Beyond the Green Premium: Sustainable Finance and Affordable Housing Governance Across England, California and The Netherlands

Since the 1980s, affordable housing provision has shifted from direct subsidies toward hybrid systems reliant on private capital. Currently, providers face decarbonisation obligations and stricter building standards linked to net-zero targets. This paper examines how sustainable finance, through ESG disclosure frameworks and labelled bond markets, interacts with affordable housing finance regimes in England, California and the Netherlands. Drawing on semi-structured interviews with providers and financial intermediaries, this paper argues that sustainable finance operates as a new layer of housing governance. While emerging within transnational sustainable finance frameworks, its meaning and effects are shaped by domestic institutional arrangements. In England, ESG issuance overlays an asset-backed bond model governed by regulatory viability and covenant constraints. In California, sustainable bonds interlock with the LIHTC system contributing to mixed public–private capital stacks. In the Netherlands, balance-sheet lending backed by the WSW guarantee limits the scope for ESG-driven pricing differentials. Across these cases, sustainable finance rarely functions as autonomous funding or produces consistent green premia. Instead, it standardises disclosure, broadens investor eligibility and reinforces accountability to capital markets. However, environmental standards remain primarily driven by regulation and subsidy design. The capacity of sustainable finance to expand affordable provision remains uneven and institutionally contingent.

Affordable Housing, Housing finance, Finance, Sustainability, Social housing

1. Introduction

Throughout most of the 20th century, affordable housing provision was supported by direct public investment. However, after the 1980s, once large brick-and-mortar subsidies were substituted by hybrid models where private investors actively participate in affordable housing provision. As a result, affordable housing provision in the Netherlands, the England and the US now depends significantly on private capital, particularly for new development. Although all three systems rely on private investment, they differ substantially in the institutional and regulatory frameworks that govern affordable housing provision. In the US, affordable housing provision is incentivised through Low Income Housing Tax Credits (LIHTC) combined with investment requirements set in the Community Reinvestment Act (CRA) (Schwartz, 2021). Conversely, in the Netherlands, a guarantee lowers borrowing costs for large social housing providers (Veenstra & Van Ommeren, 2017), while in the UK, financially robust Affordable Housing Organisations (AHOs) often cross-subsidise affordable units through market-rate developments, relying on limited grant funding and developer contributions (Whitehead, 1999).

Despite differing financing structures, AHOs in all three contexts face common decarbonisation pressures, net-zero targets, tightening building codes and phased-out fossil fuels, that are expected to require substantial private capital mobilised, arguably, through sustainable finance1. Advocates of sustainable finance posit that improved disclosure and standardisation, such as the EU Taxonomy or the International Capital Market Association's (ICMA) Green Bond Principles, can channel investment toward projects with demonstrable environmental and social impact. By

[1] ENG: Legally binding net zero target by 2050, with plans to upgrade homes to EPC band C by 2035 and stricter standards for new buildings ((CBP8830). CA: Aims for carbon neutrality by 2045 through tougher building codes and financial incentives for home renovations (SB 32/EO B-55-18). NL: Targets a 49% emissions reduction by 2030 and full decarbonisation by 2050 (National Climate Agreement, 2019).

investing in projects aligned with these standards, investors generate a premium on these assets ultimately reducing the financing costs of projects deemed sustainable (Schoenmaker & Schramade, 2019). Sustainable finance has already been deployed in various forms across the three contexts at hand. For instance, the Bank Nederlandse Gemeente (BNG), has issued ESG bonds since 2014, English AHOs since 2020 and the California Housing Finance Agency (CalHFA) since 2023.

On the one hand, the critical literature has often examined the relationship between private finance and affordable housing provision through the lens of neo-liberal deregulation and state roll-back (Jacobs & Manzi, 2020) (Manzi & Morrison, 2018). On the other hand, the economic literature has focused on quantifying financial incentives for sustainable finance by measuring green premiums across sectors, or in broad studies of bond issuance, see MacAskill et al. (2021) for a review on the topic. Despite these contributions, there remains limited understanding of how sustainable finance interacts with affordable housing systems. Only a small number of studies have examined the nexus between sustainable finance and affordable housing provision namely, Mangold & Mjörnell (2022) or its contribution to decarbonisation (Fernández et al., 2023). These have also centred on continental Europe where sustainable finance regulation is more mature.

This paper examines how sustainable finance intersects with affordable housing finance regimes in England, California and the Netherlands, drawing on semi-structured interviews with providers, intermediaries and financial institutions. It argues that sustainable finance operates as a new governance layer: rather than functioning as an autonomous funding stream, it standardises disclosure, broadens investor eligibility and reinforces accountability to capital markets. However, environmental standards remain primarily driven by public regulation and subsidy design. The paper shows that the traction of sustainable finance depends on the institutional architecture into which it is inserted: the WSW guarantee system in the Netherlands, the LIHTC-CRA nexus in California, and the bond-based financing model of English housing associations each condition its scope and effects. The capacity of sustainable finance to expand deeply affordable provision is therefore uneven and institutionally contingent.

The following section reviews the literature on comparative housing finance and develops the analytical framework. The subsequent sections present the empirical findings and the final section compares the three cases and discusses the findings.

2. Literature review and analytical framework

a. Comparative literature on affordable housing finance

Comparative housing literature has long debated convergence and divergence across national systems (Harloe, 1995; Kemeny 1995), with enduring differences generally attributed to institutional frameworks and policy legacies rather than a uniform shift toward marketisation. Schwartz & Seabrooke (2008), highlight the political-economic dynamics of housing finance introducing the idea of "varieties of residential capitalism," arguing that housing markets and finance systems have distinct causal effects on policy. In their view, the macro-financial dimensions of housing (e.g asset values, mortgage provision, credit cycles) define the typologies of housing provision, rather than traditional social-welfare mechanisms. This approach complements housing regime theory while highlighting the limits of its static country groupings. Critiques of static regime frameworks have since called for historically grounded approaches capturing the co-evolution of housing finance and urban development (Blackwell & Kohl (2019).

While housing regimes still elicit debate (Stephens, 2020), a branch of the comparative literature has turned to exploring the national or local articulation of the increasingly relevant role of financial practices and institutions. For example, Byrne (2020) explores financialisation through a comparative lens focusing on the rise of "generation rent" in examining Ireland, the UK and Spain. He finds that global credit cycles and neoliberal mortgage markets have undercut homeownership giving rise to an expansive private rental sector. This approach could be framed in what Aalbers (2022) calls a "relational and comparative" methodology that traces how transnational actors, regulation and markets co-produce housing outcomes.

Multiple critical studies examine how financial institutions shape both AHO's objectives and governance. Regarding provision goals, research shows these have evolved as organisations became increasingly reliant on private capital (Wijburg & Aalbers, 2017). In Germany, for example, the adoption of capitalisation strategies and pressure to reduce balance-sheet debt contributed to the privatisation of social housing portfolios. While such regulatory changes are not necessarily direct evidence of financialisation, they can be understood as preconditions facilitating its emergence (Wijburg & Aalbers, 2017). This deregulation has also further weakened direct state oversight, although governments retained broad control over balance sheets, detailed supervision declined, creating space for "creative management" oriented toward leveraging private finance. A notable example is the Dutch housing association Vestia, which overleveraged its financial position through derivatives (Aalbers et al., 2017). Intended to strengthen balance sheets, these speculative exposures ultimately led to its collapse.

While the financialisation literature has researched the negative impacts of deregulation (Manzi & Morrison, 2018), other studies point to broader transformations in the governance of affordable housing providers. Raco et al., (2023) describe English social housing regulation as increasingly “polycentric,” characterised by multiple public, private, and regulatory actors exerting overlapping pressures on housing associations and encouraging more entrepreneurial, risk-oriented strategies. This shift toward polycentric governance aligns with the growing influence of sustainable finance, which introduces additional standards and expectations often set by supranational institutions such as the EU or international bodies like the ICMA, further reshaping how AHOs operate.

When it comes to specific comparisons of affordable housing systems, Blessing and Gilmour (2011) show how tax-credit systems, such as the US LIHTC and Australia’s NRAS, embed affordable housing within hybrid governance structures that rely on public regulation to guide private investment. Blessing, (2012) expands on this hybridity by proposing a conceptual framework for understanding how social housing providers navigate public–private pressures. Her comparison of Australia and the Netherlands illustrates how different institutional legacies shape hybrid organizational identities. This work enriches comparative housing literature by challenging the prevailing state/market dualism in housing system typologies. Wijburg (2022) similarly highlights the importance of national context, showing how the design and oversight of tax-incentivized housing schemes vary widely across countries, influencing their effectiveness in the provision of affordable housing.

Recent scholarship has also begun to examine how sustainable finance reshapes the aims and constraints of housing provision. Wagner (2025) shows that climate-finance mechanisms for building retrofits often enroll housing providers into new forms of debt or rent-like energy payment contracts, reproducing existing inequalities in access to capital and exposing low-income households to new forms of extraction. Knuth’s (2016) similarly shows that “green value” through urban retrofits and environmental upgrades can become new frontiers for accumulation rather than improving equity or affordability. Finally, Fernández et al., (2023) find that ESG regulation expands reporting obligations while generating only limited additional finance, with benefits accruing disproportionately to large and commercially oriented providers, generating inequalities in access to capital.

b. Analytical framework and approach

This paper brings sustainable finance into dialogue with comparative analyses of housing governance. It relies on Aalbers' relational and comparative approach (2022 , which emphasises tracing how transnational actors, regulatory frameworks, and financial markets shape divergent housing outcomes, rather than relying on static national typologies. It also builds on Blessing's (2012) work on hybridity in affordable housing provision, alongside Raco et al. (2023) account of polycentric governance in which state, market and quasi-regulatory actors generate overlapping and at times contradictory pressures on housing organisations.

Building on these approaches, this paper conceptualises sustainable finance as a new governance layer within the polycentric field of affordable housing provision. The central question is: how does sustainable finance reshape the provision and governance of affordable housing across different national contexts? Rather than treating it as a funding mechanism, the analysis examines how sustainable finance introduces disclosure expectations, investor accountability relations and standardisation pressures that layer onto existing institutional arrangements. The framework concentrates on the points of interface between sustainable-finance instruments and domestic housing-finance institutions in England, California and the Netherlands, attending to how those interfaces produce divergent outcomes depending on the architecture of each national system.

We operationalise this framework through four analytical dimensions that guide both the coding and interpretation of the interview material (Table 1). These dimensions translate the theoretical concepts into empirical categories, which are implemented in the Atlas.ti coding scheme. Each dimension captures a specific aspect of how AHOs operate intersecting financial and governance structures. Together, these dimensions become a lens to analyse the interviews conducted with the three actor groups (Table 2), enabling systematic comparison across cases while retaining specificity about each context.

[TABLES 1 & 2]

3. England

3.1 Mode AHOs financing and role of private capital

In the UK, the Housing Act 1988 marked a shift by reducing direct brick-and-mortar subsidies and enabling private finance to enter the affordable housing sector. Whitehead (1999; 2007) analyses how this resulted in a system where private investment in social housing depends on state grants to de-risk complementary private capital. AHOs have taken over from local authorities as the main developers of affordable housing thanks to their involvement in financial markets. AHOs also often use cross-subsidisation strategies in which market-rate units support the delivery of often much lower priced social rent housing (Scanlon et al., 2015). Since AHOs are often charities with limited profit and a clear social mission any surplus is reinvested in their activities.

When it comes to raising capital, larger AHOs issue own-name bonds (Wainwright & Manville, 2017), and smaller ones tend to rely on bank loans or on aggregators which issue bonds and lend on the proceedings such as The Housing Finance Corporation (THFC) (Whitehead, 2014).

Thanks to their large stock and with the support of grant funding, English housing associations access private capital at particularly low rates all the while facing financial oversight:

> There is a gearing ratio, how much borrowing have we got as a percentage of all of our operations, and then we've got the interest cover. At the moment we need to make sure that we cover 110% of any interest payable. We secure against our existing portfolio of homes.(Development Director, AHO)

3.2 Governance poles and accountability structure

This hybrid financing model, market debt combined with public grants, places English AHOs within a polycentric governance field. First, there is the Regulator of Social Housing, which assesses governance (G) and financial viability (V) through its grading framework. Regulatory oversight is one of the pillars of this systems that gives certainty to investors. While the V (viability) grading assesses financial robustness, interviewees consistently emphasised that governance failures pose the greatest systemic threat:

> [G]overnance is really important when it comes to the ratings, the V is less important for us than the G. So financial viability is what we assess anyway. If the regulator thinks they're not financially viable and we think they are, that would result in a question, but not necessarily a major concern. I think the real concern is governance, because the only thing that's brought any RP close to defaulting in the sector (Director, Rating Agency).

The regulator functions as a public overseer that reaffirms the sector as a low-risk asset class in the eyes of investors. Credit-rating agencies perform their own financial assessments, but governance ratings act as a critical signal to capital markets.   As a result, AHO debt has come to occupy a particular place in investors' mindsets. AHO bonds typically yield slightly above UK government gilts while maintaining very low historical default rates. This combination, secure income streams, regulated rents, and large asset bases, makes them particularly attractive to pension funds seeking long-duration, liability-matching investments.

> Global investment sees them [AHOs] as a low risk, long dated matching of sort of, it's usually pension funds that were looking to invest. It's matching returns with liabilities in the long term" (Director, Rating Agency).

3.3 Sustainable finance as a new governance layer

In England, the increasing proximity of large AHOs to capital markets created demand for ESG-related transparency. Rather than being imposed solely from above, the Social Housing Reporting Standard (SHRS) emerged as a sector-led attempt to standardise investor-facing ESG disclosure.

> Banks and investors were asking us questions around ESG and they were all asking us the same sort of questions, but in slightly different ways. (…) [W]e spoke to a couple of other people in the sector: Why don't we just get together and develop something that? We can produce something that answers all of those questions, but it standardizes it as well(CFO, AHO)

The SHRS reflects sustainable finance operating as a governance layer: it formalises reporting routines, standardises impact metrics, and aligns housing associations with investor expectations. Hence, it reduces costs in ESG disclosure rather than fundamentally altering the financing model. These reporting standards have become central to ESG issuance among English AHOs. A notable example is London-based L&Q, which was the first AHO to issue a sustainability-linked bond underpinned by items similar to those reported on in the SHRS. The bond was oversubscribed, reflecting strong investor interest, and carried a coupon rate of 2.00%. The interest rate is structured to increase if the AHO fails to meet sustainability targets, including energy efficiency. Since then, issuance of sustainability linked products has become central to English affordable housing finance:

> If you have ESG criteria, you get the normal level of market pricing […] it has become a defacto market standard. […] The first that went out on this kind of issue with these labels in the market are the big ones. They had big teams that could resource it and gather it and position it and seek to get pricing advantage. And then everybody else followed, and it's become the norm. […] There's also […] the potential accounting reasons, potential regulatory reasons reasons for this to input into your strategies and organization going forward. (Portfolio manager, Financial Intermediary)

ESG compliance has become a condition for accessing “normal” capital pricing rather than a source of significant premium. Early movers were larger associations with greater organisational capacity, reinforcing stratification within the sector. Unlike in more heavily regulated taxonomy-driven EU contexts, sustainable finance in England does not generate a consistent green premium. Instead, it acts as a market-entry requirement. ESG labelling protects access to existing capital pools but does not substantially lower borrowing costs beyond standard market rates.

3.4 Interlock between sustainable finance and national affordable-housing finance institutions

In England, sustainable finance does not operate as an autonomous funding stream but interlocks tightly with the existing bond-based, asset-backed financing model of housing associations. ESG-labelled bonds are therefore layered onto an already mature debt infrastructure. At the core of this interlock is the borrowing model. Housing associations secure debt against their existing stock or rental cashflow, with gearing ratios and interest cover acting as binding constraints. ESG issuance does not alter these structural limits; rather, it becomes another format through which the same secured borrowing is channelled.

> It opens up a significant additional amount of capital within the pension industry, within the insurance sector to a lesser degree. But particularly in pensions and investment managers, they have a lot of green, sustainable funds, which can only invest in this type of bond. (CFO, AHO)

Certain pension and asset-management mandates restrict investment to labelled green or sustainable products. By issuing ESG-compliant bonds, housing associations gain access to these ring-fenced pools of capital. However, this does not imply a structural reduction in cost of capital. Instead, it preserves market access under evolving investor mandates. ESG bonds in the English context frequently take the form of “use-of-proceeds” instruments aligned with development already consistent with regulatory and policy trajectories:

> The debt that we do have, the 950 million, that is effectively use of proceeds funding. So it's not linked to specific ESG KPIs. It is specifically linked to having to be used

> for sustainable means, which in our case means building houses, which are at least EPCB rated. (CFO, AHO)

The threshold of EPC B reflects national decarbonisation requires and tightening building regulations. In this sense, ESG finance does not impose fundamentally new environmental obligations but codifies compliance with standards that were increasingly embedded in development practice. The interlock is therefore regulatory–financial: environmental benchmarks shaped by national climate policy are translated into bond eligibility criteria, but without altering the underlying financial logic of borrowing and covenant compliance. Investor behaviour reinforces this dynamic. ESG criteria have become embedded in due diligence routines across long-duration institutional investors:

> Because we issue bonds that are long term predominantly 30 year plus our investors tend to be pension funds that have got long-dated liabilities I think a good kind of 80% and the majority of those 90% tend to be UK based pension funds […] we get an increased number of questions from them on ESG related criteria. (Banker, Financial Intermediary)

ESG compliance acts mainly as a screening requirement for pension-fund investment rather than a source of lower borrowing costs. Housing providers adapt to investor ESG mandates, but development remains constrained by balance-sheet limits such as gearing and interest-cover ratios. As a result, sustainable finance overlays existing secured-lending structures without expanding borrowing capacity, benefiting mainly providers with newer, energy-efficient stock and stronger financial positions. The interlock becomes more visible when comparing organisational models. For-profit and growth-oriented providers with newly built, energy-efficient stock and limited legacy liabilities can integrate green bonds into more aggressive scaling strategies:

> The initial acquisition spend comes from the equity and the debt side. Once that asset is completed and handed over to us, we then refinance that, we've done it twice now, which is the CMBSs, the commercial mortgage backed security. And that's the green bond […]Once we get to a certain kind of scale, we'll then package those 2,000 units up. And then that'll be pushed into a bond […]Where we have a minimal threshold, I think is an EPC rating of B. We've got a bunch of EPC A's as well. Because we're governed by the house builder because we're not building and developing ourselves. (Finance Officer, For-Profit AHO).

Finally, ESG bonds can also be used to refinance portfolios of newly built, energy-efficient housing through securitisation, supporting expansion for providers with modern, compliant stock. This model favours for profit recently created and growth-oriented organisations, while associations with older, retrofit-intensive portfolios face tighter borrowing constraints. As a result, sustainable finance can reinforce existing inequalities by privileging providers with stronger environmental performance and balance sheets.

4. California

4.1 Mode of AHOs financing and role of private capital

In the US since the 1970s, federal policy has shifted from supply-side subsidies to demand-side instruments like the Housing Choice Voucher Program (Section 8), emphasizing individual mobility over structural housing provision (Schwartz, 2021). In 1986, the US introduced the

Low-Income Housing Tax Credit (LIHTC) program, effectively working as a grant for affordable housing development. LIHTC channels private equity into affordable housing projects through tax incentives, fundamentally altering the institutional landscape and producing complex public-private financing partnerships.

The flow of equity towards an affordable housing project starts with the Internal Revenue Service (IRS) allocating credits to state housing agencies, i.e. the California Tax Credit Allocation Committee (CTAC). These agencies in turn allocated credits through a competitive bidding process awarding so called 9% credits to developers to build LIHTC properties where rents are below a pre-determined level. There is two versions of LIHTC, 4% and 9%, these refer to the percentage of total project costs eligible to claim federal tax credits on, the difference is covered below. Developers sell LIHTC credits to investors, either directly or through a syndicator. Syndicators act as intermediaries between developers and investors which buy tax credits to offset them against their tax liabilities. The price paid by investors for these tax credits has oscillated cyclically over the decades depending on corporate profits demand for credits (Schwartz, 2021).

4.2 Governance poles and accountability structure

Equity from LIHTC projects is complemented by soft loans and subsidies from other local and state governments such as the California Department of Housing and Community Development or the Los Angeles Housing Department (LAHD). These soft loans entail lower than market interest rates and a long repayment periods. Together with soft loans, large projects by commercially oriented developers also rely on commercial loans. A relevant synergy exists between LIHTC and Tax-Exempt Private Activity Bonds (PABs). PABs are allocated to states by the IRS, which then administers them through a housing finance agency which in turn allocates the bonds to eligible projects. If a project qualifies for PABs it automatically becomes eligible for 4% LIHTC credits (Desai et al., 2010). As a result, 9% credits are capped by the LIHTC allocation ceiling while 4% credits are limited by state bond cap. Affordable housing provision therefore relies on assembling complex capital stacks.

Because LIHTC ties affordability to private equity markets while retaining strong public allocation control, Californian affordable-housing delivery is governed through multiple, overlapping “poles” of accountability. These include: (1) public agencies that allocate credits and loans, set affordability and compliance rules, and attach procurement and policy requirements; (2) private investors seeking predictable tax benefits and negotiated yields; (3) syndicators and other intermediaries who standardise underwriting and monitor compliance on behalf of investors; and (4) banks whose engagement is shaped both by market strategy and by regulatory obligations such as the Community Reinvestment Act (CRA).

The CRA is crucial because it links banking regulation to place-based investment duties, incentivising financial institutions to invest in or lend into low- and moderate-income areas (Blessing & Gilmour, 2011). In practice, CRA-related motivations support demand for LIHTC credits and for complementary debt products (construction lending, bridge lending, permanent financing) tied to LIHTC projects. This stabilises part of the investor base while also framing affordable housing finance as a compliance-driven activity. As a result, a project’s viability depends not only on mission alignment or local housing need, but also on whether it fits investor compliance logics, underwriting standards, and regulatory scoring.

At the same time, public governance in California is distributed across multiple levels. State agencies (e.g., CTCAC) define core allocation rules and scoring priorities; local agencies provide gap financing and impose local requirements; and federal rules shape tax-credit eligibility and bond structures. Each public component can introduce additional constraints, labour rules, design standards, and eligibility criteria, which are incorporated into project planning.

> That's what CTCAC does, and I think they actually do it pretty effectively, with all these regulations and all this hugely complex process, they've created a million different levers and triggers that result in tens of thousands of affordable housing units getting built in California every year, which is a super high cost state that has a housing shortage that is not getting addressed by the private market.(Finance Officer, Financial Intermediary)

4.3 Sustainable finance as a new governance layer

The development of the sustainable and green bond markets in California interlocks with private banks and affordable housing finance agencies, for instance, the sustainability bond by CALHFA mentioned above. These bonds align, according to S&P, with the international Social, Green and Sustainability bond standards set by ICMA (Sewell, 2023). The bond's social element highlights that project selection for use of proceeds relies either on eligibility for PABs. On the sustainability side, the requirements are less stringent and reference meeting building code energy efficiency standards (Title 24).

CALHAFA's issuance is complemented by that of large providers, for instance National Core was the second AHO in the US to issue a Social Bond of issuance of $100 million. The proceeds are earmarked to finance the acquisition, development, and preservation of high-quality affordable multifamily housing. This issuance follows the Social Bond Principles as defined by

ICMA. Large providers prefer to use social bonds as "there's more flexibility with the social bond in terms of utilizing it for affordable housing as well as acquiring land (CDO, AHO)". While earmarking a bond issuance as social may be easier for affordable housing providers, recent quantitative evidence points in this same direction with Social bonds having only a small premium.

> We've looked at bond pricing, How are investors valuing bonds in certain sectors? Do they care about whether it's setting a green? Do they care about whether it's social? This sort of numerical analysis has always shown that there really isn't a differential in terms of even one basis point of interest rate. (…) We sort of do it as a policy thing. (Bond expert, Financial Intermediary)

Sustainable finance also takes the form of social bonds earmarked for affordable housing through local authority financing schemes like the Office of Community Investment and Infrastructure (OCII) in San Francisco . OCII issues a $24M Taxable Third Lien Tax Allocation Bonds for affordable housing projects following ICMA social bond standards. While the use proceedings of these bonds is affordable housing, their repayment is not attached to the affordable housing developments themselves but to a tax incremental financing element attached to open market properties developed within the areas administered by the OCII. "We still have the power of tax increment financing. Which means we still have the power of issuing bonds (…) It all gets calculated on what is the amount of tax generation that now the new value is creating, which is still very high." (Area Manager, Redevelopment Agency). These bonds, repaid through tax increments, fund affordable housing through soft, subordinate loans.

> What the redevelopment agency are trying to do here when we give these loans out, we never expect for the loans to be repaid. We expect that what's gonna happen is that the affordable housing partner is going to pay some amount of servicing down the debt (..). Over time, they're gonna have to refinance that debt at some point because it's not gonna get paid down. But what we're gonna get for refinancing this is another 75 years or 100. Basically what we're creating is permanent affordable housing. (Area Manager, Redevelopment Agency)

A third group of issuers are large banks such as Bank of America, Chase or Citibank. For instance, Chase issued a $1 billion social bond in 2021 that had earmarked use of proceeds, together with other items, for affordable housing, setting the affordability criteria at a rent set at 80% Arean Median Income (AMI), above LITHC which requires at least below 60% AMI. Despite this requirement, according to the 2022 use of proceeds report, most of the funds were allocated to LITHC project either towards equity or towards construction loans or long term debt, the other two debt products that banks often provide to the LIHTC equity projects they invest in.

4.4 Interlock with national affordable-housing finance regimes

The extent to which sustainable bonds can reshape affordable housing finance in California remains limited. LIHTC pricing is primarily driven by corporate tax liabilities, investor demand, and the fixed supply of tax credits, rather than by banks' cost of capital or bond issuance conditions. Any pricing advantage from sustainable bonds is unlikely to translate into higher LIHTC equity or materially alter project financing, with credit prices since 2016 fluctuating mainly in line with corporate profits and economic cycles.

> It's limited by federal programs [LIHTC supply]. Because that supply is relatively finite in areas where there's a lot of demand, it doesn't really matter as much what's going on in the rest of the economy because they need those deals. (CEO, AHO)

In turn, building standards are often driven by CTAC credit allocation. The determinant element is the competitive LIHTC allocation for 9% credits which drives up standards:

> CTAC provides additional points to energy efficient buildings. For our organization, green building is a standard. We adopted green building standards 10-15 years ago. It's really a triple bottom line, it is good for the environment but we have to make the case with our board and our investors and lenders is the economic benefit. (Chief Development Officer, AHO)

The CTAC competitive allocation process complements two other mechanisms that incentivise higher environmental standards in new construction. First, the gross cap rent defined for LIHTC projects includes rent and a utility allowance allowing to increase rent as the utility allowance decreases. Second, additional local and state government grants or soft loans, usually attached to environmental criteria, compose an integral part of the capital stacks used in LIHTC projects. As a result of their dependence on public and concessional finance, smaller and more socially oriented AHOs are driven to higher sustainability standards through public programmes and scoring systems. A syndicator specialising in hard to fund, highly affordable projects reflects this way on the possibility to access sustainable finance:

> You're telling an investor, “yes, I'm going to give you that return that you want anyways, and I'm going to give you this impact metric”. In order for us to get the

impact metric which is meaningful to us from a mission perspective, it is impossible to provide that economic return. (CEO, Syndicator)

Ultimately, In California, sustainable finance has an impact on affordable housing provision in California in three ways that are strongly mediated through the LIHTC system. Raising funds for financial intermediaries, supporting the growth strategies of a few large providers and through the funding programmes of certain local authorities.

5. Netherlands

5.1 Mode of AHOs financing and role of private capital

Affordable housing provision in the Netherlands is primarily carried out by housing associations (woningcorporaties), the country's AHOs. Similar to England, the Dutch system shifted during the late twentieth century from reliance on direct public subsidies toward a model based on rental revenue and access to external capital markets financing. External financing is largely channelled through two specialised promotional banks, Bank Nederlandse Gemeenten (BNG) and Nederlandse Waterschapsbank (NWB). Lending from these institutions is supported by a state-backed guarantee mechanism, the Waarborgfonds Sociale Woningbouw (WSW). The WSW guarantee significantly reduces borrowing costs for housing associations and allows them to access capital markets at interest rates comparable to those of Dutch sovereign bonds, often associated with AAA credit ratings (S&P, 2022). This preferential financing framework is enabled by the legal designation of social housing as a Service of General Economic Interest (Dienst van Algemeen Economisch Belang, DAEB).

Unlike project-based financing models common in other countries, Dutch housing associations typically borrow on the basis of their overall balance sheet, rather than for individual development projects. Funding therefore supports the organisation's overall activities rather than specific housing developments. While this structure grants housing associations significant operational autonomy, it also requires them to maintain sound financial positions to retain access to guaranteed borrowing. The combination of stable rental income and preferential borrowing conditions creates a financial model in which housing associations can expand or renovate their stock while maintaining regulated rent levels.

Since the early 2000s, many housing associations have also developed additional revenue streams, notably through the sale of dwellings or through investment in the mid-market rental segment (middenhuur). Approximately 100,000 dwellings fall into this non-DAEB category. These activities are not covered by the WSW guarantee system and therefore fall outside the preferential financing framework provided by BNG and NWB. As a result, some housing associations have increasingly relied on capital market financing for these activities (Boelhouwer, 1997). In certain cases, this partial liberalisation exposed housing associations to financial risk. The most notable example occurred in 2011, when Vestia, the largest housing association in the Netherlands, suffered losses of approximately €2.1 billion due to speculative derivatives trading. These losses were ultimately absorbed by the WSW guarantee fund and by contributions from the broader network of housing associations (Elsinga & Wassenberg, 2014). The episode prompted reforms strengthening financial supervision within the sector.

5.2 Governance poles and accountability structure

Dutch housing associations operate within a multi-layered governance framework linking local authorities, national regulators, and financial institutions. On the one hand, housing associations maintain close relationships with municipal and regional governments, which play a central role in housing policy and urban development. As major providers of affordable housing, associations coordinate with municipalities on planning and development strategies, including urban renewal programmes and local housing policies. These interactions create an institutional interface through which local authorities influence the scale and location of affordable housing provision.

At the national level, the Authority for Housing Corporations enforces housing legislation and supervises housing associations. Governance and accountability mechanisms in the Dutch social housing system also operate through the financial relationships linking housing associations with promotional banks and the WSW guarantee fund. Access to preferential borrowing conditions requires housing associations to meet financial viability criteria related to balance sheet strength, liquidity, and risk exposure.

This balance-sheet-based supervision framework ensures that housing associations maintain sufficient financial stability to access preferential capital markets. In practice, associations must demonstrate prudent portfolio management and maintain sound financial ratios in order to secure additional borrowing. Through this mechanism, promotional financial institutions exercise a form of oversight over the sector while remaining largely detached from the operational evaluation of specific housing programmes. At the same time, housing associations constitute a major client base for both promotional banks and the WSW guarantee system, creating relationships characterised by mutual dependency between financial institutions and housing providers. As one representative from a promotional bank explained:

> If our own credit assessment gives outcomes that are worse than maybe the WSW assessors, even though they get a guarantee, we may not provide a loan. To be fair, in

> social housing, that is seldom the case because also the thresholds of the WSW are relatively comfortable and there are not many, recently, there have not been many social housing corporations who came into that. (Loan Officer, Promotional Bank).

As suggested by interviewees, the Dutch financing framework tends to blur traditional financial hierarchies, replacing them with a financing chain in which responsibilities are distributed among housing associations, guarantee institutions, and promotional banks. Compliance with this distribution of roles contributes to limiting financial exposure while sustaining the sector's access to low-cost capital.

5.3 Sustainable finance as a new governance layer

As in England and California, Dutch AHOs face increasing pressure to improve the energy performance of their housing stock. Housing associations have committed to sustainability targets under the National Performance Agreement (2019), which establishes sector-wide objectives for improving the energy efficiency of social housing. Investments in energy renovation increase capital costs, creating tensions between decarbonisation objectives and the capacity of housing associations to maintain affordable rents.

While these policy commitments increase pressure to decarbonise the housing stock, the way sustainable finance operates in practice remains shaped by the institutional structure of the Dutch affordable housing finance regime. The promotional banks, BNG and NWB have pioneered sustainable being among the first institutions to issue labelled sustainable bonds in Europe. BNG issued its first sustainability bond in 2014, followed in 2016 by a social bond supporting highly sustainable housing projects. NWB launched Water Bonds to finance climate adaptation projects and later expanded into the housing sector through social bonds supporting affordable housing.

In 2019, NWB issued the SDG Housing Bond, a €1 billion bond aligned with the United Nations Sustainable Development Goals and aimed at improving the environmental performance of Dutch social housing.

These instruments demonstrate the capacity of Dutch promotional banks to mobilise capital for sustainability-related investments. However, as the Netherlands developed its own form of sustainable finance early-on due to the role of these two banks in housing provision, it did not introduce significant changes in terms of the financial governance of AHO. Since housing associations already benefit from state-backed guarantees and preferential borrowing conditions, labelled sustainable finance instruments primarily serve to diversify investor demand rather than to transform the sector's financing structure.

> If there is a premium I say show it to me(…), I haven't seen it and then you can look at a risk perspective will change in the future maybe (…) we don't look at it at all so they don't see it. Our bank says we might see it so we are working on that with them" (CFO, AHO)

In the Dutch context, sustainable finance operates less as a new source of capital than as an additional governance layer shaping reporting practices and investment narratives within the sector. While the underlying financing mechanisms remain largely unchanged, sustainability frameworks introduce new expectations regarding transparency, energy performance monitoring, and the articulation of environmental outcomes.

5.4 Interlock with national affordable housing finance regimes

Several stakeholders argued that the introduction of new financial instruments aimed at mobilising capital for sustainable housing is likely to have only limited influence on the operational practices of Dutch AHOs. This reflects the structural characteristics of the national affordable housing finance regime.

First, lending within the sector is primarily based on organisation-level balance sheets rather than project-level financing. Loans provided by promotional banks are typically issued as budget financing, supporting the overall financial position of housing associations rather than individual housing developments. As a result, environmental performance is not assessed at the level of specific projects, which complicates alignment with ESG reporting frameworks.

> The main problem is that when you do budget financing, as we do, so no particular usual proceeds per bond, then it's sort of impossible to be compliant with taxonomy, as it is now, and so only project finance(…)could qualify for taxonomy, but that's a very small part. (Bond Expert, Bank)

Second, the regulatory architecture governing the Dutch social housing sector already embeds sustainability objectives, which limits the additional impact of dedicated sustainable finance instruments. Because AHOs operate under a public-service mandate and strict regulatory oversight, their activities are already framed as contributing to socially and environmentally desirable outcomes. In this context, new financial instruments labelled as “green” or “sustainable” tend to operate within existing financing channels rather than fundamentally altering investment practices. Alignment with the EU Taxonomy presents specific challenges within the Dutch regulatory context. The taxonomy requires new residential buildings to achieve energy performance levels at least 10 percent above national standards. However, Dutch building regulations already impose high efficiency thresholds under the BENG (Nearly Energy Neutral

Buildings) standard, making additional improvements financially difficult to achieve.

> But from that knowledge we knew that the EU taxonomy has one thing in it to comply with and that means that you have to build housing 10 percent better than the local requirement for energy. So in Dutch we have a very high local standard which is called BANG. Almost an efficient neutral building and if we as a housing company wants to be 10 percent better that's too expensive because we are already happy that we are meeting this.(CFO, AHO)

Consequently, although heightened energy efficiency requirements have prompted increased engagement among the promotional banks, the mechanisms through which these regulatory ambitions can be operationalized and measured remain insufficiently defined. Clear pathways for translating efficiency objectives into standardized reporting and quantifiable performance indicators have yet to emerge.

Finally, some interviewees reported that new reporting requirements are beginning to emerge when housing associations access private lending markets, particularly for financing non-DAEB activities. These requirements often involve additional sustainability disclosures during asset valuation processes.

> Yes so and due to that fact you see now a change in what they ask about information of the assets they are getting or the activities they are funding. And that's for both DAEB and non-DAEB. If we are getting non-commercial loans I see that more and more are coming into the picture. (CFO, AHO)

However, such practices remain limited and were primarily associated with commercial lending outside the core DAEB financing framework. At the time of writing, interviewees did not report systematic examples of sustainable finance instruments reshaping the financing practices of AHOs within the guaranteed social housing system.

6. Discussion and Conclusion

The objective of sustainable finance is to make private capital deliver for environmental and social goals. This paper shows how, in housing, the set of incentives available for sustainable finance adoption depend on national affordable housing finance frameworks. Across England, California and the Netherlands, sustainable finance is often led by the institutions closest to capital markets in each context: public intermediaries and private banks in the USA, AHOs in England, and promotional banks in the Netherlands. This has produced different definitions of impact and sustainability benchmarks across sectors.

Across England, the Netherlands, and California, sustainable housing finance appears to have become standardised but with limited additional impact on affordability or building standards: English AHOs have normalised sustainable debt issuance, though its added value is unclear as targets often align with or fall below government requirements; in the Netherlands, low borrowing costs secured by the WSW guarantee system mean ESG labelling mainly serves investor diversification rather than pricing benefits, with state-defined building standards dominating; similarly, in California, environmental requirements are set through public funding mechanisms like LIHTC and the CRA, meaning sustainable finance, primarily via social bonds, has limited influence and tends to benefit only projects able to access market-rate loans, leaving deeply affordable housing largely unaffected.

Among these contexts, England appears best positioned to leverage sustainable finance, given the scale and financial autonomy of its AHOs. Investor engagement and early reputational gains initially drove the sector, supported by sustainability-linked bonds and reporting frameworks such as the SHRS. However, the pricing advantages once associated with ESG issuance have largely disappeared, and uptake has become standard practice. In contrast, the institutional strength of the Dutch and US systems, anchored in state guarantees and tax credit mechanisms, blunts the impact of ESG-labelled finance. Across all three cases, it becomes clear that environmental regulation and government-led financial incentives, not ESG labelling alone, are the strongest and most consistent drivers of investment in energy efficiency and low-carbon housing.

These findings sit in tension with recent scholarship on sustainable finance and housing governance. Wagner (2025) warns that climate finance mechanisms for building retrofits tend to enrol housing providers into new forms of debt or rent-like energy payment contracts, reproducing existing inequalities in access to capital. Knuth (2016) similarly shows how urban retrofits and environmental upgrades can become new frontiers for accumulation rather than genuinely improving equity or affordability. This paper's evidence largely confirms that concern: in none of the three cases does ESG labelling function as an autonomous source of finance that deepens affordability. The scale and financial autonomy of English AHOs, which Manzi and Morrison (2018) trace to successive rounds of deregulation and commercial repositioning, makes them the actors best placed to exploit ESG markets, but also the most exposed to the accountability fragmentation that Raco et al. (2023) identify in their account of polycentric governance. The Dutch case illustrates a different mechanism the WSW long documented as a structural determinant of housing association behaviour (Veenstra & Van Ommeren, 2017), insulates the sector from green premium dynamics but also limits the traction of voluntary sustainable finance frameworks. California's experience, where the LIHTC-CRA structures private capital flows (Wijburg, 2022), shows how tax-credit dependency creates cyclical and sector-specific constraints that sustainable bonds cannot overcome for deeply affordable provision. This paper ultimately conceptualises sustainable finance as a new governance layer rather than a funding mechanism, building on Raco et al.'s (2023) account of polycentric governance and Blessing's (2012) framework for understanding hybrid organisational identities in affordable housing. In each case, sustainable finance introduces new disclosure expectations, accountability relationships and investor logics that layer onto existing institutional arrangements rather than replacing them, in line with Aalbers' (2022) relational and comparative approach, which emphasises tracing how transnational financial frameworks produce divergent outcomes depending on the national institutions through which they flow.

Policy lessons can be drawn in both directions. In California, efforts to expand affordable housing provision could benefit from fostering larger, mission-driven operators with financial and organisational capacity comparable to Dutch and English AHOs. Building such institutional capacity would enhance the sector's ability to raise and deploy capital more effectively. Conversely, in England and the Netherlands, if the goal is to channel more private investment toward affordable housing, governments may need to move beyond voluntary disclosure and labelling regimes. Stronger regulatory instruments, mandated investment quotas or targeted obligations, a feature of post-war banking systems, may again be relevant. The US Community Reinvestment Act, though less prescriptive, offers a useful model for aligning financial regulation with social housing objectives. Ultimately, while standards and reporting mechanisms are integral to sustainability objectives, the institutional design onto which these are layered remains decisive in determining whether capital reaches where it is most impactful.

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