Resilient Real Estate

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BuildingMinds

Driving Sustainability in Real Estate through Digital Transformation

This chapter explores how BuildingMinds, a software solutions provider for the real estate industry, empowers real estate professionals to manage and optimize their properties with a focus on environmental, social and governance (ESG) factors. It highlights the challenges faced by the industry, the digital platform offered by BuildingMinds, and the benefits of implementing such a platform for sustainable real estate management.

As sustainability and ESG factors gain prominence in the real estate sector, the evolving market landscape and regulatory reinforcement necessitate increased transparency and the disclosure of ESG KPIs. RICS research shows that buildings account for 25% of all UK emissions, while the sector is responsible for 37% of the EU's CO_2 emissions and 40% of energy consumption.[1] Some measures are in place to bring these figures down by 2030, but there is still a shortfall in decarbonization. Net zero will require considerable advances in both policy and innovation.

Schindler Group established BuildingMinds in response to this challenge in 2018. BuildingMinds is dedicated to assisting companies in their transition towards a more sustainable real estate industry. By streamlining data collection, refinement and augmentation, and delivering insights for well-informed decision-making, BuildingMinds empowers companies to navigate the complexities of sustainable real estate management.

[1] RICS, Decarbonising the built environment: policy reform reports for key market governments, 2023.

BuildingMinds Digital Platform for Sustainable Real Estate Management

The BuildingMinds platform serves as the hub for sustainability management within real estate companies. Emphasizing transparency, the platform ensures users comprehend the origins of data, its availability and any gaps that may exist. A comprehensive understanding of each building's performance is essential for effective oversight. To this end, BuildingMinds' digital twin feature offers an intricate digital representation of every building, encompassing crucial factors that influence performance such as constructional features, building usage, equipment, documents and data on individual floors, spaces and rental units.

The platform enables monitoring of electric vehicle charging stations, on-site energy production, and the evolving proportion of renewables within a portfolio. The inclusion of a complete 3D model of a building, combined with data on resource consumption, desk bookings and sensor data on temperature and air quality, delivers a truly holistic understanding of each asset. BuildingMinds' dashboards facilitate portfolio-wide and building-specific understanding and management of energy consumption (and generation), water usage, waste production and greenhouse gas emissions, generating the precise set of KPIs needed for effective sustainability management.

To enhance a portfolio's sustainability performance, it is crucial to look beyond the past and current state. BuildingMinds has been designed as a forward-thinking tool for managing future energy efficiency and decarbonization requirements. Notably, the Carbon Risk Real Estate Monitor (CRREM) Version 2 is integrated into the BuildingMinds platform. This enables companies following the CRREM pathways to measure their operations against regional benchmarks for 1.5°C and 2°C of warming by 2050, compared to pre-industrial levels. Stakeholders can assess properties readiness for these pathways, first outlined in the 2015 Paris Agreement, and identify improvement strategies. Other integrations include a scenario-based carbon pricing simulator, and a dedicated retrofit planning module, which enable these improvements to be quantified and executed.

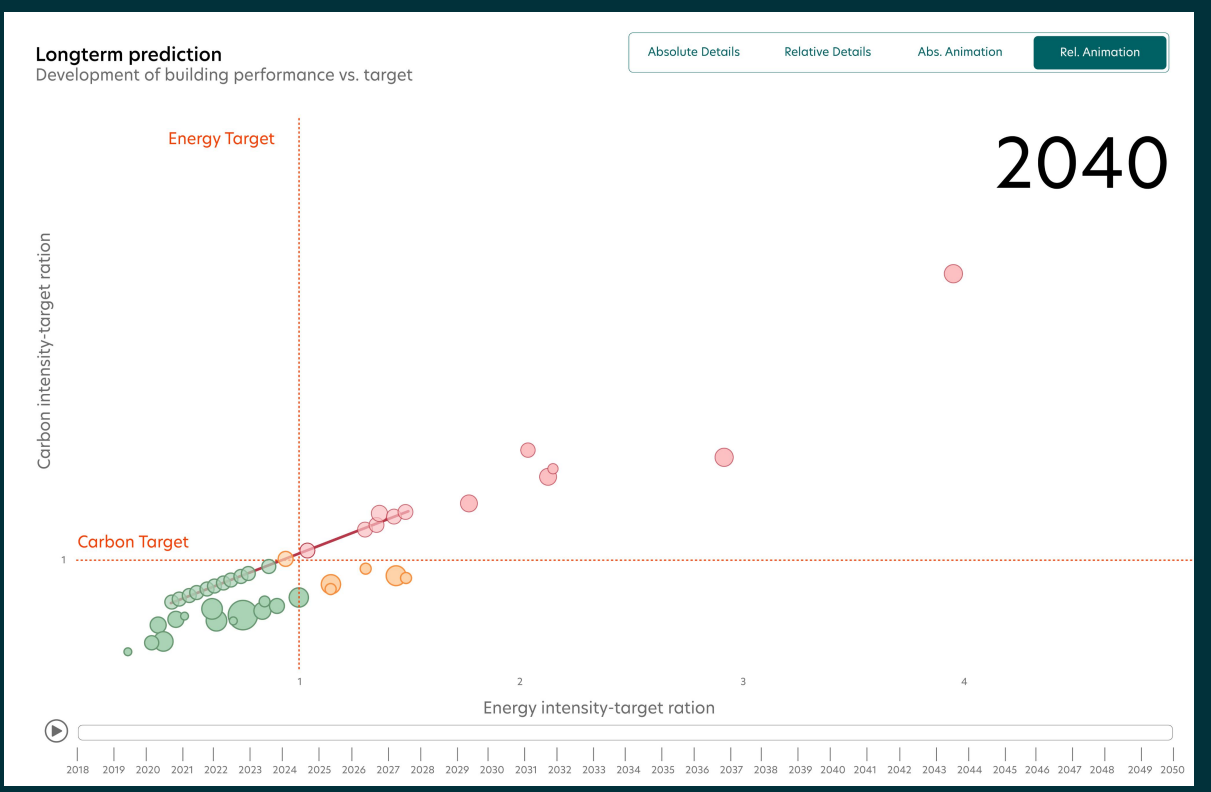


Figure 1: Visualizing the performance of individual properties in relation to CRREM V2's carbon intensity and energy intensity benchmarks via the BuildingMinds platform.[2]

[2] BuildingMinds, BuildingMinds x CRREM V2: Managing Risk and Planning to Mitigate Devaluation Across Real Asset Portfolios, 2024.

Any target-based roadmap depends on accurate real-time data. Data availability is guaranteed through the BuildingMinds platform's ability to connect to smart meters, utility providers and existing software solutions. This is further supported by features such as invoice scraping, automated extraction of information from energy ratings (EPCs) and an in-house solution for filling data gaps. AI-based Large Language Models (LLM) facilitate end-to-end processing of utility invoices, irrespective of their original language. All collected data is standardized and normalized for subsequent analysis and reporting, ensuring comparability and an understanding of the steps required to enhance performance.

Risk Management and Regulatory Compliance

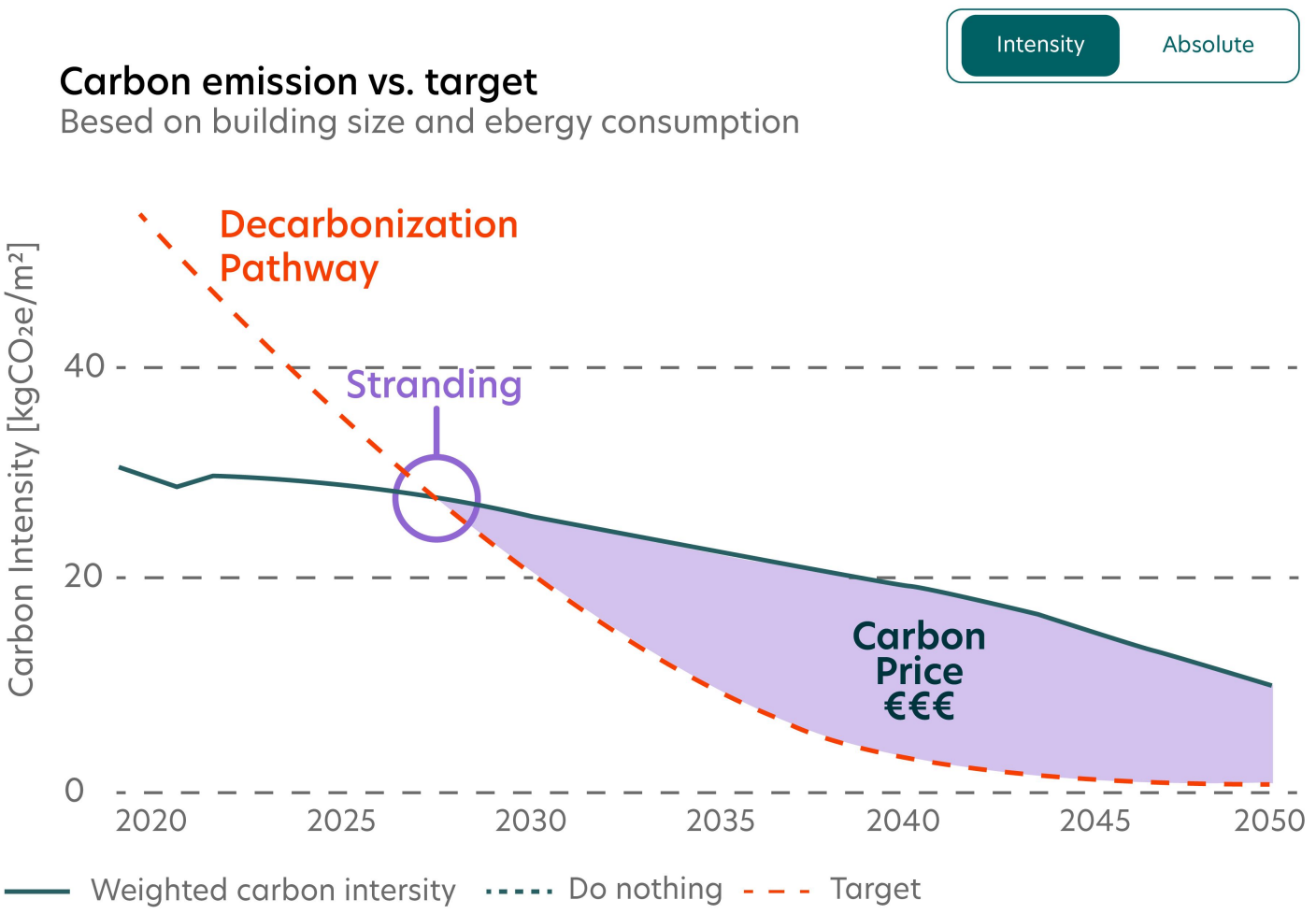
In the context of ESG-related risk management, the adage that one can only manage what is measured holds true. A vital aspect of bolstering credibility among stakeholders, regulators and auditors is transparent communication, which BuildingMinds achieves through its comprehensive data historization approach. Organizations need a dependable audit trail so that they can verify information available at any given moment and trace historical changes to the recorded data.

Further transparency can be attained by utilizing publicly available data sources, rather than proprietary information, for calculating greenhouse gas emissions or other benchmarks employed to assess alignment with the EU Taxonomy requirements. Consistent with TCFD and IFRS definitions of climate risk, organizations must address both physical and transitional climate risks.

Physical climate risks arise from severe weather events, which are continually increasing in frequency and intensity, as evidenced by our data partner Munich Reinsurance. The platform's physical risk module enables users to track current and future hazards, taking into account cutting-edge climate scenarios in line with the EU Taxonomy requirements. By considering expected monetary losses, the platform also addresses the financial aspect of physical risks and highlights potential future increases in insurance premiums.

Transitional climate risks, often linked to the term 'stranding risk', result from potential devaluations due to low energy efficiency and high carbon emissions that fail to meet future regulatory or market demands. The de-facto industry standard for assessing 'stranded assets' risks was developed by the CRREM. This standard aligns with others, such as the 'Science-based targets initiative' (SBTi), and establishes clear decarbonization targets until 2050 for each asset class and country. To manage this stranding risk, organizations need a comprehensive view of a portfolio's stranding risk, including early identification of assets struggling to meet targets.

Figure 2: Explanatory illustration for the CRREM V2 pathway, illustrating the carbon price associated with stranded assets.[3]



Tackling both physical risks and transitional risks requires a property management platform that has fully integrated the CRREM framework. Not only does this enable the most effective retrofit measures to be implemented across the portfolio. But it also provides investors with all the KPIs necessary to satisfy their reporting requirements, including GRESB, SFDR, the EU Taxonomy, and CSRD. That way, all parties ensure compliance and demonstrate the most effective path to improved performance.

[3] Ibid.

Cost Reduction, Efficiency, and Enhanced Property Value

Improvements in cost reduction, efficiency and property valuations go hand and hand with improved sustainability outcomes. Investment in improving property efficiency both through retrofitting buildings and investing in technologies that drive operational efficiencies pays dividends for people and planet. For example, data from the Government Property Agency in the UK shows its Net Zero program has not only seen a 2,400 tCO_2e reduction in Scope 1 and 2 emissions, but also £1.16m in cost savings.[4] These gains are expected to grow considerably year on year. Of course, they will have to in order to reach Net Zero by 2050.

Any cost-saving initiative should start with pinpointing which properties require immediate action. While they may not always be 'quick wins', they will deliver the greatest cost savings and reductions in emissions. And if no action is taken, they will rapidly become liabilities. By streamlining data collection, organizations can minimize expenses while establishing a robust data foundation for well-informed, data-driven decision-making. Scenario-based cost and retrofit analyses are crucial for achieving a company's sustainability goals while maximizing value for money.

Retrofitting buildings is an essential part of ensuring portfolio sustainability and performance. According to the European Commission Climate Foundation, between 85-95% of buildings in the EU will still be in use by 2050 but three quarters (75%) are not energy efficient.[5] The BuildingMind's AI-powered ''Retrofit Recommender'' helps users determine the most effective set of retrofit measures to attain energy and carbon reduction within a specified budget. The model, which has been trained using nearly 1,000 historical retrofit measures, takes into account factors such as building type, location, size, and current consumption levels to identify the optimal combination of measures. Additionally, the model can estimate potential savings and costs for planned measures.

[4] Government Property Agency, Government Property Agency ESG Report 2023, 2023.

[5] European Commission Climate Foundation, Making our homes and buildings fit for a greener future, 2021.

In parallel, the day-to-day operations of buildings must be optimized

Again, this comes down to access to real-time data and the tools to turn it into actionable insights. A range of factors can influence outcomes, including weather and seasonality. BuildingMinds introduced its "Advanced Energy Analytics", which employs an algorithm to analyze energy use within a building and isolate contributing factors such as external temperature or occupancy. This enables users to predict consumption values and evaluate the genuine impact of energy-saving measures. Verifiable data on energy savings can be utilized to demonstrate compliance with regulatory subsidy schemes and support energy contracting implementation.

In an evolving market that increasingly penalizes energy-inefficient buildings, understanding necessary actions to preserve property value and attract tenants is also crucial. Occupants have a key role to play in ensuring buildings operate sustainably while delivering healthy net-operating-income (NOI). The BuildingMinds platform's "Tenant Insights App", which is currently in development, provides transparency regarding energy performance and carbon emissions for building occupants. These kinds of solutions empower occupants to play an active role in making the places they live and work more sustainable.

Case Studies: Successful Implementation of BuildingMinds Platform

BuildingMinds' clients, including Zurich Insurance and GRR, have effectively showcased the significant impact of digital solutions on sustainable real estate management. Companies with a Insurance data foundation can accelerate their progress using a digital building management platform. For Zurich Insurance, more than one thousand buildings with a total floor area of 4.5M sqm have been onboarded. BuildingMinds' customers achieved reductions of up to 43% in energy intensity within two years for individual regional portfolios. Meanwhile, those just beginning their ESG data collection journey can greatly benefit from enhanced data collection processes, outpacing competitors relying on analog and siloed solutions.

While the initial setup of a digital representation for an entire portfolio may entail some upfront effort, the standardized platform approach guarantees a consistent and continuous flow of data. Instead of manually updating spreadsheets each year for sustainability reporting, data collection can be automated, utilizing existing information on every aspect of a building to generate profound insights based on an expanding data foundation.

Asset managers, particularly those specializing in retail assets, may find themselves lacking information on their buildings' actual energy consumption. For its Germany-based client GRR, BuildingMinds successfully demonstrated the creation of a digital portfolio twin primarily using data from Energy Performance Certificates. Automated data extraction and science-based data estimation technologies facilitated the construction of a comprehensive overview of energy consumption, carbon emissions, potential stranding risks, and required measures to mitigate these risks. Based on these technologies, BuildingMinds could come up with comprehensive energy consumption estimations for more than 390 buildings in a very short time, covering not only landlord energy consumption but also tenant energy for +850k sqm of retail space. The estimations included are clear separation of energy use purpose such as ventilation, lighting, appliances and cooling devices, enabling the customer to identify major drivers of consumption and the optimal lever for reduction measures.

BUILDING MINDS

The Future of Sustainable Real Estate Management

Without a clear picture of a portfolio today, it's impossible to plan for a better future.

In summary, technological innovation has the potential to deliver both sustainability and long-term value within the real estate sector. As the industry continues to undergo digital transformation, companies must utilize platform solutions to stay competitive and successfully adapt to the sustainable shift in the real estate market. By capitalizing on such solutions, real estate companies can expedite their journey towards sustainable real estate management, safeguard property values, attract eco-conscious tenants and thrive in an increasingly competitive landscape. The future of sustainable real estate management hinges on the successful adoption and execution of digital transformation.

As we look towards net zero in 2050, the sustainability and commercial viability of a property portfolio are fundamentally interrelated. Successfully managing the performance of this asset class depends on a sophisticated platform capable of providing visibility and actionable insights in real time. And it should have the scientific basis needed to plan a strategic shift towards a net-zero future. For example, the BuildingMinds simplifies the complexities of sustainable real estate management by automating data collection, normalizing and enriching data, and providing insights for informed decision-making. The platform's progressive approach incorporates the CRREM framework, scenario-based carbon pricing simulators and retrofit planning modules, enabling organizations to establish targets and create roadmaps for enhanced sustainability performance.

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Reducing Risk and Driving Sustainability by incorporating ESG considerations into Property Valuation

Today, environmental, social and governance (ESG) considerations play a larger role in property valuation than ever before. This is the result of intensifying regulatory mandates, shifting stakeholder expectations and the imperative for robust risk mitigation. Stringent regulations foster elevated sustainability benchmarks, while heightened stakeholder consciousness increases the demand for environmentally-friendly properties, potentially elevating market worth. Integrating ESG dimensions into assessments enables valuers to pinpoint potential risks and deliver more precise valuations. Certain factors already exert a direct influence on valuation, while others may exert influence in the future.

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The Role of Professional Standards in ESG Property Valuation

The Royal Institution of Chartered Surveyors (RICS)

sets and maintains professional valuation standards that apply to RICS members and regulated firms globally. These include RICS Valuation Global Standards ('Red Book Global Standards'), as well as and supporting guidance and insight. Along with RICS' own requirements, ***Red Book Global Standards*** incorporates the common, global concepts defined *in the International Valuation Standards* (developed by the IVSC) and provides an effective, regulatable framework for valuation professional and firms to adhere to..

Red Book Global Standards reflects the growing importance of successfully combining professional, technical and performance standards to deliver high-quality valuation advice that meets the expectations and requirements of a range of stakeholders: clients, governments, regulatory bodies and other standard-setters and the public. Mandatory rules ensure benchmarking and compliance with the latest regulations. Red Book-compliant valuations support financial reporting for accounting, secure lending and taxation purposes. Taken together, these rules, standards and guidance support best practice and provide assurance on the consistency and transparent handling of information, helping to reduce risks for valuers and their clients.

In Europe, notable instances of recognition of Red Book Global Standards include:

• In Spain, it is recognized by the CNMV (Spanish Stock Exchange Regulator). It is required by law under the CNMV to carry out valuations for IPOs (Initial Public Offerings) and for financial purposes.

• The Italian Banking Association (ABI) guidelines were updated in 2022. They include references to the latest edition of Red Book Global Standards and 'Sustainability and ESG in commercial property valuation and strategic advice', RICS professional standard.

• There are references to Red Book Global Standards in several reports and guideline documents from EU institutions, such as the European Banking Authority guidelines on loan origination and monitoring.

• Red Book Global Standards is also referenced in INREV's Property Valuation guidelines.

According to Red Book Global Standards,

'the relevance and significance of sustainability and ESG matters should form an integral part of the valuation approach' (VPS 3, 2.2, I). The relevant ESG factors can then be implemented in the entire valuation process, starting with the terms of engagement, as required by Red Book Global Standards. The terms of engagement and assumptions are supposed to be tailored to the purpose of the valuation, taking into consideration potential factors not yet reflected in the market value. While valuers should reflect markets, not lead them, they should be aware of sustainability features and the implications these could have on property values in the short, medium and longer term.

(VPGA8, 2.6 (c), iii).

In addition, Sustainability and ESG in commercial property valuation and strategic advice, professional standard, provide a practical framework for delivering on sustainability and ESG investigation and reporting requirements in professional valuation advice. It looks into the alignment of ESG and sustainability considerations with the core mechanics of valuation (purpose, basis, approach). Red Book Global Standards are currently being updated in 2024, while 'Sustainability and ESG in commercial property valuation and strategic advice' is scheduled to be updated over 2025 and 2026.

ESG Drivers of Value in Property Valuation

Of course, ESG factors ensure the real estate sector remains both ethical and societally beneficial. But they are also necessary to comply with regulatory requirements and to keep up with market demand. The three pillars of ESG collectively contribute to the overall performance and value of a property. For valuers to evaluate the influence of all ESG factors and integrate them into their valuation assessments accurately, well-defined guidelines are essential.

As illustrated in the RICS publication 'The future of real estate valuations: the impact of ESG', there are a few drivers that can affect a property's performance and risk profile in relation to ESG and property market value:

Value drivers

Factors that can directly impact the property's market value, such as energy efficiency, sustainable design and green certifications. Properties with strong ESG credentials may command higher rents and have lower vacancy rates, increasing their market value and influencing their risk profile. For example, investments in sustainable design not only enhance the property's appeal to environmentally-conscious investors but also mitigate environmental risks, thereby bolstering its long-term value. Also, properties with recognized green certifications tend to command premium pricing in the market, reflecting reduced risk exposure and increased desirability.

Risk drivers

Factors that elevate the property's risk profile, including environmental hazards, social conflict and poor governance among market participants in general. For example, environmental hazards such as proximity to flood zones or geological instability pose tangible risks to property investments, potentially leading to financial losses or regulatory liabilities. Similarly, poor regulatory compliance with building codes and environmental regulations can exacerbate risks associated with property transactions and ownership. Collectively, these risk drivers contribute to the property's elevated risk profile, necessitating thorough risk assessment and mitigation strategies to safeguard investment interests and ensure sustainable value creation in the real estate market.

Cash flow drivers

Factors that influence a property's generated cash flow, such as tenant demand, operating costs and financing costs. Properties with strong ESG credentials may benefit from lower operating costs, higher tenant retention rates and access to lower-cost financing. In turn, this results in higher cash flows, enhanced investment returns and risk mitigation associated with property ownership.

RICS Europe Leaders' Forum ‘The future of real estate valuations: the impact of ESG’

On 12 October 2022, RICS established a Leaders’ Forum consisting of the major European valuation service providers, the financial industry (banks and investors) and likeminded relevant associations and organizations.
The aim of the Leaders’ Forum is to set the conditions for a consistent and transparent approach to embedding ESG requirements into valuations and the valuation process.

Alignment between key stakeholders, transparency and expectation management are key in driving the ESG agenda forward in a collective manner. Collaboration and information exchange between valuers, investors and other stakeholders are the key activities of the Forum. This will enable the various stakeholders to adopt a holistic approach to incorporating ESG factors into valuation analysis, enabling stakeholders to better assess risk, identify opportunities for value creation and promote sustainable outcomes in the real estate market.

One of the most impactful outputs of the Leaders’ Forum is the ESG and valuation data list, which was published in February 2024. It focuses on the real estate asset level, both existing assets and those under development or redevelopment. The geographical scope of the data list is the EU, and references are made to EU regulatory requirements and supervisory expectations for each indicator. However, we encourage uptake of this data list in other jurisdictions as well.

The data list document consists of a core data list and a future potential indicators list. The core data list consists of 12 ESG indicators we believe are important when assessing ESG performance. This data list is for valuers to present to their financial clients and encourage inclusion of the indicators in the terms of reference, valuation reports and ultimately in the market value. Data availability is not assumed, and focus should be placed on those indicators where the information is readily available and where it can reasonably be expected to have an impact on the valuation. If data is not available, the required information is not shared with the valuer if a certain indicator is not relevant for the client or the property in question, the 'comply or explain' approach applies. The future potential indicators list refers to ESG requirements that are likely to become relevant in the near future. Valuers and financial clients should therefore be aware of and reflect on them.

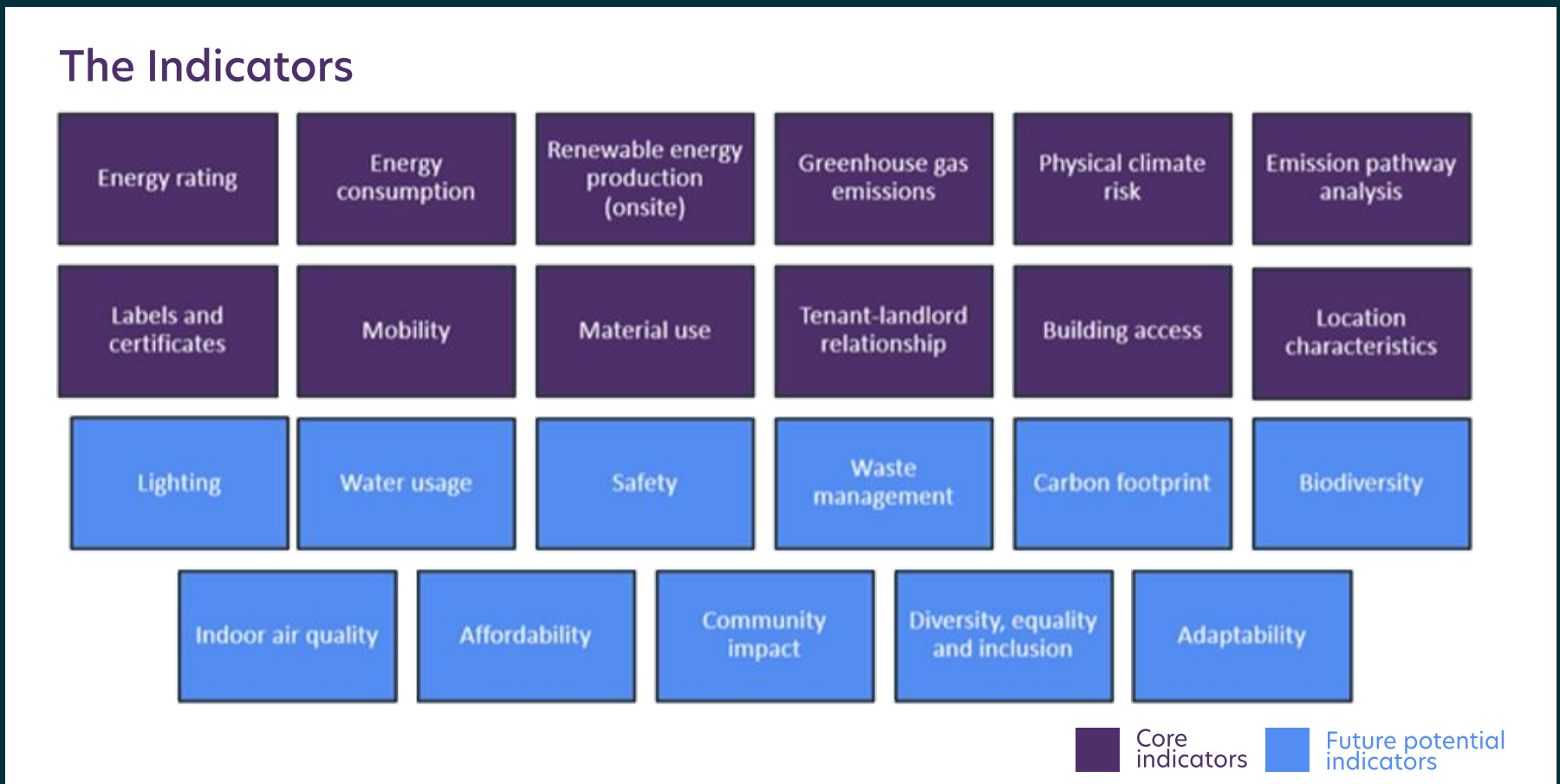

Figure 1: Indicators from the RICS ESG data list for real estate valuations (2024)

Not all markets are equally evolved, and ultimately it is up to the valuation service providers and their clients to determine how to best factor local market and regulatory requirements into the data list. However, to ensure market consistency and transparency when including ESG factors in valuations, using the data list as a reference point is strongly recommended and could serve as a useful tool to structure the dialogue.

The work of the RICS Leaders' Forum continues, and the ESG data list is a living document we expect to update each year. The first edition is currently mapped against INREV guidelines and ESG SDDS. Further mapping with other industry guidelines is currently underway.

The Future of ESG in Property Valuation

As time goes on, ESG considerations will become increasingly important in property valuation. These are driven by several key trends and developments, that create challenges as well as opportunities for the property sector.

Regulatory and legislative mandates

Continued evolution of regulatory requirements around ESG reporting and disclosure are driving greater transparency and accountability in the real estate sector. This is prompting investors and valuers to incorporate ESG factors into their decision-making processes. Regulatory requirements will drive greater adoption of ESG integration in property valuation, as compliance becomes a key consideration for asset owners, investors and valuers alike.

To understand the current state of the EU property market, it is important to be aware of the impact of regulation on valuation. In recent years, various regulations and directives have been introduced at both the EU and national levels to address the ESG aspects of real estate. Some legislation targets companies, investors and investment products, rather than individual property assets or portfolios. The valuer will therefore make appropriate judgments around the relevance and impact of the regulations. Those instructing valuations will also need to consider whether the impact on them as an investor or company needs to be considered in the valuation of individual properties or portfolios, and instruct the purpose and resultant basis of value accordingly. The ESG and valuation data list, which links the core indicators with the relevant EU legislation where possible, serves to help structure the dialogue between valuers and their clients.

Alignment of metrics

There are increased calls for, and efforts to, standardize ESG metrics and reporting frameworks, facilitating benchmarking and consistency in assessing the sustainability performance of properties across different markets. Initiatives such as the Leaders' Forum serve to bring key stakeholders from different fields together, to align expectations and needs, agree a reasonable implementation framework and collectively drive the ESG agenda forward.

Stakeholders' expectations

Investors focusing on sustainability and responsible investment practices will drive demand for ESG-aligned properties. Valuers may face pressure from investors to incorporate ESG factors into their valuations to accurately reflect the financial risks and opportunities associated with sustainability. Tenants are increasingly prioritizing ESG considerations when selecting properties, favoring properties with the right kind of green certifications, better energy-efficiency features and amenities that promote health and well-being. Valuers may need to assess the marketability and rental premiums associated with ESG-aligned properties. Ultimately, portfolio assets may change hands within the larger community of investors and asset owners, so it is in everyone's interests to align when it comes to ESG compliance for their properties and future proofing investments.

Knowledge and training

Not all stakeholders fully understand ESG related risks and opportunities, regulatory implications and potential impacts on properties and portfolios. Knowledge and training on ESG will become indispensable for real estate professionals looking to navigate its complexities and drive positive outcomes for both their businesses and the broader real estate industry.

Data and technological advancements

The situation varies geographically, but there are persistent challenges related to the quality, consistency and availability of ESG data for properties. This hinders the ability to conduct comprehensive analysis. However, advanced technologies such as artificial intelligence, machine learning and geospatial analysis are continuously improving ESG integration into property valuation and allowing for more informed decision-making. Advanced data analytics is enabling the processing of large volumes of ESG-related data in order to derive actionable insights and enhance the accuracy of property valuations. Greater data availability would empower valuers to enhance the accuracy, depth and sophistication of their valuation models, thereby improving the reliability and transparency of real estate valuations.

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Summary

ESG integration is essential for improving sustainability, reducing risk and creating long-term value in the real estate industry. Influenced by evolving regulatory standards, stakeholder expectations and risk management needs, ESG-focused properties are increasingly viewed as valuable investments. For investors and asset owners, driving the ESG agenda forward collectively is about future proofing their assets and investments. There is also a clear need for a consistent and transparent approach to embedding ESG requirements into the valuation process.

The nuanced integration of ESG considerations is crucial for optimizing property value and fostering accuracy in valuations. It is important not to reinvent the wheel or create new initiatives that are not linked to what is available currently. It is strongly recommended the industry adopts a collaborative and holistic approach when aligning valuations with sustainability goals and stakeholder expectations.