



About ULI

The Urban Land Institute is a global, member-driven organisation comprising more than 48,000 real estate and urban development professionals dedicated to advancing the Institute's mission of shaping the future of the built environment for transformative impact in communities worldwide.

ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics.

Established in 1936, the Institute has a presence in the Americas, Europe, and Asia Pacific regions, with members in 81 countries. ULI has been active in Europe since the early 1990s and today we have almost 5,500 members and 15 National Councils.

The extraordinary impact that ULI makes on land use decision making is based on its members sharing expertise on a variety of factors affecting the built environment, including urbanisation, demographic and population changes, new economic drivers, technology advancements, and environmental concerns. Drawing on the work of its members, the Institute recognises and shares best practices in urban design and development for the benefit of communities around the globe.



About C Change

C Change is a ULI-led programme to mobilise the European real estate industry to decarbonise. We're a movement empowering everyone to work together for a sustainable future. We connect the brightest minds from across the value chain. We challenge barriers, share expertise, and champion innovation to move swiftly to accelerate solutions that will transform our industry and protect our planet. C Change means real change.

C Change was formed in late 2021 by a group of leading real estate players that was united in its aim to focus on collaboration to ensure companies large and small have access to practical solutions and education on decarbonisation.

Author

Kate Wolfenden, Partner, 103 Ventures

ULI Europe project staff

Lisette van Doorn, CEO

Sophie Chick, Vice President, Research and Advisory Services

Simon Chinn, Vice President, Research and Advisory Services

Aleksandra Smith-Kozłowska, Director, Research, Europe

Andrea Carpenter, Consultant

103 Ventures project staff

Suzy Glass, Partner

Valentin Wiesner, Project Manager

Foreword

We are pleased to launch the ULI C Change Transition Risk Guidelines. These guidelines outline a standardised approach to assess and disclose climate transition risks as part of property valuations.

We believe the adoption of these guidelines by owners and managers in the industry can help remove a critical barrier and enable us to accelerate the transition to a low-carbon built environment.

There is currently limited regulation in place to drive the real estate industry to net zero carbon, but we know it is our responsibility to transform our buildings. This has seen many players taking an individual approach by making internal assessments for transition risks based on different assumptions.

However, addressing climate change is urgent, and a fragmented approach is the greatest threat to our progress. We do not have time for companies to pursue individual methodologies when dealing with transition risks across our cities. This causes friction for buyers and sellers, and the inconsistency across owners and managers ultimately slows down progress on a topic that we are all doing our best to address.

Instead, we must unite as an industry and clear the most effective path towards change. Working together will accelerate our progress, and, importantly, following one agreed methodology levels the playing field between larger and smaller players, which is key to our overall success.

We believe there is also a societal benefit. By getting the market to move faster on this topic, we can help the industry build a strong case for a collaborative approach to transform existing stock. Without it, we risk stranding assets, stagnating our investment markets and making parts of our cities un-investible and uninhabitable.

To do this, we need to shift our thinking from a focus on capex and costs to value preservation and uplift. This issue can also be part of the bigger urban development challenges and opportunities related to repurposing assets and reshaping our cities.

These Transition Risk Assessment Guidelines support owners and managers to assess the impact of specific risks over the time series of an investment. They identify 12 transition risks which are of material impact to real estate assets now and in the future. They also include three standard templates to disclose and report to three key stakeholders: transacting entities, valuation service providers and institutional investors.

We believe these guidelines are applicable globally when supported by the right regional datasets required to undertake the analysis.

The guidelines are now ready to be used by industry participants and we would welcome feedback on their adoption. We intend to produce case studies to demonstrate the guidelines in-use and would also be pleased to hear about companies that wish to partner on research projects to implement the guidelines across portfolios.

For C Change, the guidelines are the first step in addressing the decarbonisation of our cities. Even with a common methodology to assess transition risks, there is still work to be done. We believe working with this methodology also requires a change of mindset; we can no longer

make the costs to decarbonise buildings a competitive part of transactions. This means we need to be willing to share data, which can be a sensitive topic across competing businesses. We will be looking at protocols around data sharing and the risks and the opportunities of this important next step.

We also think it is important to address emerging topics such as carbon pricing that can support decarbonisation. This is a topic the industry has not yet addressed properly but we believe to preserve real estate assets, there needs to be a concerted effort to mediate a common carbon price and strategy for the industry.

Finally, we plan to use these guidelines as a basis for the technical specification for Preserve, a smart tool that will be available for all industry players to help assess transition risks consistently and speed up adoption.

We would like to thank the many individuals that have supported the development of these guidelines. In particular, our Steering Committee, the European Sustainability Product Council and those experts that took participated in a series of technical workshops.

It has been this connecting of these bright minds from across the value chain that has helped us develop the type of workable solutions that C Change is founded upon, and we thank them for their ongoing support.

We encourage you to review these guidelines and consider how they can be adopted within your company. Help us ensure that C Change is real change.

Lars Huber
Chair, ULI Europe



Lisette van Doorn
CEO, ULI Europe



C Change Partners

Icon



Gold



Silver



Thanks to the following Founding Partner for its support on these guidelines **ARUP**

Contents

Why these guidelines are important	7
How these guidelines work	8
1. The role and scope of the guidelines	9
1.1 What these guidelines intend to do	9
1.2 What the guidelines do not intend to do	9
1.3 Scope of transition risk assessment	10
1.4 Conducting the assessment as a smaller entity	10
1.5 Key stakeholders	10
1.6 Suitably qualified professional(s)	10
1.7 The relationship between transition risk assessments and property valuations	10
1.8 The relationship between this transition risk assessment and associated industry tools/reporting mechanisms	11
2. How to action these guidelines	13
2.1 When to conduct a transition risk assessment	13
2.2 Asset-level assessment	13
2.3 The comply or explain principle	13
2.4 Required transition risk assessment data points	13
2.5 Setting up the discounted cash flow for transition risk assessment	14
2.6 Ensuring a shadow bottom line in the discounted cash flow	14
2.7 Identifying the top three material risks	14
2.8 Implementing financial metrics	14
2.9 Further use and interpretation of transition risks assessments	15
2.10 Eliminating the risk of double counting	15
3. How to assess the transition risks	16
3.1. Summary chart of treatment of transition risks	16
3.2 Transition risks - quantifiable into a discounted cash flow	16
3.2.1 Cost of decarbonisation	17
3.2.2 Energy costs	19
3.2.3 Embodied carbon	21
3.2.4 Obsolescence and depreciation	23
3.2.5 Minimum Energy Performance Standards (MEPS)	25
3.2.6 Carbon price	27
3.2.7 Tenant voids	29
3.2.8 Exit yield	31
3.3 Transition risks – not quantifiable into a discounted cash flow	32
3.3.1 Reputational Risk (investor specific)	32
3.3.2 Access to Insurance	32
3.3.3 Access to debt capital	33
3.3.4 Internal resourcing	33
4. Standardised disclosure templates	34
4.1 Transition risk assessment – owner or manager disclosure sheet	34
4.2 Transition risk assessment – valuation service provider disclosure sheet	35
4.3 Transition risk assessment – investor reporting sheet	35

5. Next steps	37
5.1 Interdependent delivery needs for implementation	37
5.1.1 Critical mass adoption	37
5.1.2 Preserve tool	37
5.2 Further development of the guidelines	37
5.2.1 Data sharing	37
5.2.2 Mediated industry carbon price	37
5.3 Revision and change procedure	38
Acknowledgments	39
Key contributing organisations	39
Inspiration and influence	39

Why these guidelines are important

With the built environment contributing around 37%¹ of global carbon emissions in 2022, it is clear that without effective transition risk management both the communities in which buildings can thrive and the \$11.1² trillion investment industry that builds and maintains them is at stake.

This is also about just transition for our cities and ensuring that addressing climate risks also drives social change, as we recently set out in our paper *Breaking the value deadlock: enabling action on decarbonisation*.

The proper integration of transition risks holds the key to galvanising action on decarbonisation – of the asset itself and its interdependent infrastructure. At present, transition risks, such as the cost of decarbonisation and additional resources needs, are known to be impacting the value of property, while not captured in real estate valuations.

However, without a standardised method by which to assess it, there is risk of informed investors divesting carbon-heavy portfolios or assets to less sophisticated purchasers, which are less educated on the risks concerning the decarbonisation of real estate. As a result, there is a risk of larger numbers of assets stranding as they are not able to make the financial business case for the transition.

The objective of these ULI C Change Transition Risk Assessment Guidelines is to standardise the treatment and disclosure of transition risks up and down the value chain of real estate investment.

The guidelines are intended to be used by asset owners and managers when conducting asset and portfolio level assessments. They also include associated disclosure templates, which are intended to enable standardised disclosure of transition risks between (i) transacting entities, (ii) with the valuation services industry and, (iii) to report to institutional investors and other stakeholders.

¹ <https://globalabc.org/resources/publications/2022-global-status-report-buildings-and-construction>

² <https://www.msci.com/documents/10199/8f62c2a3-8374-cbf9-a7d2-a8c2c5e63e62>

The contents of these guidelines are designed to be adopted into existing industry practice. As such, we recommend that they should be integrated into discounted cash flow assessments and all relevant asset-level decision-making from transactions to ongoing management.

In addition, we believe the guidelines can also educate the industry on each transition risk, including how they can both individually and collectively impact the value of an asset in the short and long term. For this reason, we intentionally identify and describe risks in isolation from each other. We recommend that owners and managers familiarise themselves with each of these risks individually to ensure total competence in transition risk management and value creation.

Finally, we believe publication of these guidelines can also provide a best practice baseline to act as a minimum expected standard for the industry from the date of publication.

While we are focusing on the effective treatment and disclosure of transition risks up and down the value chain of real estate investment, we also want to highlight that there are several, sizeable upside risks associated with the effective management of these transition risks. For example:

- potential higher rental income as a result of a higher specification property
- additional net income opportunities from onsite renewables
- reduced reletting times
- higher tenant quality and loyalty
- increased rental income as a result of lower energy bills, etc.

Currently, we do not have market data on this potential upside and by creating market transparency on this topic, we hope to make this available.

While it is not the role of these guidelines to advise owners and managers how to maximise their value creation in this context, we recognise that the greater the quality of analysis of these transition risks, the greater the potential quality and accuracy of the value creation opportunity will be. As such, it is expected that the quality of this assessment will become a strategic priority for owners and managers.

As part of the ULI C Change programme, work is underway to support the adoption of these guidelines, through the development of an automated transition risk assessment tool called Preserve, as well as examples of the transition risk assessment in action. This will include better prompting for owners and managers to consider and integrate upside risks. Please see section 5 (next steps) for more information.

How these guidelines work

These guidelines set out details for 12 transition risks, nine of which can be quantified into a discounted cash flow.

Each transition risk highlighted in these guidelines starts with a description of the risk as it stands today and a short summary of how the risk might be impacted in future. It classifies the risk as “quantifiable into a discounted cash flow”, or “not quantifiable into a discounted cash flow” including reasoning for each decision.

It is important to note that classifying a transition risk as “not quantifiable into a discounted cash flow” for the purpose of these guidelines does not mean a deprioritisation or a lack of risk for the owner or manager. All the identified risks in these guidelines are critical to identify, monitor and manage as part of a wider asset or portfolio analysis.

However, the risks that are classified as quantifiable in section 3.2 of these guidelines are risks that can

be quantified into a cost *today*. The unquantifiable risks may still be impacting investment decisions and strategies, but are as yet only qualitative and as such are not possible to integrate into the proposed transition risk assessment at this time.

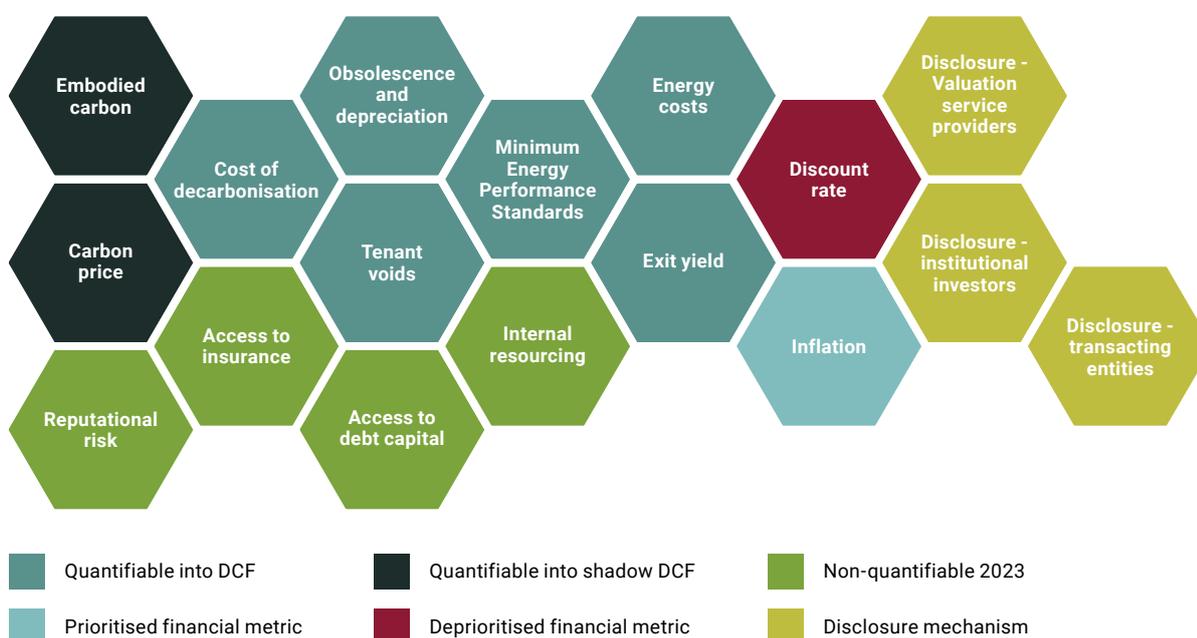
Each transition risk highlighted in the guidelines has:

- an overarching principle. The intention is that this serves as a basis for best practice in delivery.
- a suggested best practice. Best practice in this context aligns with comparable industry guidelines (e.g., INREV) and will aim to be considered the minimum standard.

In addition, we observe that some transition risk recommendations may represent more of a leadership position than the standard best practice expected for industry. In these cases, leadership position activities have been added to additional guidance.

However, we consider it important for owners and managers to review and prepare for this additional guidance wherever possible, in order to model evolving best practice within the industry. There is also a notable likelihood, that future versions of the guidelines may integrate some of the additional guidance criteria.

Once the transition risk assessment is complete, we recommend that owners and managers disclose a small number of key data points with three key stakeholders:



- The transacting entity
- The valuation service provider
- The institutional investor

These data points are detailed in three disclosure templates, which are further explained in section 4.

1. The role and scope of the guidelines

1.1 What these guidelines intend to do

The guidelines intend to provide insight and structure around the treatment of a priority set of transition risks considered material to real estate assets. They will:

- Highlight the key transition risks known to have an impact on real estate assets.
- Classify which transition risks can be quantified and thereby integrated into an associated discounted cash flow budget line.
- Classify which transition risks cannot be quantified and thereby should be monitored and considered for a future guideline revision.
- Identify where risks may have a potential impact on financial assumptions and metrics, and how to treat them in relation to specific discounted cash flow calculations.
- Suggest a standardised method for assessing and integrating each of the applicable transition risks into the discounted cash flow.
- Provide a list of suggested data points for standardising the disclosure of transition risks between transacting entities, valuation service providers, and to institutional investors.

1.2 What the guidelines do not intend to do

First and foremost, it is important to note that these guidelines do not intend to replace the industry standard requirement for a market or fair value assessment conducted at least annually and/or upon acquisition or sale of a real estate asset. This is especially important in the realm of financial reporting, where providing the individual or aggregate fair or market value is a fiduciary responsibility.

Secondly, it is important to make clear that these guidelines do not replace or provide superior information to owners and managers about how to holistically manage their respective assets

to sustainability. As explained in detail in these guidelines, there is a much wider spectrum of requirements to achieve asset and portfolio level sustainability. Furthermore, it is important to note that this focuses solely on integrating transition risks. Total climate risk management must also include physical risks.

After these fundamental points are understood, in addition, the guidelines do not intend to:

- Replace decarbonisation audits and proper due diligence on a real estate asset. These proposed guidelines are meant to be used in conjunction with both these asset assessment requirements.
- Replace or provide new reporting frameworks or protocols linked to wider financial reporting requirements.
- Replace or provide new reporting frameworks linked to wider non-financial reporting bodies, for example TCFD. These guidelines may produce information which can help inform such reporting requirements, but they are not intrinsically or causally linked.
- Replace the need for sustainability expertise within a real estate investment team. These proposed guidelines can be used by both in-house sustainability leads and investment committee leads.
- Assess transition risks at an organisational level and as such does not include risks/ costs such as organisational climate risk reporting. These guidelines focus on asset- and portfolio-level assessment only.
- Replace the use of an industry standard discounted cash flow. These guidelines are meant to support the explicit inclusion of criteria directly associated with decarbonising real estate, within, and in complement to, already core industry assessment methods and tools.
- Suggest the replacement of critical data collection and resultant increased accuracy of asset and portfolio level calculations. These guidelines are meant to inform owners and managers and their stakeholders of the impact of specific risks over the intended duration of an investment, in order to assess and prioritise deeper explorations of the transition risks that are making the biggest potential impact on the certainty of the owners' and managers' targeted returns.

1.3 Scope of transition risk assessment

The assessment of transition risks by investors and owners and managers are currently undertaken for the following reasons:

- Annual financial reporting
- Management reporting to shareholders and other stakeholders
- Taskforce on Climate-related Financial Disclosures (TCFD) and other corporate and non-financial reporting
- Underwriting of an asset value, at acquisition or disposal
- Assessment of value as part of a regular asset/ portfolio management analysis
- Decarbonisation audit or assessment of an asset or portfolio

These guidelines broaden the application of where transition risks can be used, to additionally provide/ be included within:

- Quantitative indications to owners and managers to support assessments of the value of an asset, in order to aid in asset price negotiations.
- Standardised disclosure of where transition risks are impacting property value between transacting entities.
- Standardised reporting by owners and managers to institutional investors.
- Standardised reporting via a secure medium between owners and managers and the valuation services industry.

1.4 Conducting the assessment as a smaller entity

Historically, the assessment criteria in these guidelines has placed larger organisations at an advantage to smaller organisations which may not have the resource or expertise to stay as well informed as their larger peers. With these guidelines, we anticipate that smaller organisations will now be able to quickly navigate the complex space of transition risk-adjusted investment value and be able to manage and negotiate their assets more effectively. For this reason, these guidelines are suitable for all organisations, large or small.

1.5 Key stakeholders

The key stakeholders central to the effective delivery of these guidelines are as follows:

- Owners and managers, including ESG leads – responsible for the assessment of investment value
- External service providers, decarbonisation – including decarbonisation auditors and cost consultants
- Valuers and other external service providers
- Transacting entities, buyers and sellers
- Institutional investors

Furthermore, integral to continued applicability of these guidelines and accuracy of their analysis when applied, are key data providers. The most notable of which in the Europe, is:

- Carbon Risk Real Estate Monitor (CRREM)

1.6 Suitably qualified professional(s)

We recommend in these guidelines that the assessment of transition risks is to be conducted by the owner or manager with support of an internal sustainability expert capable of understanding and navigating the complete suite of transition risks and corresponding data points, or a suitably qualified external resource.

While no specific qualification exists to ensure an owner or manager and/or their internal expert is suitably qualified for this assessment, we recommend that owners and managers consider the technical content and understanding required in order to deliver this assessment and make a responsible decision as to if the internal team is suitably equipped to deliver the assessment. As noted in several of the risks detailed in section 3 below, the more potentially materially impactful the risk, the greater the recommendation is made to seek the assistance of a specialist third-party provider to support the quality and accuracy of the assessment.

1.7 The relationship between transition risk assessments and property valuations

It is proposed that the assessment of transition risks to inform investment value in accordance with these guidelines must be in addition to a fair or market value assessment. This fair or market value assessment must be conducted by an independent and suitably qualified valuer,

with suitable review periods and guide criteria as described in the Royal Institution of Chartered Surveyors (RICS) in its [Red Book Global Standards](#).

In this instance, the valuer would continue to observe the fair or market value on the basis of comparables-based evidence and not integrate additional speculative transition risks, as instructed by the RICS Valuation – Global Standards (Red Book Global Standards). Where impacts of transition risks can be evidenced as specifically and causally impacting market value, and have been explicitly stated by the owner or manager, it is proposed that the valuer should present this assessment to the manager in the usual formats of explicit mentions within the assessment of value or additional strategic advice, where it is possible to do so.

Please note. Should the valuer integrate the cost of decarbonisation to reach local MEPs in their fair or market value, then the owner or manager should take care to compare and contrast this assessment of costs versus the costs estimated as a result of an internal decarbonisation audit (as described in Section 3.2.1) and ensure no double counting between them. As already being experienced by leading organisations, this comparison can, at times, identify an alpha opportunity.

1.8 The relationship between this transition risk assessment and associated industry tools/reporting mechanisms

Carbon Risk Real Estate Monitor (CRREM)

It is important to note that these guidelines are intended for global use. However, to provide precise enough recommendations for owners and managers, the Carbon Risk Real Estate Monitor (CRREM) has been used a proxy data provider/ tool to best assess an asset's stranding date.

The CRREM tool is currently available in all 27 European Union member states, including the UK, and is due to launch a U.S.A edition in the summer of 2024. For owners and managers outside of those regions, CRREM provides guidelines for how to adapt the analysis providing more localised data.

For this reason, these we recommend that for the effective assessment and standardisation of the

treatment of transition risks, it is proposed that an owner or manager's baseline decarbonisation pathway aligns with the Carbon Risk Real Estate Monitor (CRREM) 1.5°C pathways, wherever possible (CRREM v2.02 or latest update).

NB. It is understood that not all sectors are covered with the CRREM pathway or tool, nor some of the nuances of specific needs within sectors (e.g., a high intensity data centre within an otherwise mixed used building). However, following industry benchmarks enables greater industry standardisation, so it is proposed to use CRREM as a baseline from which the owner or manager can specify and quantify any amendments or adjustments inclusive of reasoning, wherever applicable.

Task Force for Climate Related Disclosure (TCFD)

It is important to note that this is an analysis that is entirely separate to scenario-based analysis associated with TCFD guidelines. This is because the primary purpose of the TCFD guidelines is to stress test against different climate scenarios. Whereas one of the two primary objectives of these guidelines is to ensure education of the individual and combinatory risks associated with these transition risks, in order to understand these risks, they need to be deconstructed and assessed. Once properly assessed, the results can be used to inform a wider scenario or indeed more commercial sensitivity analysis on an asset.

That being said, it is understood that much of the processes described in these guidelines can support the quality of response in relation to transition risk reporting only, within the TCFD requirements. This includes but is not limited to:

- (i) Describing the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.
- (ii) Describing the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.
- (iii) Describing the organisation's processes for identifying and assessing climate-related risks.

- (iv) Describing the organisation's processes for managing climate-related risks.
- (v) Describing how the processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.
- (vi) Disclosing the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.
- (vii) Disclosing scope 1, scope 2, and, if appropriate, scope 3 greenhouse gas (GHG) emissions, and the related risks.

Specific to point (ii) above these guidelines align with TCFDs requirement for the explicit use of and disclosure of carbon price for completion of the TCFD scenario planning.

Other supporting data providers

It is understood that in order to successfully complete a transition risk assessment, certain data points are required and these are not ubiquitously available. In some instances, the data will be available in-house or as a result of due diligence or decarbonisation assessments conducted on the asset. Where this is not possible, it is proposed that owners and managers are recommended to draw upon established data providers and credibly sourced industry estimations to support progress. However, as stated, if an owner or manager, through the use of this transition risk process, identified a risk that is really material to the potential value or investment return of an asset, then it is strongly recommended that the path of extra due diligence and assessment is followed.

Given the considerable variation between data sources and credibility, where data and not audits has been used in the analysis, owners and managers must disclose their sources in the disclosure sheets.

2. How to action these guidelines

2.1 When to conduct a transition risk assessment

We recommend that assessment of transition risks are conducted once a year per asset. It should also be conducted on a potential new asset acquisition, ongoing management of an existing asset, and in preparation for sale.

2.2 Asset-level assessment

We recommend that this assessment is conducted on an asset-by-asset basis. The results of these assessments can be aggregated to portfolio level for disclosure to investors. More information on portfolio-level disclosure to investors can be found in section 4 (standardised disclosure templates)

2.3 The comply or explain principle

We recommend that owners and managers conduct the full assessment and disclosure as described in these guidelines. If an owner or manager does not comply with any or all of the recommendations made, then owners and managers are recommended to explain why they were not able to do so. More information in the comply and explain is included in section 4 (standardised disclosure templates).

2.4 Required transition risk assessment data points

We propose that the following transition risk data points (see chart below) should be prepared in order to conduct a transition risk assessment.

Required data point	Unit/typology
Floorspace of asset	Square metres or square feet
Sector or typology of asset	Sector as identified using CRREM Reference Guide
Location of asset	Country, climatic zone
Total energy use	Energy types, total kWh
Cost of energy	Energy type, cost per kWh in local currency
Total operational emissions per annum (last reporting year)	kg CO ₂ e
Total operational emissions intensity per annum (last reporting year)	kg CO ₂ e/square metre or square foot
Total future planned embodied carbon responsibility (EN 15978: Construction & Product A1-5, In Use: B3-5 and End of Life: C)	kg/tonnes CO ₂ e
Internal carbon price	Value in local currency
Cost of decarbonisation	Value in local currency, per planned decarbonisation event (not including inflation)
Depreciation of associated decarbonisation hardware and technologies	Lifespan in years
Total potential energy surplus	kWh
Price of energy surplus if sold back to the grid	Cost in local currency per kWh
Expected tenant voids as a result of decarbonisation	Number of weeks or months
Asset stranding date (according to CRREM pathways)	Year
Minimum standard stranding date	Year relative to sector

2.5 Setting up the discounted cash flow for transition risk assessment

In the assessment of transition risks, we recommend that owners and managers must first calculate an industry standard discounted cash flow and include all the industry standard data points required to make an accurate assessment of the value of an asset.

Once the initial assessment has been made, we recommend the additional transition risk-related data points (see section 2.4 above) are entered into a separate transition risk-adjusted assessment section. For this purpose, we recommend that a transition risk-adjusted section of the discounted cash flow should be created and used on all transactions and the annual review of ongoing assets under management to support the identification of clear causalities in the adjustments to potential value.

2.6 Ensuring a shadow bottom line in the discounted cash flow

We recommend that in the assessment of transition risks, owners and managers should be able to demonstrate the potential value impact of transition risks, even if these risks do not impact the actual free cash flows for the asset. For this, owners and managers should include a shadow section underneath the bottom line of their free cash flows assessment to explicitly state these shadow costs, but not include them into the free cash flow assessment.

The specific transition risks that we recommend to be included in this shadow assessment are as follows:

Transition risk
Cost of decarbonisation after holding period
Energy costs – tenanted parts
Carbon price – operational and embodied

We recommend that it should be the owner or manager's responsibility as to how material this shadow risk is to the assessment of value and indeed any price negotiation upon sale or acquisition.

2.7 Identifying the top three material risks

It is important to note that not all identified risks will impact the owner or manager's asset in equal measure. As such, we recommend that the owner or manager uses these guidelines to assess all transition risks (as described in section 3 below) that have the potential to create a material impact on the shadow or actual free cash flow. Once an assessment is complete, it will be possible to identify the top three risks which have the greatest material impact on the assessed value of the property. In this instance, the greater the financial impact, the greater the material impact.

We recommend that the owner or manager considers these risks a priority to obtain as accurate information as possible. As such, each risk should require more detailed assessment or consultation, either through suitably qualified third-party providers or internal capacity.

2.8 Implementing financial metrics

When conducting a transition risk assessment within a discounted cash flow it is important to consider how the discount rate interacts with and differentiates from the wider identified transition risks to avoid double counting.

Nominal versus real discount rate

The use of the discount rate in investment decision-making is a critical internal decision which directly impacts perceived value of an asset. A critically important element to the discount rate is the decision between the use of a real (real cash flow, and not inflation-adjusted) and nominal (inflation-adjusted cash flows) discount rate in the discounted cash flow analysis. For the purpose of assessing transition risks, it is proposed that owners and managers use the nominal discount rate, in line with existing industry best practice.

Blended inflation rate

As current industry standard, the appropriate inflation adjustment to the risk premium is often driven from a general assessment of the national inflation rate, plus an additional adjustment to this rate as result of the owner or manager's insight, as to its accuracy/relevance to the specific context of the asset.

When assessing transition risks, we recommend that owners and managers must pay closer attention to more specific components of the inflation rate. This can be achieved by weighting a blended inflation rate according to the quantified impact potential of the previously identified top three materially impacting risks (see section 2.7). This is important for owners and managers because national inflation rates cannot account for the heightened volatility that is being experienced in supply chains for, e.g., energy, retrofit materials or technologies.

2.9 Further use and interpretation of transition risks assessments

We recommend that owners and managers should be cognisant that the treatment and placement of these risks do not work in isolation from each other.

As such, once an initial quantification of transition risks for use in a discounted cash flow has been completed, owners and managers may choose to carefully consider where these costs or income opportunities might impact other areas of the discounted cash flow.

For example, energy improvement costs, coupled with future carbon prices, can prompt owners and managers to reconsider rental income potential at rent negotiations.

Such calculations can automatically be prompted in tools such as the forthcoming Preserve tool, but for the purpose of these proposed guidelines a short mapping chart is provided below.

2.10 Eliminating the risk of double counting

Given the complexity and interconnectedness of these disaggregated, yet compounding risks, owners and managers must take great care in identifying and eliminating any risks of double counting in the assessments.

To ensure this is achieved, we recommend that owners and managers conduct an assessment on each transition risk individually first and then cross reference against the key risk areas for double counting e.g., interrelated risks as detailed in section 2.9, or blended inflation rate informed nominal discount rates as detailed in section 2.8 above. Once the risk of double counting has been established, we recommend that these are reviewed as part of the annual review process as described in section 2.1.

Name of transition risk	DCF primary impact(s)	DCF secondary impact(s)
Cost of decarbonisation	Capital expense, operating expense	Rental income, exit value
Energy costs	Operating expense	Rental income, exit value
Carbon price	Operating expense	Rental income, exit value
Depreciation	Operating expense	
Rental income change	Rental income	Exit value
Tenant voids (as a result of decarbonisation activities)	Rental income	Rental income, exit value
Embodied carbon	Operating expense	
Exit yield	Income	

3. How to assess the transition risks

3.1 Summary of transition risks

The table below sets out the transition risks which have been identified. The risks identified in section 3.2 have been classified as “quantifiable into a discounted a cash flow”, and are thereby recommended to be included in owner and manager transition risk assessments. The risks identified in section 3.3 have been classified as “not quantifiable into a discounted cash flow”, and are thereby not recommended to be included in the risk assessment at this stage.

3.2 Transition risks - quantifiable into a discounted cash flow

This section of the guidelines breaks down each transition risk into a:

- description of risk
- classification of risk (quantifiable or not quantifiable into a DCF) rationale
- risk principle
- recommended treatment of the risk
- recommended placement of risk within the discounted cash flow.

In some risks, e.g., carbon price, an additional sub-heading has been created to denote additional actions associated with taking a leadership position on this risk, which is indicated by:

- Additional guidance

Risk	Included in the guidelines	Into DCF	Into Shadow DCF
Quantifiable into a DCF			
Cost of decarbonisation	Y	Y	Y
Energy costs	Y	Y	Y
Embodied carbon	Y		Y
Obsolescence and depreciation	Y	Y	Y
Minimum Energy Performance Standards (MEPS)	Y	Y	
Carbon price	Y		Y
Tenant voids	Y	Y	Y
Exit yield	Y	Y	
Not quantifiable into a DCF in this version			
Reputational risk (investor specific)	N	N	N
Access to insurance	N	N	N
Access to debt capital	N	N	N
Internal resourcing	N	N	N



3.2.1 Cost of decarbonisation

Description of risk

This refers to the amount of investment required to decarbonise an asset in line with the CRREM 1.5oC aligned decarbonisation pathway* (v2.02 or latest update) and to stay within minimum energy performance standards (MEPS). This includes the cost of materials, labour, systems and advisory project management services. CRREM only currently focuses on operational carbon emissions and future retrofit-related embodied carbon.

In future, the level of this risk can be impacted by uncertainties such as inflation and supply chain issues. Furthermore, while no equivalent embodied carbon benchmark or pathway exists at present, it is expected to be developed in certain regions in the coming year or two and will put greater pressure on the inclusion of lower embodied carbon materials³.

**Please note. These guidelines are intended for global use. The description of this risk includes a credible European data source, CRREM. In summer 2024, CRREM is expected to expand to other regions. For other regions, until CRREM expands further, CRREM provides guidelines for how to adapt the analysis providing more localised data.*

Classification of risk rationale

When conducted with a suitably qualified professional, the assessment of the cost of decarbonisation can generate actual costs, to a high confidence for the owner and manager. As such this is considered possible to model in a discounted cash flow transition risk assessment.

Principle

If the asset is not currently compliant with the 2050 year within the 1.5oC aligned CRREM pathway (v2.02 or latest update), then an accurate estimation of the inflation-adjusted decarbonisation costs must be conducted for the asset, inclusive of all works required to reach the 2050 compliant emissions targets.

³ <https://www.bpie.eu/news/new-report-sets-out-a-framework-for-benchmarking-and-limiting-buildings-embodied-carbon-an-essential-tool-to-meet-europes-climate-goals/>

Recommended treatment of risk

We propose that the actual estimated cost of decarbonisation for an asset should be calculated against the baseline of the latest CRREM pathway analysis (v.2.02 or latest update).

To calculate the cost against this pathway, the owner or manager should first identify the decarbonisation needs of the asset.

As a potentially substantial capital expenditure requirement, the more accurate the decarbonisation assessment, the better. The most accurate assessment will come from a decarbonisation audit. These audits should either be conducted using a suitably qualified internal resource, or externally, through specialist third-party service providers.

When conducting or commissioning this audit, an owner or manager must pay careful attention to differentiate between what would be considered a business-as-usual upgrade and what would be considered a dedicated spend for decarbonisation. This is an important differentiation to ensure the assessments do not create a disincentive to invest in decarbonisation. For the owners and managers that commission this audit, this can be achieved by instructing the service providers to make this delineation as part of their work.

Please note. By making this delineation in the analysis, this does not mean owners and managers should separate subsequent upgrade and specialist decarbonisation spends in a business plan. In fact, the more an owner and manager can integrate decarbonisation costs into a holistic, longer term business planning, the greater cost savings can be expected.

NB. As described in Section 1.7. When comparing this transition risk-adjusted analysis with the fair or market value assessment provided by the valuer, it is important to consider if the local valuer has integrated the cost of decarbonisation to reach local MEPs in their fair or market value. If this is the case, the owner or manager should take care to compare and contrast this assessment of costs versus the costs estimated as a result of the internal decarbonisation audit and ensure no double counting between them. As already being experienced by leading organisations, this comparison can, at times, identify an alpha opportunity.

The assessment of costs is to be conducted in line with the asset-level business plan and/or intended holding period. While the total cost of decarbonisation must be recorded, the manager must discern which acts of decarbonisation will be conducted within the intended holding period of the asset and which will not. These two figures will both be placed into the discounted cash flow.

We recommend that once an assessment of the appropriate decarbonisation expenditure is agreed, the capital investment that is expected to be spent during the intended holding period for the asset, should be entered into the capital expenditure budget line in the discounted cash flow in the appropriate years.

We recommend that the remainder of the costs associated with bringing the asset to the CRREM V2.02 (or latest update) 2050 compliant emissions target is included in the final shadow column of the discounted cash flow (see illustrative fractional excerpt above) detailing the bracketed years from the year after the intended holding period to the 2050 compliant year – 2050, or sooner.

Recommended discounted cash flow placement

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only. The shadow costs detailed here would be listed in a dedicated section at the bottom of the discounted cash flow assessment not within the main assessment.

In some cases, owners and managers may not be able to conduct a full decarbonisation audit in the time frame, e.g., due to transaction deadlines. In these instances, this assessment can be supported by estimation tools such as the forthcoming Preserve tool. However, it is noted that should the manager find a considerable risk of uncertainty with the estimation that has significant impact potential on the targeted returns, the owner or manager should revert to a full decarbonisation audit.

Additional guidance

We recommend that leaders present a more thorough analysis of the required decarbonisation events in a discounted cash flow that extended beyond the intended holding period. To achieve this, we recommend to detail each shadow year past the intended holding period up to 2050 so that a more accurate assessment of e.g. inflation risks or regulations can be taken into account.

TRANSITION RISK ADJUSTED MODULE EXCERPT	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Yr 11- 2050
CAPEX											
Property Upgrades											
	Total Cost Act of Decarbonisation 1				Total Cost of Act of Decarbonisation 2 + Impacted by Nominal Inflation rate inclusive of 3 top risks adjustments				Total Cost of Act of Decarbonisation 3 + Impacted by Nominal Inflation rate inclusive of 3 top risks adjustments		
Decarbonisation											
SHADOW CAPEX											
Decarbonisation											Total Cost of Act of all other acts of Decarbonisation to reach CRREM V2.02 2050 complaint emissions targets + Impacted by Nominal Inflation rate inclusive of 3 top risks adjustments



3.2.2 Energy costs

Description of risk

This refers to the change in operational energy costs before and after the proposed acts of decarbonisation, to include all forms of energy usage (specifically, grid electricity, natural gas, fuel oil, district heating: steam, district heating: chilled water, renewables and other sources) that is in turn split between owner and tenant responsibility. In some cases, e.g., onsite renewables, there is an opportunity to produce a net energy surplus and as such earn additional income as a result of decarbonisation.

In future, this risk can be impacted by inflation and supply/demand economics and can be very volatile to predict, but nevertheless inflation linked assumptions can be made.

Classification of risk rationale

When provided with the right underpinning data sets, energy calculations can generate actual costs, to a high confidence for the owner and manager. As such this is considered possible to model in a discounted cash flow transition risk assessment.

Principle

An accurate estimation of inflation-adjusted energy costs must be included in the discounted cash flow, before and after all acts of decarbonisation events, for the full duration of the holding period.

Recommended treatment of risk

We recommend that the energy cost should be recorded for the full duration of the intended holding period of the asset.

As there are both short- and long-term energy cost variances as a result of action or inaction on decarbonisation, we recommend that an accurate estimation of each energy type be included to ensure a complete picture of:

- (i) the potential additional costs (e.g., rising energy prices)
- (ii) the potential cost reduction (e.g., reduced energy usage as a result of decarbonisation activities)
- (iii) new potential income opportunities (e.g., surplus energy sold to the grid)

To understand the complete risk of an asset, we propose that a full assessment of the asset must be completed to include both the tenanted and owner-managed parts of the building. However, if the asset is tenanted, and the owner or manager is not responsible for the energy bills for the tenanted parts of the building, we recommend that two separate costs are recorded: common parts/ owner-managed and tenanted.

To calculate these risks, owners and managers should take the previous years' reported energy use. However, should the asset have been subjected to an event which has distorted the energy data (e.g. pandemic) then the owner and manager should first calculate a mean average from the three most recent reporting years' energy usage. Energy usage should consider the whole asset (kWh/ annum), the types of energy being used by the building now (including grid electricity, natural gas, fuel oil, district heating: steam, district heating: chilled water, renewables and other sources), and the cost of energy (p/kWh) for each energy type.

Owners and managers should then work with the previously defined cost of decarbonisation assessment, to calculate the agreed reductions or switches in energy use that is suitable for the asset and in what time frame for the entire intended holding period for the asset.

This process to agree upon the right time to implement the decarbonisation to maximise savings or returns can be a manual and iterative process. We recommend that an owner or manager either works with a suitably qualified professional internally, a third-party service provider to help advise on this challenge or an automated tool to support the aggregation and analysis of this data, such as the forthcoming Preserve tool.

TRANSITION RISK ADJUSTED MODULE EXCERPT	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
INCOME										
Total Rental Income										
Other Collectibles										
Renewable energy surplus						Net energy surplus	Net energy surplus	Net energy surplus	Net energy surplus	Net energy surplus
OPERATING EXPENSES										
Common Parts										
	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Cost reduction event as a direct result of act of decarbonisation + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Yr 7 + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
Grid Electricity										
	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Yr 1 + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Cost reduction as a direct result of act of decarbonisation + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
Natural Gas										
SHADOW OPERATING EXPENSES										
Tenanted Parts										
	Last reporting year total cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Total cost reduction + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Total cost reduction + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Cost reduction event as a direct result of act of decarbonisation + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Yr 7 + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
Grid Electricity										
	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Yr 1 + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Cost reduction as a direct result of act of decarbonisation + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
Natural Gas										
	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Cost reduction as a direct result of act of decarbonisation + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Yr 7 + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
Fuel Oil										
District Heating: steam	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Yr 4 + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Yr 7 + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
District Cooling: chilled water	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Yr 4 + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Yr 7 + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment
Other energy (renewable)	Last reporting year energy type cost	Yr 1 + inflation adjustment	Yr 2 + inflation adjustment	Yr 3 + inflation adjustment	Yr 4 + inflation adjustment	Yr 5 + inflation adjustment	Yr 6 + inflation adjustment	Yr 7 + inflation adjustment	Yr 8 + inflation adjustment	Yr 9 + inflation adjustment

Proposed discounted cash flow placement:

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only. The shadow costs detailed here would be listed in a dedicated section at the bottom of the discounted cash flow assessment not within the main assessment.

We recommend that all energy costs that the owner or manager is responsible for should be included in the operating expenses section of the discounted cash flow, under "Utilities". If the owner or manager is not responsible for the costs of the tenanted parts of the building, these costs are to be included in the shadow "Utilities" section at the bottom of the discounted cash flow.

Please note. Any net energy surplus from on site renewables is to be included in other collectables within rental income.

We recommend that the mean energy costs should be recorded in year 1 of the discounted cash flow. This cost should then be adjusted, taking into account (i) an appropriate inflation adjustment (see section 2.8 above) and (ii) any projected reductions in costs as a result of the planned acts of decarbonisation, and then placed in the appropriate years in the discounted cash flow.

We recommend that a detailed view of the energy cost mix is included in the discounted cash flow for greater owner and manager understanding and for full transparency in disclosure.



3.2.3 Embodied carbon

Description of risk

This refers to the financial risk associated with embodied carbon emissions within an asset, meaning the carbon that is emitted as a direct result of the product creation and construction, in-use or end-of-life, life cycle stages (e.g., [European standards EN19578](#) A1–5, B1-5 and C1-4).

In the future, it is expected that clearer guidelines around embodied carbon benchmarks for buildings will impact the cost of (embodied) carbon for new development and increase pressure for lower embodied carbon materials to be used in properties over time.

Classification of risk rationale

When a credible decarbonisation assessment and business plan has been conducted with a suitably qualified professional, the underpinning embodied carbon calculations can be provided to a high confidence for the owner and manager, and be translated into a carbon cost calculation. As such, this is considered possible to model in a discounted cash flow transition risk assessment.

Principle

The total future embodied carbon emissions of an asset should be identified and estimated as accurately as possible, then explicitly listed as a shadow cost for owners and managers in the discounted cash flow.

Recommended treatment of risk

To calculate the future embodied carbon emissions risk of an asset, we recommend that the

owner or manager must identify the key actions in its business plan and decarbonisation audit throughout the life stages of the building for the intended holding period of the asset, and assess the embodied carbon emissions responsibility of each action. This is inclusive of new builds set for development and existing assets.

We recommend that the identification of this risk in all life cycles is standardised across all sectors and properties – new build and existing properties. For existing properties, the assessment of product creation and construction life cycle stages are limited to the product and construction emissions spent as a result of the specific in-use, retrofit- or end-of-life/rebuild-related activities.

All stages should be accurately assessed and recorded as a total embodied carbon emissions amount. To obtain this information, we recommend that data should be sourced through specialist third-party data providers or comparable internally conducted assessments with suitably qualified professionals.

Once a total future embodied carbon emissions estimate for an asset is secured (in tonnes or kg of CO2e), this must be multiplied by the cost of carbon (see section 3.2.6 below) to arrive at a total shadow cost.

Proposed placement in discounted cash flow

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only. The shadow costs detailed here would be listed in a dedicated section at the bottom of the discounted cash flow assessment not within the main assessment.

TRANSITION RISK ADJUSTED MODULE EXCERPT		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
Total Free Cash Flows After Taxes	Totals	Totals	Totals	Totals	Totals	Totals	Totals	Totals	Totals	Totals	Totals
SHADOW OPERATING EXPENSES											
Total Cost of Carbon	Total cost of carbon	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment
Total Embodied Emissions Future	Total cost of embodied carbon future	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	Cost reduction as a direct result of act of decarbonisation + inflation adjustment	total cost of carbon + inflation adjustment			
Total Operational Emissions - Tenanted	Total cost of operational carbon	total cost of carbon + inflation adjustment	Cost reduction as a direct result of act of decarbonisation + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment			

We recommend that the total future embodied carbon cost is provided in the shadow section of the discounted cash flow below the bottom line of free cash flows. As the total carbon cost should be disaggregated for full transparency in disclosure, the future embodied carbon cost will have a dedicated budget line for full transparency in disclosure.

Additional guidance

It is noted that the lack of regulation to recognise historic embodied carbon emissions in buildings has proven to be a disincentive for the discouragement of new build properties instead of renovating existing ones. As such, we recommend that leading owners and managers working in development or redevelopment activities, do three things:

- (i) conduct a future embodied carbon assessment of what a new building of equal or similar size and characteristics, would emit if it was built today
- (ii) convert those emissions into a cost of carbon (see section 4.2.6 below)
- (iii) use this additional cost of carbon in direct financial comparisons of new build versus renovation, or redevelopment versus renovation wherever possible to do so.



3.2.4 Obsolescence and depreciation

Description of risk

This refers to the implementation of new technologies or solutions faster than the intended lifespan of the existing technology (thereby requiring an early write down of an existing technology/system). This has been detailed as a risk separate to maintenance and obsolescence as both other costs integrate a much wider spectrum of considerations that will cloud the calculation.

In the future, the level of this risk can be impacted by uncertainties such as inflation and supply chain issues.

Classification of risk rationale

When a detailed decarbonisation assessment has been conducted by a suitably qualified professional or third-party specialist, it is expected that an accurate assessment of the (i) earlier spends required, and (ii) early write downs can be provided to the owner or manager at a high confidence. As such, this is considered possible to model in a discounted cash flow transition risk assessment.

Principle

The accelerated obsolescence of technologies and solutions as a result of decarbonisation-related activities should be accurately costed and included in the discounted cash flow.

Recommended treatment of this risk

We recommend that when calculating this risk, owners and managers, in conjunction with the business plan and decarbonisation audit, assess which existing technologies or solutions will be required to be (i) decommissioned due to (local) regulation before their economic end of life, or (ii) decommissioned as a result of internal commitment to decarbonisation and accurately display these costs in the discounted cash flow.

When conducting this assessment, owners and managers must pay careful attention to differentiate between what would be considered a wider obsolescence or business-as-usual depreciation, and what would be considered exclusively an accelerated depreciation. This is an important differentiation to ensure the assessments do not create a disincentive to invest in decarbonisation. For the owners and managers that choose to commission a decarbonisation audit, this can be achieved by instructing the service providers to make this delineation as part of their work.

Please note. As previously stated in the cost of decarbonisation risk in section 3.2.1, by making this delineation in the analysis, this does not mean owners and managers should separate wider obsolescence and business-as-usual obsolescence in a business plan. In fact, the more an owner and manager can integrate decarbonisation costs into a holistic, longer term business planning, the greater cost savings can be expected.

It is also noted that if owners and managers would like to experiment in the discounted cash flow as to when is the right time to make these investments, owners and managers may choose to experiment with time frames within the discounted cash flow or use a tool such as the forthcoming Preserve tool to support them.

Recommended placement in discounted cash flow

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only.

We recommend that entry into the discounted cash flow is provided in two places:

- (i) Obsolescence, implicit inclusion – when recording an earlier or higher spend on new technologies or solutions that is a direct result of decarbonisation, owners and managers must include the cost in

TRANSITION RISK ADJUSTED MODULE EXCERPT	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Yr 11-2050
CAPEX											
Property Upgrades											
Decarbonisation					Total Cost of Act of Decarbonisation 1 (Inclusive of earlier technology or solution spend)						
Less subsidies					Less total subsidy value						
SHADOW CASH FLOW											
Decarbonisation					Residual value of decommissioned technology or solution						

the cash flow in the appropriate year in the discounted cash flow. It is expected that this implicit spend will appropriately impact the discounted cash flow in its own right.

- (ii) Depreciation, explicit inclusion – when recording the early write down loss of a decommissioned technology or solution, owners and managers should list the remaining value, less any residual income that might have been earned as a result of its sale in the shadow section of the discounted cash flow.

Please note. Should any early decommissioning subsidies be made available for certain technologies and solutions, then these should be detailed as a reduction in costs in the cost of decarbonisation row.

Additional guidance

We recommend that owners and managers remain aware that certain retrofit technologies deployed in near-term years, (even if an early decommissioning of equipment has already been required to reach near term energy efficiency standards), may not be efficient or effective enough to enable alignment with the CRREM 1.5oC decarbonisation pathways (v2.02 or later) through to 2050. We recommend that owners and managers keep regularly informed of these potential additional upgrades, pay careful consideration to the operational and embodied carbon trade-offs before any decisions are made, and, if appropriate, factor these additional costs into the discounted cash flow in later years for full transparency.



3.2.5 Minimum Energy Performance Standards (MEPS)

Description of risk

This refers to the potential income or cash flow risk as a result of breach of minimum energy performance standards due to inaction on decarbonisation. This risk can present itself in three ways

- (i) a specific penalty per year or as a one-off fee
- (ii) stipulation that no sale or new lease is allowed until MEPS has been achieved
- (iii) no leasing, including existing tenants and with immediate effect until MEPS has been achieved. MEPS can be derived from the 2023 European Performance and Buildings Directive Revision (EBPD)⁴, or through national energy performance standards.

In the future, this risk is expected to become more significant as more ambitious national or local standards are expected to be issued, and the reform of energy performance certificates to include energy intensity benchmarks are fulfilled.

Classification of risk rationale

The accurate calculation of this risk relies on the owner and manager acting in line with local, national or regional regulations. As these guidelines present the best practice view, it is understood that assessments of the financial impact of the breach of MEPS can be identified, to a high confidence for the owner or manager. As such this is considered possible to model in a discounted cash flow transition risk assessment.

Principle

Any potential rental income change or penalty that is linked to breach of minimum standards as a result of inaction on the decarbonisation needs of the asset, must be accurately assessed by owners and managers and included in the discounted cash flow.

Recommended treatment of this risk

We recommend that the MEPS risk is calculated by first identifying the local building MEPS specific to the sector and location of the asset.

Should local regulation not be in place or be of a lower ambition, then we recommend that the owner or manager should use the Europe-wide recommendations, as laid out in the EPBD.

Next, we recommend that the owner or manager should identify the year in which the asset will not reach minimum standards according to relevant local MEPS standards. If the owner or manager is not planning a decarbonisation event to bring the asset within minimum standards in that year, then the owner or manager must comply with the local regulation as to how to record a potential cost. Local regulations differ and the accurate recording of cost can be:

- (i) a specific penalty per year or as a one-off fee
- (ii) no sale or relet until MEPSs have been achieved
- (iii) no letting, including existing tenants and with immediate effect. In whichever case is relevant to the asset, owners and managers must apply 100% of the associated penalty or implied income loss

Please note that in the case of 100% reduction in income, we recommend that income values should also take into account the expected growth of the rental income as if the reduction did not happen, to demonstrate the total value at risk over the period.

Proposed placement in discounted cash flow

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only.

TRANSITION RISK ADJUSTED MODULE EXCERPT	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
INCOME										
Total Rental Income per month	Yr 1 total	Yr 2 total + inflation adjustment	50% of Yr 3 total + inflation adjustment	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Less income loss from breach of minimum standards			-50% of Yr 3 total + Inflation adjustment	-100% of Yr 4 total + Inflation adjustment	-100% of Yr 5 total + Inflation adjustment	-100% of Yr 6 total + Inflation adjustment	Nil	Nil	Nil	Nil
Decarbonisation rental income premium			(Minimum standard breach in Month 6)			(Decarbonisation event - end of lease, major works, month 9)	Yr 7 income premium + inflation adjustment	Yr 8 income premium + inflation adjustment	Yr 9 income premium + inflation adjustment	Yr 10 income premium + inflation adjustment

⁴ https://www.europarl.europa.eu/doceo/document/TA-9-2023-0068_EN.pdf

We propose that the estimation of this risk should be recorded as a sub-heading of the rental income line labelled “income loss from breach of minimum standards” in the discounted cash flow. This sub-heading should show a proportionate reduction in income or penalty, subject to what local regulation stipulates, until an appropriate decarbonisation event can bring it up to minimum standard.

NB. If owners and managers would like to experiment in the discounted cash flow as to when is the right time to make these investments, owners and managers may choose to experiment with time frames within the discounted cash flow or use a tool such as the forthcoming Preserve tool to support them.



3.2.6 Carbon price

Description of risk

This refers to the cost of carbon for all forms of carbon pricing: regional, national and city level fiscal policy instruments, carbon offsetting and internal carbon pricing. National and international fiscal policy instruments do not yet target the asset owner or tenant directly so this risk is impacted indirectly, as a result of the EU Emissions Trading Scheme (EU ETS), through energy costs and the potential knock on effects to rental income.

Internal carbon price is currently voluntary, but is a standard requirement in the TCFD framework, albeit at an entity level, and is on track for mandatory disclosure in several regions⁵. Carbon offsets are not recommended unless tackling residual emissions as detailed in the Science-based Targets Initiatives (SBTi) Net Zero Standards revision of 2021⁶, and, as such, these are not included in this assessment.

In the future, TCFD guidelines may become mandatory in many more national markets and the EU Emissions Trading System (ETS) may extend into instruments that impact owners and tenants directly.

Classification of risk rationale

Accurately assessing the carbon price risk relies on a singular figure multiplied by internal assessments of carbon emissions. When provided with the right underpinning data sets, an accurate assessment of the total cost of carbon can be calculated, to a high confidence for the owner and manager. As such this is considered possible to model in a discounted cash flow transition risk assessment.

Principle

The accurate carbon price cost for operational and future embodied emissions, should be included in the discounted cash flow analysis as a shadow cost.

Recommended treatment of risk

We recommend that owners and managers should choose an externally verified credible benchmark as well as institute a carbon price floor to prevent downward fluctuations, instead of using the “market price” of offsets (cheapest available) as a means to set a shadow carbon price.

We recommend that owners and managers select their own benchmarks, agree on a floor and disclose it. However, as part of the ULI C Change wider programme, a deep industry consultation on carbon pricing, the appropriate value, benchmarks and delivery mechanisms will be conducted and results included in the next version of the guidelines. We recommend that the total cost of carbon of the asset should be estimated by first identifying the total emissions responsibility for the asset, including:

- (i) annual operational emissions of the asset. This is calculated by multiplying the energy type usage described in section 3.2.2 in kWh by the emissions factors (e.g., g CO₂e/kWh) for that energy type and region; and
- (ii) the total embodied carbon emissions of any future decarbonisation works in kg/tonnes CO₂e (see section 3.2.3 *embodied carbon*) to reach a total carbon price.

⁵ <https://plana.earth/academy/tcfd-task-force-on-climate-related-financial-disclosures#:~:text=The%20TCFD%20started%20as%20voluntary,Canada%2C%20Japan%20and%20South%20Africa.>

⁶ <https://sciencebasedtargets.org/blog/net-zero-urgent-beyond-value-chain-mitigation-is-essential#:~:text=The%20principle%20at%20the%20heart,chains%20to%20achieve%20net%2Dzero.>

TRANSITION RISK ADJUSTED MODULE EXCERPT	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
Total Free Cash Flows After Taxes	Totals	Totals	Totals	Totals	Totals	Totals	Totals	Totals	Totals	Totals
SHADOW OPERATING EXPENSES										
Total Cost of Carbon	Total cost of carbon	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment
Total Embodied Emissions Future	Total cost of embodied carbon future	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment
Total Operational Emissions - Tenanted	Total cost of operational carbon	total cost of carbon + inflation adjustment	Cost reduction as a direct result of act of decarbonisation + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment			

Proposed placement in discounted cash flow

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only. The shadow costs detailed here would be listed in a dedicated section at the bottom of the discounted cash flow assessment not within the main assessment.

We recommend that the total carbon price is provided in the shadow section of the discounted cash flow below the bottom line of free cash flows.

Additional guidance

We recommend that leading owners and managers should enact a true “fee-paying” internal carbon price on operational emissions and future embodied emissions. A true fee-paying carbon price means the total carbon cost is actually charged to the asset or portfolio, and as such, can be allocated to further decarbonisation activities.

In this instance, we propose that the operational emissions-linked cost of carbon, and future embodied carbon emissions should both be provided on dedicated budget lines in the discounted cash flow as an operational expense.



3.2.7 Tenant voids

Description of risk

This refers to a change in rental income linked to tenant vacancies as a direct result of decarbonisation activities. Specifically, this risk can take four forms:

- (i) tenants moving out during an existing tenancy
- (ii) the cost to relocate tenants during a tenancy
- (iii) tenants moving out at the end of tenancy, when works would then need to be conducted and the property relet after that
- (iv) the potential reduction in reletting periods as a result of the decarbonisation activities.

In the future, the first three points may be compounded by supply chain availability and volatility. For point four, reduced reletting periods may only be a short-lived benefit, which could reduce when high efficiency buildings become the norm.

Classification of risk rationale

For the first three points, when the estimation of tenant voids is linked to the assessment of the cost of the decarbonisation assessment and is conducted by a suitably qualified professional, it can generate actual costs, to a high confidence for the owner and manager. As such this is considered possible to model in a discounted cash flow transition risk assessment.

For point four, this assessment relies on the response of the market or tenant to the owner and manager opportunity, which cannot be predicted accurately.

Principle

Any potential tenant void as a direct result of decarbonisation activities should be accurately assessed by the owner or manager and included in the appropriate year of the discounted cash flow.

Recommended treatment of this risk

We recommend that the potential tenant vacancy should be estimated as a direct result of the prior assessments of (i) the cost of decarbonisation (inclusive of the associated decarbonisation audit) as detailed in section 3.2.1, and (ii) the asset business plan (inclusive of tenant renegotiation and leasing events).

When conducting this assessment, owners and managers must pay careful attention to differentiate between what would be considered a business-as-usual or upgrade-related tenant vacancy and what would be considered exclusively related to depreciation. This can be difficult to do when tenant vacancies are optimised for multiple upgrade purposes. To calculate this, we recommend that two comparable data points are required:

- (i) the longest expected vacancy associated with business-as-usual upgrades
- (ii) the longest expected vacancy associated with specific decarbonisation related activities

We recommend that the difference between the two data points can be classified as exclusive to decarbonisation transition risk and recorded an accurate tenant void cost.

This is an important adjustment to make to ensure the assessments do not create a disincentive to invest in decarbonisation. For owners and managers that choose to commission a decarbonisation audit rather than conduct this assessment internally, this can be achieved by instructing the service providers to make this delineation as part of their work.

To calculate this cost for the discounted cash flow, we propose that the estimated tenant voids can be provided in weeks or months, but should then be converted to the appropriate monetary value by assuming a proportionate 1/12th or 1/52th value linked to the number of months or weeks expected for the asset to be vacant.

TRANSITION RISK ADJUSTED MODULE EXCERPT		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
INCOME											
Total Rental Income per month	Yr 1 total		Yr 2 total + inflation adjustment	Yr 3 total + inflation adjustment	Yr 4 total + inflation adjustment	Yr 5 total + inflation adjustment	Yr 6 total + inflation adjustment	Yr 7 total + inflation adjustment	Yr 8 total + inflation adjustment	Yr 9 total + inflation adjustment	Yr 10 total + inflation adjustment
Less income loss from estimated tenant voids as a result of decarbonisation							-75% of Yr 6 + inflation adjustment	-50% of Yr 7 total + inflation adjustment	-100% of Yr 8 total + inflation adjustment	-100% of Yr 9 total + inflation adjustment	-100% of Yr 10 total + inflation adjustment
							(Decarbonisation event - end of lease, major works, month 9)				

Proposed placement in the discounted cash flow

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only.

We recommend that owners and managers should enter the resultant expected tenant vacancy into the discounted cash flow under the subheading of the rental income and label it “Estimated tenant voids as a result of decarbonisation” instead of an absolute rental income decrease.



3.2.8 Exit yield

Description of risk

This refers to the part that decarbonisation has to play on the total potential impacts or influences on total exit yield upon point of sale. This can be cumulatively impacted by many interrelated risks identified in these guidelines, including decarbonisation costs, energy costs and MEPS breaches. As such, this forms the case for the proper integration of all the applicable transition risks to quantify the potential impact on value. As with rental income, wider market influences and dynamics can impact or override such risks in the short term, e.g. due to varying economic cycles. This risk hones down on one small part of that total value assessment equation - transition risks.

In the future this risk can be impacted in many ways, by many variables, as identified above. In order to manage this future risk, all other risks must be monitored.

Classification of risk rationale

When a detailed assessment of all transition risks has been conducted by a suitably qualified professional, accessing credible and robust data sets, the contributing calculations to the total exit value can be provided to a high confidence for the owner and manager, to be translated into a carbon cost calculation. As such this is considered possible to model in a discounted cash flow transition risk assessment.

Principle

The assumptions underpinning the exit yield estimation must explicitly include consideration of all the interrelated risks in this assessment that are deemed to have a material impact on the potential asset value in the intended holding period and included in the discounted cash flow.

Recommended treatment of this risk

We recommend that due to the deep interconnection between the risks detailed in these guidelines and the resultant potential cumulative impacts on an already complex wider set of influences on estimated future sale and lease prices, this compounds the case that owners and managers should (i) first complete the proper assessment of all the transition risks that are considered material to this asset, and then (ii) use the top three most materially impacting risks as explained in section 2.7 to include in the considerations for the estimation of the future exit yield.

NB. It is important to note, that given the complexity and interconnectedness of the calculations to reach an effective exit yield calculation, owners and managers must take great care in identifying and eliminating any risks of double counting in the assessments. For more details on how to manage this, please refer to section 2.10.

Recommended placement in discounted cash flow

We recommend that the quantified material risks deemed to have a potential impact on the exit yield must be included in the final value stated in the discounted cash flow. As the implications for the exit yield includes many of the transition risks which are cumulative, it is not possible to create a clear discounted cash flow illustration.

3.3 Transition risks – not quantifiable into a discounted cash flow

This section of the guidelines details the longer list of transition risks which have been considered not possible to model into a discounted cash flow at this time.

We recommend that owners and managers review this list of transition risks and manage these risks as part of a wider, more holistic sustainability management strategy for the asset or portfolio.

While many of these risks are not deemed suitable for inclusion in a discounted cash flow in this version of the guidelines, as each of these transition risks mature and crystallise, it is expected many may transition into quantifiable risks in the near future.

This section breaks down each transition risk into a description of the risk and the classification of risk rationale only.



3.3.1 Reputational Risk (investor specific)

Description of risk

This refers to the increasing pressure from wider stakeholders on investors investing in assets or funds to decarbonise all assets in line with a 1.5oC trajectory. This is being further reinforced as a result of the rise of the [Glasgow Financial Alliance for Net Zero \(GFANZ\)](#) which galvanises the [Net Zero Asset Owner Alliance](#), and the [Net Zero Asset Managers Initiative](#), among others, to follow this decarbonisation strategy.

Regulation to support this agenda is also emerging for investors. Using European regulation as a select example, the EU Taxonomy dictates certain primary energy demand criteria for the construction and renovation of buildings, among others. Increasing expectation to align with or conform to these net zero criteria and commitments can potentially impact the owner or manager's access to equity-based finance and ultimately performance.

In future this risk is expected to proportionately grow in line with the institutional investor's own decarbonisation journey. At present, this is not mandated or regulated at sector level, but voluntary

action to trigger an industry shift is already growing fast.

Classification of risk rationale

Institutional investors make judgements on the basis of these risks together with much wider organisational sustainability criteria in order to reach their decisions and any associated monetary value-based decisions. Therefore, it is considered not possible to model this risk into a discounted cash flow transition risk assessment at present.



3.3.2 Access to Insurance

Description of risk

This refers to the rising cost of an insurance premium as a result of an unsustainable asset, and ultimately, insurance availability itself. At present, there is clear evidence for physical risks impacting the cost and availability of insurance, but significantly less so for transition risks. This is further complicated, in that – like banks – insurance providers do not want to create disincentives for the conversion from brown to green properties, and should continue to insure with clear change incentives (e.g., insurance premium reductions if property is decarbonised) included.

In the future, similar to the banking and institutional investment sectors, this risk is expected proportionately growing with the insurance industry's own decarbonisation journey.

Classification of risk rationale

At present this is not mandated or regulated at industry level. The voluntary [Net Zero Insurance Alliance \(NZIA\)](#) is not yet working at a sector level to provide enough of a focus on the built environment. As a result, the complex pricing mechanisms related to responsive insurance premiums and transition risks are not yet universally available. As such this is not considered possible to model in a discounted cash flow transition risk assessment at present.



3.3.3 Access to debt capital

Description of risk

This refers to (i) the reduction in access to debt capital as a result of inaction on decarbonisation, and (ii) fluctuations in the cost of capital before and after decarbonisation activities.

For point (i), the availability of debt capital is not considered as much of a risk if the intention is to decarbonise the asset. However, should there be no intention to decarbonise or if the organisation requesting the capital does not have an evidenced intention to decarbonise its business, then it is considered a growing risk.

Similar to the reputational risk (investor-specific), inaction on decarbonisation can impact access to capital in certain regions. As an example, major supervisory authorities (e.g the European Central Bank and the Bank of England) are already signalling this risk, in that they require climate risk assessments on lending portfolios and recently conducted a stress testing study on climate risk exposure for all direct banks⁷.

In the future this risk is expected to proportionately grow in line with the capital provider's own decarbonisation journey. At present, this is not mandated or regulated at sector level, but through voluntary activities such as the [Net Zero Banking Alliance](#), progress is being made, sector by sector, and fast.

Classification of risk rationale

For point (i), at present, a reduction on the availability of capital as a result of inaction is not mandated or regulated in any region, so access to debt decisions are made on the basis of these risks together with a much wider lending criteria in order to reach their decisions. As such, it is considered not possible to model this risk into a discounted cash flow transition risk assessment at present.

For point (ii), the fluctuating cost of capital associated with green loans is reported to be up to 25 basis points penalisation or up to 10 basis

points reward, related to building certifications and/or specifically agreed decarbonisation objectives. However, green loans are not explicitly linked to singular decarbonisation activities and as such the timelines of the loan may not coincide with the decarbonisation activities or building certification, and may only be a contributing factor to the overall agreed rates. As such this is not considered possible to model in a discounted cash flow transition risk assessment at present.



3.3.4 Internal resourcing

Description of risk

This refers to the amount of additional investment required to facilitate the effective decarbonisation of an asset in line with a 1.5oC pathway. This includes the cost of internal sustainability experts to lead the decarbonisation audit and delivery assets. It does not include internal resourcing required for organisational-level climate risk reporting.

In future, the level of this risk can expected to be impacted by inflation and supply shortages of suitably qualified professionals.

Classification of risk rationale

As a result of industry consultation, it has been evidenced that additional internal resourcing would likely impact the wider expenses of the fund or organisation, and may only impact a management fee. This is not possible to causally relate to proportionate reduction in fee linked to costs incurred at an asset level. As such, this is considered not possible to model in a discounted cash flow transition risk assessment at present.

⁷ https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.climate_stress_test_report.20220708~2e3cc0999f.en.pdf

4. Standardised disclosure templates

Conducting a complete assessment of the prioritised transition risks, as detailed in section 3.2 above, is critical to inform owners and managers of the transition risk-adjusted value of their assets. However, unless this information is shared with key stakeholders in the real estate industry, taking concerted and collective action on these risks is likely to remain precariously slow.

As such, we recommend that key asset- or portfolio-related data points are shared with three key stakeholders:

- (i) the transacting entity
- (ii) the valuation service provider
- (iii) the institutional investor

As detailed in the comply or explain section (section 2.3) above, we recommend that if for any reason any of the below listed data cannot be shared, then an explanation must be provided in the disclosures.

This section provides a summary and reasoning for each stakeholder as well as the specific data points to be included in owner or manager business-as-usual processes.

4.1 Transition risk assessment – owner or manager disclosure sheet

The *Transition risk assessment – owner or manager disclosure sheet* is a standardised disclosure sheet detailing the specific data points for sharing transition risk assessment data with a transacting entity.

We recommend that the owner or manager that is preparing to sell the asset, should prepare the specific data points and include it in the data room as part of the industry standard due diligence procedures.

We recommend that the potential buyer should explicitly ask for the transition risk assessment disclosure sheet with the owner or manager to be included in the data room. Once the data has been received, we recommend that the owner

Data point required	Description of risk impact on value	Underlying assumptions/ data sources	Explanation (if data is not available)
Property name/identifier			Y
Property address			Y
Property type/ sector			Y
Floorspace			Y
Property stranding date if no acts of decarbonisation were taken from today (CRREM V 2.02 or latest update)	Y	Y	Y
Energy use per energy type in kWh (mean average of last three reporting years)	Y	Y	Y
Energy cost per energy type in kWh (mean average of last three reporting years)	Y	Y	Y
Total emissions tonnes/ kg CO ₂ e: operational (last reporting year), embodied future (all life cycle stages (e.g. EN15978 A1-5, B1-5, C1-4 as appropriate to asset),	Y	Y	Y
Data sources and assumptions used if any assessments are not based on actual data		Y	Y
Carbon price	Y	Y	Y
Total cost of carbon should no acts of decarbonisation be taken in the following year	Y	Y	Y
List of decarbonisation-related risks impacting blended inflation rate	Y	Y	Y

or manager conducts their own transition risk assessment as detailed in these guidelines to ensure they are properly informed of the quantified risks before entering into final negotiations.

4.2 Transition risk assessment – valuation service provider disclosure sheet

The *Transition risk assessment – valuation service provider disclosure sheet* is recommended to be completed after the transaction of a property at an agreed price that has been informed by a transition risk assessment. The data sheet is recommended to be disclosed by both the buyer and the seller to their respective valuation service providers which provided the initial fair or market value assessment.

4.3 Transition risk assessment – investor reporting sheet

The *Transition risk assessment – investor reporting sheet* is recommended to be completed and shared

in line with the standard disclosure schedules associated with investor reporting, which is particular to each owner/manager relationship.

We recognise that due to the portfolio level reporting norms and the agreed discretion of/ mandate for the manager, that significantly less asset specific data may be required than what is recommended to be assessed in these guidelines.

However, we propose that particular quantified transition risks and adjusted values should be included for full disclosure and educative purposes, when aggregated at a portfolio level.

It is noted that some investor relationships (e.g. joint venture) relationships require more granular and asset specific data. In this instance, we recommend that owners and managers revert to the use of the transacting entity data disclosure sheet as detailed in section 4.1.

Data point required	Description of risk impact on value	Underlying assumptions/ data sources	Explanation (if data is not available)
Property name/identifier			Y
Property address			Y
Property type/ sector			Y
Floorspace			Y
Property stranding date if no acts of decarbonisation were taken from today (CRREM V 2.02)	Y	Y	Y
Energy use per energy type in kWh (mean average of last three reporting years)	Y	Y	Y
Energy cost per energy type in kWh (mean average of last three reporting years)	Y	Y	Y
Total emissions tonnes/ kg CO2e: operational (last reporting year), embodied future (life stages EN15978 A1-5, B1-5, C1-4 as appropriate to asset), embodied historic A1-5 estimation.	Y	Y	Y
Carbon price	Y	Y	Y
Total cost of carbon should no acts of decarbonisation be taken in the following year	Y	Y	Y
Data sources and assumptions used if any assessments are not based on actual data		Y	Y
Market value provided by a third-party valuer	Y	Y	Y
Final negotiated price	Y	Y	Y
List of decarbonisation-related risks impacting blended inflation rate	Y	Y	Y

Data point required	Description of risk impact on value	Underlying assumptions/ data sources	Explanation (if data is not available)
Number of assets in portfolio			Y
Number of CRREM 2050 V2.02 (or latest update) compliant assets in portfolio	Y	Y	Y
Number of CRREM 2050 V2.02 (or latest update) non-compliant assets in portfolio	Y	Y	Y
Total market value of portfolio	Y	Y	Y
Total estimated transition risk-adjusted value of portfolio	Y	Y	Y
Market value of each component asset	Y	Y	Y
Estimated transition risk-adjusted value of each asset and aggregate portfolio (including explicit mention of cost of decarbonisation for FCF assessment)	Y	Y	Y
Notification of sale or existing asset (including details of compliance status as above and reason for exit)	Y	Y	Y
Notification of any destroy and rebuild or new build activities with an asset (including transition risk-adjusted value)	Y	Y	Y
Notification of purchase of new asset and compliance status as above	Y	Y	Y
List of transition risks with a material impact on portfolio value	Y	Y	Y
Total value of each transition risk and its estimated value for the full portfolio	Y	Y	Y

5. Next steps

5.1 Interdependent delivery needs for implementation

It is important to note that significant shifts in business practice are best supported by regulation. However, asset and portfolio level transition risk management remains nascent while the management and reporting of transition risks at an organisational cross-sector level has made strong progress in recent years through the Taskforce on Climate Related Disclosures (TCFD), the Sustainable Finance Disclosure Regulation (SFRD), the International Financial Reporting Standards (IFRS) and the International Sustainability Standards Board (ISSB).

While the ultimate long-term goal of these guidelines would be to inform wider regulatory standards, in the near term, this emergent practice must gain recognition and traction in the industry. The below supporting actions are designed to achieve this:

5.1.1 Critical mass adoption

It has been identified that, unless supported, the adoption of new industry best practices, can be slow in reaching an industry norm. This has significant implications for the pace at which real estate owners and managers can effectively assess the investment value of their assets and ultimately price in the cost and opportunity of decarbonisation. To support this adoption, dedicated attention is required to identify a “critical mass” of industry participants, then engage and support the early adoption of these guidelines with these industry influencers and leaders.

This work is being conducted as part of the 2023 ULI C Change programme.

5.1.2 Preserve tool

It has been identified that while many of the downside risks can be easily integrated into industry best practice universal guidance, the application of upside risks involves more nuance and personal input from the owner or manager. Furthermore, it has been identified that there is no single tool to support the industry with the effective data gathering and automation of formulas to easily integrate the transition risks

identified in these guidelines into an industry standard discounted cash flow.

To tackle this challenge, these guidelines will be accompanied by the Preserve tool, which will support the assessment of transition risk-adjusted value.

The specification for the tool will be developed in quick succession to the publication of these guidelines, and the resultant final tool specification will be developed as part of the wider ULI C Change programme.

5.2 Further development of the guidelines

5.2.1 Data sharing

It has been identified that the lack of standardised treatment and disclosure of transition risks has hampered the progress of the real estate investment industry to properly adjust the value of its assets. To overcome this systemic challenge, dedicated attention must be paid to enabling the right conditions for transition risk-associated data to be shared with the following entities and purposes.

- Due diligence disclosure between transacting parties
- Reporting to institutional investors
- Quantifiable comparables with integrated transition risks to the valuation services industry

These guidelines present best practice recommendations based on what is perceived to be possible today. In what is typically a competitive industry, work is required to encourage the sharing of important transition risk-associated data for crucial non-competitive purposes such as the acceleration of the rate of decarbonisation at an industry level.

This work on data sharing is being undertaken as part of the 2023 ULI C Change programme.

5.2.2 Mediated industry carbon price

It has been identified that while standardised disclosure can drive a more accurate assessment of an asset value that integrates transition risks, without an industry-mediated, standardised and disclosed carbon price, and best practice for how to manage this price internally, an uneven playing field may be experienced. This will stall the fair and

effective price negotiations of a true asset value. This is not a problem unique to the real estate sector, and it is clearly understood that industry mediation is a difficult task. However, to overcome this systemic challenge, dedicated attention to industry consultation and collaboration is required to seek common agreement on the role of carbon pricing in the assessment of property values, as well as an industry-mediated price and method for integration.

To tackle this challenge, a deep dive into industry best practice on carbon pricing is being completed in the second half of 2023, as part of the wider ULI C Change programme.

5.3 Revision and change procedure

We propose that after publication of these guidelines, they will be reviewed in full on a regular basis.

Acknowledgments

These guidelines could not have been constructed without the continued support of the real estate investment industry, in sharing current best practice, barriers and opportunities for development. It is not possible to name every individual and organisation, but special thanks to Paul Kennedy, Brenna O’Roarty, Olivier Elamine and Susana Saiz.

Key contributing organisations

ACRE, Alstria, Aon, APG, Arup, Aviva Investors, AXA IM Alts, Bankers Without Boundaries, Barclays, Bouwinvest Real Estate Investors, BNP Paribas Real Estate, Carbon Risk Real Estate Monitor (CRREM), Catella Residential, CBRE Investment Management, COIMA, DEAS, Deerns Group, Deloitte, DENEFF, Deutsche Bank, Deutsche Pfandbriefbank, DWS, Edmond de Rothschild, EPRA, Equinox, Europa Capital, European Mortgage Federation (EMF), European Property Federation (EPF), The European Group of Valuers Associations (TEGOVA), Evora Global, Green Finance Institute (GFI) Global Real Estate Engagement Network (GREEN), Hibernia Real Estate Group, HSBC, Icebreaker One, Immobel, Immobel Capital Partners, INREV, Institutional Investors Group on Climate Change (IIGCC), Invesco Real Estate, JLL, J.P. Morgan Asset Management, Kempen Capital, La Salle, Laudes Foundation, Legal & General Investment Management, Longevity Partners, Madaster, M&G Real Estate, Nuveen Real Estate, Oxford Economics, Oxford Properties Group, Patrizia, Pimco Prime Real Estate, PGGM, Ramboll, Redevco, RICS, Savills Investment Management, Schroders Capital, Sustineri Partners, Tristan Capital Partners, University of Cambridge, World Business Council for Sustainable Development (WBCSD)

Inspiration and influence

These guidelines could not have been possible without the groundwork of some excellent organisations already driving progress forward in the real estate investment industry. Two most notable influences are CRREM’s Risk Assessment Tool and DENEFF’s Carbon Value Analyser. Much of this foundational thinking has been integrated into these guidelines and the proposed Preserve Tool.