and support from public guarantees.


Energy suppliers and distributors:

A channel for loyalty and competitive differentiation in the residential market, with access to consumption data that improves segmentation and marketing.


Public Administration:

An energy policy tool that mobilizes private investment in residential efficiency without the direct cost of massive subsidies, aligned with the targets of the National Integrated Energy and Climate Plan (PNIEC) Energy Efficiency Directive (EED).

Necessary levers



Consumption data per household:

Regulatory obligation for energy companies to share consumption and energy efficiency data for the current equipment in each home with the government and with accredited ESCOs, as a basis for market segmentation and the design of personalized offers.



Transparency of margins and financial costs:

Regulation of transparency and control of financial costs and margins applied by suppliers when a Social CAE or a public subsidy is integrated, preventing public benefits from being captured by the supplier instead of the consumer.



Modeled economic viability:

Obligation to provide the owner with an economic feasibility model for the investment that includes the expected energy savings, the monthly installment, the generated CAE (Energy Savings Certificate), and the applicable subsidies, in an understandable and verifiable format.



Energy savings surety insurance:

Development of a specific insurance product that guarantees the consumer and the financier the promised energy savings if the equipment does not achieve the expected performance.



Equipment Replacement CAE:

Expansion of the Catalog of Standardized Measures of the Spanish CAEs system to include specific fact sheets for the replacement of HVAC and DHW equipment, including in the CAE value all the expected energy savings over the useful life of the equipment.



Social CAE with multipliers:

Boosting the CAE scheme for vulnerable households, using multiplier factors to improve project returns for ESCOs in low-income demographics and deliver more advantageous conditions to end consumers.



Pledge of CAEs:

Express legal authorization for the pledge of self-consumption surplus rights in favor of financial institutions, energy service companies (ESCOs), or financial vehicles, as collateral or a repayment mechanism in project financing structures for homeowners' associations or large residential developments.



CAE advances:

Development of a mechanism to advance the value of the CAE before verification of actual savings, reducing liquidity risk for ESCOs during the implementation phase of the works.

H3. On-bill financing for equipment replacement. *On-Bill Financing with CAEs***Accreditation of ESCOs:**

Technical and financial accreditation system for ESCOs operating under the on-bill scheme, with requirements for proven experience, solvency and insurance coverage.

**Access of ESCOs to public financing:**

Enabling accredited ESCOs to access public financing lines and guarantees (ICO, CDTI, regional funds) for renovation and energy efficiency projects.

**Favorable taxation:**

Combination of the scheme with tax exemptions or reductions (reduced VAT on efficient appliances, personal income tax deduction for investment in energy efficiency) and direct subsidies for vulnerable groups.

Potential impact

- o **Domestic technological drive.**

Accelerated replacement of obsolete air conditioning and DHW equipment in the Spanish residential sector, which represents one of the biggest levers for reducing household energy consumption in the short term and with good rates of return.

- o **Economic relief.**

Reduction of household energy bills by combining greater equipment efficiency and neutrality of the financing fee, with a particularly significant impact on vulnerable households in energy poverty.

- o **Private investment in housing.**

Mobilization of private investment (ESCOs, energy providers) towards the residential segment, which has historically been underserved by energy efficiency financing due to its fragmentation and small project size.

- o **Regulatory compliance.**

Generation of residential CAEs that feed into the national energy savings obligation system, contributing to the targets of the 2023–2030 National Integrated Energy and Climate Plan (PNIEC).

- o **Complementarity with deep renovation fact sheets (H01, PLF, WHEEL):**

The on-bill equipment replacement acts as a gateway and an initial low-cost intervention, which can be scaled up to more comprehensive actions in a second phase.

Difficulty of implementation

 Medium

IN FAVOR:

Ease of execution.

The on-bill model for equipment replacement is technically simpler than deep renovation schemes, as it involves smaller investments, shorter payback periods, and more direct measurement of savings.

International precedents:

The model has operational benchmarks in other European countries (France with the MPR/CEE scheme, Italy with the Conto Termico) and in some pilot programs of Spanish utilities, which reduces the risk of the concept.

BARRIERS / RISKS:

Regulatory barrier (main):

The current framework for ESCs in Spain does not include sufficient certificates for the replacement of residential equipment, and the pledging of ESCs is not expressly permitted by law.

Financial barrier:

The accreditation of ESCOs and the development of savings surety bonds require time for the market to mature, but they are necessary conditions for the bankability of the scheme.

Confidentiality challenges:

The obligation to share consumption data per household with accredited ESCOs may generate privacy and competition concerns that require a careful regulatory framework.

Others comments

This fact sheet is supplementary and has a more limited scope than the deep renovation fact sheets (H01 PLF/PACE-CANON, H03 WHEEL).

While these target comprehensive renovations of €15,000–80,000, the on-bill equipment replacement option is suitable for investments of €3,000–15,000, with faster returns and less technical complexity.

The logical sequence would be:

On-bill for equipment as the first intervention → deep renovation with PLF or WHEEL as the second phase.

The momentum of the Social CAE as a multiplier for vulnerable households is particularly relevant in the context of the EU Social Climate Fund (2026–2032).

It will fund energy efficiency measures for households in energy poverty.

References:

MPR/CEE scheme (France), Conto Termico (Italy), utility on-bill financing programs in the U.S. (States of California, New York and Vermont).

H 04.

PRENBADEM.

Public-Private Financing for the Renovation of Multi-Unit Buildings

Developed by Susana Martín**Purpose**

Unlock the energy renovation of multi-unit buildings with diverse homeowner associations—especially those with vulnerable or financially struggling homeowners—through a two-way public-private financing mechanism that complements the community's bank loan with a public loan with flexible repayment terms (PRENBADEM). This eliminates the individual risk that holds back project approval at homeowners' meetings and reduces the risk of default for the bank.

Scope of application

Financing **mechanism as a lever for rehabilitation**. Primarily applicable to:

**Multi-unit buildings under a homeowners' association regime.**

With energy retrofit needs and owners with varying levels of financial capacity.

Extendable to:

**Single unit home.**

When the household meets the eligibility criteria.

This **is especially relevant in neighborhoods with mixed-income housing developments** (middle- and low-income homeowners in the same building), where economic heterogeneity hinders collective decision-making.

Description

The **PRENBADEM** (Non-Bank Loan with Modulated Repayment) is a two-way public financing instrument designed to overcome the main bottleneck in energy retrofits of multi-unit buildings: the difficulty of achieving the necessary majority at homeowners' meetings when some of them cannot afford their share of the community bank loan.

The model operates on the premise that bank loans to homeowners' associations have a historically low default rate and are one of the most effective private financing vehicles for building renovation. The problem is not the loan itself, but the management of the individual risk of homeowners with lower repayment capacity, who, in the absence of a specific mechanism, block the project for everyone.

PRENBADEM acts as a public cushion that covers this individual risk, allowing the bank loan to the community to be approved under normal conditions and the rehabilitation project to move forward.

It operates in two complementary modes:

- **Vulnerable PRENBADEM:**

Public loan of up to 100% of the unsubsidized cost of renovating the home of a vulnerable homeowner or one experiencing financial hardship. The repayment term is flexible depending on the owner's situation: it can be repaid at the time of transfer of ownership (sale or inheritance) or, at the latest, 90 years after the grant. The debt is updated annually with the CPI. The cost of the difference between the CPI and the cost of 10-year Government Bonds (enabling financing cost) is borne by the State, as is the illiquidity risk.

- **Emergency PRENBADEM:**

Variant aimed at homeowners who were not initially vulnerable but who, once the community bank loan has started, experience an objective unforeseen situation (job loss, serious illness, separation) that prevents them from continuing to pay their installment. It covers 2 years of payments (part of the principal), equivalent to approximately 13.43% of the principal financed in a 15-year loan, acting as temporary relief until the homeowner regains their ability to pay.

The instrument already has an operational track record in Catalonia:

The AMB Apropar-se project, where it was first implemented in a public management model, and the Pla de Barris, which has been implemented using Next Generation funds. In both cases, it operates as repayable aid for the transfer of ownership. The current challenge is to adapt and generalize it to private projects with bank financing, a process that has already begun in the Pla de Barris program, and to expand it to other areas.

Barrier addressed

PREBADEM addresses **three linked barriers** that explain the low approval rate of renovation projects in homeowners' associations:



Blockage at the meeting due to owners without the ability to pay.

In buildings with owners of different financial means, the presence of one or more owners who cannot afford their share of the bank loan blocks approval of the project for the entire community. The **vulnerable PREBADEM** resolves this situation by covering the vulnerable owner's share with public funding, allowing the majority to approve the project without the vulnerable minority blocking it.



Risk of sudden emergency.

Even homeowners who are able to pay at the time the project is approved may become unable to pay due to unforeseen life events (unemployment, illness) during the typical 10–15-year term of the loan. The lack of an insurance mechanism for this eventuality creates reluctance to commit to the community loan. The **PREBADEM emergency** program acts as temporary insurance, covering 2 years of dues while the owner regains their ability to pay.



Risk to the bank.

Although the historical default rate on loans to communities is not significant, the presence of owners without the ability to pay introduces a residual risk that prevents their approval. Public coverage of individual risk improves the community's risk profile and **facilitates approval** and slightly more favorable terms for the community.

Measure

1

Enable the money-back guarantee:

The general law on subsidies (Art. 31) provides for the registration of housing subsidies in the property registry and the restriction of the housing to the use for which the aid or subsidy was granted, as well as the duration of this restriction. The Mortgage Law (Art. 3) provides that the entry in the register may be an administrative certification.

- **Implementation in the current example of use:** In Catalonia, the procedure for recording the encumbrance has been established through an administrative certification from the authority granting the aid in a marginal note, and the obligation to repay the aid received upon the transfer of ownership for the following 90 years, thanks to an agreement between the sponsoring public authority and the Dean's Office of the Association of Registrars of Catalonia, and also thanks to Article 136 of Law 18/2007 on Housing Law (Catalonia).

H4. PREBADEM.Public-Private Financing for the Renovation of Multi-Unit Buildings

- **Expansion to the rest of Spain:** The grant agreement must be entered in the Land Registry, defining the details of the registry entry instrument used, as has been done in Catalonia or in an equivalent manner, for an autonomous region or for the whole of Spain. The development of specific instructions by the Directorate General of Public Records for the registration of the PRENBADEM entry could be sufficient, ensuring its enforceability against third parties and its compatibility with existing mortgages and encumbrances.

2 Eligibility Criteria:

To be defined by the granting entity (autonomous community, ICO, etc.), with reference to income thresholds, assets and/or the employment status of the owner. The EMERGENCY mode may require proof of the unforeseen event.

3 Coordination with the bank loan:

PRENBADEM does not replace the bank loan to the community, but rather complements it. The community remains a borrower from the bank for the portion not covered by subsidies. PRENBADEM covers the individual share of the owner facing financial difficulties or an emergency. It must be agreed with the bank that the bank will not take into account the risk arising from individual households receiving the PRENBADEM in the total risk of the homeowners' association.

3 Public budget:

Budget allocation to grant the PRENBADEM and assume the potential illiquidity of said public funds, as well as to cover the cost of enabling financing (CPI differential vs. 10-year government bonds), which is the only net cost to the government under normal conditions.

Beneficiaries



Vulnerable homeowners facing financial hardship in multi-unit buildings:

Access to financing that covers your renovation fee with no immediate outlay or personal bank debt, with repayment deferred until the property is transferred.



Owners in an unexpected emergency situation:

2-year term insurance for installments that prevents default and breach of the community bank contract in the event of unforeseen life events.



Homeowners' associations:

Unblocking the approval of renovation projects by eliminating the effective veto of owners with lower ability to pay, with a better risk profile for the bank.

H4. PREBADEM.Public-Private Financing for the Renovation of Multi-Unit Buildings**Banking institutions:**

Reduction of the residual risk of the loan to the community by publicly covering the share of homeowners with the greatest payment difficulties, facilitating approval and achieving greater lending at affordable risk conditions.

**Non-vulnerable owners:**

They can carry out the renovation of the building without the economic situation of vulnerable residents blocking it indefinitely.

**Public Administration:**

Limited tax cost tool (the spread between the CPI and sovereign bonds) that acts as a catalyst for private bank capital, with a high multiplier effect on the total investment mobilized. Although the illiquidity of the allocated funds must be taken into account, their impact on public budgets is low for another reason: they act as an unblocking mechanism because they eliminate homeowners' fears and banking risks, but experience shows that many applicants eventually give up (only 1.6% of households have formalized the process) and pay off the bank loan to clear their debt, or they repay it at the first opportunity.

Necessary levers

**Integration with assistance programs:**

Align PRENBADEM funding with existing subsidy programs (regional and national) to target the uncovered cost segment and households facing financial hardship.

**Dissemination channels:**

The tool has the effect of unblocking community approval simply by being available, so to take advantage of these effects, it must be known to the stakeholders involved in making renovation decisions: homeowners' associations, property managers, mediators and renovators, construction companies, etc.

**Enable a revolving fund:**

For the reinvestment of recovered PRENBADEM loans.

Potential impact

- **Significant increase in the approval rate of energy retrofit projects in heterogeneous homeowners' associations.**

This is the main bottleneck in the renovation market for multi-unit buildings.

- **Mobilization of private bank capital towards residential rehabilitation with a high multiplier effect.**

The public cost (interest rate differential) is small in relation to the volume of private investment unlocked.

- **Reduction of the risk of vulnerable homeowners being excluded from rehabilitation processes.**

PRENBADEM allows households with lower financial means to participate in the renovation of their building without taking on bank debt and repayment installments.

- **Territorial extension.**

Extension of the instrument at a national level based on the Catalan precedents, creating a more fluid renovation market with less financial friction for homeowners' associations.

- **Complementarity with other instruments.**

PRENBADEM acts as a facilitator that enables conventional bank loans and existing grants to unleash their potential in buildings where economic heterogeneity was holding them back.

Difficulty of implementation

● ● ● ● ● Medium

IN FAVOR:

Proven operational track record in Catalonia:

This significantly reduces the concept risk and provides empirical evidence of its feasibility and good results.

BARRIERS / RISKS:

Model adaptation:

The registration entry as collateral requires specific instructions from the DGRN (Directorate General for Registries and Notaries) to ensure its enforceability and compatibility with existing mortgages, which implies a regulatory process of limited but necessary scope.

Controlled spending:

The fiscal cost to the state is low and predictable.

Further remarks

PRENBADEM is one of the most original tools in the set of fact sheets due to its focus on individual risk within the collective structure of community lending, which is the most frequent and least addressed cause of blockage in rehabilitation policy.

It does not compete with other instruments but rather enables them: without PRENBADEM, many buildings cannot take advantage of bank loans, grants, or the PLF/WHEEL.

The PRENBADEM emergency program is particularly innovative: there is no equivalent instrument on the Spanish market that acts as temporary installment insurance for unforeseen events affecting loans to communities, making it a truly new public policy proposal. While it is true that Catalonia offers this soft loan a posteriori (once a difficulty arises), it is also true that this is only possible while the call for applications is open, so it would still be necessary to establish a mechanism to keep it available for the entire term of the bank loan.

Full description of the instrument , [here](#).

Operational background: Apropar-se project of the AMB. Pla de Barris de Catalunya, Barcelona, and AMB (each with its corresponding housing consortium).

6.2. Market infrastructure and macro-financial levers

The two instruments in this block are not products that a household purchases directly: they are conditions that, if met, make all the mechanisms in the previous block cheaper and scalable. One acts on the cost of liquidity that banks allocate to green lending (**H05**); the other acts on the ability of a currently marginal asset — the energy performance certificate (CAE) — to become a real part of the financial equation of any renovation (**H06**).

H 05. Green interest

Developed by Susana Martín



Purpose

Encourage and make credit financing for energy retrofits and the ecological transition in the eurozone more affordable through a preferential interest rate below the market rate set by the European Central Bank (ECB).

Scope of application

 European (Eurozone).

With direct impact:



On **credit institutions**.

And, indirectly:



On the **final borrowers**.

Individuals, companies, and energy efficiency sectors).

In all Member States.

Description

Creation of an ECB liquidity instrument — called Green Interest — inspired by TLTROs (*Targeted Longer-Term Refinancing Operations*).

It involves **injecting liquidity into the banking system at preferential interest rates** (at zero or well below official rates), strictly conditional on credit institutions increasing lending for energy savings, clean energy and building renovation.

Barrier addressed



High financing costs.

Conventional market interest rates make investment in renovation and transition projects more expensive and less attractive.



Lack of incentives for green credit.

Lack of competitive advantages for commercial banks to massively redirect private liquidity toward energy efficiency.



Vulnerability to inflation.

The continued dependence on fossil fuels, which generates volatility and price pressures in the European economy.

Measure

1

Expression of political support from the government.

The countries that have implemented this instrument, such as China, had political support from the government.

In the case of the eurozone, there should be a sufficient number of governments supporting the measure for the ECB to consider it part of its secondary mandate.

2

Redesign of ECB liquidity instruments.

Adapt a TLTRO-type scheme specifically focused on credit operations for renovation and clean energy.

3

Monitoring and conditionality.

Strictly monitor whether the green credit growth targets are actually being met and passed on to the end customer.

Beneficiaries



Citizens and final borrowers:

Access to low-cost credit to renovate homes and reduce their energy bills



Credit institutions:

Obtaining liquidity from the ECB on preferential terms to boost its green loan portfolio.



Construction and renovation sector:

Reduction in financing costs and substantial increase in demand for energy efficiency projects.



European economy:

Reduced consumption of fossil fuels and lower inflationary volatility.

Necessary levers



Alignment with the price stability mandate:

The ECB is assured of fulfilling its primary mandate with this instrument, as retrofitting reduces dependence on fossil fuels and, therefore, long-term inflationary pressures.



Integration into the ECB's strategy:

Environmental sustainability and the EU Taxonomy are already integrated into the ECB's monetary policy strategy in various ways. However, climate policy is the responsibility of governments, not the ECB. Therefore, an actively climate-focused monetary policy must be the result of collaboration between governments and central banks, and it must be aligned with the drive for a European industrial policy.



Empowering civil society:

Ongoing support for European campaigns (such as the Unlock Campaign led by Positive Money EU, REVO Prosperidad Sostenible, ASUFIN, GBCe, etc.).

Potential impact

- **Massive acceleration of the energy retrofitting of buildings and other investments needed for the transition:**
Large-scale acceleration of building renovation to meet European climate targets.
- **Reduction of financial barriers:**
Drastic reduction in the cost of capital for the energy transition of households and SMEs.
- **Macroeconomic and price stability.**
Structural mitigation of inflation risk stemming from energy price crises.

Difficulty of implementation

● ● ● ● ● High

IN FAVOR:**Traction capacity:**

Initiating political signals in their favor can provoke emulation and facilitate cascading support.

BARRIES / RISKS:**Institutional alignment:**

A high degree of political and inter-institutional consensus is required.

Further remarks

This measure complements other green financing measures and becomes more effective when deployed together.

H 06.

Securitization / pledging of CAEs*Developed by Jimena Muzio and Eduardo Brunet***Purpose**

The aim is to facilitate access to financing for energy efficiency measures by transforming Energy Savings Certificates (ESCs) into financial assets that can be pledged, aggregated and potentially securitized, in order to mobilize private capital towards energy renovation projects, especially in the residential sector.

To this end, it is necessary to give CAEs a sufficient economic size by recognizing the savings generated over the useful life of the action; to provide them with an observable price and a creditworthy counterparty through forward contract auction mechanisms; and to guarantee the legal, tax and accounting certainty needed for them to be used as collateral and as an underlying asset in financing and capital market transactions.

Scope of application

Energy Savings Certificate System regulated by Royal Decree 36/2023, with priority application to energy efficiency measures in:



Residential buildings and **homeowners' associations**.



SMEs and projects promoted by **energy service companies**.

The scope also extends to the catalog of standardized measures and to the definition of the annual savings obligation of obligated entities, to the National Energy Efficiency Fund the National Registry of Energy Efficiency Certificates (CAE) and the role of the aggregator.

Description

The initiative proposes developing a regulatory and financial framework that allows CAEs to be used as assets capable of generating financing, in a **three-phase** sequence.

Phase 1:

Modify the calculation method so that the CAE reflects the cumulative and discounted energy savings over the entire useful life of the measure, and not just the savings in the first year. This amendment requires the catalog of standardized measures that currently includes the estimation of the CAE per action to be rewritten, and, at the same time, the obligation of reporting entities to be restated in the same units.

Phase 2:

To develop the auctions proposed by MITECO, preferably configured as forward contract auctions rather than just immediate delivery. The forward auction generates a public reference price and transforms the certificate — an uncertain asset traded bilaterally — into a credit claim against a solvent counterparty, which is the instrument that can actually be pledged and securitized under current regulations.

Phase 3:

Enable pledging with effective registration, regulate the role of the aggregator, establish accumulation vehicles, and develop securitization structures backed by renovation loans with contracted CAE income, with a public first-loss guarantee layer.

It also proposes to incorporate social prioritization factors. The recommended option is not a multiplier on the ordinary certificate, but a specific and separate obligation for savings in vulnerable households, with its own quota, market and price, in line with the French CEE *précarité énergétique* scheme.

Barrier addressed

The initiative seeks to overcome the limitations that prevent CAEs from acting as catalysts for private financing:



Insufficient economic size of the certificate.

As only the savings from the first year are certified, the CAE income represents a marginal fraction of the cost of an envelope intervention and does not alter the financial equation of the project.



Absence of an observable price.

There is no public index, and financial institutions lack a basis for valuing the collateral and calibrating haircuts.



Absence of a creditworthy counterparty and forward contracting.

This prevents the pre-financing of the project, which is where the real cash flow problem for the developer and the homeowners' association lies.



Legal uncertainty.

Regarding the nature of the CAE as an asset subject to a security interest, the enforceability of the pledge against third parties, the assignment of future certificates, and the position of the bona fide purchaser in the event of an administrative cancellation.



Tax and accounting uncertainty.

This prevents contracts with homeowners' associations and undermines the recognition of the asset on the balance sheet.



Catalog bias toward short-lived measures.

By only assessing the first year, the system favors low-cost measures with a quick return over deep building envelope retrofits, which is the stated objective of public policy.



Insufficient scale and high transaction costs.

In amounts of 3,000 to 8,000 euros per home, which prevent the issuance size from being reached without a regulated aggregation entity.

Measures

1

Measures:

- **Recognize the accumulated and discounted savings** over the useful life of the measure, with a single discount rate set in the standard — the French reference is 4%.
- **Rewrite the catalog of standardized measures**, incorporating the conventional service life, the discount rate, the persistence and degradation factor of savings, and the climate zone and building typology coefficients into each data sheet.
- Create **comprehensive building performance** sheets, with a bonus linked to the improvement in the energy performance certificate rating, rather than simply the arithmetic sum of individual measures.
- **Simultaneously recalibrate the annual savings obligation** in the same multiannual units. Without this recalibration, the increase in the supply of certificates would drive down the price, and the net effect would be contrary to what is intended.
- Resolve the **transition of the existing stock** by closing and opening the system on a specific date, with a transitional period of twenty-four months, or by means of differentiated vintages in the registry.

- Publish a **multi-year obligation trajectory to 2035**, consistent with Article 8 of Directive (EU) 2023/1791, and regulate banking between periods with an explicit expiration date.
- Establish a **separate obligation quota for vulnerable households**, with its own demand and its own price.

2 Auctions and price formation:

- Structure **auctions for forward contracts** with delivery at 12, 24 and 36 months, a published multi-year schedule, and segmented lots with reserved quotas for residential buildings, vulnerability, industry, and the tertiary sector..
- Adopt a **uniform marginal price** instead of pay-as-bid, so that the auction generates a single publishable reference price.
- Set a **public reserve price** that operates as a multi-year floor, the functional equivalent of a contract for differences. The cap already exists de facto due to the economic equivalence of the payment to the FNEE.
- Enable **surety bonds** in addition to bank guarantees as performance guarantees, and resolve non-compliance by settling differences rather than imposing punitive penalties.
- Publish a **benchmark index in euros per certified kWh**, based on auction results and reported bilateral transactions.

3 Legal, tax and accounting regime:

- Expressly classify the CAE as a **transferable intangible movable asset** that is subject to a security interest, with the precedent of Article 21 of Law 1/2005 for emission allowances
- Enable the **registration of the security interest in the National CAE Registry with constitutive effect and third party opposability**, featuring expedited out-of-court enforcement and bankruptcy remoteness.
- Validate the **assignment of future CAEs** not yet issued, with sufficient determinability, to allow for the pre-financing of the project.
- Protect the **bona fide purchaser and secured creditor** by channeling liability for defects to the executor and the verifier with mandatory insurance.
- Extend the **VAT taxpayer's investment** and clarify, through a binding ruling, the treatment under personal income tax and corporate income tax, as well as the regime for homeowners' associations.
- Approve an **ICAC resolution** similar to the one of February 8, 2006 on emission rights.

4 Financial infrastructure:

- Regulate the **statute of aggregators**: registration, proportional solvency, segregation of client assets, and rules of conduct.
- Establish an **accumulation vehicle** financed by a revolving credit facility from a bank or from ICO and the EIB, which will make it possible to reach a critical
- Structure the securitization on **the renovation loan with contracted CAE income or on the forward purchase agreement**, with homogeneity from origination and templates compliant with ESMA to qualify for the STS label.
- Establish a **guarantee fund with a first-loss tranche**, public-private or with EIF coverage under InvestEU, in line with the French FGRE model.
- Ensure **registry interoperability** between the CAE registry, the energy performance certificate registry, the building logbook, and the renovation passport, in order to automatically generate the information required for securitization transactions.

Beneficiaries



Households and homeowners' associations:

These would gain access to better financing terms and to pre-financing of the work in exchange for the assignment of future energy efficiency certificates.



Households in energy poverty:

If the specific obligation quota is established.



Energy services companies:

Installers and project developers.



Financial institutions:

They would have an additional identifiable repayment source and a securitizable asset with an STS label.



Aggregators and institutional investors:

Interested in assets linked to the energy transition and aligned with the European taxonomy.



Obligated entities:

Those that would gain visibility into prices and forward supply to fulfill their obligation.

Necessary levers



Amendment of Royal Decree 36/2023, with a dual objective:

Multi-year criteria and recalibration of the obligation, on the one hand; pledge regime, assignment of futures and registration custody, on the other.



Ministerial order approving the revised catalog:

Of standardized measures, with conventional useful lives, discount rate and correction factors, following public technical consultation.



Regulatory development of the auction mechanism:

By MITECO and IDAE, with auction regulations, prequalification system for aggregators, and multi-year schedule.



ICAC Resolution:

On the recognition, valuation and derecognition of the CAEs.



Assessment, recording and traceability standards:

Agreed with the financial sector, including methodology for discounts due to verification, delivery, vintage and regulatory risk.



Standard framework agreement for spot and forward purchases and sales:

Regarding the adapted EFET model, agreed with AEB, CECA, UNACC and obligated entities.



Active participation of financial institutions, aggregators and asset managers:

With at least one institution willing to discount contracts awarded in the first pilot auction for verification, delivery, vintage and regulatory risk.



Institutional coordination:

Between MITECO, IDAE, CNMC, the Ministry of Economy, Trade and Business, the Ministry of Finance, the Bank of Spain, ICO and the financial sector.

Potential impact

o **Improved fundability.**

The combined effect of multi-year recognition and forward auctions would substantially change the financial equation of energy retrofits. The income from the CAE would go from being a marginal incentive to being a significant source of repayment, with a direct effect on debt service coverage, on the financeable repayment term, and on the debtor's creditworthiness.

o **Promotion of deep rehabilitation.**

At the same time, the reorganization of catalog incentives would help correct the current bias toward short-term measures and align the CAE system with deep retrofit goals.

o **Increased investment mobilized.**

In the medium term, the consolidation of a market with a public reference price, regulated aggregators, and securitization structures with a public first-loss guarantee would make it possible to scale up the volume of investment mobilized and reduce dependence on direct subsidies.

Difficulty of implementation

● ● ● ● ● High

It requires **significant regulatory changes**, definition of the legal, tax and accounting treatment of carbon credits, development of valuation **methodologies accepted by the market**, and creation of a **financial infrastructure that enables aggregation and eventual securitization**. In addition, it will be necessary to **build trust among financial institutions and investors** regarding the quality and stability of the associated flows.

Four specific implementation risks are identified:

Price collapse:

If the transition to a multi-year approach is not accompanied by the simultaneous recalibration of the obligation.
This is the main technical risk of the renovation.

Auction bias.

A single auction awarded on a cost-effectiveness basis will systematically select the lowest-cost measures per kWh and exclude deep retrofits.
Segmented lots with reserved quotas are the necessary mitigation.

Reputation for fraud:

The precedents of the French Energy Savings Certificates (CEE) and the Italian Superbonus will be cited as objections. The increased transferability must be offset by accredited and independent verification prior to registration, full registry traceability, a limit on the number of transfers before exchange, joint and several liability of the executor and the verifier with compulsory insurance, and reversal of the VAT liability.

Risk of excessive prudential expectation.

The pledge of the CAE does not in itself produce capital savings: the list of eligible financial collateral in the CRR is closed, and the CAE is not included in it. Prudential relief is obtained through an eligible provider guarantee, through securitization with significant risk transfer, or through documented empirical improvement of the IRB parameters. The proposal should be presented to the supervisor in terms of repayment capacity and creditworthiness.

Further remarks

The initiative represents an evolution of the CAE system from a regulatory compliance mechanism to an **instrument for financing the energy transition**, connecting energy efficiency markets with financial markets and **reducing dependence on public subsidies**.

It should be noted that **Annex V of Directive (EU) 2023/1791 expressly allows savings to be counted over the lifetime of the measures**. The proposed change **does not require any amendment to the European framework: it is a revisable national option**. France certifies accumulated and updated kWh over the conventional duration of the measure; Italy recognizes certificates for a useful life of between five and ten years.

Finally, the relationship with the other instruments in the portfolio is one of complementarity, **not substitution**. The CAE provides repayment flow; the guarantee fund provides first-loss coverage; the government-backed loan provides term. None of the three alone solves the bankability of residential rehabilitation; all three together do.

6.3. Enabling conditions: Information and regulatory compliance

The previous section ultimately depends on one piece of data: the actual energy rating of each home. Without it, neither the Green Mortgage (H02) can activate its novation clause, nor can the Energy Efficiency Certificate (H06) prove the savings it aims to securitize, nor can the market in general incorporate the value of energy efficiency into the price of housing. The following fact sheet is not, strictly speaking, a financial mechanism: it is the starting point without which the previous ones cannot be implemented. a escala.

H 07.

Measure to ensure regulatory compliance regarding the advertising of energy certification

Developed by Susana Martín



Purpose

Eradicate the widespread failure to display energy efficiency labels in property listings (for rent and sale), guaranteeing consumers' right to transparent information about the property's sustainability and energy consumption before signing a contract.

Scope of application

 Country.

Regarding the property listing published in Spain by:



Agencies



Large holders



Web Portals



Promoters

Description

Action plan led by the Ministry of Consumer Affairs to enforce compliance with Royal Decree 390/2021 using the penalty framework of the General Law for the Defense of Consumers and Users.

The omission of the energy label in advertisements is classified as a serious violation for **misleading advertising due to the omission of relevant information**, drastically increasing oversight and deterrence.

Barrier addressed



Impunity and ineffective sanctions.

Ineffectiveness of the minor fines (€300) under the Ley del Suelo (Land Law), which do not deter agencies and large landlords.



Fragmentation of responsibilities and inaction.

Stoppage of in-person regional inspections in the fields of industry and construction.



Lack of effect on transactions.

The publication of the energy label should influence consumers' perception when buying and selling homes, and non-compliance with this requirement invalidates this lever for change.

Measurements

1

Reclassification of violation.

Consider the lack of an energy label as widespread misleading advertising (punishable by a fine of up to €100,000 or 4 to 6 times the unlawful profit).

2

Control of intermediary portals.

Require by law the prior validation of the official registration number of the certificate in order to allow the listing to be published.

3

Automated inspections (Sweeps).

Implement mass digital scraping campaigns (web scraping) to audit thousands of ads simultaneously.

4

Interconnection of records.

Link the official regional registers of certificates with the databases of real estate portals via API, to facilitate compliance.

Beneficiaries



Consumers and users:

They have access to transparent information on energy consumption and expenditure before buying or renting, and they can include the energy label in the home appraisal to obtain financing, as provided for in the appraisal regulations (Order ECO/805/2003 of March 27, recently amended by *Order ECM/599/2025*).



Real estate market and construction sector:

It promotes fair competition and highlights the value of energy retrofits.



Environment:

Promotes transparency in emissions and the efficiency of the housing stock.

Necessary levers



Issue an Interpretative Guideline from the Directorate General for Consumer Affairs:

Linking the omission of the label to misleading advertising.



Agreement and coordination at the Sectoral Consumer Conference:

With the Autonomous Communities.



Institutional cooperation:

Between the Ministry of Consumer Affairs and the Ministry for Ecological Transition (MITECO).

Potential impact

Property revaluation:

The possibility of incorporating the energy rating into home appraisals will help to highlight the energy efficiency of homes.

Nearly 100% compliance with regulations.

On digital portals in the short term through mandatory filtering.

Massive deterrent effect.

The large agencies and marketers, due to the substantial increase in the amount of the penalties.

Change in preferences.

Increased public awareness and demand for more energy-efficient homes.

Difficulty of implementation



Low

Further remarks

Drafting of the proposal for a "Green Interest Rate for the Eurozone" by Stan Jourdan.

07

Affordability and progressivity: which mechanism corresponds to each household profile

Chapter 2 already mentioned the need to size the housing stock and the different profiles and/or needs that are envisaged at the household level. Chapter 6 has presented seven financial mechanisms. This chapter addresses both: not all instruments serve all households equally, and part of the value of this report lies precisely in not treating them as an interchangeable menu.

7.1. Intersection logic

Three variables determine which mechanism fits which household profile:

Ability to pay.

Whether the household can afford a fee, even if it is offset by energy savings.

Access to conventional credit.

Whether or not the household exceeds the standard bank score).

The type of intervention needed.

Replacement of equipment versus comprehensive renovation of the building envelope.

For **multi-unit housing stock** — 64% of the total — a **fourth variable** is added:

If the intervention depends on a collective decision by the homeowners' association.

This matrix is intended as a guide and does not purport to be definitive, but rather to serve as a guide to some of the variables that should be taken into consideration. Combinations of lock profile and mechanism other than those proposed here may also be valid depending on the specific case.

COMBINATION OF HOUSE PROFILE AND MECHANISM			
Household profile	Typical intervention	More suitable mechanism	Why
High consumption. Creditworthy	Extensive renovation + equipment replacement.	H01 PLF/NEW-PACE H02 Green mortgage	Sufficient ability to pay. H01 avoids the risk of personal debt and early sale. H02 takes advantage of an existing active mortgage.
Average consumption. Average income, with an active mortgage	Equipment changes and partial envelope upgrades.	H02 Green mortgage H03 On-bill equipment	H02 is designed for this segment. H03 covers the one-time replacement of equipment without affecting the mortgage.
Low consumption. Low income, no room for savings	Replacement of low-cost equipment.	H03 On-bill equipment with CAE	Bill neutrality from the first month is key for a household with no room for savings. It does not require access to conventional bank credit.
Energy poverty	Comprehensive rehabilitation + equipment replacement, with priority public.	H01 PLF, no bank + H04 in multi-unit buildings + H03 with Social CAE.	H01 expands access to low-credit profiles. H04 specifically resolves the blockage when this household lives in a heterogeneous community. The Social CAE improves the conditions of H03 .
No heating system with DHW)	Installation of first HVAC system.	H03 on-bill, with possible support from H04 if it is in a multi-unit unit.	By definition, this is an intervention on equipment rather than an envelope. The on-bill scheme is the most direct and least frictional instrument for a first installation.

7.3. Heterogeneous homeowners' associations: a cross-cutting layer

It should be noted that **H04 (PRENBADEM)** is not an alternative mechanism to the others, but a layer that is added to any of them when the intervention takes place in a multi-unit building with owners of different financial means. For example, a building can finance its renovation with **H01** for owners without solvency issues and with **H04** for vulnerable owner(s) within the same community. This “cross-cutting layer” logic is what allows Chapter 4 — in particular, the collective decision barrier — not to depend on finding a single instrument that serves both the solvent and the vulnerable owner within the same building.

7.4. The role of **H05** and **H06**

H05 (Green Interest) and **H06** (securitization of CAEs) do not appear in the table above because they are not mechanisms that a household chooses directly: they are the underlying conditions that determine whether **H01**, **H02**, **H03**, and **H04** can be offered on cheaper terms and on a larger scale. Its impact on each household profile is indirect but significant: a reduction in the cost of bank liquidity via **H05** ultimately translates into better rates for green mortgages (**H02**); and a CAE with an observable price and the ability to be pledged as collateral via **H06** directly improves the economic viability of on-bill financing for equipment (**H03**) for low-consumption and energy-poor households.

08

Implementation Roadmap

8.1. Why organize the mechanisms by time, and not just from the catalog

Chapter 3 has identified 2026 as a window of opportunity: the closure of the Next Generation EU funds in June, the presentation of the PNRE (National Building Renovation Plan), and the upcoming EU ETS II. Chapter 5 has shown that no mechanism depends on a single actor, and that coordination among actors determines the speed of the transition as much as its scale. A practical conclusion emerges from both chapters: the catalog in Chapter 6 should not be read as a menu of options that are all equally available right now, but rather as a set of instruments that require very different maturation times and that must be carefully sequenced so as not to miss the window of 2026 and the years that follow.

This chapter ranks the seven mechanisms according to two variables already present in each fact sheet: **their urgency** whether their absence exacerbates the gap left by the closure of the RRF funds—and **their difficulty of implementation**, as rated in each fact sheet in Chapter 6.

8.2. Urgency and difficulty matrix

URGENCY AND DIFFICULTY MATRIX			
Mechanism	Difficulty of implementation	Urgent need due to the closure of RRF funds	Next step pending
H07 EC Regulatory Compliance	Low 	High It is the starting condition on which H02 and H06 .	Administrative decision. No legal change is required.
H03 On-bill financing with CAEs	Medium 	High A lower-friction instrument that fills the gap in equipment replacement left by current subsidies.	Regulatory development of the CAE catalog and enablement of the pledge.
H04 PRENBADEM	Medium 	High Already operating in Catalonia. Its widespread adoption is the most mature component to deploy in the short term.	Instructions for the registry entry.
H02 Green mortgage with conditional novation	Medium (Registration in the prudential component).	Medium Covers the middle-income segment; does not depend directly on the RRF fund schedule.	Limited-scope regulatory amendment and agreement by sector.
H01 PLF/NEW-PACE (redeemable rentcharge)	Medium-high 	Medium The sooner tax queries are resolved, the sooner you can escalate.	Binding consultations with the DGT and protocol with Registrars and Notaries (already underway, with its own roadmap until 2027).
H06 Securitization of CAEs	High 	Medium Its absence does not block immediate activity, but it does affect the scalability of H02 and H03 in the medium term.	Amendment of Royal Decree 36/2023, auctions by MITECO/IDAE, legal and accounting framework.
H05 Green interest	High 	Low It depends on a European decision, with no foreseeable	Interinstitutional political consensus.

8.3. Three work horizons

The matrix above should not be read as a list of absolute priorities, but rather as a warning about dependencies. Activating **H03** without first resolving **H07** means offering an invoice payment plan without the energy database that gives it credibility with consumers and with the financial regulator. Developing **H06** without first stabilizing the catalog of CAEs that **H03** needs means building the securitization infrastructure on an asset that is still poorly calibrated. The lesson from Chapter 5 — that coordination among actors determines speed, not just volume — applies here literally: The order of implementation matters as much as the list of mechanisms.

1

Immediate horizon (2026):

What can be activated by an administrative decision or sectoral agreement.

H07 (EEC regulatory compliance) is the only one of the seven mechanisms rated as having low implementation difficulty, and its absence directly impacts the effectiveness of **H02** and **H06**. In parallel, the widespread adoption of **H04** (PRENBADEM) outside Catalonia should be addressed with the same urgency, given that it already has a proven operational track record and a predictable fiscal cost: the remaining step is essentially administrative, not design-related.

2

Regulatory development horizon (2026–2027):

This requires a regulatory amendment of limited scope.

H03 (*on-bill* with CAEs) and **H02** (green mortgage) share a medium-difficulty profile and do not depend on extensive regulatory reform, but rather on the regulatory development of CAEs, the authorization of their pledging, and sectoral agreements with banks. It is reasonable to expect that they could be operational within this timeframe if regulatory development is prioritized within the framework of the 2026 PNRE itself.

3

Market infrastructure horizon (2027 onwards):

This requires building new institutional capacity.

H01 (PLF/NEW-PACE) and **H06** (securitization of CAEs) share the need to develop market infrastructure — aggregation vehicles, registries, valuation standards — that cannot be improvised. The **H01** file itself already includes a phased roadmap up to 2027. **H06** also requires first resolving the reform of the CAE catalog, which in turn depends on **H03**. This timeline is consistent with the fact that both mechanisms are the ones that can mobilize the most private capital in the long term, but also the ones that are least likely to be operational as early as 2026.

4

Timeframe for what depends on decisions made outside Spain (no defined deadline):

Unlike the previous six, **H05** (Green Interest) does not have a timeline that Spain can set unilaterally. Its inclusion in this catalog does not imply that it should be treated as a short-term implementation priority, but rather as a long-term policy line, consistent with Recommendation 9.6 of this report.

09

Prioritized recommendations

The previous chapters have described the challenge in numbers, the regulatory framework, the structural barriers, and a list of seven specific mechanisms to overcome them. This process has resulted in six recommendations, jointly addressed to public authorities and the financial sector, because none of them can be implemented by just one side.

9.1. Design the 2026 PNRE as a replacement architecture, not as a continuity

The National Building Renovation Plan that Spain must submit in 2026 cannot simply be an extension, under a different name, of the subsidy model that has supported renovation since 2021. That model is running out, along with the Next Generation EU funds that financed it. The PNRE must be designed, from the outset, as a combined and stable architecture: direct subsidies focused on energy-poor households and scalable market mechanisms — such as those described in Chapter 6 — for the rest of the housing stock.

9.2. Address the enabling conditions first, not just the financial products.

The National Building Renovation Plan that Spain must submit in 2026 cannot simply be an extension, under a different name, of the subsidy model that has supported renovation since 2021. That model is running out, along with the Next Generation EU funds that financed it. The PNRE must be designed, from the outset, as a combined and stable architecture: direct subsidies focused on energy-poor households and scalable market mechanisms — such as those described in Chapter 6 — for the rest of the housing stock.

9.3. Explicitly protect vulnerable households and diverse communities, without waiting for the trickle-down effect.

No market instrument, however well designed, naturally reaches a household without the ability to pay or a homeowners' association with vulnerable residents. These two cases require specific instruments — the **PRENBADEM (H04)** for the second, and the Social CAE and access without conventional bank scoring of the PLF (**H01**) for the first — which must be developed and financed with the same priority as market mechanisms, not as an afterthought. The expansion of PRENBADEM beyond Catalonia, in particular, should be treated as a short-term priority, given that it already has a proven operating track record and a predictable and low tax cost.

9.4. Leverage existing legal frameworks before legislating from scratch

Leverage existing legal frameworks before legislating from scratch([H01](#)) illustrates a principle that should guide the design of public policy in this area: Spain already has legal mechanisms — the provisional registration, the registry entry of subsidies provided for in the General Subsidies Law — that are capable of supporting innovative financial instruments without the need for extensive legislative reform. Prioritizing the adaptation of these existing structures over the creation of new legal frameworks saves years in terms of implementation speed, a critical factor given the timeline described in Chapter 3.

9.5. Establish a specific inter-agency coordination body

Virtually no mechanism in Chapter 6 depends on a single institutional actor. The green mortgage requires coordination between the Treasury, the Bank of Spain, and the banking sector; the securitization of energy efficiency certificates (CAEs) requires the MITECO, IDAE, CNMC, the Treasury, the Bank of Spain, and ICO; and regulatory compliance with the CEE requires the Ministry of Consumer Affairs, MITECO, and the Autonomous Communities. Without an entity to explicitly coordinate these components, each mechanism will move at the pace of the slowest actor, and the risk that the necessary levers will become misaligned — for example, a reformed carbon credit catalog without a pledge registry to amplify its impact — is high.

9.6. Taking issues that cannot be resolved in Spain alone to the European level

Some of the most decisive barriers — the prudential treatment of green mortgages within the framework of capital requirements, or the cost of bank liquidity earmarked for green lending — depend on decisions that fall to the European Central Bank, the European Banking Authority, or the European Parliament, not to the Spanish authorities. Spain should use its influence as one of the markets with the highest volume of energy-inefficient housing in the EU to drive these discussions at the European level, rather than passively waiting for them to be resolved, since their resolution directly affects the scalability of instruments such as [H02](#) and [H05](#).

10

Conclusions

Spain stands before a strategic window of opportunity. Comprehensive decarbonization and modernization of Spain's housing stock is not only feasible, but also far more cost-effective over the long term than inaction. This report goes a step further by demonstrating that viable financial instruments—either available now or adaptable within a realistic timeframe—can mobilize the nearly €20 billion annually required for this transition, while ensuring vulnerable households are not left behind.

While the mechanisms outlined in Chapter 6 are not exhaustive, they demonstrate a core guiding principle for future efforts: the most promising instruments do not necessarily demand radical legislative innovation. Instead, they succeed by blending three key elements: adapting proven structures, explicitly integrating public and private capital, and tailoring design to households' actual capacity to pay. The municipal census model adapted for renovation (H01), the dual-track mechanism for heterogeneous communities (H04), and the reform of energy performance contracting into a financeable asset (H06) all exemplify this strategy.

Spain now has a clear opportunity to secure a stable, diversified, and inclusive financial framework tailored to the real diversity of its housing stock. The coming months will determine whether this architecture is built deliberately and strategically, or left to emerge sluggishly and unevenly by default.

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