

Proven pathways: Lessons from Property Linked Finance markets






April 2026



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Key lessons at a glance

KEY:  Commercial  Residential  Commercial and Residential  Replicable lessons  Cautionary lessons







United States



-  Early transactions helped demonstrate credibility and build market confidence.
-  Coordinated industry guidance and cross state learning (e.g., from the Commercial Property Assessed Clean Energy (C-PACE) Alliance and PACENation) helped reduce fragmentation and support consistent programme design.
-  State and local level authorisation created structural fragmentation.
-  Insufficient contractor oversight in early Residential PACE (R-PACE) legislation highlighted the importance of embedding consumer protection measures from the outset.
-  Limiting eligible measures in early legislation showed the need for broad statutory scope to enable long-term market growth.
-  Ensuring mortgage providers are comfortable with the model is essential to unlock scale and ensure sustainable market expansion.






Australia



-  Partnering with installers and solar PV providers proved effective for raising awareness among SMEs.
-  Designing legislation to include both environmental upgrades and climate resilience measures demonstrated the value of future-proofing statutory frameworks.
-  Establishing a central market administrator such as Better Building Finance showed how centralisation can streamline previously fragmented systems.
-  Restricting early scope to commercial retrofits demonstrated that narrow eligibility can constrain market scalability, pushing activity toward a smaller number of larger transactions that are better able to absorb friction costs.
-  Retrofit demand was too low to support Property Linked Finance (PLF) market growth, highlighting the importance of initially focusing on sectors where strong underlying demand already exists, such as the new-build housing market.
-  Without a coordinated launch strategy, a staged, council-by-council roll-out risks creating geographic fragmentation.



Canada



-  Adapting existing legal mechanisms provided a workable foundation for PACE and helped build early market confidence.
-  Government funding in the early stages is a powerful tool for de-risking deployment and building the confidence needed to attract private capital later.
-  Lessons from the US PACE model and Canadian PACE pilots helped design more robust PACE programmes in Canada.
-  Limited administrative resources at municipal level proved a significant barrier on programme roll-out, underscoring the need to assess local capacity before launch.
-  Caution stemming from US PACE challenges kept Canada aligned with publicly funded, non-profit-led models, limiting the emergence of scalable private-capital pathways.




United Kingdom



-  Building a broad and flexible model helped avoid fragmentation and reduced the need for future redesigns.
-  Collaborative model development (e.g., Green Finance Institute–Lloyds Banking Group–NatWest Group) demonstrated the value of incorporating diverse perspectives early in programme design.
-  Early stakeholder engagement proved essential for building understanding, securing industry support, and developing an early project pipeline.
-  Proactive and strategic policymaker engagement early in the process can accelerate delivery timelines.
-  Lessons from the Green Deal showed the risks of applying Savings-to-Investment Ratio (SIR) requirements within UK PLF models.

Europe/Spain



-  Training contractors and energy professionals on the EuroPACE model demonstrated the importance of trusted, accessible guidance for households.
-  Early market and consumer engagement showed how valuable early feedback is in validating and refining programme design.
-  Establishing new municipal charging systems highlighted the complexity of legal and administrative reform across multiple municipalities.



Introduction

Future-proofing the global building stock requires effective financing solutions capable of mobilising capital at scale and ensuring that property owners can access the tailored funding they need. Despite growing demand for building improvements, traditional finance products have struggled to deploy capital at the pace and scale required and often fail to provide long-term, affordable options for both commercial and residential property owners. As a result, many property owners remain unable to invest in critical upgrade measures.

Property Linked Finance (PLF) is an innovative financial solution designed to support projects that enhance the environmental performance and climate resilience of buildings. Unlike traditional lending, PLF links the finance to the property rather than the owner, meaning repayment obligations transfer to the new owner upon sale. This structure addresses major barriers to upgrading buildings by providing up to 100% of upfront costs, offering repayment terms aligned with the useful life of measures, and overcoming the payback period barrier faced by property owners.

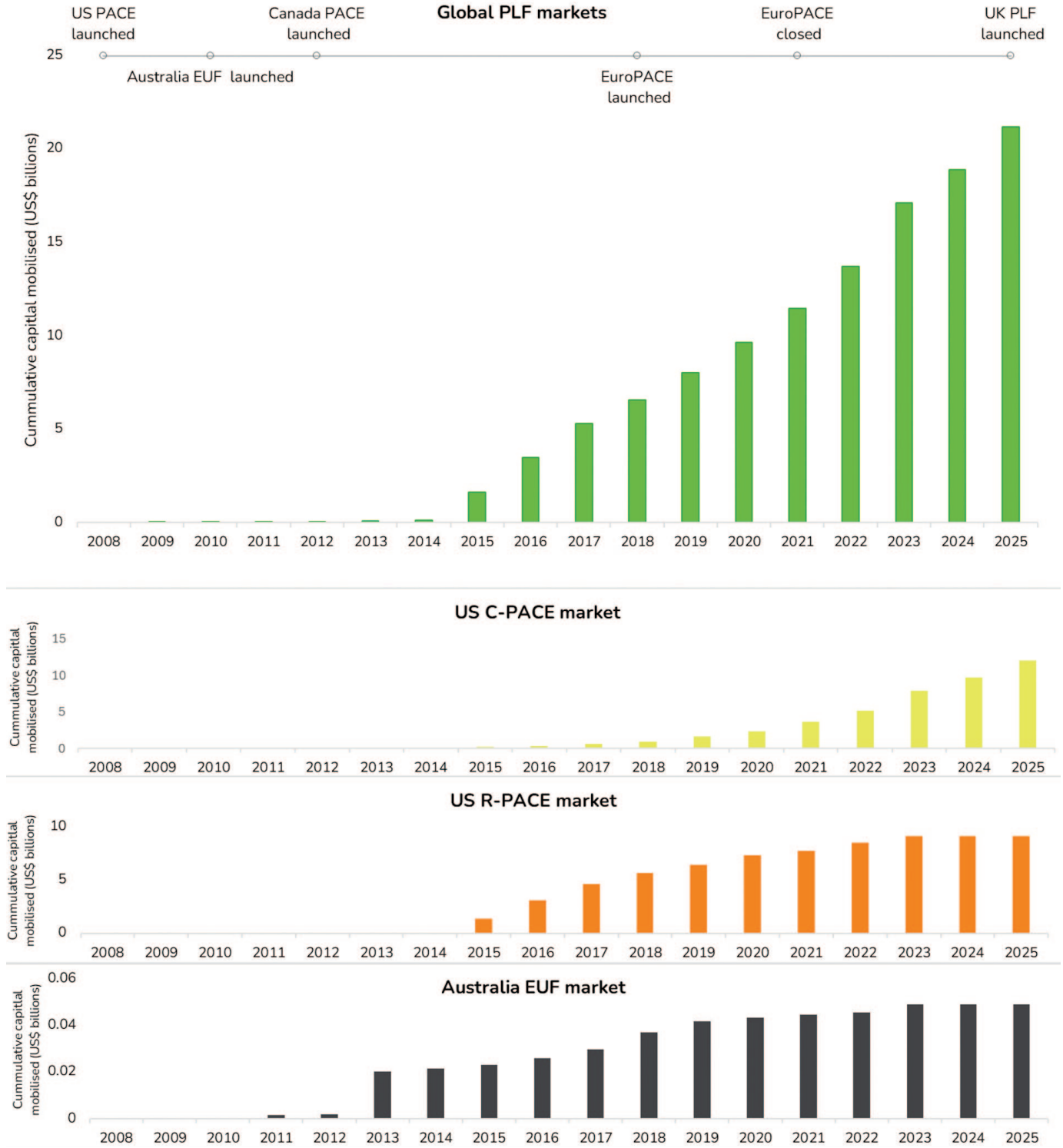
The first PLF model was developed in the United States (US) in 2008, shortly followed by a similar approach in Australia. Since then, new models have been created, drawing on lessons from early adopters, including Canadian Property Assessed Clean Energy (PACE), Property Linked Annuity Canon (PACE Canon) and the United Kingdom's (UK) PLF.

This paper outlines the key successes and challenges observed across existing and developing markets – both during the launch and scaling phases of the market – and identifies common enablers and barriers. It provides practical guidance for market participants seeking to launch and scale PLF solutions in new regions. This paper is designed to be used alongside the PLF Pathways¹, which provides a clear, replicable, step-by-step guide for scaling PLF solutions. If you'd like to explore these insights further or connect with a community of international experts, please get in touch with the Global Property Linked Finance Initiative (GPLFI).

¹ <https://www.propertylinkedfinance.com/wp-content/uploads/2026/03/Property-Linked-Finance-Pathways.pdf>

Global landscape of active Property Linked Finance markets

Figure 1: Cumulative Global PLF Capital Mobilised and Key Market Launch Dates²



² R-PACE reporting is only currently available up to 2023. To avoid an artificial decline in cumulative totals, the 2023 cumulative value is carried forward for 2024 and 2025. No annual data is available for Canadian PACE or EuroPACE.

Deep dive: United States



Background and objectives

PACE financing was first introduced in Berkeley, California, in 2008 to support energy-efficiency and renewable-energy upgrades for both residential and commercial properties. The model aimed to overcome upfront cost barriers, unlock private capital for building upgrades and reduce energy costs.

Overview of the model

Both Residential PACE (R-PACE) and Commercial PACE (C-PACE) financing now support energy efficiency, renewable energy, water efficiency and resilience measures, with C-PACE also able to finance public health improvements. PACE can be used for both new and existing buildings, as well as for refinancing.

The financing is facilitated through the local council via a voluntary property tax assessment that remains with the property and automatically transfers upon sale. It is secured by a preferential lien on the property. This structure enables long-term, fixed-rate finance that is non-accelerating and can align repayment periods with the useful life of the improvements.

Performance to date

Since its inception, PACE has mobilised more than USD 21 billion in investment, with R-PACE accounting for over USD 9.1 billion and C-PACE contributing over USD 12 billion.³ ⁴ C-PACE deployment has accelerated rapidly, growing at an average annual rate of 30% between 2020 and 2025, with transaction sizes increasing significantly, including a recent USD 465 million deal.⁵ As a result, PACE has evolved into a recognised asset class with a distinct securitisation market.

Lessons learned from introducing Property Assessed Clean Energy

Replicable lessons

- **Pilot transactions demonstrated the PACE models' viability.** Early PACE transactions played a pivotal role in establishing the model's credibility and demonstrating clear demand for long-term, fixed-rate efficiency financing, helping to build market confidence. These initial deals surfaced legal, operational, and market challenges at a manageable scale, allowing stakeholders to resolve issues before expanding into additional states.
- **Replicable templates supported market consistency.** Early activity created replicable templates for documentation, underwriting and capital stacking which supported broader market scaling across the US.
- **Authorisation frameworks increased market confidence.** US PACE programmes developed approved lists of technologies helping to improve market confidence and supported wider programme adoption.

³ <https://www.pacenation.org/pace-market-data/>

⁴ Cumulative capital mobilised by C-PACE is an estimated figure informed by stakeholder and industry engagement

⁵ <https://www.nuveen.com/greencapital/news-and-blog>

Cautionary lessons

- **State-level authorisation created structural fragmentation.** Because PACE financing requires state-level enabling legislation, each state defines how PACE operates. This has led to inconsistencies between states and contributed to market fragmentation.
- **C-PACE's additional requirement for local level authorisation further increased fragmentation.** In addition to state legislation, C-PACE programmes require local authorisation from counties or municipalities. Typically, states establish a high-level framework, and local taxing authorities must opt in. This two-tier structure resulted in a patchwork of programme requirements, with varying standards across jurisdictions and, in some cases, multiple competing local or privately administered programmes.
- **Legislative gaps in early R-PACE statutes resulted in consumer protection issues.** R-PACE programmes encountered early consumer-protection challenges, largely because initial legislation did not include adequate contractor oversight. In the absence of clearly defined rules, some contractors misrepresented the PACE programme, leading to negative media coverage and political opposition, affecting public perceptions of PACE. States addressed these issues by revising and expanding their statutes to include stronger consumer-protection provisions, standardised underwriting criteria, mandatory contractor training requirements and accreditations, disclosure of long-term obligations and independent new-build/retrofit assessments.
- **Misalignment with mortgage providers limited market participation.** Early PACE programmes did not fully engage and align with mortgage providers before launch, which created uncertainty around how the solution would interact with existing lending practices. As PACE assessments are structured as a super-priority lien, major mortgage guarantors such as Fannie Mae and Freddie Mac currently exclude loans on properties with active PACE assessments. This has introduced practical challenges for market participation, deterring homeowners from using PACE due to concerns about how it would affect the mortgageability of their property. It highlights the importance of continued coordination between programme designers and financial institutions.

Lessons learned from scaling Property Assessed Clean Energy

Replicable lessons

- **The growing volume and size of transactions helped strengthen market confidence.** As the PACE market has matured, greater familiarity among developers, lenders, and capital-markets participants has supported scaling, with rising transaction sizes, and increased participation from institutional investors, further strengthening market confidence. Notable headline transactions, including Nuveen's USD 465 million C-PACE financing deal in Washington, D.C., demonstrate the institutional scale the market has now achieved. The US PACE market has evolved to accommodate larger transactions where the deal economics can absorb the friction costs associated with early-stage market challenges, rather than relying on high-volume mass market adoption.

- **Industry networks supported national-level scaling.** PACENation and C-PACE Alliance have played a central role in supporting the scaling of PACE. PACENation provides public officials and stakeholders with resources, educational materials, and industry convenings to support the launch and scaling of PACE programmes. These networks have helped accelerate adoption by facilitating knowledge-sharing and reducing the need for states to design programmes from scratch. Similarly, the C-PACE Alliance has supported cross-state learning by offering guidance on programme design, legal documentation, and implementation to stakeholders introducing C-PACE. Their support has helped states and local governments adopt more consistent approaches, improving market participant clarity.

Cautionary lessons

- **Narrow eligibility criteria limited market scaling.** Initially, many PACE programmes were limited to financing energy-efficiency and renewable-energy upgrades in existing buildings, limiting their ability to scale. However, over time, states broadened their statutes to expand the scope of eligible measures, including:
 - New construction – Enabled after developer advocacy in major markets such as New York, Washington, D.C., and California. This change unlocked significant capital flows, with new construction now accounting for roughly half of all C-PACE financing.
 - Retroactive PACE – Enabling developers to refinance eligible sustainability measures post-construction.
 - Climate-resilience financing – Allowing PACE to support measures such as flood mitigation, seismic strengthening, and storm-hardening.

Deep dive: Australia



Background and objectives

Australia first introduced a PLF-style scheme in 2010, known as Environmental Upgrade Finance (EUF). EUF was created in response to the City of Melbourne's 1,200 Buildings Programme, which aimed to improve the energy efficiency of 1,200 commercial buildings, around two thirds of the municipality's commercial building stock. The programme identified access to capital and split incentives as the biggest barriers to retrofit activity, both of which EUF was designed to overcome.

When introduced, EUF enabled SMEs to finance environmental upgrades with no upfront costs and long repayment terms, many of whom had previously lacked access to the capital required to undertake such improvements. In many cases, EUF led to positive cash flows for SMEs, with energy savings exceeding repayment obligations.⁶

Overview of the model

EUF supports projects that deliver environmental and resilience improvements in commercial properties. The finance is linked to the property through council rates (upgrade charges); operating through a contract between the property owner, lender and council. EUF covers up to 100% of the project costs and offers long repayment periods of up to 20 years.

⁶ Although PLF can result in positive cash flow, PLF cannot guarantee that energy savings will exceed repayment costs

Performance to date

EUF has now expanded across four states and more than 75 councils, mobilising USD 49 million and supporting projects that have delivered over USD 100 million in savings.

Lessons learned from introducing and scaling Environmental Upgrade Finance

Replicable lessons

- **Partnering with installers accelerated uptake.** EUF providers partnered with solar PV providers and other installers to raise targeted awareness among SMEs, helping the scheme scale quickly.
- **Broad eligibility criteria enabled market growth.** The original EUF framework allowed both environmental upgrades and climate-resilience measures, giving the market room to grow as retrofit needs evolved.
- **A centralised administrator reduced fragmentation and simplified delivery.** The Better Building Finance (BBF) platform streamlined a previously fragmented system by providing unified processes across local government boundaries and supporting new councils to onboard. The impact of the BBF is clearly illustrated when comparing the council-led roll out in New South Wales (NSW) with the approach taken in Victoria. NSW, statewide legislation existed before the BBF, scaling was therefore limited because each council had to develop its own infrastructure to offer the finance, and there was a clear disconnect between councils, capital providers, and borrowers. In contrast, when Victoria expanded its legislation statewide, the BBF launched at the same time, enabling 31 councils to be set up in roughly three years, a pace NSW was never able to match under its council-led approach.
- **Streamlined credit and application processes supported scaling.** Updating the credit policy and simplifying the application journey, especially through a free online billing platform, proved crucial, recognising that transaction simplicity is a core driver of market growth.
- **A national verification framework improved market confidence.** A qualifying framework was developed using common performance measures and proven technologies, drawing on established building certification methodologies already used in Australia. By tailoring the framework to Australia's country-specific nuances, the framework ensures both technical rigor and local relevance. Implementing a verification framework helped improve transparency and boost market confidence.
- **Working with government provided capital providers with an attractive recoverability profile.** Because EUF payments are collected through council rates, which historically demonstrate near-100% collection rates, the structure had a better risk profile than many other loan products available in the market, enabling lender and market confidence.

Cautionary lessons

- **Restricted eligibility constrained the EUF market and reduced the economic viability of SME-scale transactions.** EUF was initially restricted to existing commercial buildings in Melbourne, excluding residential and new-build properties. As a result, the pipeline of qualifying projects was constrained by geography and asset type, rather than being directed toward areas where demand was strongest. This narrow scope prevented the market from reaching the scale needed to attract sustained investment and institutional funding. It also contributed to a shift towards a lower volume of larger deal sizes, rather than a higher volume of SME scale-transactions that EUF was originally designed to address. In 2022, the Sustainable Australia Fund's (SAF) average deal size was around 124,000 USD, aligned with the programme's intended SME focus. By December 2023, however, the average deal size had grown to 1 million USD due to high per-transaction costs and deal frictions.
- **Insufficient retrofit demand hindered market growth.** The commercial retrofit sector was too small to support rapid growth, and finance alone could not stimulate activity. Without strong demand-side incentives, the scheme struggled to scale beyond early adopters. This demonstrates the importance of focusing on sectors where underlying demand already exists. Australia has a large new-build housing market dominated by major builders who can provide the volume, consistency, and standardisation that institutional capital requires. Efforts are therefore now focused on launching EUF in the new-build sector to create a high-volume, standardised asset class capable of attracting and mobilising capital at scale. Over time, this capital infrastructure and market confidence can be leveraged to support and accelerate growth in the retrofit market as well.
- **Council-by-council roll out created geographic fragmentation and administrative burden.** As EUF scaled geographically it required each local council to opt in separately, creating a fragmented national landscape and introducing transaction frictions. Prior to the introduction of the BBF platform, this structure also left many councils struggling to meet administrative requirements and forced the market to rely on multiple parties, with differing and often complex processes. This early experience also had lasting effects: even after BBF began supporting councils, some authorities were reluctant to reengage following previous attempts that required significant time and resources without generating results. This highlights the long-term risk of attempting a council-by-council roll-out without adequate ongoing support.

Balanced lessons

- **Administrator–lender collaboration can strengthen delivery capacity but may also reduce wider market confidence and participation.** The BBF was originally launched and facilitated by the SAF, a dominant EUF lender. This affiliation helped ensure strong administrative capacity, supported origination, and contributed to streamlining what had previously been a fragmented system. However, concerns were raised about perceived conflicts of interest, which may have discouraged participation from other lenders. Establishing a publicly searchable register and appointing an independent entity to oversee core transactional and enforcement functions would help address these concerns, though this would likely come at the expense of some of the origination benefits that came with lender affiliation.

Deep dive: Canada



Background and objectives

The adoption of PACEstyle programmes in Canada was driven by the need to accelerate energy efficiency and renewable energy improvements across the built environment, which is responsible for roughly 18% of Canada's greenhouse gas emissions.⁷ Early advocates recognised that many building owners lacked access to low cost, flexible finance to undertake retrofit projects and that no Canadian equivalent to the US PACE model existed to meet this need.

At the same time, municipalities and provincial stakeholders viewed PACE as a tool to support local economic development, helping stimulate demand for local trades, create green jobs, and keep energy spending within communities while improving housing quality.

The first enabling legislation for a PACE programme in Canada was passed in 2012 in Ontario, with broader advocacy and national discussions emerging in 2017 following the creation of PACE Alberta, which later evolved into PACE Canada.

Overview of the model

Canadian PACE programmes use a Local Improvement Charge (LIC) mechanisms to link the finance to the property, enabling municipalities (with provincial authorisation) to recover upgrade costs through property tax bills. PACE programmes finance energy efficiency and renewable energy upgrades and are currently predominantly funded through public capital.

Performance to date

Canadian PACE activity to date is largely attributed to a small number of municipal or regional programmes, such as Halifax Solar City in Nova Scotia initiatives, and pilots in Alberta and Ontario, each deploying capital in the low- to mid-multimillion- dollar range. Initial capitalisation has relied predominantly on municipal borrowing, provincial contributions, and national instruments such Green Municipal Fund supported programmes. Whilst recent legislative developments and new programme development indicate that deployment is likely to expand in the coming years, total cumulative capital mobilised remains relatively modest compared with the significant retrofit investment need to future-proof Canada's built environment.⁸

Lessons learned from designing and introducing Property Assessed Clean Energy

Replicable lessons

- **Adapting existing legal mechanisms offered a practical foundation for implementation and helped strengthen market confidence.** Many provinces already permitted the use of LICs and were able to amend their legislation to extend these charges to private property energy upgrades, reducing legal uncertainty and increasing confidence amongst market participants.
- **Pilot transactions demonstrated feasibility and strong consumer demand.** Early programmes including Halifax's Solar City programme demonstrated that a municipality could design and operate a PACE-style programme with strong uptake and manageable risk, providing a proof-of-concept and informing later provincial and national discussions.

⁷ <https://www.energycanada.org/building-codes/reaching-net-zero-in-existing-buildings/>

⁸ No comprehensive or authoritative national dataset is currently available on the total amount of capital mobilised through PACE programmes in Canada.

- **Evidence-based-guidance supported clearer programme design.** Reports from organisations such as PACE Alberta, Alberta Environmental Law Centre, Pembina Institute and the FCM’s Green Municipal Fund synthesised US experience and early Canadian pilots into design recommendations (e.g., on underwriting, eligible measures, consumer protections and governance), helping provinces and municipalities converge on more robust models.^{9 10 11}
- **Specialised programme operators reduced administrative burden.** Emerging third party entities and nonprofit organisations offering turnkey programme services, from marketing and application intake to contractor management and servicing, allowing smaller municipalities to participate without building full internal delivery capacity.
- **Public capital played a catalytic role in early market formation.** Municipal funds, provincial initiatives, and national instruments provided early capitalisation, helping de-risk programme deployment and build a performance track record. This foundational support created the confidence and stability needed to attract private capital participation over time.

Cautionary lessons

- **Decentralised policymaking created variability amongst provincial programmes.** With no federal leadership or unified PACE framework, provinces and municipalities developed programmes independently, resulting in inconsistent design choices, varying delivery models, and uneven implementation capacity.
- **Provincial enabling legislation required significant policy and legal work.** Because PACE must be authorised through province level legislation, each jurisdiction faces significant policy work, legal analysis, and advocacy to adapt LICs for PACE purposes. Many provinces still have no enabling legislation, and where frameworks do exist, they typically allow only publicly funded PACE-style programmes with low financing caps and short terms, further limiting scale.
- **Caution driven by US PACE controversies constrained the scalability of Canada’s model.** In response to issues associated with US R-PACE, particularly concerns around consumer protections and mortgage lender conflicts, Canadian regulators and policymakers proceeded cautiously, moving slowly to ensure that property linked charges would not interfere with existing mortgage rights. This caution ensured stronger protections and alignment with existing lending frameworks, but also contributed to slower and more narrowly scoped early implementations. At the same time, legislators, bureaucrats, and key advisors were wary of adopting a private sector-driven model, similar to the US PACE model, and instead favoured publicly funded and administered, or nonprofit-led approaches. This risk averse stance limited the development of scalable private capital pathways in Canada.
- **Limited administrative capacity at the municipal level slowed programme deployment.** Many municipalities lacked the inhouse expertise needed to design, market, and administer PACE programmes, extending launch timelines and constraining early uptake. Additional requirements, such as integrating PACE with tax billing systems and updating bylaws and procurement processes, added further administrative load and often slowed delivery.
- **Early programmes struggled to build sufficient deal flow to demonstrate performance.** Cautious roll-outs and modest administrative budgets limited the number of early projects, making it difficult for some programmes to fully deploy available public capital or demonstrate strong portfolio performance.

⁹ https://6da5c454-4e60-4c22-b72e-598adb5a4fe1.filesusr.com/ugd/3da787_7ce118664bd744d5988bd611fb99ff99.pdf

¹⁰ https://6da5c454-4e60-4c22-b72e-598adb5a4fe1.filesusr.com/ugd/1bda74_4fde725d4e114d1a9d9152f6d8472971.pdf

¹¹ https://6da5c454-4e60-4c22-b72e-598adb5a4fe1.filesusr.com/ugd/3da787_013bf79cfb5d4c78bbd467bb2eb7ce31.pdf?index=true

Deep dive: United Kingdom



Background and objectives

The UK began exploring PLF in response to recommendations from the Green Finance Institute's Coalition for the Energy Efficiency of Buildings, a group of more than 400 members including stakeholders across financial institutions, local and national government and the energy and construction industry. A clear market gap was identified, with many commercial and residential property owners lacking access to long-term, affordable finance for energy efficiency upgrades, low carbon technologies, and climate resilience improvements. PLF emerged as a potential mechanism to unlock private capital at scale and support the transformation of the UK's ageing building stock.

Overview of the model

While UK PLF is currently under development, when launched UK PLF will fund up to 100% of the upfront costs of a project that improves the environmental performance of a residential or commercial property. The finance will align with the useful lifetime of the improvements. In England and Wales PLF will be linked to the property through a Restriction on Title for C-PLF pilots, and when scaled for both R-PLF and C-PLF it will use a Local Land Charge.¹² In Scotland, a Standard Security¹³ will underpin PLF in both piloting and scaling phases.

Lessons learned from designing and introducing Property Linked Finance

Replicable lessons

- **Developing a scalable PLF framework positioned the UK for future institutional investment.** Engagement with mature international markets highlighted the need to build a PLF model capable of supporting institutional investment, rather than optimising for early pilots only. To achieve this, the Green Finance Institute team engaged with a wide range of financial institutions and industry stakeholders of different sizes to ensure the PLF model aligned with their requirements, not just those with the risk appetite to be first movers. The GFI team also tested that there was adequate demand for building upgrades and green construction in the UK to support a PLF market, and considered the role that securitisation could play in enabling scale.
- **Broad and flexible investment criteria maximised the potential size of the market.** International markets demonstrated the importance of ensuring PLF can apply to both residential and commercial buildings, cover building upgrades and new construction, and fund a wide range of measures, from energy efficiency and renewable energy to climate resilience. This will allow the UK to maximise potential market impact, avoid fragmentation, and reduce the need for future redesigns.
- **Co-designing the PLF model with industry strengthened the feasibility and market acceptance of UK PLF.** A formal collaboration between the Green Finance Institute, Lloyds Banking Group, and NatWest Group explored how to introduce and deploy UK PLF, bringing together a broad range of perspectives during the market's design phase and ensuring the model reflected real world delivery considerations.

¹² <https://www.greenfinanceinstitute.com/wp-content/uploads/2024/11/A-Greenprint-for-Property-Linked-Finance-in-the-UK.pdf>

¹³ <https://www.greenfinanceinstitute.com/wp-content/uploads/2025/12/Scottish-PLF-Greenprint.pdf>

- **Early industry engagement helped to build understanding and confidence.** Many stakeholders, including financial institutions, policymakers and industry players, had limited understanding of how PLF operates or the benefits it offers. Engaging these groups early to input into UK PLF design and building confidence in the mechanism proved essential for creating momentum to pilot and scale the solution. Working with a broad range of stakeholders from the outset, including potential PLF lenders, project developers, and senior lenders, helped to build market understanding, support, and a pipeline of projects for early demonstrator deals.
- **Tailoring the model to the UK's legal and regulatory context ensured feasibility and avoided legislative complexity.** Whilst international PLF solutions provided valuable early proof of concept and insights into scalability, the UK's distinct financial, legal, and regulatory environment required a tailored approach. Rather than using a voluntary financing mechanism repaid through an additional line item on property tax bills, as in the US and Australia – which would have required significant and complex legislative changes and placed additional operational burdens on local authorities in the UK – the market instead explored existing legal mechanisms to underpin UK PLF. The PLF Principles¹⁴ were used to help test and rank the most appropriate linking mechanisms in the UK; this determined that a suitable mechanism for repayment collections and security already existed under UK property law.
- **Enabling PLF nationally delivers a larger, coherent market.** When designing UK PLF, a key consideration was ensuring it could be enabled at a national scale, in line with the PLF Principles, so the model could achieve the widest possible geographic reach. National level legislation mitigates the risk of market fragmentation seen in other jurisdictions with locally determined enabling legislation and instead supports a larger addressable market.
- **Early and strategic engagement with policymakers helped expedite timelines.** The development of UK PLF highlights the importance of navigating political engagement cycles, which can be complex and take time. Establishing PLF requires coordination across several government departments and regulators, reinforcing the value of early, strategic engagement to build support, align with political priorities, and accelerate implementation.

Cautionary lessons

- **Using a Savings-to-Investment Ratio (SIR) in previous retrofit schemes undermined trust and limited uptake.** The Green Deal was a UK government initiative designed to provide long-term finance for building upgrades. A central principle of the scheme was the “Golden Rule”, whereby projected savings on energy bills should exceed the cost of repayments. In practice, this was not consistently achieved, creating mistrust, negative press, and ultimately poor uptake. The experience of the Green Deal demonstrated the risks of using a SIR for UK PLF. When PLF was first discussed with UK stakeholders, concerns rooted in the Green Deal's shortcomings had to be proactively addressed, particularly around unrealistic savings assumptions, consumer protection, and the credibility of projected financial benefits.

¹⁴ <https://www.propertylinkedfinance.com/wp-content/uploads/2025/11/GFI-GPLFI-REPORT.pdf>

Deep Dive: Europe with a spotlight on Spain



Background and objectives

Efforts to develop PLF solutions in Europe stemmed from an urgent need to accelerate building renovation. Around 75% of EU buildings are energy inefficient, making largescale renovation essential to meeting the EU's 2050 climate targets.¹⁵ Yet renovation rates remain low, with only around 1% of buildings undergoing renovation each year.¹⁶

Overview of the models

EuroPACE was a l'Instrument Financier pour l'Environnement (LIFE) project launched in 2020 to accelerate the deployment of energy saving and renewable energy technologies in EU member states' households, combining affordable finance with people-centric technical assistance to reduce the risks associated with energy efficiency investments. Inspired by the US PACE market, EuroPACE was designed for repayments to be collected through property tax bills.

However, creating new municipal charging mechanisms proved to require complex legal and bureaucratic reforms across Europe, making national deployment slow and uncertain. Due to this, the New European Way for Property-Linked FinAnCE solutions (NEW-PACE) programme, a collaboration between GFI España, Nederlandse Organisatie voor Toegepast (TNO), Sustainable Energy Financing Association (SEFA), Spainsif, and Joule Assets, began exploring an alternative model.¹⁷ When launched, this new model will link payments to the property through a private law solution called consignative census (the PACE Canon), which avoids the need for regulatory change whilst delivering all, if not more, of the benefits of PACE financing.

Lessons learned from introducing EuroPACE

Replicable lessons

- **Engaging with and educating contractors improved consumer confidence and uptake.** The EuroPACE programme engaged closely with contractors and energy experts responsible for delivering upgrades, training them in the EuroPACE model so they could clearly and accurately explain the financing benefits to potential customers. This ensured that information provided to households was trustworthy, consistent, and easy to understand, helping to build confidence in the scheme. By simplifying the customer journey and effectively creating a one-stop-shop experience, EuroPACE increased accessibility and supported greater uptake of home energy improvements.

¹⁵ https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en

¹⁶ https://www.bpie.eu/wp-content/uploads/2022/02/rev6_SPIPA_EU.pdf

¹⁷ <https://www.sefaeu.org/new-pace>

Cautionary lessons

- **Legislative and administrative complexity slowed expansion and increased costs.** EuroPACE experienced challenges and delays when expanding across different regions and working with municipal authorities to determine how EuroPACE should be formally recorded. Introducing EuroPACE requires legislative changes and coordination across different levels of government. The programme faced difficulties in doing so due to the rigidity of the legislative process, as well as the fact that local taxes are highly decentralized and influenced by political cycles. The significant legal work required in each area also increased transaction costs.
- **Variation in municipal processes created inconsistencies and required repeated adjustments.** Each willing council needed to assess their own resources and approve a local resolution that complied with specific bureaucratic processes of each municipality. Documentation often had to be revised to also align.
- **Intensive local stakeholder engagement increased time and resource demands.** Municipal authorities and local delivery stakeholders needed to be individually engaged and educated, adding further time and cost constraints.

Lessons learned from designing Property Linked Annuity Canon

Replicable lessons

- **Learning from other PLF models helped identify scalable legal pathways.** Insights from EuroPACE and Greenward's exploration of a PACE-style product secured by a tacit-mortgage-style mechanism in Spain, demonstrated that creating new municipal charging or on-tax systems requires complex legal and bureaucratic reforms. Parallel work in the Netherlands, which used a ground-lease structure, demonstrated that PLF can be delivered by leveraging existing legal instruments. In response, the NEW-PACE project examined alternative pathways that could rely on existing legal instruments rather than new municipal mechanisms, ultimately identifying PACE Canon as a viable and scalable solution. At the same time, intermediate options, such as existing municipal public charges (e.g. Prestaciones Patrimoniales Públicas no Tributarias in Spain) could also be viable, since they generally only require approval through local ordinances rather than national legislation.
- **Early market engagement helped build political and industry support.** Initial efforts from Greenward, helped engage the full supply chain and key political stakeholders to promote a national level programme and share a PACE Enabling Guide, avoiding fragmentation. This ensured that information provided across the market was trustworthy, consistent and easy to understand, helping to build confidence in the scheme and generate broad political consensus. Further engagement from the NEW-PACE project with banks, investors, legal experts, and other market stakeholders also helped validate the structure, gather feedback, and build the partnerships needed for implementation.
- **Engagement with consumers helped validate and refine the model.** A 2025 market study in Spain showed strong interest in PLF, but many respondents found the structure difficult to fully understand, highlighting the need to refine the customer journey and strengthen communication around the product.

Cautionary lessons

- **Multifamily buildings introduced additional governance and administrative complexity.** Whilst PLF works well for single-family homes and commercial buildings in Spain, applying it to multifamily buildings raises both practical public deeds management and governance challenges, particularly around achieving consensus among homeowners and allocating responsibilities and payments. The NEW-PACE Project is currently investigating how to overcome this issue.

Conclusion

Existing PLF markets demonstrate PLF's potential to mobilise capital at scale for building upgrades and green construction when supported by clear enabling frameworks and strong stakeholder alignment. Across all markets, it is evident that learning from existing PLF markets and engaging with stakeholders in other regions has been critical for effective model design. Early engagement with local market stakeholders has been equally important to gather feedback, validate assumptions, and build the partnerships required for implementation.

Early transactions are consistently cited as a key enabler, providing an opportunity to test and refine operational processes, build credibility, and accelerate market growth. Successful PLF markets have also shown the value of designing models that are broad, flexible, and capable of accommodating both building upgrades and new construction across residential and commercial sectors.

Experience from current markets highlights the effectiveness of working with suppliers and contractors to widen outreach, whilst emphasising the importance of proper training to avoid consumer protection issues or reputational risks. Contractor oversight and qualifying frameworks both help to support market confidence. Current markets highlight the importance of frameworks being adapted to local context and nuances to avoid unnecessary friction. Another consistent lesson is that PLF alone cannot stimulate demand; it is essential to begin in sectors where strong underlying demand already exists, in order to build a recognised and investable asset class. At the same time, complementary policy incentives, market-wide education, and awareness initiatives are needed to create demand in other sectors that can later benefit from a more mature PLF market. Together, these elements are essential to unlocking the full scale of the opportunity.

Recurring challenges appear across geographies, including fragmented state- and local-level enabling legislation, limited capacity within municipalities to operationalise PLF, and the complexity of navigating political cycles and multi-level governance structures. These challenges underline the need to carefully assess a region's political, regulatory, and financial landscape when introducing PLF, and to evaluate whether existing legal mechanisms can be leveraged to avoid the need for major legislative reforms. These challenges also demonstrate the importance of establishing a common framework for national PLF solutions, to ensure consistency across regions and to avoid a fragmented market. Experience from existing markets also shows that administrative simplicity and standardised documentation reduce friction and encourage broader participation.

These cross-market- lessons offer practical advice for new and emerging PLF schemes seeking to launch and scale PLF solutions and should be used in conjunction with the PLF Pathways. As PLF markets continue to evolve, we encourage you to reach out to the GPFLI team to access further insights and support. If you would like to join our community of fellow PLF pioneers, please reach out the GPFLI: propertylinkedfinance@gfi.green

Acknowledgments

We would like to thank the following organisations who have contributed their time, insights and expertise, in a personal capacity, to support this report: Green Finance Institute, Climate Bonds Initiative, PLF Accelerator Australia, Amalgamated Bank, C-PACE Alliance, Lloyds Banking Group, PACE Canada and Nuveen Green Capital and an independent GPLFI advisory group member Kristina Klimovich.



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propertylinkedfinance@gfi.green

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