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Creating Financial Value Through Sustainability in Listed Real Estate

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EXECUTIVE SUMMARY

Investment in sustainable buildings is projected to represent a USD 1.8 trillion opportunity by 2030[1], as investors are increasingly seeking properties with high performance in environmental, social, and governance (ESG) metrics.

For listed real estate, the effects of sustainability measures can be reflected as green premiums or brown discounts during valuations, but also continuously through share prices, analyst expectations, cost of capital and premiums or discounts to EPRA Net Asset Value metrics (NAVs). Despite their recognised importance, there remain challenges in quantifying the financial benefits that potential or planned sustainability measures could have on assets or portfolios, making it hard to argue the business case for capital investments in the area.

Sustainability Value Creation (SVC), the framework presented in this paper, provides a practical methodology for identifying, prioritising, and quantifying sustainability actions in financial terms. The framework provides a pathway to connect sustainability levers to key financial drivers for real estate performance, for example rental income, vacancy, operating costs, EPRA Earnings, EPRA NAVs, and investor confidence. It allows companies to move from qualitative sustainability narratives to evidence-based investment decisions and clearer communication on how investment in sustainability measures supports financial value.

Through two illustrative case studies, this paper demonstrates how sustainability initiatives (such as energy efficiency, electrification, renewable energy, climate adaptation, tenant engagement, certification, and ESG data) can improve Net Rental Income (NRI) through decreased operational costs, reduced vacancy, and higher rental rates. It also shows how measures can contribute to both immediate operating performance, longer-term resilience, and higher market value.

This paper is intended to be a practical tool for action. By applying the SVC framework, listed real estate companies can move from broad sustainability ambition to financially grounded decisions: building the right data foundation, identifying and prioritising the levers that matter most, embedding quantified impacts into asset plans and investment appraisals, and translating results into investor-relevant metrics. In doing so, sustainability becomes not only a parallel reporting exercise, but a strategy for stronger capital allocation, clearer investor communication, and more resilient long-term performance.



[1] *World Economic Forum. (2024). Towards Green Building Value Chains. WEF and BCG (accessed 14/06/2026).*

1. INTRODUCTION

1.1 A new lens on sustainability in the listed real estate sector

Against a backdrop of evolving risks, including economic instability, geopolitical tensions, technological disruptions, and unprecedented climatic events, the perspective on sustainability across industries has begun to shift from a compliance-based activity to a value-adding exercise[2]. This is no less true in the listed real estate sector, where stakeholders are recognising the growing importance of embedding sustainability into real estate to protect and increase financial value.

Investment in sustainable building levers is projected to represent a USD 1.8 trillion opportunity by 2030[3], as investors increasingly seek properties with high energy efficiency ratings, minimal carbon emissions, low exposure to physical climate risks, EU Taxonomy alignment, high social engagement metrics, and robust governance structures[4].

$1.8 trln

projected investment in sustainable building levers by 2030

In a recent real estate investor survey[5]:

76%
of respondents said that sustainability considerations had impacted their investment decisions over the last year or two;

30%
of respondents said that sustainability considerations had led to a decrease in the bidding price;

35%
of respondents said that sustainability considerations had led to a decision not to bid at all; and

69%
of investors who responded said they had noticed a "brown discount" in assets that did not meet certain sustainability criteria.

Evidence is undoubtedly growing of a "green premium" for sustainable buildings due to their potential for decreased operating costs, growing attractiveness, and increased resilience[6]. A recent Sustainability Index study[7] showed that energy-efficient assets across subsectors (office, retail, and industrial) yielded higher returns than similar inefficient assets. In Germany, a study showed a clear correlation between energy-efficient and low-carbon properties and asset value[8]: energy-efficient buildings command a premium of up to 4.7% compared to the median, while high-emission properties face corresponding "brown discounts".

Occupiers' climate commitments also increase demand for assets with high sustainability performance, leading to higher occupancy rates[9]. Additionally, social and governance aspects such as user experience, surrounding environment, community engagement, fair employment practices, and stakeholder communication play a role in increasing value through, for example, overall tenant satisfaction, which has been associated with lower vacancy rates and higher rental income.

For listed real estate, the effects of sustainability measures may not only be reflected as green premiums or brown discounts but also continuously through share prices, analyst expectations, cost of capital, and premiums or discounts to EPRA Net Asset Value metrics (NAVs). Sustainability performance therefore influences not only asset values, but also how capital markets value the company.

[2] KPMG AG. (2026). Sustainability Value Creation: How companies turn ambition into measurable performance. KPMG.(accessed 01/06/26).
[3] World Economic Forum. (2024). Towards Green Building Value Chains. WEF and BCG (accessed 14/06/26).
[4] RICS. (2025). Sustainability Report 2025. London: Royal Institute of Chartered Surveyors (RICS) (accessed 01/06/26)
[5] Markiewicz, K. (2025, April 09). Sustainability remains a key driver for European real estate investors. JLL Insight (accessed 02/06/26).
[6] PwC and the Urban Land Institute. (2023). Emerging Trends in Real Estate Europe 2024. London: PwC and the Urban Land Institute (accessed 03/06/26).
[7] CBRE. (den 13 November 2025). Net zero assets are increasingly critical for logistics occupiers driven by their own corporate commitments. (accessed 06/06/26).
[8] Wüest Partner. Empirical study on the relationship between CO2 emissions and market value Studie: Beziehung zwischen CO2-Ausstoß und Marktwert (accessed 06/06/26).
[9] World Green Building Council. (2021). Beyond the Business Case. World Green Building Council (accessed 14/06/26).

For example:

- **Sustainable buildings lower operational expenses** by decreasing utility bills, waste output, and maintenance costs. Sustainable buildings can lead to 10-30% lower operating costs, reducing payback times for initial investments. Another potential benefit is the reduction in rental turnover costs due to increased tenant satisfaction from lower costs and improved wellbeing[10].
- **Climate risk is increasingly integrated into asset valuation.** Climate change can impact property value by increasing operational costs, declining attractiveness, reducing rental levels, directly damaging buildings, and impacting overall insurability of the properties[11,12]. Assets with in-depth climate risk assessments and solid adaptation measures are more likely to be protected against climate risks and their related financial impacts, as reflected by lower, or stable, insurance premiums[13].
- **Sustainable buildings may attract a broader investor pool and better loan conditions[14]**. Lenders have been shown to reward certified buildings' lower-risk profile with more favourable loan conditions[15], while alignment with frameworks such as the EU taxonomy supports eligibility for green financing mechanisms, all of which may lower cost of debt and by extension, increase valuation by increasing liquidity and compressing the required yield.

1.1.1 Challenges in making the business case for sustainable buildings

Despite growing awareness of the business case for sustainable assets, the real estate sector continues to face material challenges when it comes to measuring and evidencing the financial impact of sustainable investments. Regulatory developments and industry initiatives have improved transparency and data availability. However, translating sustainability performance into robust, comparable, and decision-relevant financial outcomes remains difficult[16,17]. The key challenges can be grouped into three main areas:



Lack of data and quantification methods: while ESG data availability has improved, driven by regulation such as the EU Corporate Sustainability Reporting Directive (CSRD), the Energy Performance of Buildings Directive (EPBD), market-led initiatives such as EPRA sBPR, and the development of ESG data lists for valuations[18], data gaps persist. ESG data is still uneven across assets, geographies, and indicators, with limited historical time series and inconsistent definitions. In addition, many sustainability impacts can be identified qualitatively but cannot yet be easily quantified or isolated from other value drivers such as location, asset class, or market conditions, limiting comparability and financial robustness.



Complexity and cost of business case development: building a credible financial case for sustainability initiatives, particularly capital-intensive measures such as retrofits, remains complex and resource-intensive. It requires detailed technical, financial, and regulatory analysis, specialised skill sets, as well as assumptions about future energy prices, regulation, tenant demand, and risk. These challenges are amplified in volatile market environments and where sustainability benefits accrue over longer time horizons, increasing uncertainty around payback periods and value impact.



Difficulties in securing management buy-in: responsibility for sustainability initiatives and their financial outcomes is often fragmented across investors, asset managers, and property managers. At the same time, the voluntary nature of many ESG valuation frameworks and the lack of universally accepted financial evidence can make it harder to secure senior management buy-in. Without clear ownership and a transparent link to financial performance, sustainability initiatives risk being perceived as optional or only compliance-driven rather than value-adding, slowing decision-making and investment.

[10] World Green Building Council. (2021). Beyond the Business Case. World Green Building Council (accessed 14/06/26).
[11] Peterson, S. (2014). What the Real Estate Industry Needs to Know about the Insurance Industry and Climate Change. Urban Resilience Program White Paper Series: Urban Land Industry (accessed 02/06/26).
[12] OECD. (2025). Future-Proofing Real Estate Investment. OECD Urban Studies. Paris: OECD Publishing (accessed 02/06/26).
[13] Forcellati, C., Tan, S.-F., & Hills, J. (2026, April 15). Business Insights: Climate Risk & Real Estate: Why Mitigation is the best insurance policy. CBRE (accessed 02/06/26).
[14] GRESB. (2026). Sustainability-linked loans. GRESB. (accessed 30/06/26).
[15] Eichholtz, Hotermans, Kok, & Yönder (2019). Environmental performance and the cost of debt: Evidence from commercial mortgages and REIT bonds. Journal of Banking and Finance. (accessed 30/06/26).
[16] KPMG AG. (2026). Sustainability Value Creation: How companies turn ambition into measurable performance. KPMG (accessed 01/06/26).
[17] KPMG. (2026). Closing the sustainability valuation gap. KPMG International. (accessed 06/07/26).
[18] RICS. (2024). The future of real estate valuations: the impact of ESG. London: Royal Institution of Chartered Surveyors. (accessed 03/06/26).

1.2 The Sustainability Value Creation framework

Recognising these challenges and the increased need to integrate sustainability into financial steering and planning, Sustainability Value Creation (SVC), defined as the contribution of sustainability to a company's overall performance, aims to provide a framework to translate sustainability topics into consistent financial value logic[19].

While the impact of ESG factors on property valuation is an area of growing strategic importance and some guidance exists, e.g. the RICS Red Book update[20], a fully established and widely accepted methodology for quantifying this effect remains underdeveloped. In this context, SVC offers a pragmatic alternative to help overcome this gap. The framework enables the identification and measurement of the financial impacts associated with ESG performance at asset or portfolio level, while providing a structured basis to quantify the potential upside in property value driven by sustainability initiatives, effectively supporting investment decisions and strengthening the business case for sustainability.

In this paper, we aim to provide an overview of the SVC framework and how it can be applied to the real estate sector by identifying and quantifying sustainability-related opportunities from a financial perspective.

We first introduce the framework in a step-by-step format, providing details on best practices throughout. We then exemplify the framework using two case studies:

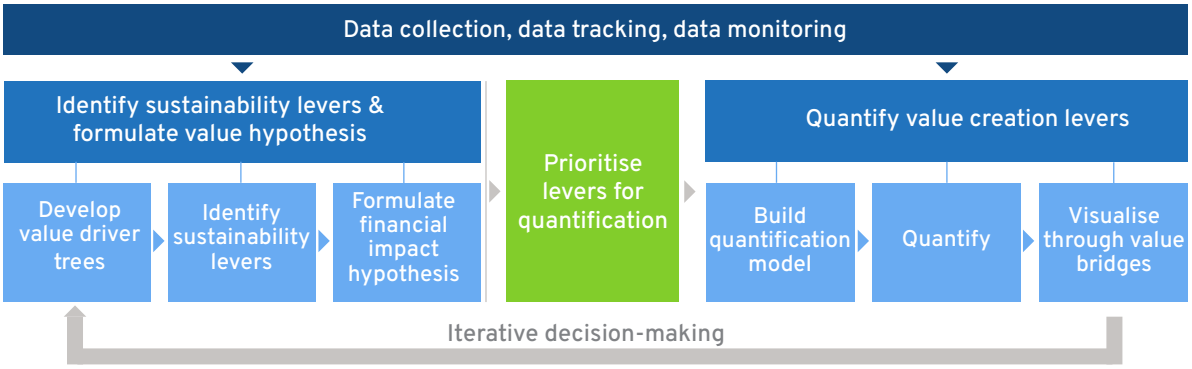
1. **An underperforming rental housing estate built in the late 70's in Germany**
2. **A recently built office portfolio in Europe with mixed energy performance**

Finally, we provide concluding remarks and general recommendations for implementing this framework in the listed real estate sector.



[19] *KPMG AG. (2026). Sustainability Value Creation: How companies turn ambition into measurable performance. KPMG (accessed 01/06/26).*
[20] *RICS Red Book Update effective 31 January 2025, RICS Valuation – Global Standards (Red Book) (accessed 10/06/26)*

2. IDENTIFYING AND QUANTIFYING SUSTAINABILITY-RELATED OPPORTUNITIES IN THE LISTED REAL ESTATE SECTOR



Graphic 1. Framework for identification and quantification of sustainability-related opportunities

2.1 Establishing a robust data foundation

One of the most common challenges when seeking to quantify the value creation or value protection potential of sustainability initiatives is data availability and consistency.

The aim is not to achieve perfect data coverage, but to establish a robust, transparent, and decision-grade baseline that allows sustainability performance to be meaningfully linked to financial outcomes. Three categories of data are needed:

	Importance	Example metrics
Financial & asset data	This data is the baseline for value creation; it represents the anchor for embedding sustainability impacts into financial outcomes	Rental income, vacancy rates, operating expenditure (OPEX), capital expenditure (CAPEX), yields, exit assumptions and holding periods
Sustainability performance and strategy data	Data that describes how assets currently perform across ESG dimensions; it is used to track and compare ESG performance[21]	Energy and water consumption, greenhouse gas emissions, waste, materials use, green building certifications, climate resilience measures, and selected social indicators relevant to tenants
Contextual and market data	This data determines whether initiatives create upside or prevent value erosion	Local energy prices, carbon pricing mechanisms, regulatory thresholds, investor and lender requirements and priorities, and evidence of tenant preferences

Table 1. Categories of data, importance, and example metrics

[21] *Note that companies reporting under EPRA sBPR already hold a significant amount of baseline sustainability data which can be used to support quantification of business value creation.*

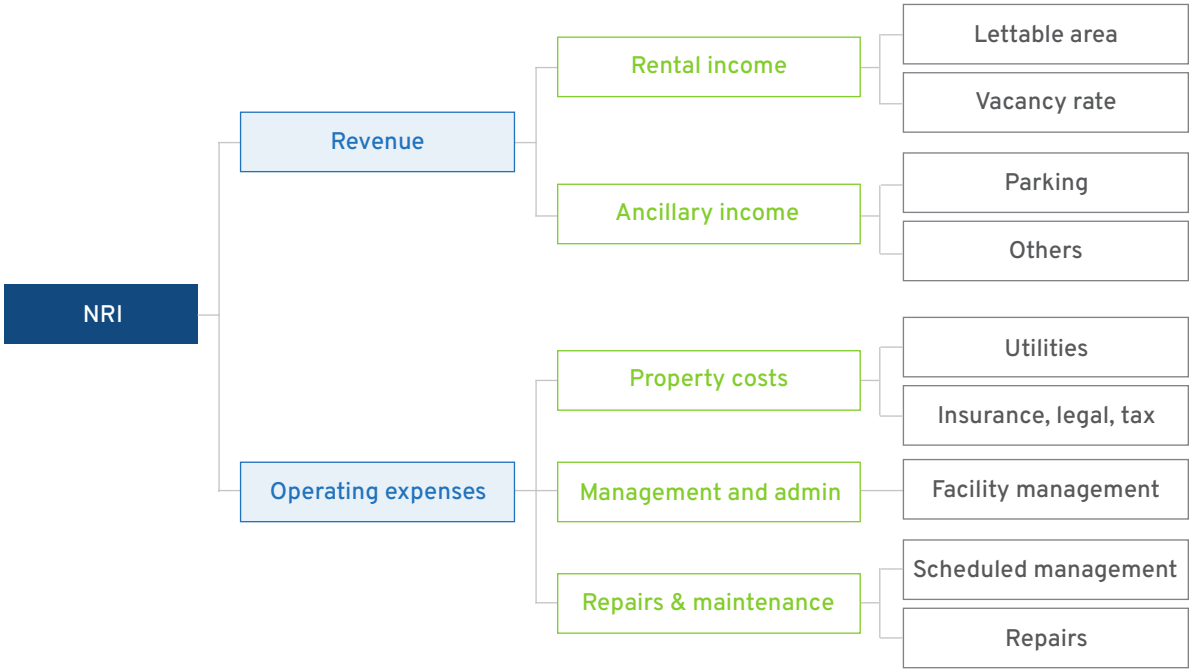
Often, the data collection process will be a continuous exercise throughout the quantification process, so not all data needs to be available from the start, but a good baseline with key financial and ESG indicators as well as market-related data will provide a solid foundation for the next steps.

2.2 Identifying sustainability levers and formulating value hypotheses

Once a robust data foundation has been established, the next step is to identify how sustainability initiatives influence financial value. This requires translating ESG topics into explicit value creation and value protection levers that can later be prioritised and quantified.

2.2.1 Value Driver Trees

A Value Driver Tree (VDT) is a key analytical tool that can support this process, since it helps break down real estate financial metrics, such as Net Rental Income (NRI), Earnings before interest and tax (EBIT), IFRS and EPRA Earnings, etc., into their underlying drivers, providing a clear structure for identifying financial drivers that can be influenced by sustainability initiatives.



Graphic 2. Example VDT for a residential real estate asset[22]

VDTs typically start with the preferred financial metric (e.g. NRI [asset level], EBIT, EPRA Earnings [portfolio level], etc.), are then broken down into income and expenses, and then into their core drivers (base rent, ancillary income, property costs, management and admin, repairs & maintenance, etc.). These elements are further broken down into operational and risk drivers.

2.2.2 Identifying sustainability levers

Once the financial drivers of an organisation have been mapped, sustainability levers that have the potential to impact these drivers can be identified.

Sustainability levers can stem from different topics across the ESG components. A lot of attention has been placed on environmental levers due to the relative ease of quantifying their benefits, but as previously exemplified, social and governance levers also bring important benefits in terms of resilience and attractiveness.

[22] *Note that this VDT is only an example and does not represent the revenue and cost drivers of all Real Estate companies.*

ENVIRONMENTAL LEVERS

include energy efficiency, decarbonisation, water and waste management, climate resilience, circularity, and biodiversity. These typically affect operating costs, future CAPEX, and exposure to regulatory and physical climate risks.

SOCIAL LEVERS

include indoor environmental quality, tenant well-being, accessibility, safety, and fair labour practices in asset operations. These influence rental income, occupancy, tenant retention, and income volatility.

GOVERNANCE LEVERS

include, for example, ESG governance structures, green building certifications, alignment with the EU Taxonomy, third-party scoring, data transparency and quality. These primarily influence risk perception, financing conditions, and exit outcomes.

Identifying sustainability levers can be done through two complementary processes: an outside-in perspective and an inside-out perspective. Considering both ensures that the analysis captures market expectations while remaining aligned with strategic considerations.

	Outside-in perspective	Inside-out perspective
	The outside-in perspective focuses on how external stakeholders and market forces influence real estate value. These levers reflect expectations and requirements that assets must meet to remain competitive and investable.	**The inside-out perspective** focuses on internal priorities and ambitions. These levers originate from the organisation's sustainability strategy, operational capabilities, and long-term targets.
	Key stakeholders and drivers	
	• Investors and lenders, whose ESG criteria affect access to capital, financing terms, and investment appetite. • Regulators, whose evolving environmental and social requirements influence compliance costs, CAPEX needs, and risk exposure. • Tenants, whose preferences for energy efficiency, comfort, health, and flexibility influence demand, rental levels, and retention. • Society and local communities, whose expectations affect reputation, planning approval, and long term asset acceptance.	• Corporate sustainability strategies, targets, and roadmaps. • Decarbonisation and net zero targets, • Social commitments (e.g. health & safety, use of healthy materials, provision of amenity spaces for the users, accessibility). • Governance frameworks, risk management practices, digitalisation, and data capabilities.
	Example levers	
	• Demand for low-carbon or certified buildings leading to rental premiums or liquidity benefits. • Demand for healthy buildings leading to higher rental income. • Regulatory tightening on energy performance creating value protection through early compliance. • Lenders' preference for transparent ESG governance supporting lower discount rates.	• Planned energy efficiency investments that reduce operating costs and emissions whilst meeting the corporate targets. • Circular construction or refurbishment strategies that lower lifecycle CAPEX. • Accessibility targets at portfolio level. • Strengthened governance and ESG data systems that improve investor confidence and lower the cost of capital.

Table 2. Identifying sustainability levers through the outside-in and inside-out perspectives.

2.2.3 Formulating financial impact hypotheses

Financial impact hypotheses articulate the causal link between a sustainability lever and the financial driver it affects, helping map sustainability levers to specific branch(es) in the VDT, for example:

> *Improved energy performance reduces operating expenses, attracts better tenants, increases rental income, and protects value against future regulatory tightening."*

> *Enhanced tenant wellbeing improves retention, lowers vacancy and stabilises rental income."*

> *Stronger ESG governance reduces perceived investment risk, supporting more favourable valuation assumptions."*

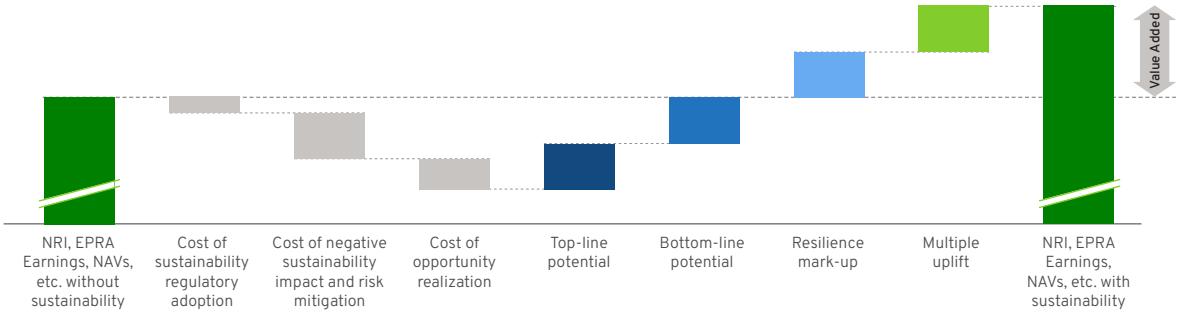
Financial impact hypotheses help distinguish between value creation levers and value protection levers, and support the process of mapping sustainability levers in the VDT:

- **Value creation levers** are those that increase future cash flows and revenue upside, such as rental premiums or faster leasing, as well as cost-related effects such as lower operating or maintenance costs.
- **Value protection levers** are those that reduce costs, downside risks or prevent value erosion. These include reduced exposure to regulatory penalties, carbon pricing, physical climate risks, or future CAPEX required to maintain asset compliance and marketability.

Some levers might have both value creation and value protection effects.

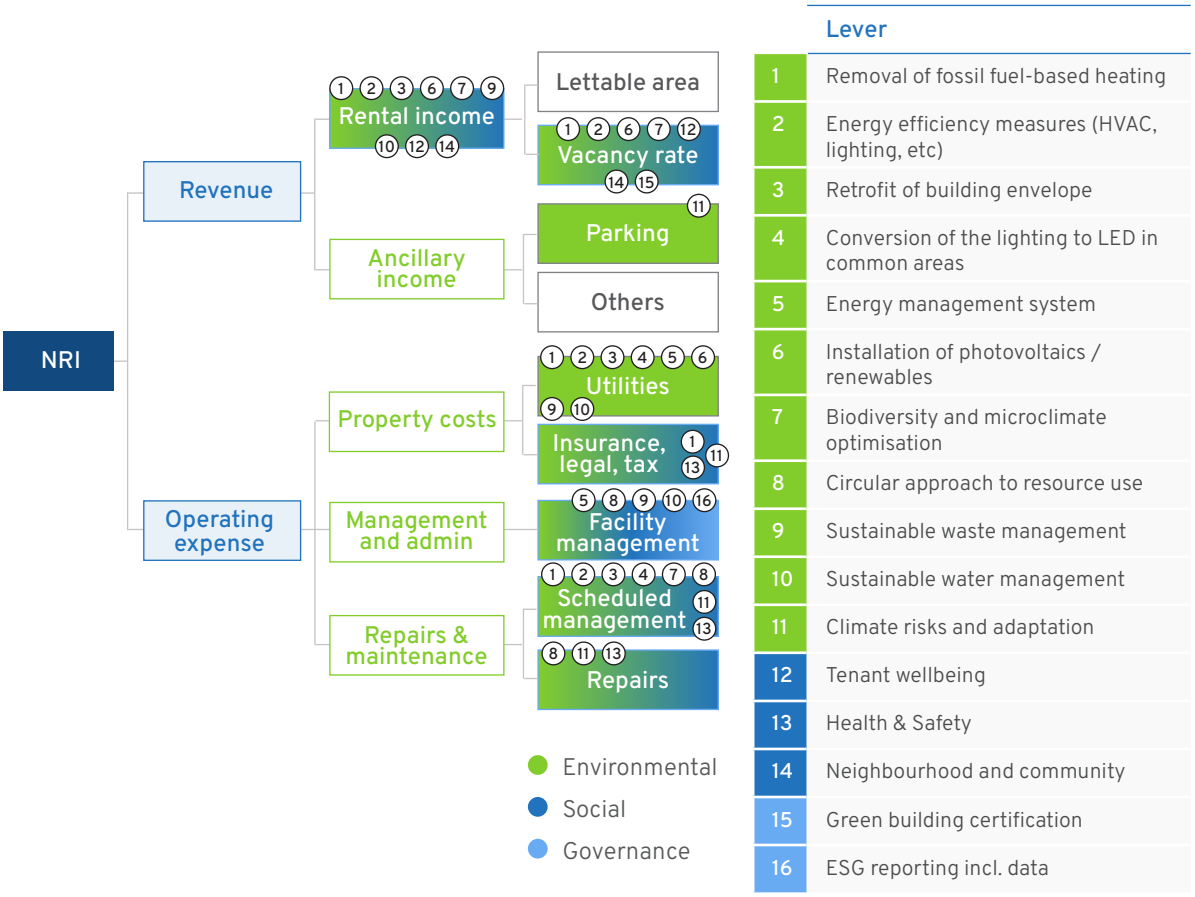
Levers can also be understood from a Growth, Efficiency, Resilience, and Multiple perspective as illustrated in the diagram below:

Growth	Efficiency	Resilience		Multiple
Revenue upside	**Cost reduction**	**Avoided revenue loss**	**Resilience**	**Uplift**
Refers to the **incremental revenues** an asset/ portfolio/district can achieve by carrying out sustainability retrofits or upgrades leading to lower vacancy rates, higher rents, higher asset value, market attractiveness	Refers to the **costs** that an asset/portfolio/ district can **avoid** by taking proactive sustainability measures, e.g., by avoiding fines (MEPS) or supply chain disruptions (access to solutions and funding), from more efficient operations (energy efficiency or reducing operating costs)	Refers to the **revenue** an asset/ portfolio/district can **retain** by preventing potential losses caused by changing, not addressed market, customers/ tenants and legislative requirements.	Refers to the **ability to adapt and recover** from unexpected events or disruptions, such as natural and climatic disasters, economic downturns, cyber-attacks or other.	Refers to an asset/portfolio/ district being **more investible** and perceived as having a better prospect due implemented and planned strategic sustainability decisions that support resilience and energy performance.



Graphic 3. Classification of sustainability value levers by growth, efficiency, and resilience.

Once a clear financial impact hypothesis has been developed for a sustainability lever, the lever is mapped to the branch(es) of the VDT that it is expected to impact. This exercise is illustrated below:



Graphic 4. Sustainability value levers mapped to the VDT.

It is important to state that not all identified levers need to be quantified immediately. Considering the constraints of limited time and resources, levers identified should then be shortlisted and prioritised for quantification. Prioritisation ensures analytical effort is focused where it adds most value.

2.3 Quantifying value creation levers

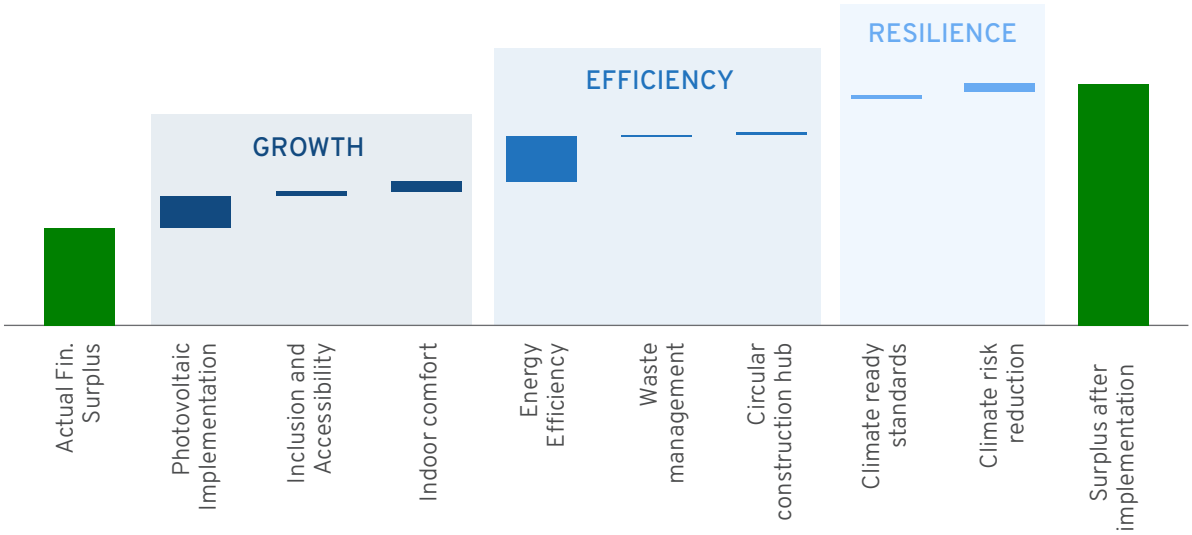
2.3.1 Build quantification model

Once priority levers have been identified and linked to material value drivers, the next step is to translate qualitative insights into quantifiable financial impacts. The quantification model should make explicit how sustainability levers influence operational performance and financial metrics. The model should connect sustainability levers to intermediate business effects, such as cost efficiency, risk reduction, rental growth, vacancy rates, and access to and cost of capital, creating a transparent bridge between sustainability performance, financial drivers, and performance metrics.

While building the quantification model, organisations should aim to understand the specific data points and assumptions needed to arrive at a financial impact quantification. Quantification does not require perfect data (assumptions can be used where information is lacking) but robust estimates can be developed using a combination of internal data, market benchmarks and clearly stated assumptions. As data quality improves and markets evolve, assumptions can be refined and the framework scaled across asset classes and geographies.

2.3.2 Visualising the results

Once the prioritised sustainability levers have been quantified, a value bridge or waterfall diagram can be used to visualise the results and compare the effects of the different levers against the chosen financial metric (e.g. NRI [asset level], EBIT, IFRS & EPRA Earnings [portfolio level]). Value bridges summarise the exercise into a concise graphic that allows comparability and facilitates decision-making.



Graphic 5. Example of value bridge differentiating between growth, efficiency and resilience levers. Note that the example is indicative only and does not reflect a real case quantification.

Beyond asset-level performance metrics, quantified impacts in terms of NRI, EBIT, IFRS & EPRA Earnings, etc. can be further translated into other key financial metrics used by equity analysts and institutional investors to assess value and make investment decisions:

- Improvements in NRI can translate into higher recurring earnings, supporting increases in EPRA Earnings.
- Sustained NRI growth, combined with shifts in perceived risk, can influence property valuations and therefore EPRA NAVs, both through higher cash flows and potential yield compression.
- Separately, strengthened ESG performance and transparency can improve access to capital and reduce the cost of debt, reinforcing the same earnings and valuation metrics through the cost-of-capital channel[23].

Taken together, these effects can contribute to a re-rating in capital markets, reflected in reduced discounts, or potential premiums, to NAVs. Explicitly linking quantified sustainability impacts to these investor-relevant metrics is therefore critical to ensuring sustainability performance is clearly understood, appropriately valued, and effectively integrated into investment decision-making.

2.3.3 Translate insights into action and continuous improvement

Quantification only creates value if insights are embedded into decision-making. Results can be integrated into investment appraisals, asset business plans, and portfolio strategies, ensuring sustainability considerations influence capital allocation alongside traditional financial metrics. Quantified outcomes can also be used to support investor communication, financing discussions, and regulatory engagement.



[23] *World Economic Forum. (2025). Already a Multi-Trillion-Dollar Market: CEO Guide to Growth in the Green Economy. December 2025. (accessed 17/06/26).*

3. CASE STUDIES

In this section, we aim to exemplify the SVC framework using two case studies:

1. **An underperforming rental housing estate built in the late 70's in Germany**
2. **A recently built office portfolio in Europe with mixed energy performance**

For each case, we identify sustainability levers along ESG topics, and we quantify the associated CAPEX and the expected financial outcomes expressed as the return on investment (ROI), calculated as the annual impact on NRI relative to the CAPEX invested. To represent the levers' overall contribution to the asset's financial performance, we compare their financial impact with NRI, as defined under EPRA Best Practices Recommendations 2024[24], and used here as a metric representative of the asset's operating performance. We then provide an explanation of how the impact on NRI can translate into value creation at the corporate level, reflecting on metrics such as EPRA Earnings (Case study 1) and EPRA NAVs (Case study 2).

3.1 CASE STUDY 1. An underperforming rental housing estate built in the late 70's in Germany

3.1.1 Project description

ASSET DESCRIPTION

The reference asset represents a typical, institutionally owned rental housing estate in German mid-sized and large cities.

It is a mature neighbourhood with a homogeneous ownership structure, whose buildings were constructed between the early 1970s and 1980s.



The asset consists of standardized multi-family buildings with 6 to 15 residential units in each block, simple access cores, and an efficient, cost-conscious construction typology typical of those years.

Energy Perspective

Typical partially modernized building stock:

- Limited parts of the building envelope have already been upgraded
- Heat supply is still largely gas-based remaining a key lever for future decarbonization.

Challenges

Multiple, interrelated challenges driven by ageing assets and outdated infrastructure, resulting in poor energy performance certificates (EPCs) and a progressive decline in value.

Limited ESG maturity, with insufficient transparency on sustainability performance, limited or no certifications in place, and the absence of a robust net-zero transition pathway.

Commercial Impacts

Structural and sustainability gaps are increasingly impacting commercial performance, vacancy rates and rental income.

Tenant Engagement

Tenant engagement remains underdeveloped, highlighting the need for more structured programs that enhance long-term value.

[24] EPRA. (2024). Best Practices Recommendations Guidelines. September 2024 (accessed 15/06/26).

3.1.2 Summary of sustainability levers

The following sustainability initiatives have been identified for the asset:

Topic	Subtopic		Lever
Environmental	Energy & electrification (core value lever)	1	Removal of fossil fuel-based heating
		2	Energy efficiency measures (HVAC, MEP, etc)
		3	Retrofit of building envelope
		4	Conversion of the lighting to LED in common areas
		5	Installation of an energy management system
		6	Installation of photovoltaics (PV)
	Biodiversity & nature	7	Biodiversity and microclimate optimisation
	Resource use and circularity	8	Circular approach to resource use during reno-vations
		9	Sustainable waste management
	Water	10	Sustainable water management
	Climate risk and resilience	11	Climate risks and adaptation
Social		12	Tenant surveys and engagement
		13	Health & Safety
		14	Neighbourhood and community
Governance		15	Green building certification
		16	ESG reporting incl. data
		17	EU taxonomy alignment

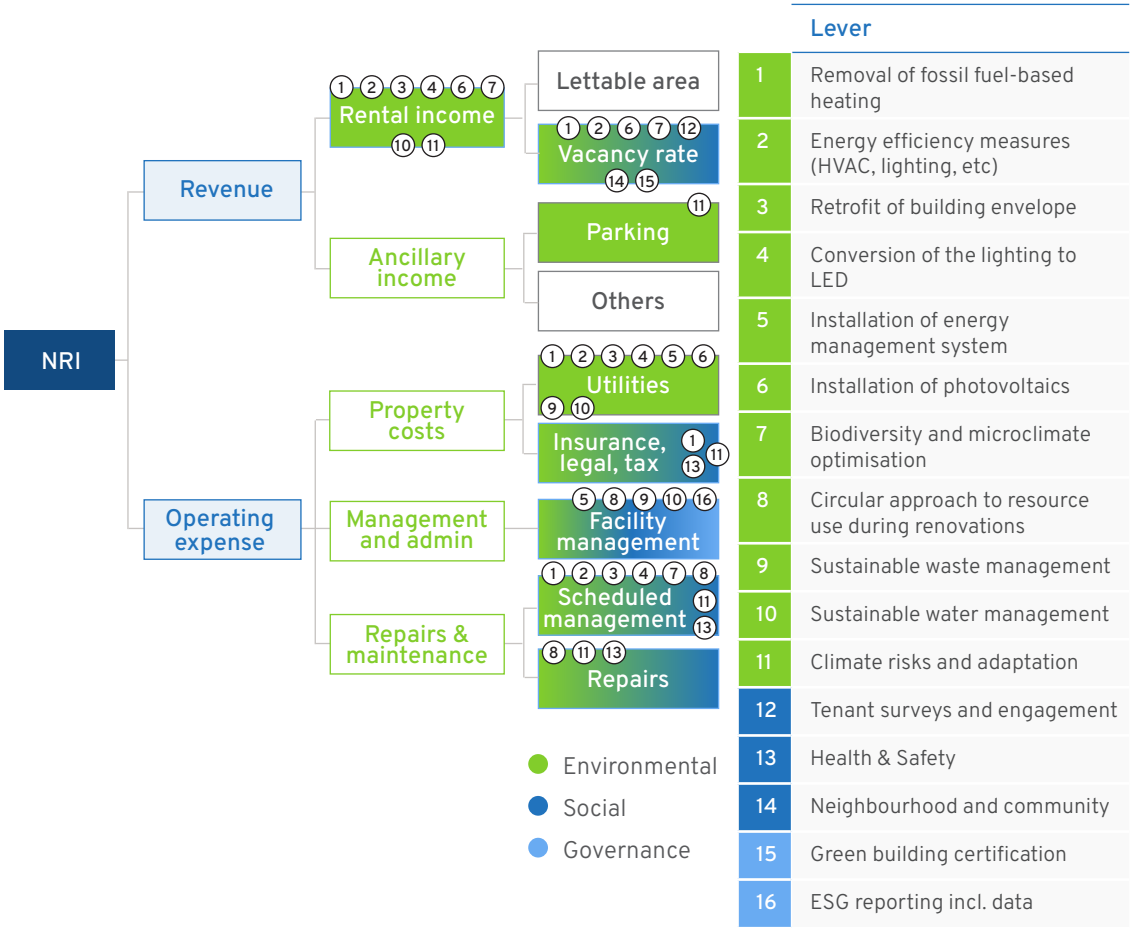
Table 3. Sustainability levers for residential asset (Case study 1)

A detailed description of each lever and its contribution to value creation and protection can be found in Appendix A.

3.1.3 Value Driver Tree

The VDT for the residential asset and the mapping of the identified sustainability measures is illustrated in the following diagram, showing the correlation between financial KPIs and sustainability measures.

The analysis of this asset class highlights a clear link between sustainability initiatives and benefits on both the income and cost sides of NRI. The focus is on improving operational efficiency and upgrading underperforming buildings, with CAPEX partly passed through to tenants in line with rent regulation frameworks. In return, tenants benefit from lower operating costs, creating a mutually beneficial outcome. These measures reduce utility and maintenance expenses while enhancing overall asset performance and value. Social and governance factors also contribute to this value creation. Tenant satisfaction stemming from decreased operational costs and social initiatives can also impact vacancy rates, especially in underperforming portfolios.



Graphic 6. VDT for residential asset (Case study 1)[25]

3.1.4 Value creation and value bridge

The value creation potential quantified for each identified and prioritised lever is outlined in the table below.

Topic			Lever	CAPEX	ROI	Financial impact on NRI	
				Euro	%	Euro	% NRI
E	Energy & electrification (core value lever)	1	Removal of fossil fuel-based heating	511,400	6.6%	33,800	7.4%
		2	Energy efficiency measures (HVAC, MEP)	419,300	7.6%	32,000	7.0%
		3	Retrofit of building envelope	3,335,000	4.7%	155,100	34.0%
		4	Conversion of the lighting to LED in common areas	28,800	11.7%	3,400	0.7%
		5	Installation of an energy management system	134,900	7.7%	10,400	2.3%
		6	Installation of PV	238,600	8.4%	20,100	4.4%

[25] *Note that lever 17: "EU Taxonomy alignment" has not been mapped to the VDT since its impacts were not quantified at NRI level.*

Topic			Lever	CAPEX	ROI	Financial impact on NRI	
				Euro	%	Euro	% NRI
E	Biodiversity & nature	7	Biodiversity and microclimate optimisation	68,000	3.7%	2,500	0.5%
	Resource use and circularity	8	Circular approach to resource use during renovations	125,000	5.8%	7,300	1.6%
		9	Sustainable waste management	40,000	5.0%	2,000	0.4%
	Water	10	Sustainable water management	178,400	4.6%	8,200	1.8%
	Climate risk and resilience	11	Climate risks and adaptation	71,500	4.4%	3,100	0.7%
S		12	Tenant surveys and engagement	No CAPEX	No CAPEX	3,300	0.7%
		13	Health and Safety	50,000	3.2%	1,600	0.3%
		14	Neighbourhood and community	157,400	5.0%	7,900	1.7%
G		15	Green building certification	39,000	7.7%	3,000	0.7%
		16	ESG reporting incl. data	No CAPEX	No CAPEX	Enabling lever, not quantified separately at NRI level	
		17	EU Taxonomy alignment	Not quantified, potential effect on cost of debt described below			

Table 4. Quantified impact of sustainability levers for residential asset (Case study 1)[26]

The metric used to illustrate the contribution of each lever to financial performance is NRI[27]. The levers act at the asset level (higher rents and reduced irrecoverable costs flow directly into each asset's NRI), and aggregate across the portfolio. At the entity level, the resulting uplift in NRI flows through, broadly one-for-one before tax and financing effects, to the recurring earnings metrics used across European listed real estate: EPRA Earnings as the EPRA-standardised measure, after deducting recurring net finance costs and current tax and removing non-cash, non-recurring items. In the German residential context, several mechanisms are particularly material:

- **Modernisation Levy (§559 BGB)** allows partial pass-through of eligible CAPEX into rental income (8 % of eligible costs p.a., capped at 3 €/m² per month within 6 years), converting energy retrofits and modernisation works into sustained rental uplift.[28]
- **Modernisation Levy ((§559e in conjunction with §559b BGB)** creates a regulatory pathway to monetise heating decarbonisation investments through rent increases (10 % of eligible costs p.a., capped at 0.5 €/m² per month over 6 years), improving the business case for heat pumps, district heating connections and other compliant heating systems while limiting tenant burden through predefined caps.

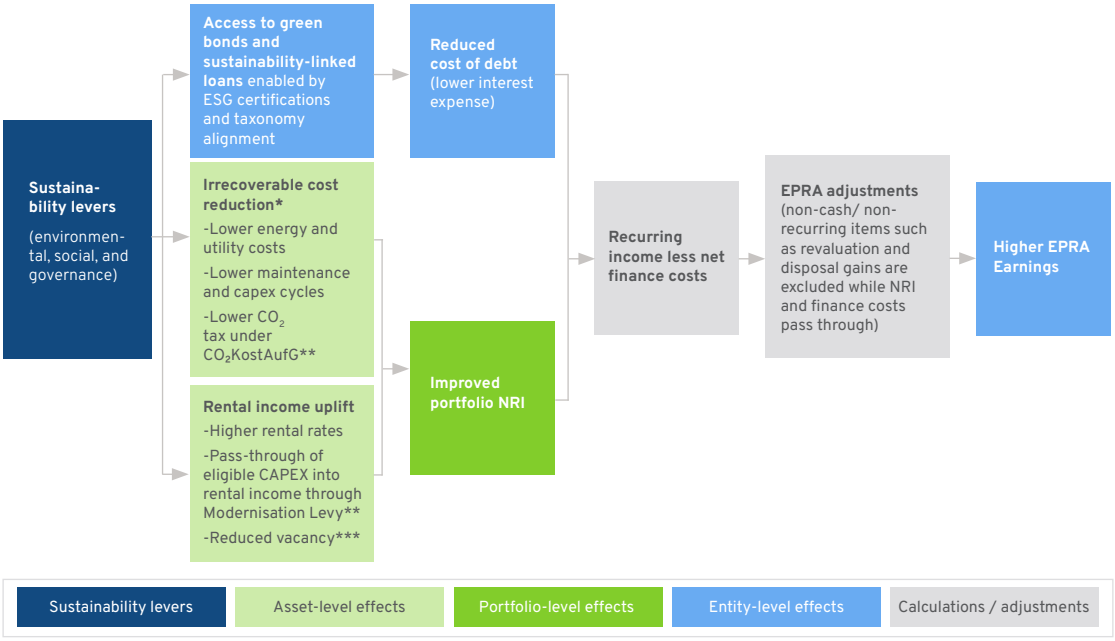
[26] *All figures shown are hypothetical and for illustrative purposes only*
[27] *As defined under EPRA BPR 2024.*
[28] *Measures are assessed individually and are not aggregated to test combined rent increases against the statutory caps of the Modernisation Levy (§ 559 / § 559e BGB: 3 €/m² and 0.50 €/m² per month over six years). Each measure complies in isolation, and the phasing of measures over more than six years makes simultaneous capping unlikely; however, where measures fall within the same six-year window, a potential exceedance of the cap must be examined on a case-by-case basis.*

- **Reduced landlord share of CO_2 tax** under CO_2KostAufG: under the 10-step model, the landlord-borne share rises with the asset's carbon intensity. Energy retrofits shift this burden materially towards tenants, improving NRI.
- **Lower landlord-borne utility costs** (common areas, central heating in vacant units, vacancy-related service charge shortfalls): while most utility costs are recoverable under BetrKV, efficiency gains in landlord-borne shares support NRI.
- **Cold-rent uplift potential through reduced tenant ancillary costs:** improvements in building efficiency (heating, hot water, electricity in common areas) reduce the warm-rent burden for tenants. In rent-regulated environments, this expanded affordability headroom can support higher base rents over time, either through Modernisation Levy mechanisms, re-letting at re-priced market levels, or improved tenant willingness to accept rent adjustments where total occupancy cost (warm rent) remains stable or decreases.

ESG certifications and EU taxonomy alignment can further strengthen financial performance by reducing the cost of debt. ESG-linked financing instruments issued by European listed residential companies (green, social, and sustainability bonds, and sustainability-linked bonds) can support more favourable financing conditions, lowering net finance costs, and thereby increasing EPRA Earnings.

It should be noted that, for simplicity, tax is not explicitly modelled here. In practice, improvements to both NRI and net finance costs increase taxable income; the net benefit to EPRA Earnings is realised after applying the company's effective tax rate, partially offsetting the gross uplift, but leaving a net positive contribution to after-tax recurring earnings[29].

For a company with multiple assets, the combined uplift of sustainability measures across the full portfolio, particularly through the Modernisation Levy mechanism and the reallocation of CO_2 costs, could provide gains in IFRS earnings and EPRA Earnings, both via NRI growth and structurally lower financing costs.



*Note that "Irrecoverable cost reduction" makes only a very small contribution to the NRI
**Note that these mechanisms are specific to geography of the case presented and might differ depending on the market
***Note that the impact on the vacancy rate must be viewed in the context of real estate markets that vary greatly from place to place

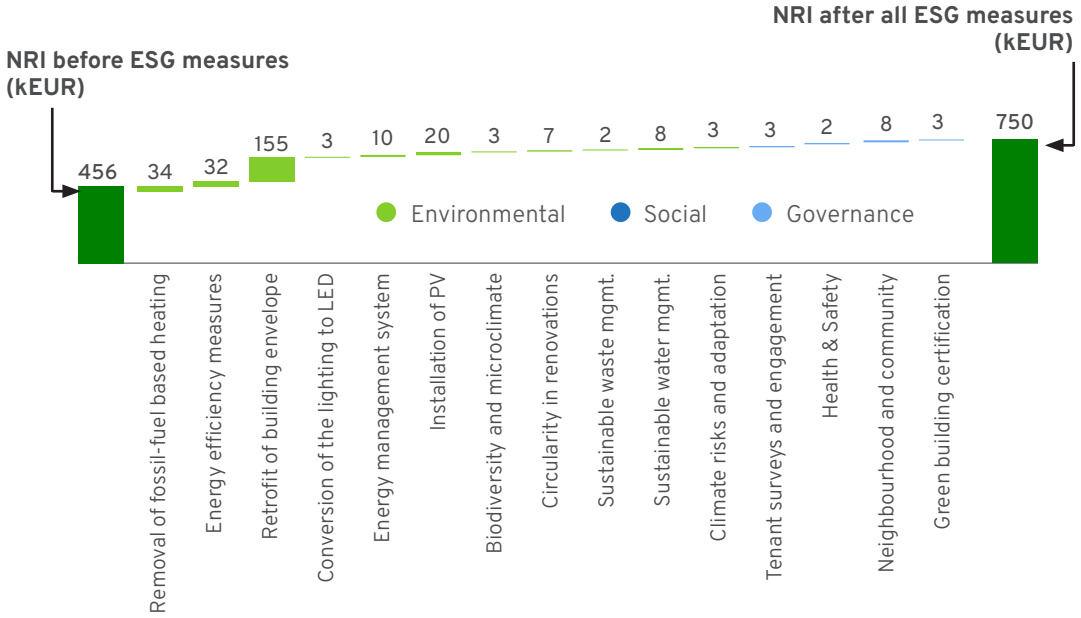
Graphic 7. Potential impact of sustainability levers on higher EPRA Earnings

[29] *The tax impact varies with corporate tax status and therefore between listed real estate companies throughout Europe: e.g. German listed residential companies are non-REITs and are therefore subject to standard corporate taxation; by contrast, several European regimes permit residential companies to operate under tax-transparent REIT regimes, under which qualifying rental profits are exempt from corporate income tax and taxation shifts to the shareholder level, so an identical operational improvement yields a larger post-tax benefit than under a non-REIT structure.*

Value Bridge of NRI Impact of Sustainability Measures

Presenting this analysis in a clear and visually compelling format supports the identification of the sustainability measures that deliver the greatest impact on asset-level financial performance. In this case, the results are illustrated using a waterfall diagram, also referred to as a Value Bridge, which demonstrates how each individual intervention contributes to overall value creation.

This approach allows for a transparent breakdown of incremental effects, linking specific measures to changes in key financial metrics and highlighting the relative contribution of each lever. As a result, it provides a structured and intuitive way to prioritise initiatives, communicate outcomes to stakeholders, and support investment decision-making.



Graphic 8. Value bridge (NRI) for residential asset (Case study 1)[30].

3.1.5 Conclusions

The analysis indicates that implementing the identified ESG measures across this asset can contribute to a significant uplift in NRI, while also improving long-term asset quality, regulatory readiness and tenant affordability. In particular, building envelope retrofits, replacement of fossil fuel-based heating, energy efficiency upgrades, photovoltaic installation and tenant-focused measures can reduce operating costs, enable eligible rental uplift through the Modernisation Levy, improve energy performance, and help protect the asset against regulatory tightening, carbon-related costs and potential brown discount effects.

These anticipated improvements in NRI and asset quality are dependent on capital expenditure requirements (e.g. removing fossil fuel-based heating provides an annual NRI uplift of 7.4%, but only after an initial capital investment of 511 kEUR). As these investments bind financial resources, investment decisions should be considered in the context of the expected income uplift, cost savings, risk mitigation benefits and long-term value preservation objectives.

In practice, asset owners should prioritise measures with a strong financial impact and clear implementation rationale, such as energy efficiency upgrades, LED conversion, energy management systems, and PV installation, while phasing more capital-intensive interventions, such as façade renovation or heating system replacement, in line with technical lifecycle events, planned refurbishment cycles and regulatory requirements. This staged approach allows sustainability improvements to be integrated into regular asset management while supporting both income growth and value protection over time.

[30] Note that lever 16: "ESG reporting incl. data" and lever 17: "EU Taxonomy alignment" have not been quantified at NRI level and therefore are not included in NRI Value Bridge.

3.2 CASE STUDY 2. A recently built office portfolio in Europe with mixed energy performance

3.2.1 Project description

COMMERCIAL PORTFOLIO DESCRIPTION



Portfolio description

- Five relatively new office buildings located in prime city locations across Europe.
- Properties are designed to accommodate multiple tenants, offering flexible and modern office spaces suited to the needs of various businesses.
- Predominantly office spaces, with some assets including ground floor amenities and retail spaces.

Asset characteristics

- Range of building types: low-, mid- and high-rise buildings
- Built between 2003 and 2020.
- Assets with varying levels of energy efficiency, sustainability features, and maturity across environmental, social, and governance dimensions.
- While some buildings already incorporate more advanced measures, overall performance remains uneven, with differing energy and carbon standards, limited alignment on social sustainability aspects, and inconsistent certification coverage.

Current position

- Currently performing well from a commercial perspective
- Evolving ESG regulations and shifting market and occupier preferences are increasing expectations for stronger, more transparent sustainability performance.
- To remain competitive and future-proof asset value, there is a need for continuous improvement across environmental metrics, particularly energy, carbon, and climate resilience, as well as across social and governance practices.

Key commercial dynamics

For the office segment, vacancy rates and rental income remain the biggest threats to financial performance, in a "tenant led market".

Strategic focus

Seeking targeted opportunities to enhance performance, unlock new value streams, and strengthen the portfolio's long-term ESG positioning

3.2.2 Summary of sustainability levers

The following sustainability levers have been identified for this portfolio:

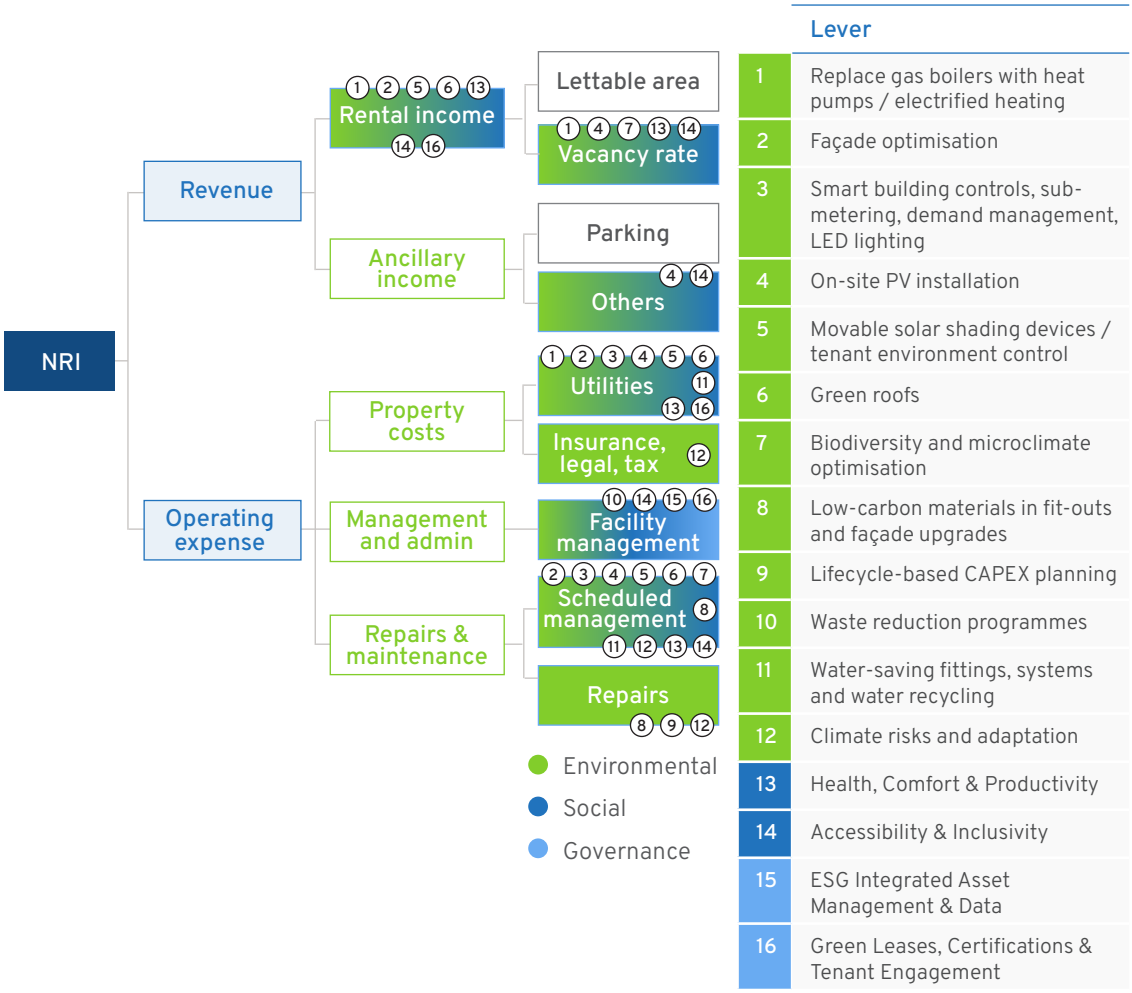
Topic	Subtopic		Lever
Environmental	Energy & electrification (core value lever)	1	Replace gas boilers with heat pumps / electrified heating
		2	Façade optimisation (solar control glazing, insulation, airtightness, external shading, renovation)
		3	Smart building controls, sub-metering, demand management, LED lighting
		4	On-site PV installation (where structurally feasible)
		5	Movable solar shading devices / tenant environment control
	Biodiversity & nature	6	Green roofs (solar green roofs preferred)
		7	Biodiverse landscape planning, species protection programme and microclimate optimisation
	Resource use and circularity	8	Low-carbon materials in fit-outs and façade upgrades
		9	Lifecycle-based CAPEX planning
		10	Waste reduction programmes
	Water	11	Water-saving fittings, systems and water recycling
	Climate risk and resilience	12	Asset-level physical climate risk screening, adaptation and engagement with insurers and lenders (Climate risk and adaptation)
Social		13	Health, comfort and productivity
		14	Accessibility and inclusivity
Governance		15	ESG integrated asset management and data
		16	Green Leases, certifications and tenant engagement
		17	EU taxonomy alignment

Table 5. Sustainability levers for office portfolio (Case study 2)

3.2.3 Value Driver Tree

The VDT for the office portfolio and the mapping of the identified sustainability measures is illustrated in the following diagram, showing the correlation between financial KPIs and sustainability measures.

The analysis of this office building portfolio shows a clear link between sustainability initiatives and benefits on both the income and cost sides. The focus lies on the improvement of operational efficiency, the smart integration of renewable energy, climate resilience, and tenant health, comfort, and productivity, as well as accessibility and inclusion. The focus on tenant wellbeing and social aspects is particularly important given the condition of the office sector, characterised by high vacancy rates due to new and hybrid work models.



Graphic 9. VDT for office portfolio (Case study 2)[31]

3.2.4 Value creation and value bridge

The value creation potential quantified for each identified and prioritised lever is outlined in the table below.

Topic			Lever	CAPEX	ROI	Financial impact on NRI	
				Euro	%	Euro	% NRI
E	Energy & electrification (core value lever)	1	Replace gas boilers with heat pumps / hybrid systems	4,750,000	5%	248,400	1.2%
		2	Façade optimisation (solar control glazing, insulation, airtightness, external shading, renovation)	6,000,000	4%	253,800	1.3%

[31] *Note that lever 17: "EU Taxonomy alignment" has not been mapped to the VDT since its impacts were not quantified at NRI level.*

Topic			Lever	CAPEX	ROI	Financial impact on NRI	
				Euro	%	Euro	% NRI
E	Energy & electrification (core value lever)	3	Smart building controls, sub-metering, demand management, LED lighting	15,570,000	3%	417,400	2.1%
		4	On-site PV installation (where structurally feasible)	2,550,000	14%	345,700	1.7%
		5	Movable solar shading devices / tenant environment control	160,000	16%	25,200	0.1%
	Biodiversity & nature	6	Green roofs (solar green roofs preferred)	680,000	6%	38,400	0.2%
		7	Biodiverse landscape planning, species protection programme and microclimate optimisation	385,000	5%	17,700	0.1%
	Resource use and circularity	8	Low-carbon materials in fit-outs and façade upgrades	250,000	15%	38,000	0.2%
		9	Lifecycle-based CAPEX planning	350,000	16%	57,000	0.3%
		10	Waste reduction programmes	65,000	13%	8,500	0%
	Water	11	Water-saving fittings, systems and water recycling	185,000	20%	37,000	0.2%
	Climate risk and resilience	12	Asset-level physical climate risk screening, adaptation and engagement with insurers and lenders	1,025,000	17%	173,100	0.9%
S		13	Health, comfort & productivity	1,566,300	16%	247,300	1.2%
		14	Accessibility & inclusivity	1,230,000	20%	242,400	1.2%
G		15	ESG integrated asset management & data	820,000	3%	28,000	0.1%
		16	Green leases, certifications & tenant engagement	70,000	54%	37,500	0.2%
		17	EU Taxonomy alignment	Not quantified, potential effect on cost of debt and NAVs described below.			

Table 6. Quantified impact of sustainability levers for office portfolio (Case study 2)[32]

[32] *All figures shown are hypothetical and for illustrative purposes only.*

As for Case Study 1, the metric used to illustrate the contribution of each lever to portfolio-level financial performance is NRI[33]. For the office portfolio, however, we also explore how potential uplifts in NRI can translate into higher EPRA NAVs.

Sustainability levers can influence EPRA NAVs through two distinct but interconnected pathways:

Pathway 1 - NRI growth: Under the income capitalisation approach, fair value is broadly proportional to NRI (Fair Value ≈ NRI / cap rate). Three core mechanisms support NRI growth in the office context:

- **Reduced irrecoverable costs** including the landlord share of CO_2 tax, vacancy-related service charge shortfalls, non-recoverable maintenance and insurance directly improve NRI.
- **Rental income uplift** through green premiums in tenant-led markets, where institutional occupiers increasingly favour certified, low-carbon and climate-resilient assets that align with their own decarbonisation targets and CSRD reporting obligations.
- **Reduced vacancy and shorter void periods,** particularly for assets in transition risk-exposed segments where weak ESG performance translates into demonstrable brown discounts and longer re-letting cycles.

In addition, lower service charges driven by efficiency measures can expand tenant affordability headroom, which can support higher headline rents at renewal or re-letting while keeping total occupancy cost competitive, this is a particularly relevant lever in markets with high service charge inflation.

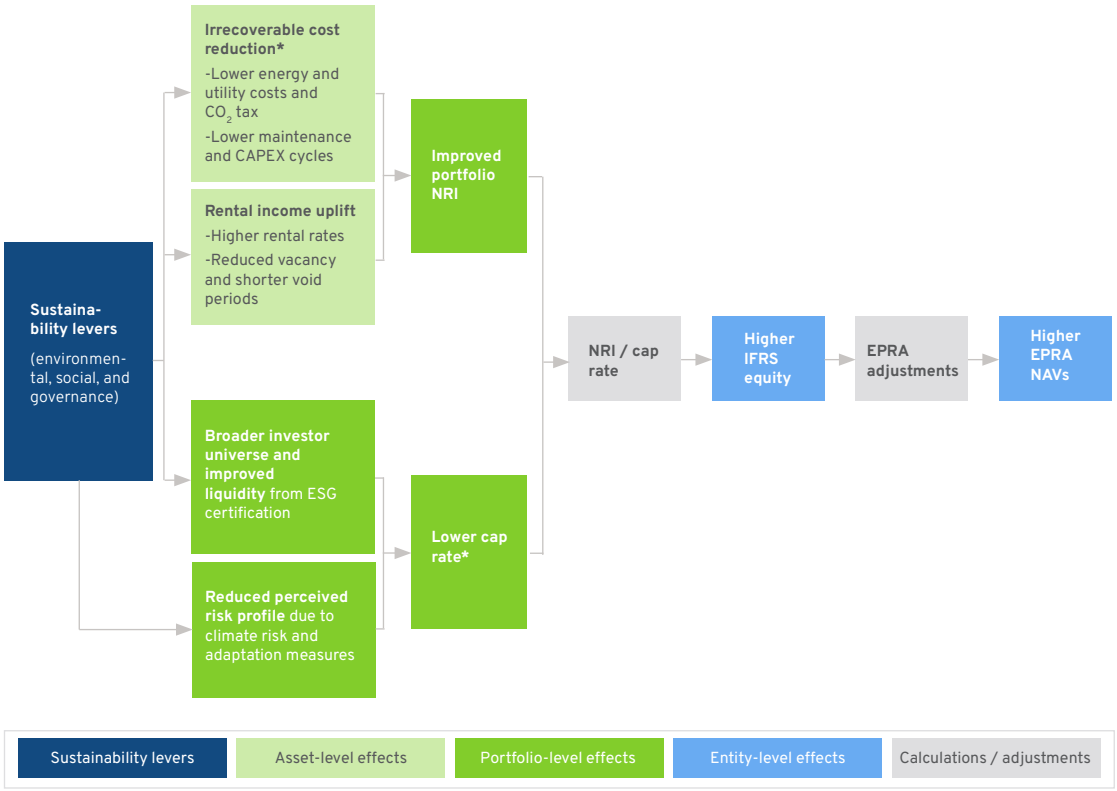
When cap rates are held constant, NRI improvements translate proportionally into higher appraised fair value, and ultimately into IFRS equity via the fair value of investment properties recognised in the balance sheet.

Pathway 2 - Cap rate compression: Sustainability performance can also influence the cap rate itself. ESG-certified, taxonomy-aligned and climate-resilient assets attract a broader institutional investor pool and benefit from improved access to green financing, both of which enhance asset liquidity and compress the required yield. Separately, asset-level physical climate risk screening, adaptation measures and transparent disclosure to insurers and lenders reduce the perceived risk profile of the asset, supporting further cap rate compression and amplifying the valuation uplift beyond what NRI growth alone would achieve.

Both pathways feed into IFRS equity through the fair value of investment properties on the balance sheet. After EPRA adjustments, which restate certain IFRS items such as deferred tax related to investment properties, fair value of financial instruments, and goodwill, the combined effect is reflected in higher EPRA NAVs.

In practice, the relationship between sustainability levers and EPRA NAVs is substantially more complex than these linear pathways suggest. Cap rates are driven by a confluence of macroeconomic forces (interest rates, credit conditions, risk appetite and sector liquidity) that can dominate or offset any sustainability-driven compression in a given market cycle. The framework presented above is therefore intentionally simplified: it traces the directional logic of each pathway in isolation, holding other variables constant. In reality, these effects are difficult to disentangle empirically and vary significantly across asset classes, markets, valuation methodologies and time periods. Nevertheless, the structural direction, sustainability performance supporting both NRI and asset value, is broadly evidenced across European office real estate markets and increasingly reflected in transaction pricing, lender requirements and tenant decision-making.

[33] *As defined under EPRA BPR 2024.*



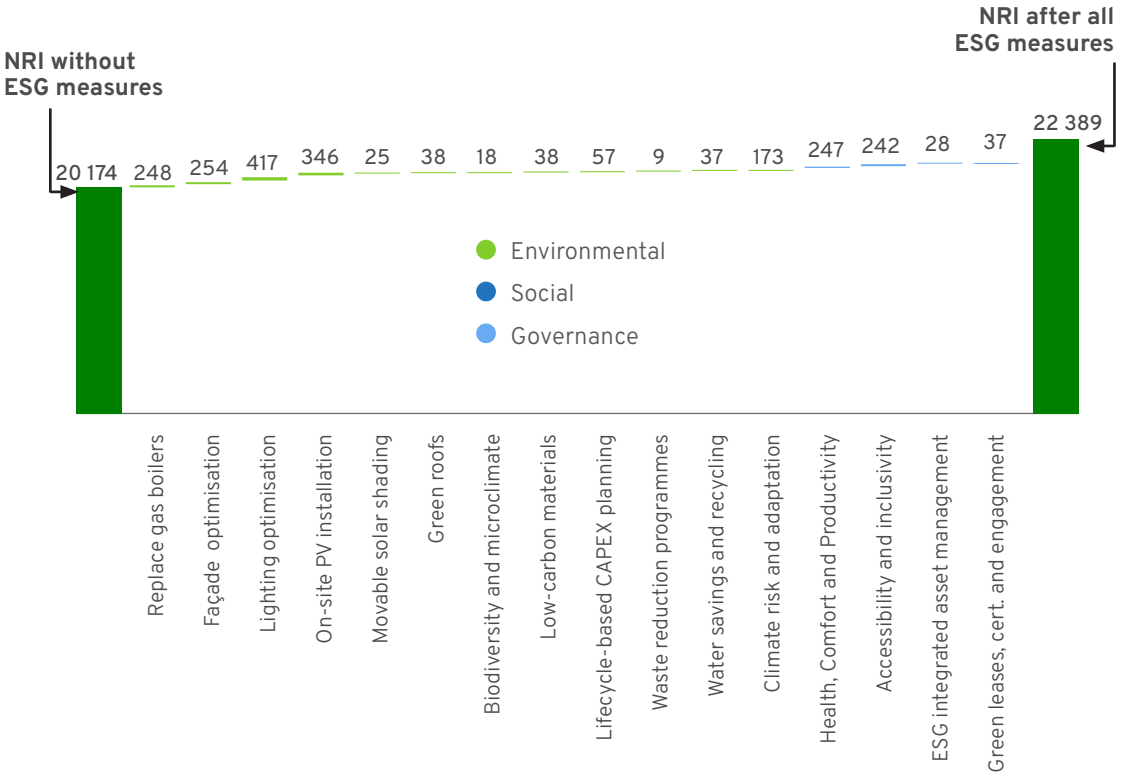
*Note that cap rates are driven primarily by a confluence of macroeconomic forces (interest rates, credit conditions, risk appetite and sector liquidity) that can dominate or offset any sustainability-driven compression in a given market cycle.

Graphic 10. Potential impact of sustainability levers on EPRA NAVs

Value Bridge of NRI Impact of Sustainability Measures

The quantification results are illustrated using a waterfall diagram, also referred to as a Value Bridge, which demonstrates how each individual intervention contributes to overall value creation in terms of NRI increase.

This approach allows for a transparent breakdown of incremental effects, linking specific measures to changes in key financial metrics and highlighting the relative contribution of each lever. As a result, it provides a structured and intuitive way to prioritise initiatives, communicate outcomes to stakeholders, and support investment decision-making.



Graphic 11. Value bridge (NRI) for office portfolio (Case study 2)[34].

3.2.5 Conclusions

The analysis indicates that implementing the identified ESG measures across the office portfolio can contribute to a meaningful uplift in NRI, while also strengthening long-term asset resilience and market positioning. In particular, energy efficiency, smart building controls, on-site renewable energy, climate adaptation, and tenant-focused measures can reduce operating costs, improve occupier attractiveness, and help protect the portfolio against regulatory tightening and changing market expectations.

These benefits should also be weighed against the required capital investment and competing portfolio priorities. ESG measures can enhance building performance, occupier appeal and long-term marketability, but typically involve substantial upfront expenditure. Implementation decisions should therefore balance capital requirements against expected operational savings, leasing benefits, regulatory risk mitigation and long-term value preservation.

In practice, asset owners should prioritise measures with a strong financial impact and short payback periods, such as smart controls, LED upgrades, PV installations and tenant engagement initiatives, while phasing more capital-intensive interventions, such as façade optimisation or heating system replacement, in line with technical lifecycle events, lease structures and refurbishment plans. This staged approach allows sustainability improvements to be integrated into regular asset management while supporting both income growth and value protection over time.

[34] *Note that lever 17: "EU Taxonomy alignment" has not been quantified and therefore is not included in NRI Value Bridge.*

4. CONCLUSIONS AND RECOMMENDATIONS

This paper demonstrates how sustainability is a driver of financial value for listed real estate companies, not merely a compliance obligation. The SVC framework is used to operationalise and demonstrate this link, connecting sustainability levers to income, cost, risk, and valuation outcomes in ways that can directly inform investment decisions. The case studies confirm that this logic can be applied across asset types and geographic markets.

Four priority areas can be identified for companies seeking to implement the framework:

1. **Build a linked data foundation:** the SVC framework generates useful outputs only where financial, asset-level sustainability and market data relevant to the asset/portfolio under focus can be used. In many cases, the binding constraint is not only data availability, but also integration: relevant sustainability and financial data may be incomplete, inconsistent or difficult to access, and where available, they often do not share the same key performance indicators, granularity, or update frequency. Addressing this, even partially, is a prerequisite for the analysis that follows.

2. **Use VDTs and value hypothesis to support prioritisation, not just mapping:** Identifying which levers affect financial outcomes is a necessary first step, but the greater value lies in being able to produce an actionable list rather than an exhaustive inventory. Relevant considerations for lever prioritisation may include expected financial impact, strategic fit, implementation complexity, regulatory exposure and lifecycle timing, though the weight given to each depends on company context and portfolio composition. In practice, it is often useful to distinguish between actions that can be implemented immediately and more capital-intensive measures that warrant sequencing against technical lifecycle events. The SVC framework provides a structure for making these trade-offs explicit, not a prescribed methodology.

3. **Embed sustainability impacts into investment decisions:** The quantified financial effects of priority levers are most useful when reflected directly in asset business plans, investment appraisals and hold/sell reviews, rather than maintained as a parallel sustainability workstream. At portfolio level, the framework can support more transparent steering discussions around obsolescence risk and brown discount exposure alongside conventional financial criteria.

4. **Translate outputs into investor-relevant metrics:** Equity investors focus on recurring earnings and NAVs, while debt investors prioritise cash flow resilience and financing conditions. The value bridges developed in this paper express financial outcomes in terms of NRI, providing a clear link between sustainability interventions and asset-level performance. Building on this foundation, companies can extend the logic to further investor-relevant metrics (e.g. EPRA Earnings, NAVs, and cost of capital) in line with their reporting frameworks to facilitate communication. Furthermore, companies should refresh the analysis as data improves to ensure the framework is a continuous part of financial planning and investor engagement, rather than a one-off exercise.

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APPENDIX A
CASE STUDY 1: DETAILED INFORMATION

Asset description

The reference case represents a typical, institutionally owned rental housing estate in Berlin. It is a mature neighbourhood with a homogeneous ownership structure, whose buildings were constructed between the early 1970s and 1980s. The asset consists of standardised multi-family buildings with 6 to 15 residential units in each block, simple access cores, and an efficient, cost-conscious construction typology typical of those years.

From an energy perspective, the district reflects a typical partially modernised stock: limited parts of the building envelope have already been upgraded, while the heat supply is still largely gas-based and therefore remains a key lever for future decarbonisation.

The asset is facing multiple, interrelated challenges driven by ageing assets and outdated infrastructure, resulting in poor energy performance certificates (EPCs) and a progressive decline in asset and portfolio value. From an ESG perspective, the asset shows limited maturity, with insufficient transparency on sustainability performance, limited or no certifications in place, and the absence of a robust net-zero transition pathway.

These structural and sustainability gaps are increasingly affecting commercial performance, vacancy rates, and rental income. At the same time, tenant engagement remains underdeveloped, highlighting the need for more structured programmes that enhance long-term value.

Description for residential asset

Item	Description
Asset type	Institutionally owned residential estate with multi-family buildings
Ownership structure	One owner / one housing group
Development logic	Mature district developed in several construction phases
Overall construction period	1970–1980
Building typologies	High-density residential district
Location	Berlin, Germany
Number of buildings	13
Number of apartments	118
Apartments per building	6-15 (number varies according to building size)
Number of storeys	3-5
Total living area	7,250 m^2
Total heated area	8,000 m^2
Average apartment size	61.5 m^2
Weighted reference construction year	approx. 1977
Predominant energy source	Natural gas

Item	Description
Weighted installation year of heating systems	Approx. 1999 (systems generally approaching their end of life)
Heat distribution system	Radiators
Domestic hot water	Centralised or semi-centralised gas heating
Weighted energy performance indicator	135 kWh/m² year
Total annual energy demand of the district	1,080,000 kWh/year
Weighted carbon emissions	32.4 kgCO_2/m² year
Weighted energy efficiency class (EPC)	E
CRREM Misalignment	Asset misaligned for Energy Intensity and Carbon
Digital/smart metering infrastructure	Initial roll-out in limited properties
Modernisation status	Partially modernised
Typical construction features	Masonry construction or industrialised panel construction, pitched and flat roofs, full basements, no elevators, balconies in some buildings. No insulation. Double glazing.
Parking	Surface parking, asphalted areas
Amenities	Green common areas, children's playground

Key financial data

ITEM	VALUE
Net Rental Income	
Income	638,800 €
Expenses	183,250 €
NRI	455,550 €
Income	
Rental income (cold rent)	624,500 €
Vacancy rate	2.3 %
Ancillary income (parking)	14,300 €
Non-recoverable Expenses	
Maintenance & Repairs (routine and emergency)	101,500 €
Property management (in house and third party)	44,000 €
Letting & tenant turnover costs	6,000 €
Utilities (central spaces) – (Electricity/general electricity position for stairwells, exterior lighting, technology and communal areas)[35]	9,000 €
Carbon tax (50/50 landlord/ tenant)	11,750 €
Legal & professional costs	8,000 €
Tenant engagement (Information materials, tenant communication)	3,000 €

[35] *Communal-area electricity is generally recoverable under § 2 No. 11 BetrKV. The amount shown reflects the landlord-borne residual resulting from the portfolio's vacancy share and the contractual structure of the underlying lease agreements.*

ITEM	VALUE
Recoverable expenses from tenants	
Property heating costs	112,300 €
Property hot water supply	28,100 €
Waste collection & street cleaning	25,400 €
Water supply, sewage & drainage	40,900 €
Garden and landscape	8,700 €
Building Insurance incl. natural hazards	18,000 €
Building cleaning & pest control	17,400 €
Property tax	12,000 €

Description of value creation levers

ENVIRONMENTAL

Energy & Electrification (core value lever)



1. Removal of fossil fuel-based heating

Value lever description

Replacing fossil fuel-based heating like gas boilers with heat pumps at natural replacement points such as end-of-life or major refurbishment, aligning decarbonisation goals with CAPEX cycles to optimise investment efficiency and minimise stranded asset risks.

Value hypothesis

Value creation:

Decreased energy and fuel costs from switch to renewables and increased energy performance (efficiency). This in turn leads to rent stability, higher attractiveness and reduced vacancy rates.

Value protection:

Reduction of long-term carbon exposure, mitigation of regulatory risks (fossil bans, energy standards, CRREM misalignment), and improvement of long-term liquidity.

Contributes to:

Efficiency: through lower operating costs and improved margins.

Growth: enhanced tenant attractiveness and asset quality.

Resilience: through reduced exposure to energy price volatility.

Cost & revenue components

Cost:

CAPEX: heat pump installation, system integration, potential upgrades (distribution system, electrical capacity, envelope improvements).

OPEX: lower and more stable utility costs, potential reduction in maintenance costs (with some added system complexity).

Revenue:

Vacancy rates: decreased vacancy rates through higher tenant satisfaction.

Rental fees: higher and more stable rental fees due to high energy efficiency and reduced exposure to energy price volatility.

Rental uplift: through Modernisation Levy (§559e in conjunction with §559b BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps-details in Glossary), combined with higher rents and lower vacancy driven by improved energy performance.



2. Energy efficiency measures (HVAC, MEP, etc.)

Value lever description

Upgrading and optimising building technical systems (HVAC and broader MEP systems) to improve energy efficiency and operational performance. Typical measures include replacement or optimisation of heating systems (e.g., pumps, controls, hydraulic balancing), ventilation upgrades (where present), optimisation of domestic hot water systems, installation of smart thermostatic controls, insulation of pipes, and improvements in building-level controls and regulation systems.

Value hypothesis

Value creation:

Lower operating expenses from energy consumption due to increased energy efficiency and reduced heat loss, leading to higher NRI. Higher rents through cost pass-through enabled by Modernisation Levy.

Value protection:

Lower exposure to energy cost volatility and mitigation of regulatory risks (fossil bans, energy standards, CRREM misalignment).

Contributes to:

Efficiency: through lower operating costs and improved margins.

Resilience: through reduced exposure to energy price volatility.

Growth: through higher rents enabled by Modernisation Levy.

Cost & revenue components

Cost:

CAPEX: hydraulic balancing, pump replacement, control system adjustments.

OPEX: reduction in utility costs and maintenance savings.

Revenue:

Rental uplift: through Modernisation Levy (§559 BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps-details in Glossary), combined with higher rents and lower vacancy driven by improved energy performance.



3. Retrofit of building envelope

Value lever description

Adding or upgrading insulation of the building envelope (e.g. roof, façade, floors, windows) in situations where renovation is already required for maintenance reasons. By integrating energy efficiency improvements into planned works, it enhances thermal performance while optimising capital allocation.

Value hypothesis

Value creation:

Lower operating expenses from energy consumption due to improved thermal insulation. Higher rents through cost pass-through enabled by Modernisation Levy.

Value protection:

Lower exposure to energy cost volatility and mitigation of regulatory risks (fossil bans, energy standards, CRREM misalignment).

Contributes to:

Efficiency: through lower operating costs and improved margins.

Resilience: reduced exposure to energy price volatility.

Growth: through higher rents enabled by Modernisation Levy.

Cost & revenue components

Cost:

CAPEX: insulation materials, façade/roof/window upgrades, etc.

OPEX: reduction in utility costs for common areas and maintenance savings.

Revenue:

Rental uplift: through Modernisation Levy (§559 BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps-details in Glossary), combined with higher rents and lower vacancy driven by improved energy performance.



4. Conversion of the lighting to LED in common areas

Value lever description

Replacing conventional lighting, such as incandescent, halogen, or fluorescent lighting, with energy-efficient LED technology.

Value hypothesis

Value creation:

Lower operating costs due to energy efficiency gains from LED technology. Higher rents through cost pass-through enabled by Modernisation Levy.

Value protection:

(Minor) Reduced exposure to electricity price volatility through optimised consumption.

Contributes to:

Efficiency: through reduced energy demand from lighting in common areas.

Growth: through higher rents enabled by Modernisation Levy.

Cost & revenue components

Cost:

CAPEX: LED fixtures, installation, minor system adjustments.

OPEX: reduction in electricity costs in common areas and lower replacement/maintenance expenses.

Revenue:

Rental uplift: through Modernisation Levy (§559 BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps-details in Glossary), combined with higher rents and lower vacancy driven by improved energy performance.



5. Installation of an energy management system

Value lever description

Implementing an energy management system to monitor, analyse, and actively optimise energy consumption across building systems.

Value hypothesis

Value creation:

Lower operating costs due to energy efficiency gains and optimisation of operations (e.g. schedules, setpoints).

Value protection:

Reduced exposure to energy price volatility through optimised consumption.

Contributes to:

Efficiency: through lower operating costs and higher margins.
Resilience (minor): lower exposure to energy price volatility.

Cost & revenue components

Cost:

CAPEX: sensors, meters, software platform, system integration and setup.

OPEX: software licensing, system maintenance, and data management. Reduction in operating costs from energy savings in common areas.

Revenue:

n.a.



6. Installation of PVs

Value lever description

Installing PV systems at assets with the highest economic and technical potential (e.g. suitable roof space, strong solar irradiation, favourable consumption profiles).

Value creation:

Lower energy costs from on-site generation and self-consumption, additional revenue potential from feed-in tariffs or surplus energy sales, improved asset attractiveness and marketability from enhanced ESG profile.

Value protection:

Reduced exposure to grid price volatility.

Contributes to:

Efficiency: reduction in energy procurement costs.

Resilience: increased energy independence and price stability.

Growth: new revenue streams and enhanced asset attractiveness.

Cost & revenue components

Cost:

CAPEX: PV modules, inverters, installation, grid connection, potential roof preparation.

OPEX: maintenance and operational costs for panels, decrease in costs of energy from common areas.

Revenue:

Ancillary income: potential income from surplus generation.

Vacancy rates: decreased vacancy rates through higher attractiveness.

Rental fees: higher and more stable rental fees due to lower energy costs for tenants.



7. Biodiversity and microclimate optimisation

Value lever description

Enhancing biodiversity and improving local microclimates at asset level through targeted, often low-invasive measures (e.g. habitats, greening elements, ecological corridors). Based on ecological assessments, tailored interventions are implemented to support local species and strengthen ecosystem quality. The measure can be integrated into existing sites with limited structural effort and is particularly suitable as part of refurbishment, landscaping, or ESG upgrade programmes.

Value hypothesis

Value creation:

Increased tenant attractiveness and well-being through improved outdoor quality and market differentiation, potential reduction in cooling costs due to improved microclimate (e.g. shading, cooling, air quality).

Value protection:

Reduced exposure to climate-related risks (e.g. overheating, urban heat island effect, etc.)

Contributes to:

Growth: through increased attractiveness.

Resilience: through climate adaptation.

Efficiency (minor): through reduced need for cooling.

Cost & revenue components

Cost:

CAPEX: ecological assessments, greening measures (e.g. planting, habitats, vertical systems).

OPEX: limited maintenance costs for landscaping and upkeep, decrease in energy-related costs (cooling).

Revenue:

Vacancy rates: decreased vacancy rates through higher tenant satisfaction.

Rental uplift: through Modernisation Levy (§559 BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps-details in Glossary), combined with higher rents and lower vacancy driven by improved energy performance.

Resource use and circularity



8. Circular approach to resource use during renovations

Value lever description

Integrating circular economy principles into renovation activities, focusing on reuse, recycling, and resource-efficient material selection. Measures include reusing building components (e.g., doors, fixtures), selecting recyclable materials, and minimising construction waste. Given the standardised construction typology across the asset, circular practices can be scaled efficiently during planned refurbishments (e.g., façade upgrades, kitchen/bathroom renovations).

Value hypothesis

Value creation:

Lowers capital and operational expenditures during renovations, through decreased use of resources and waste disposal, it also reduces CAPEX long-term through the use of materials with longer lifetime. Lever can also enhance ESG profile and support green financing opportunities.

Value protection:

Reduced exposure to rising material costs and regulatory risks related to construction waste.

Contributes to:

Efficiency: through lower capital and operational costs.

Resilience: through lower exposure to price volatility and regulatory requirements.

Cost & revenue components

Cost:

CAPEX: potential upfront planning/ design costs for circular solutions, selective investments in higher-quality, longer lifetime or reusable materials. Potential reduction in long-term CAPEX investments due to higher lifetime and quality of materials used in previous renovations.

OPEX: reduced material procurement costs, lower waste disposal and landfill costs, procurement adjustments.

Revenue:

Rental uplift: through Modernisation Levy (§559 BGB), could enable partial pass-through of eligible CAPEX to tenants (subject to caps- details in Glossary).



9. Sustainable waste management

Value lever description

Improving the way waste is separated, collected, monitored, and managed across the residential asset to reduce environmental impact, improve operational efficiency, and support regulatory compliance. Typical measures include better waste separation infrastructure, clearer tenant signage and communication, dedicated collection points for specific waste streams (e.g., paper, plastics, bio-waste, small hazardous waste), monitoring of waste volumes and contamination rates, and coordination with local waste service providers to optimise collection systems.

Value hypothesis

Value creation:

Limited value creation effects in the form of enhanced tenant satisfaction and sustainability perception and improved regulatory compliance positioning through ESG reporting.

Value protection:

Avoided costs related to inefficient waste contracts, contaminated waste streams, improper disposal, safety issues in waste areas, and non-compliance with local waste handling requirements. Avoided reputational issues related to poor asset cleanliness or environmental underperformance.

Contributes to:

Resilience: from reduced risk of fines, cost from incidents and operational disruptions.

Cost & revenue components

Cost:

CAPEX: installation of waste separation stations and containers, improvement of waste rooms or external collection points.

OPEX: collection, transport and disposal services, tenant communication and awareness campaigns, facility management (minor).

Revenue:

n.a.

Water



10. Sustainable water management

Value lever description

Improving the efficiency, monitoring, and responsible use of water across the residential asset, including both potable water consumption and wastewater handling. Typical measures include installation of water-efficient fixtures (e.g., low-flow taps, showerheads, dual-flush toilets), leak detection systems, sub-metering, pressure optimisation, and—where feasible—rainwater harvesting or greywater reuse (e.g., for irrigation or common area cleaning).

Value hypothesis

Value creation:

Lowered water consumption costs (for landlord-controlled consumption), improved tenant affordability and satisfaction through lower utility bills. Higher rents from pass-through of costs, enabled by Modernisation Levy.

Value protection:

Reduced risk of water waste, leaks and damage (e.g. from moisture, mould or structural issues), mitigated exposure to water and wastewater tariffs and better compliance with regulatory expectations and sustainability standards.

Contributes to:

Resilience: lowers risk for water damage and operational disruption.

Efficiency: increases water use efficiency.

Growth: higher rents enabled by Modernisation Levy.

Cost & revenue components

Cost:

CAPEX: installation of water-efficient fixtures, sub-metering systems and smart water meters, leak detection systems, plumbing system upgrades, greywater systems, rainwater retention tanks, drainage upgrades. Retrofitting piping and filtration systems.

OPEX: maintenance of water and leak detection systems, monitoring of water quality and system performance, potential energy costs.

Revenue:

Rental uplift: through Modernisation Levy (§559 BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps- details in Glossary).



11. Climate risks and adaptation

Value lever description

Assessing, addressing and transparently disclosing the physical climate risks to which the asset is exposed. The increase in the frequency and intensity of extreme weather events is linked to higher insurance premiums, higher and more frequent damage to assets, higher repair and maintenance costs, and risk of high vacancy in high-risk areas. Assessing exposure to physical climate risks, investing in adaptation measures and transparently reporting to stakeholders can lead to lower and avoided costs.

Value hypothesis

Value creation:

Lowered insurance premiums and increase in attractiveness. Pass-through of adaptation costs to tenants enabled by the Modernisation Levy could lead to higher rents.

Value protection:

Avoided maintenance and repair costs from increased frequency and intensity of extreme weather events, decreased risk of rising insurance premiums, decreased risk for higher vacancy levels in high-risk areas.

Contributes to:

Resilience: lowered risks from increase in frequency and intensity of extreme weather events due to climate change, lowered (or stable) insurance premiums, lowered risk for stranded assets in high-risk areas.

Growth: higher rents enabled by Modernisation Levy.

Cost & revenue components

Cost:

CAPEX: climate adaptation investments (e.g. flooding defences, rainwater drainage, increased greenery, etc.).

OPEX: investment in climate risk assessment, maintenance for adaptation solutions, lower or avoided maintenance and repair costs, lower insurance premiums.

Revenue:

Rental uplift: through Modernisation Levy (§559 BGB), could enable partial pass-through of eligible CAPEX to tenants (subject to caps-details in Glossary), combined with lower vacancy driven by reduced risk perception.

SOCIAL



12. Tenant surveys and engagement

Value lever description

Implementing an annual survey to capture feedback from the tenants aiming to provide better services that meet tenants' expectations, strengthen transparency and communication.

Value hypothesis

Value creation:

Increased attractiveness of the asset versus competing rental stock due to higher tenant satisfaction, lower vacancy, longer tenancy duration and more stable cash flows.

Value protection:

Reduced tenant churn and related reletting, refurbishment, and marketing costs. Lowers risk of complaints, disputes, and reputational issues.

Contributes to:

Growth: lower vacancy and longer tenancy durations due to increased attractiveness, contributes to more stable and potentially higher revenue over time.

Cost & revenue components

Cost:

CAPEX: no CAPEX.

OPEX: running annual tenant survey programme to establish needs for increased wellbeing. Increase communication and engagement.

Revenue:

Vacancy: lower vacancy due to higher tenant satisfaction and increased attractiveness.



13. Health & Safety

Value lever description

Improving health and safety conditions for tenants, visitors, contractors, and staff. Measures may include fire safety upgrades, improved lighting in common areas, slip and trip prevention, asbestos or hazardous-material management during renovations, indoor air quality measures, safe access routes, and stronger construction health and safety procedures. For 1970s–80s residential buildings, this lever is highly relevant because aging building systems, legacy materials, and wear in common areas may increase health and safety risks over time.

Value hypothesis

Value creation:

Supports institutional investor requirements and responsible asset management credentials. Potential for higher rents by cost pass-through enabled by Modernisation Levy.

Value protection:

Avoided costs from accidents, legal claims, non-compliance with health and safety standards and emergency repairs. Lever reduces operational disruption and potential reputational risk and helps preserve asset functionality and tenant trust.

Contributes to:

Resilience: avoided incidents and lower risk of non-compliance.
Growth: higher rents and lower vacancy from improved safety.

Cost & revenue components

Cost:

CAPEX: fire safety equipment upgrades, emergency lighting, handrails, anti-slip measures, hazardous material remediation if needed, ventilation or water system improvements.

OPEX: regular inspections, testing and preventive maintenance, health and safety management process and documentation, staff and contractor training.

Revenue:

Rental uplift: through Modernisation Levy (§559 BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps – details in Glossary), combined with higher rents and lower vacancy driven by improved safety.



14. Neighbourhood and community

Value lever description

Improving the broader social quality, cohesion, and liveability of the asset and surrounding neighbourhood. Measures may include community spaces, local partnerships, activation of green/open areas, support for neighbourhood initiatives, improved lighting and wayfinding, mobility solutions, and resident engagement mechanisms. This is particularly relevant in larger estates where attractiveness is influenced not only by the apartment itself but also by the perceived safety, quality, and identity of the surrounding environment.

Value hypothesis

Value creation:

Improves attractiveness, reduces vacancy, and improves leasing performance by enhancing the attractiveness of the asset within the local market. Potential for higher rents by cost pass-through enabled by Modernisation Levy.

Value protection:

Reduces risk of neighbourhood decline, anti-social behaviour, and reputational deterioration.

Contributes to:

Growth: lower vacancy and longer tenancy durations due to increased attractiveness contribute to more stable and potentially higher revenue over time. Potential for higher rents from passthrough cost.

Resilience: decreased risk for neighbourhood decline and reputational deterioration.

Cost & revenue components

Cost:

CAPEX: upgrades to public/shared areas, courtyards, playgrounds, seating, lighting, and wayfinding, community-use spaces or neighbourhood infrastructure improvements.

OPEX: community programming, resident engagement, and local partnership initiatives, additional maintenance and estate management effort, security-related costs where relevant.

Revenue:

Vacancy rates: lower vacancy due to higher tenant satisfaction and increased attractiveness.

Rental fee: potentially higher rental fees from differentiation.

Rental uplift: through Modernisation Levy (§559 BGB), enabling partial pass-through of eligible CAPEX to tenants (subject to caps – details in Glossary), combined with higher rents and lower vacancy driven by improved living conditions.

GOVERNANCE



15. Green building certification

Value lever description

Obtaining recognised green building certifications for relevant assets or renovation projects, such as DGNB, BREEAM, LEED, WELL or other applicable schemes. Certification typically requires structured documentation and performance improvements across areas such as energy, materials, water, indoor environmental quality, and management processes.

Value hypothesis

Value creation:

Enhances marketability of asset, supporting financing discussions and investor confidence. It may also improve tenant appeal where it exists with additional benefits such as energy savings, lower costs, etc.

Value protection:

Reduces obsolescence risk for older assets.

Contributes to:

Growth: increases portfolio attractiveness, impacting valuation.

Cost & revenue components

Cost:

CAPEX: incremental design and upgrade costs to meet certification requirements, potential investments in energy, water, material or indoor-environmental measures.

OPEX: certification fees, audits, documentation requirements, staff time or consultant support, recertification or performance monitoring where required.

Revenue:

Vacancy: lower vacancy due to increased attractiveness and lower costs from energy savings, etc.

Rental fee: potentially higher rental fees from differentiation.



16. ESG reporting incl. data

Value lever description

Establishing robust ESG data collection, management, and reporting processes across the portfolio. Relevant topics may include energy, emissions, water, waste, health and safety, tenant-related social indicators, renovation activity, taxonomy status, and climate risk.

Value hypothesis

Value creation:

Improves investor, lender, and tenant confidence, supports green financing, taxonomy reporting, and sustainability-linked strategies. Enables more targeted and evidence-based CAPEX allocation and operational optimisation.

Value protection:

Reduces compliance, reputational and data-quality risks, enables earlier identification of inefficiencies and underperforming assets, supports defensibility of reported claims and sustainability reporting.

Contributes to:

Efficiency: improved resource efficiency through data-based approach to maintenance, repairs, renovations, etc. Reduces costs by early detection of inefficiencies.

Growth: increases stakeholder confidence, potentially impacting valuation.

Resilience: reduces compliance and data-related risks.

Cost & revenue components

Cost:

CAPEX: no CAPEX.

OPEX: ongoing data collection, validation and reporting, audit/readiness processes and stakeholder reporting, consulting support where needed.

Revenue:

n.a.



17. EU taxonomy alignment

Value lever description

Aligning portfolio strategy, asset management, refurbishment planning, acquisitions, and reporting processes with the EU Taxonomy so that relevant real estate activities increasingly qualify as Taxonomy-eligible and, where criteria are met, Taxonomy-aligned. This is particularly relevant for activities such as renovation of existing buildings and selected enabling measures such as energy performance controls, energy efficiency equipment, and on-site renewable technologies.

Value hypothesis

Value creation:

Supports access to green financing, strengthens investor confidence, improves external ESG positioning, and creates a clearer basis for prioritising CAPEX toward assets and measures that are better aligned with market and regulatory expectations.

Value protection:

Reduces the risk of falling behind evolving sustainable finance expectations, mitigates exposure to greenwashing concerns, and helps protect asset liquidity and attractiveness as transparency and sustainability criteria become more important in financing and investment decisions. It also supports preparedness for reporting and compliance requirements linked to Taxonomy disclosures.

Contributes to:

Growth: through stronger investor appeal, improved financing discussions, and enhanced marketability of assets and the portfolio.

Resilience: through reduced regulatory, disclosure, and transition risk, and stronger preparedness for changes in market expectations.

Cost & revenue components

Cost:

CAPEX[36]: asset upgrades required to meet relevant technical screening criteria (e.g. energy efficiency improvements, building controls, monitoring systems, climate adaptation measures).

OPEX: technical assessments, climate risk and DNSH assessments, reporting processes, assurance-readiness, advisory support, and internal governance.

Revenue:

Financing: potential access to more attractive green or sustainability-linked financing conditions and improved lender dialogue where alignment is strong and well evidenced.

Investor attractiveness / valuation support: can support stronger investor confidence, protect liquidity, and reduce risk of value erosion associated with weaker sustainability positioning.

[36] *CAPEX investments required for taxonomy alignment are usually included in other levers.*

APPENDIX B
CASE STUDY 2: DETAILED INFORMATION

Portfolio description

The office portfolio consists of five relatively new office buildings located in prime city locations across Europe. These properties are designed to accommodate multiple tenants, offering flexible and modern office spaces suited to the needs of various businesses. They are predominantly office spaces, with some assets including ground floor amenities and retail spaces.

The portfolio includes a range of building types, including low-, mid- and high-rise buildings built between 2003 and 2020. It comprises assets with varying levels of energy efficiency, sustainability features, and maturity across ESG dimensions. While some buildings already incorporate more advanced measures, overall performance remains uneven, with differing energy and carbon standards, limited alignment on social sustainability aspects, and inconsistent certification coverage.

Although the portfolio is currently performing well from a commercial perspective, evolving ESG regulations and shifting market and occupier preferences are increasing expectations for stronger, more transparent sustainability performance. To remain competitive and future-proof asset value, there is a need for continuous improvement across environmental metrics, particularly energy, carbon, and climate resilience, as well as across social and governance practices. For the office segment, vacancy rates and rental income remain the biggest threats to financial performance, in a "tenant-led market".

Against this backdrop, targeted opportunities to enhance performance, unlock new value streams, and strengthen the portfolio's long-term ESG positioning are being sought.

Description for office portfolio

Item	Description
Asset type	Institutionally owned commercial estate with offices and retail spaces
Ownership structure	One owner
Development logic	Diversified portfolio located in prime city locations across Europe
Overall construction period	2003–2020
Building typologies	Low-rise to high-rise office buildings
Location	Düsseldorf, Frankfurt (Germany), Milan (Italy), Rotterdam (Netherlands), Vienna (Austria)
Number of buildings	5
GFA (m^2)	110,000
NF (m^2)	85,870
Weighted reference construction year	approx. 2010
Energy sources	Natural gas, district heating
Weighted installation year of heating systems	approx. 2010
Weighted energy performance indicator	140 kWh/m^2 year
Total annual energy demand of the portfolio	15,770,000 kWh

Item	Description
Weighted carbon emissions	32.40 kgCO_2/m^2 year
Weighted energy efficiency class (EPC)[37]	E
CRREM misalignment	Assets partly misaligned for Energy Intensity and Carbon
Digital/smart metering infrastructure	Initial rollout in limited properties
Modernisation status	Partially modernised
Parking	Underground parking garage
Amenities	Some assets with ground floor amenities

Key financial data

ITEM	VALUE
Net Rental Income	
Income	23,342,000 €
Expenses	3,169,800 €
NRI	20,172,200 €
Income	
Rental income (cold rent)	22,370,000 €
Vacancy rate	8.1 %
Ancillary income (parking)	972,000 €
Non-recoverable Expenses	
Maintenance & Repairs (routine and emergency)	850,100 €
Property management (in house and third party)	951,400 €
Letting & tenant turnover costs (amortised over Ø 7-yr lease term)	44,200 €
Utilities (central spaces) – Electricity for stairwells, exterior lighting, technology and communal areas[38]	89,300 €
Carbon tax (50/50 landlord/tenant)	82,400 €
Legal & professional costs	171,700 €
Tenant engagement (Information materials, tenant communication)	75,600 €
Non-recoverable ancillary costs	152,800 €
Net service charge shortfall (direct vacancy costs)	262,800 €
Maintenance (planned / capital reserve)	489,500 €

[37] EPC ratings are based on national certification schemes and are not yet fully comparable across EU Member States. The weighted portfolio EPC class is indicative only.
[38] Under current law, statutory CO_2 cost allocation between landlord and tenant only applies to the two German assets (CO_2KostAufG). Italy, the Netherlands and Austria have no equivalent regime today. With the EU ETS2 becoming fully operational in 2028, comparable national rules following the German model are assumed for portfolio-level aggregation.

ITEM	VALUE
Recoverable expenses from tenants	
Property heating costs	553,000 €
Property cooling costs	245,600 €
Common area electricity	1,047,600 €
Waste collection & street cleaning	214,700 €
Water supply, sewage & drainage	331,500 €
Garden and landscape	97,900 €
Building Insurance incl. natural hazards	304,000 €
Building cleaning & pest control	1,116,300 €
Property tax	412,200 €
Security services	472,300 €
Elevator maintenance	240,400 €
Fire safety	185,500 €
Building management / caretaker	412,200 €
Other recoverable costs	132,200 €

Description of value creation levers

ENVIRONMENTAL

Energy & Electrification (core value lever)



1. Replace gas boilers with heat pumps / electrified heating

Value lever description

Replacing fossil fuel-based heating systems with electrified alternatives such as air- or ground-source heat pumps. In this portfolio, it is particularly relevant for assets still relying on gas heating, where direct combustion contributes materially to operational carbon emissions and future transition risk.

Value hypothesis

Value creation:

Improve asset attractiveness to occupiers and investors seeking lower-carbon office space and support stronger long-term leasing.

Value protection:

Reduced exposure to carbon-related regulation, fossil fuel price volatility, and risk of accelerated obsolescence.

Contributes to:

Efficiency: through lower operating costs and improved margins.

Growth: enhanced tenant attractiveness and asset quality.

Resilience: through reduced exposure to energy price volatility.

Cost & revenue components

Cost:

CAPEX: heat pump installation and replacement of gas boiler infrastructure, distribution system adaptation, electrical upgrades and controls integration.

OPEX: reduced utility costs from lower / zero fuel demand, potentially higher electricity cost depending on system performance, maintenance of new equipment and monitoring systems.

Revenue:

Vacancy rate: reduced vacancy rate due to higher attractiveness.



2. Façade optimisation (solar control glazing, insulation, airtightness, external shading, renovation)

Value lever description

Targeted façade improvements to reduce heat losses, control solar gains, improve airtightness, and enhance thermal comfort. Measures may include glazing upgrades, sealing improvements, and partial façade renovation. It is particularly relevant for assets with higher energy intensities, comfort risks, or significant cooling and heating demands.

Value hypothesis

Value creation:

Reduced operating expenses from energy consumption, improved indoor thermal comfort, tenant experience, and asset competitiveness in markets where occupiers increasingly prefer energy-efficient, climate-resilient buildings.

Value protection:

Reduced energy cost exposure and risk of underperformance versus evolving building standards.

Contributes to:

Efficiency: through lower operating costs and improved margins.

Growth: potential for improved asset competitiveness.

Resilience: through reduced exposure to energy price volatility.

Cost & revenue components

Cost:

CAPEX: insulation materials, façade/roof/window upgrades, etc.

OPEX: lower energy costs, reduced wear on HVAC system, ongoing maintenance of façade.

Revenue:

Vacancy rate: reduced vacancy rate due to higher attractiveness.



3. Smartbuilding controls, sub-metering, demand management, LED lighting

Value lever description

Implementing smart building controls and sub-metering across the office portfolio to improve real-time visibility of energy use and enable active optimisation of HVAC, ventilation, lighting, and other building systems. Measures may include upgraded building management systems, occupancy- or demand-based controls, sub-metering by tenant or system, automated scheduling, fault detection, and LED lighting upgrades in landlord-controlled areas. This lever is particularly relevant in multi-tenant office buildings where operational patterns vary across occupiers and where energy inefficiencies are often linked to control settings rather than building fabric alone.

Value hypothesis

Value creation:

Lower operating expenses through reduced electricity and HVAC-related consumption, improved operational performance, and better tenant comfort from more responsive building controls.

Value protection:

Supports compliance with energy efficiency and reporting requirements, reduces risk of inefficient operation going undetected, and lowers exposure to energy price volatility. It also reduces the risk of underperformance relative to increasingly digital and efficient office stock.

Contributes to:

Efficiency: through lower operating costs, reduced energy waste, and improved building performance.

Resilience: lower exposure to energy price volatility and better operational control.

Growth (minor): through improved tenant experience and marketability in technology-enabled office assets.

Cost & revenue components

Cost:

CAPEX: LED fixtures, controls, sensors, sub-meters, software and system integration, potential rewiring or upgrades to building management systems.

OPEX: lower electricity costs, lower replacement and maintenance costs, software licences, monitoring and data-management effort.

Revenue:

Vacancy rate: reduced vacancy risk through improved comfort and more transparent, efficient building operation.

Rental fees: potential support for rent retention where occupiers value operational efficiency and high-performing building management.



4. On-site PV installation (where structurally feasible)

Value lever description

Installing on-site solar PV systems where roof area, technical capacity, and local economics permit. It is most applicable to the low-rise and mid-rise assets with greater relative roof availability, though selected high-rise assets may still offer opportunities through rooftop or canopy installations.

Value hypothesis

Value creation:

Lower energy costs from on-site generation and self-consumption, additional revenue potential from feed-in tariffs or surplus energy sales, improved asset attractiveness and marketability from enhanced ESG profile.

Value protection:

Lower exposure to energy price volatility.

Contributes to:

Efficiency: reduction in energy procurement costs.

Resilience: increased energy independence and price stability.

Growth: new revenue streams (from sale of surplus generation) and enhanced asset attractiveness.

Cost & revenue components

Cost:

CAPEX: PV modules, inverters, installation, grid connection, potential roof preparation.

OPEX: maintenance and operational costs for panels, decrease in costs of energy.

Revenue:

Vacancy rate: reduced vacancy rate from increased asset attractiveness and reduced costs.

Ancillary income: potential income from surplus generation.



5. Movable solar shading devices / tenant environment control

Value lever description

Installing movable external or internal solar shading devices and improving tenant-level environmental controls to reduce overheating, glare, and unnecessary cooling demand. Measures may include automated blinds, façade-integrated solar shading, zoned controls, and user-adjustable comfort settings. This is particularly relevant for office buildings with high solar exposure, large, glazed façades, or occupier sensitivity to indoor comfort and visual conditions.

Value hypothesis

Value creation:

Improves tenant comfort, satisfaction, and usability of space while reducing cooling demand and associated operating costs. In tenant-led office markets, better comfort conditions can support stronger retention and leasing performance.

Value protection:

Reduces overheating risk, limits future comfort-related obsolescence, and helps protect asset quality as climate change increases summer heat stress and occupier expectations for resilient workplaces.

Contributes to:

Efficiency: through reduced cooling demand and better control of solar gains.

Resilience: through improved adaptation to heat stress and overheating risk.

Growth (minor): through improved occupier experience and stronger leasing appeal.

Cost & revenue components

Cost:

CAPEX: shading devices, controls, sensors, façade integration, and installation.

OPEX: maintenance of shading systems, controls, and limited replacement costs; reduced cooling-related operating costs.

Revenue:

Vacancy rate (minor): reduced vacancy risk due to improved comfort and occupier satisfaction.



6. Green roofs

Value lever description

Installing or retrofitting vegetated roof systems to improve stormwater management, thermal performance, biodiversity value, and urban heat resilience. It is most relevant where roof structure and maintenance access allow, especially on low-rise and mid-rise buildings and potentially on podium or annex roofs in larger assets.

Value hypothesis

Value creation:

Strengthened ESG credentials and potentially enhanced occupier perception (if roof is visible and accessible).

Value protection:

Reduced exposure to heat-related climate risks.

Contributes to:

Resilience: resilience to increased costs due to heatwaves and / or heat stress.

Cost & revenue components

Cost:

CAPEX: roof preparation, waterproofing, green roof system installation and structural checks.

OPEX: ongoing maintenance, irrigation, vegetation care and inspection, possible energy savings due to lower heat exposure.

Revenue:

Vacancy rate (minor): lower vacancy rate from differentiation.



7. Biodiverse landscape planning, species protection programme and microclimate optimisation

Value lever description

Improving the external environment through planting, shading, permeable surfaces, ecological habitats, seating and public-realm interventions that enhance site quality, biodiversity, and local microclimate. Measures may include species-supporting planting, pollinator-friendly landscaping, water-sensitive design, canopy cover, and improvements to outdoor amenity and arrival experience. This is particularly relevant in prime city office locations where the quality of the external environment increasingly contributes to occupier perception and asset attractiveness.

Value hypothesis

Value creation:

Enhances occupier comfort and the perceived quality of shared and external spaces, strengthens ESG differentiation, and can support tenant attraction and retention. In some locations, improved microclimate and shading may also reduce cooling demand and associated costs.

Value protection:

Reduces exposure to heat-related climate risks such as urban heat island effects and supports adaptation to more frequent heatwaves and extreme rainfall events.

Contributes to:

Resilience: through climate adaptation and reduced site-level heat and water stress.

Growth: though increased attractiveness, stronger user experience, and enhanced public-realm quality.

Efficiency (minor): where landscaping helps reduce cooling demand or manage stormwater more effectively.

Cost & revenue components

Cost:

CAPEX: ecological assessments, site redesign, planting, habitats, permeable surfaces, shading elements, and irrigation or drainage upgrades where needed.

OPEX: ongoing landscape maintenance, biodiversity management, and limited decreases in energy-related costs where local cooling benefits materialise.

Revenue:

Vacancy rates: reduced vacancy risk through improved occupier satisfaction and better site experience.



8. Low-carbon materials in fit-outs and façade upgrades

Value lever description

Integrating low-carbon and more resource-efficient materials into fit-outs, refurbishments, and façade upgrades across the office portfolio. Measures may include specifying recycled, reused, bio-based, or lower-embodied-carbon materials, reducing material intensity, and selecting products with stronger durability, circularity, or environmental declarations. This is particularly relevant where tenant fit-outs are frequent and where façade or refurbishment programmes are already planned.

Value hypothesis

Value creation:

Strengthens ESG positioning and marketability, can support occupier and investor confidence, and may create cost savings over time through better material efficiency, lower waste volumes, and stronger lifecycle performance.

Value protection:

Reduces exposure to rising costs or regulatory pressure associated with carbon-intensive materials, supports future-proofing against embodied-carbon expectations, and lowers obsolescence risk for assets undergoing refurbishment.

Contributes to:

Efficiency: through lower material waste, better lifecycle performance, and potentially lower long-term replacement needs.

Growth: through stronger ESG credentials and improved appeal to sustainability-conscious occupiers and investors.

Resilience: through reduced exposure to material cost volatility and evolving embodied-carbon requirements.

Cost & revenue components

Cost:

CAPEX: potential design, specification, procurement, and supplier costs linked to lower-carbon materials; possible upfront premium for selected products.

OPEX: lower waste handling costs, potentially lower replacement costs over time, and procurement effort to source suitable materials.

Revenue:

n.a.



9. Lifecycle-based CAPEX planning

Value lever description

Embedding lifecycle-based planning into CAPEX decisions to align sustainability upgrades with asset condition, renewal cycles, leasing events, and long-term portfolio strategy. This includes using condition data, technical due diligence, energy and carbon priorities, and expected regulatory developments to time interventions more effectively and combine maintenance with value-creating sustainability measures.

Value hypothesis

Value creation:

Improves capital allocation efficiency by bundling works, avoiding duplicated interventions, and optimising the business case of sustainability-related investments. It can also minimise disruption to tenants and improve the timing and effectiveness of upgrades.

Value protection:

Avoided inefficient reinvestment and stranded CAPEX.

Contributes to:

Efficiency: through better capital allocation and reduced duplication of works.

Resilience: through earlier mitigation of regulatory and technical risks and stronger asset future-proofing.

Cost & revenue components

Cost:

CAPEX: condition assessments, technical advisory, and portfolio-level prioritisation processes.

OPEX: reduced reactive intervention costs.

Revenue:

Vacancy rate: reduced downtime and leasing disruption where works are better planned and sequenced.



10. Waste reduction programmes

Value lever description

Implementing waste reduction and waste-separation programmes across asset operations and tenant interfaces, including improved collection infrastructure, clearer user guidance, fit-out waste management, monitoring of waste streams, and engagement with service providers and occupiers. This is particularly relevant in multi-tenant office buildings where waste volumes and contamination rates can materially influence service costs and building sustainability performance.

Value hypothesis

Value creation:

Reduces waste management costs, improves operational efficiency, and supports stronger tenant perception of building sustainability performance.

Value protection:

Avoids costs linked to contaminated waste streams, inefficient contracts, reputational underperformance, and non-compliance with local waste-handling standards.

Contributes to:

Efficiency: through lower disposal costs and more efficient resource handling.
Resilience: through lower regulatory and operational risk.

Cost & revenue components

Cost:

CAPEX: waste separation stations, signage, collection-point improvements, and fit-out waste logistics where relevant.

OPEX: collection, transport, tenant communication, monitoring, and programme management; lower disposal and contamination-related costs over time.

Revenue:

n.a.

Water



11. Water-saving fittings, systems and water recycling

Value lever description

Improving water efficiency across the office portfolio through water-saving fixtures, sub-metering, leak detection, pressure optimisation, and—where feasible—water recycling or rainwater reuse systems. Typical applications include low-flow fixtures, smart meters, irrigation optimisation, and reuse of non-potable water for landscaping or selected building functions. This lever is most relevant in assets with high common-area water use, cooling-related water demand, or growing exposure to water tariffs and climate-related water stress.

Value hypothesis

Value creation:

Lowers water and wastewater costs, supports operational efficiency, and can improve occupier and investor perception of responsible resource management. In some assets it may also support certification outcomes or broader ESG positioning.

Value protection:

Reduces risk of leaks, water damage, rising water tariffs, drought-related constraints, and underperformance against evolving sustainability expectations.

Contributes to:

Efficiency: through lower water consumption and reduced operating costs.

Resilience: through reduced exposure to water stress, leaks, and tariff increases.

Cost & revenue components

Cost:

CAPEX: water-efficient fixtures, smart meters, leak detection, plumbing upgrades, storage or recycling systems where applicable.

OPEX: system maintenance, monitoring, and potentially lower water and wastewater charges.

Revenue:

Vacancy rate: lower vacancy from decreased operational costs and increased attractiveness.



12. Asset-level physical climate risk screening, adaptation and engagement with insurers and lenders

Value lever description

Assessing physical climate risks at asset level and implementing targeted adaptation measures, while strengthening dialogue with insurers and lenders on risk exposure and mitigation. Measures may include flood protection, drainage upgrades, overheating mitigation, façade or roof resilience, backup systems, emergency planning, and improved disclosure of asset-level resilience actions. This is particularly relevant for geographically diverse office portfolios where risk exposure differs by location and where insurability, financing, and long-term liquidity are increasingly shaped by climate resilience.

Value hypothesis

Value creation:

Supports investor and lender confidence, can stabilise insurability and improve the quality of financing discussions, and may strengthen occupier confidence in business continuity and asset quality.

Value protection:

Avoids or reduces costs linked to physical damage, business interruption, rising insurance premiums, asset downtime, and long-term value erosion in more climate-exposed locations.

Contributes to:

Resilience: through stronger protection against acute and chronic physical climate risks.

Growth (indirect): through improved asset confidence, liquidity, and marketability.

Cost & revenue components

Cost:

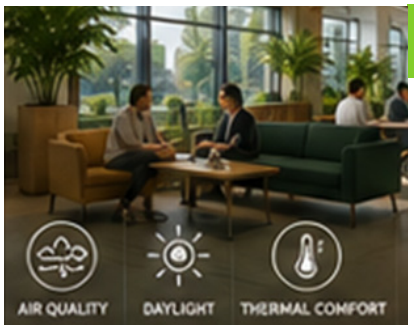
CAPEX: adaptation measures such as flood protection, drainage, shading, resilience upgrades, and technical studies.

OPEX: climate risk assessments, monitoring, maintenance of adaptation measures, and potentially lower insurance-related cost escalation over time.

Revenue:

Vacancy rate: reduced vacancy risk from climate-affected assets.

SOCIAL



13. Health, Comfort & Productivity

Value lever description

Improving indoor environmental quality and occupier wellbeing across the office portfolio through measures such as ventilation and air-quality improvements, thermal comfort optimisation, glare reduction, acoustic improvements, lighting quality, access to amenities, and features that support healthier and more productive workplaces. This lever is particularly relevant in office markets where occupiers increasingly compare space based not only on price and location, but also on user experience, retention potential, and support for hybrid working models.

Value hypothesis

Value creation:

Improves occupier satisfaction, supports stronger leasing performance and retention, and can justify better rent retention or pricing in competitive markets where workplace quality is a key differentiator. It may also enhance the attractiveness of the buildings to higher-quality or longer-term tenants.

Value protection:

Reduces risk of higher vacancy, lease churn, and reputational underperformance in office segments where outdated or uncomfortable space becomes less competitive.

Contributes to:

Growth: through improved occupancy, retention, and potential rental strength.

Resilience: through reduced vacancy risk and stronger long-term competitiveness.

Cost & revenue components

Cost:

CAPEX: ventilation and air-quality upgrades, comfort-related controls, acoustic and lighting improvements, wellness features, and amenity-related upgrades.

OPEX: maintenance, monitoring, engagement, and service-level enhancements.

Revenue:

Vacancy rates: reduced vacancy through stronger occupier appeal and lease renewal.

Rental fees: potential support for higher or more stable rents where wellbeing and workplace quality materially influence space selection.



14. Accessibility & Inclusivity

Value lever description

Improving accessibility and inclusivity in the office portfolio so that assets better serve a broader range of users and comply with evolving expectations of equitable, user-friendly design. Measures may include barrier-free access, improved entrances and circulation, accessible toilets and amenities, wayfinding, lighting, acoustic support, inclusive design of shared spaces, sustainable mobility options, attractive common areas and surroundings, and operational policies that improve accessibility for tenants and visitors.

Value hypothesis

Value creation:

Broadens the pool of occupiers and users for whom the asset is suitable, enhances tenant perception of building quality, and can support stronger leasing performance and retention in competitive office markets.

Value protection:

Reduces regulatory and legal risk, lowers obsolescence risk in older assets, and helps protect marketability as accessibility expectations become more material in tenant decision-making.

Contributes to:

Growth: through broader tenant appeal and improved user experience.

Resilience: through reduced compliance and obsolescence risk.

Cost & revenue components

Cost:

CAPEX: access ramps, lift or entrance upgrades, signage and wayfinding, inclusive amenities, and circulation improvements.

OPEX: maintenance of access-related features and potential updates to tenant-facing operational procedures.

Revenue:

Vacancy rates: reduced vacancy risk through broader occupier suitability and improved building appeal.

Rental fees: indirect support for rent retention where building quality and user inclusivity affect leasing outcomes.

GOVERNANCE



15. ESG integrated asset management & data

Value lever description

Embedding ESG considerations into core asset management processes and improving the collection, management, and use of sustainability data across the portfolio. This includes integrating energy, emissions, water, waste, climate risk, social indicators, certifications, and capital planning into routine decision-making, supported by clear governance, roles, data platforms, dashboards, and reporting processes.

Value hypothesis

Value creation:

Enables more targeted and evidence-based allocation of CAPEX and operational interventions, supports stronger investor and lender confidence, and can improve portfolio-wide performance by identifying underperforming assets earlier. It also strengthens the credibility of sustainability claims and can support access to green financing and sustainability-linked strategies.

Value protection:

Reduces compliance, reporting, reputational, and data-quality risks, and helps avoid value erosion linked to poor information, missed regulatory requirements, or delayed action on underperforming assets.

Contributes to:

Efficiency: through better data-driven maintenance, CAPEX prioritisation, and operational improvements.

Growth: through greater investor confidence and potentially improved portfolio market perception.

Resilience: through lower compliance and governance risk and stronger organisational capability.

Cost & revenue components

Cost:

CAPEX: metering, sub-metering, dashboards, systems integration, and digital infrastructure.

OPEX: ongoing data collection, validation, reporting, assurance-readiness, governance effort, and stakeholder communication.

Revenue:

n.a.



16. Green Leases, certifications & tenant engagement

Value lever description

Using green lease clauses, targeted certifications, and structured tenant engagement programmes to align landlord and occupier behaviour on energy, waste, water, fit-outs, data sharing, and broader sustainability performance. This lever helps address split incentives in multi-tenant office buildings and can strengthen both operational outcomes and the external credibility of the portfolio's ESG positioning.

Value hypothesis

Value creation:

Supports stronger occupier relationships, better retention, improved operating performance through shared action, and enhances asset attractiveness through recognised certifications and visible sustainability commitments. It can also support rental levels and occupier demand in markets where certified, collaborative, and transparent ESG performance matters.

Value protection:

Reduces split-incentive risk, lowers the risk of underperforming shared sustainability initiatives, and protects against obsolescence by aligning assets with occupier and investor expectations.

Contributes to:

Efficiency: through improved landlord-tenant alignment on resource use and operational optimisation.

Growth: through stronger occupier appeal, retention, and certification-backed marketability.

Resilience: through reduced obsolescence risk and stronger stakeholder relationships.

Cost & revenue components

Cost:

CAPEX: limited direct CAPEX, except where certification-related upgrades are required.

OPEX: certification fees, audits, legal review of green lease clauses, tenant engagement programmes, communication, and ongoing monitoring.

Revenue:

Vacancy rates: reduced vacancy through stronger tenant retention and improved marketability.

Rental fees: potential support for stronger rental levels and lease renewals in assets with recognised certifications and more mature ESG leasing practices.



17. EU taxonomy alignment

Value lever description

Aligning portfolio strategy, asset management, refurbishment planning, acquisitions, and reporting processes with the EU Taxonomy so that relevant real estate activities increasingly qualify as Taxonomy-eligible and, where criteria are met, Taxonomy-aligned. This is particularly relevant for activities such as renovation of existing buildings and selected enabling measures such as energy performance controls, energy efficiency equipment, and on-site renewable technologies.

Value hypothesis

Value creation:

Stronger EU Taxonomy alignment can improve the portfolio's sustainability profile in a way that is increasingly comparable and decision-useful for investors, lenders, and other stakeholders. For real estate owners, this can support access to green financing, strengthen investor confidence, improve external ESG positioning, and create a clearer basis for prioritising CAPEX toward assets and measures that are better aligned with market and regulatory expectations.

Value protection:

Reduces the risk of falling behind evolving sustainable finance expectations, mitigates exposure to greenwashing concerns, and helps protect asset liquidity and attractiveness as transparency and sustainability criteria become more important in financing and investment decisions. It also supports preparedness for reporting and compliance requirements linked to Taxonomy disclosures.

Contributes to:

Growth: through stronger investor appeal, improved financing discussions, and enhanced marketability of assets and the portfolio.

Resilience: through reduced regulatory, disclosure, and transition risk, and stronger preparedness for changes in market expectations.

Cost & revenue components

Cost:

CAPEX[39]: asset upgrades required to meet relevant technical screening criteria (e.g. energy efficiency improvements, building controls, monitoring systems, climate adaptation measures).

OPEX: technical assessments, climate risk and DNSH assessments, reporting processes, assurance-readiness, advisory support, and internal governance.

Revenue:

Financing: potential access to more attractive green or sustainability-linked financing conditions and improved lender dialogue where alignment is strong and well evidenced.

Investor attractiveness / valuation support: can support stronger investor confidence, protect liquidity, and reduce risk of value erosion associated with weaker sustainability positioning.

[39] *CAPEX investments required for taxonomy alignment are usually included in other levers.*

APPENDIX C.
GLOSSARY

Term	Definition	Relevance
Core terms		
Brown discount	The brown discount is the inverse of the green premium and represents the negative valuation impact applied to assets with poor sustainability performance. See also green premium.	Core concept underpinning value protection logic; it is critical for demonstrating the cost of inaction in ESG strategies.
Energy Management System (EMS)	An EMS is an integrated combination of software, hardware and processes used to monitor, analyse and optimise energy consumption across a building or portfolio.	Important mechanism for improving operational efficiency and reducing energy cost exposure.
Green premium	The green premium refers to the additional economic value (price, rent, or returns) that sustainable or energy-efficient properties command compared to otherwise similar non-sustainable assets. See also brown discount.	Reflects tenant and investor willingness to pay for ESG performance.
Sustainability Value Creation (SVC)	The contribution of sustainability to a company's overall performance, translated into a structured financial value logic that links sustainability topics to business and financial outcomes.	Core concept that underpins the proposed methodology for identifying prioritising and quantifying sustainability-related value in real estate.
Value Driver Tree (VDT)	An analytical structure that breaks down a chosen financial metric (e.g., NRI, EPRA Earnings, FFO) into its underlying revenue and cost drivers.	Central tool for SVC framework used to identify where sustainability levers affect financial performance and where quantification should be focused.
Financial terms		
EPRA Earnings	A standardised financial metric developed by EPRA as a measure of underlying operational performance. It represents the net income generated from operational activities, excluding all components not relevant to the underlying net income performance of the portfolio, such as the change in value of investments and any gains or losses from the sales of properties[40]	Key measure of a company's underlying operating results and an indication of the extent to which current dividend payments are supported by earnings.

[40] *EPRA. (2024). Best Practices Recommendations Guidelines. September 2024 (accessed 15/06/26).*

Term	Definition	Relevance
Funds From Operations (FFO)	FFO is a widely used industry-standard performance metric for REITs that measures the cash-generating ability of real estate operations. It adjusts net income by removing accounting distortions specific to real estate, particularly depreciation, amortisation, and gains or losses on property sales[41].	Widely used performance metric in US REIT markets and increasingly referenced in international real estate analysis; included for comparative context given its conceptual alignment with EPRA Earnings, which serves as the European equivalent and primary operational metric in this paper
EPRA Net Asset Value Metrics (NAVs)	A group of three financial metrics (EPRA Net Reinstatement Value, EPRA Net Tangible Assets and EPRA Net Disposal Value) that replaced EPRA NAV and EPRA NNNAV[42].	Standardised valuation metrics used by real estate stakeholders to assess a company's underlying asset value, compare performance across peers, and understand whether the market is pricing the business at a premium or discount to its net asset base.
Net Rental Income (NRI)	Gross rental income for the period less ground rents payable, service charge expenses and other non-recoverable property operating expenses such as insurance, real estate taxes, marketing and other vacant property costs[43].	Asset-level indicator used to measure the value of sustainability measures within the provided case studies.
Return on Investment (ROI)	ROI measures the annual return generated by an investment relative to its cost (CAPEX), calculated as net benefit divided by total investment cost.	Core metric to assess the financial attractiveness of sustainability levers (e.g. retrofits). It allows for comparison across different measures.
Legislation		
Betriebskostenver-ordnung (BetrKV)	The German Operating Costs Ordinance, in force since 1 January 2004, which exhaustively defines the categories of operating costs that residential landlords may pass through to tenants as Nebenkosten (service charges). For residential real estate owners, it establishes which building operating costs are recoverable through tenant charges.	Defines the cost categories that are recoverable for residential real estate owners in Germany.
Kohlendioxid-kostenauftei-lungsgesetz (CO_2KostAufG)	German law that has been in force since 1 January 2023. It allocates the carbon-pricing costs associated with heating and hot-water fuels between landlords and tenants, creating incentives for both energy-efficient building operation and building refurbishment.	Key mechanism through which energy retrofits reduce non-recoverable operating costs and support NRI in German residential real estate.

[41] Nareit. (2018). Funds From Operations White Paper – 2018 Restatement. Nareit (accessed 29/06/26)
[42] EPRA. (2019). EPRA NAV FAQ. November 2019 (accessed 29/06/26).
[43] EPRA. (2024). Best Practices Recommendations Guidelines. September 2024 (accessed 15/06/26).

Term	Definition	Relevance
	For residential buildings, the landlord's share of the carbon costs is determined using a ten-tier model based on the building's CO_2 emissions intensity. In the least energy-efficient buildings, landlords must bear up to 95% of the carbon costs, while in highly efficient buildings tenants bear all carbon costs. As a result, energy-efficiency improvements can reduce landlords' exposure to carbon costs and, alongside energy savings and other benefits, contribute positively to NRI in the German residential real estate sector.	
CSRD (Corporate Sustainability Reporting Directive)	The CSRD is an EU Directive that requires large companies and certain listed entities to disclose standardised, information on ESG performance.	Major regulatory driver of ESG data availability and transparency.
EPBD (Energy Performance of Buildings Directive)	The EPBD is the EU's regulatory framework aimed at improving the energy efficiency and decarbonisation of buildings across Europe.	Major driver of regulatory risk and value protection logic.
Modernisation Levy (German: Modernisierungsumlage)	A legally regulated mechanism under German law (§ 559 BGB) allowing landlords to allocate a portion of the costs of modernisation measures to tenants. Only measures that increase the quality of the living space, improve energy efficiency, or sustainably conserve resources are eligible. Scope of eligible measures (energy-related modernisation): thermal insulation of external walls, roof, or basement ceiling; replacement of old windows; installation of a new heating system; and measures to reduce energy consumption for hot water generation. Eligible costs are calculated as total modernisation costs minus costs attributable to pure maintenance and received subsidies or grants. For heating system replacement, a flat-rate deduction of 15% may be applied as maintenance costs (§559e (2) BGB); otherwise, the maintenance share must be estimated based on asset condition.	Key mechanism for linking CAPEX to rental income growth and supporting refinancing of ESG-driven investments; indirectly impacts NRI, and EPRA Earnings.

Term	Definition	Relevance
Sustainability frameworks and certifications		
BREEAM	BREEAM is a sustainability assessment and certification method for the built environment. It provides third-party certified standards to assess whole-life performance across areas such as carbon, energy, water, materials, health and social impact, circularity, resilience and biodiversity.	Internationally recognised certification that can support asset performance improvement, ESG disclosure, investor confidence and value creation through improved sustainability credentials.
Energy Performance Certificate (EPC)	An EPC is a standardised rating scheme that assesses and communicates the energy efficiency of a building. EPC ratings range from A (most efficient) to G (least efficient) in the EU framework.	Key market signal of asset quality and sustainability performance; driver of green premium / brown discount dynamics.
DGNB	DGNB is a sustainable building certification system developed by the German Sustainable Building Council. It assesses buildings and districts across a holistic set of sustainability criteria, including environmental, economic, sociocultural, technical, process and location quality, and can be applied across different building life-cycle stages.	Recognised certification scheme that can strengthen asset quality, ESG credibility, marketability and alignment with sustainability objectives in real estate portfolios.
GRESB	GRESB is a globally recognised ESG benchmark for real estate and infrastructure, assessing and comparing the sustainability performance of companies, funds, and assets across environmental, social, and governance criteria.	Market-recognised ESG benchmark that supports investor engagement, peer comparison, data transparency and identification of sustainability-related risks and opportunities.
LEED (Leadership in Energy and Environmental Design)	LEED is a widely used green building rating system that provides a framework for healthy, efficient and cost-effective green buildings. It applies across building types and project phases and awards certification levels based on verified performance against prerequisites and credit requirements.	Globally recognised green building certification that can enhance marketability, demonstrate sustainability leadership and support operational efficiency and tenant appeal.
RICS Red Book	The RICS Red Book refers to the RICS Valuation – Global Standards, which set mandatory practices and professional requirements for RICS members undertaking valuation services.	Valuation standards increasingly recognise sustainability and ESG factors as material market influences, supporting more transparent integration of sustainability considerations into property valuation.