





The Urban Land Institute is a global, member-driven organisation comprising more than 46,000 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 more than 4,500 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.

CChange

The logo for CChange features a stylized teal 'C' followed by the word 'Change' in a teal sans-serif font.

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.

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Foreword

The ULI C Change programme is mobilising the real estate industry to decarbonise. With the built environment responsible for 39 percent of global emissions, the onus is on us as an industry to come together to do what we can to accelerate solutions that transform our industry and protect our planet.

These proposed guidelines outline how the industry can standardise how to assess and disclose climate transition risks as part of property valuations. This helps remove a key barrier that will enable us to accelerate the transition to a low-carbon economy.

There is currently limited regulation in place to drive us to net zero carbon, but we know it is our responsibility to transform our buildings. This has seen many players already making internal assessments for transition risks based on different assumptions.

Rather than this individual approach, we need to get the market moving faster by building 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.

These consultation guidelines are designed to support owners and managers to assess the impact of specific risks over the time series of an investment. They identify 14 transition risks, nine of which can be of material impact to real estate assets now and in the future. They also include three standard templates to support disclosure and reporting.

We recognise that by addressing topics such as carbon pricing and embodied carbon in these consultation guidelines, we are pushing the outer limits of where we are today with decarbonisation. However, we see this as a fast-moving space, which requires bold thinking; what appears to be far-reaching today could very mainstream as soon as six months or a year down the line.

We put forward these proposed guidelines to advance the technical approach to assessing transition risks. However, we believe there are strong social and economic implications for our industry and cities if we don't tackle this critical challenge of transition risk collaboratively as an industry. We have addressed these issues in a separate discussion paper *Breaking the value deadlock: enabling action on decarbonisation*.

These consultation guidelines are not only the first practical outcome of C Change's work, they also represent the project's spirit of collaboration.

To arrive at this point, the project team undertook more than 50 one-to-one interviews and refined its thinking with the support of more than 100 people through workshops with our Steering Committee, the European Sustainability Product Council and a group of sustainability and investment experts, many of whom attended multiple meetings to offer their insights.

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.

C Change was formed in late 2021 by a group of leading real estate players: Allianz Real Estate, Arup, Catella, Hines, Immobel, Redevco and Schrodgers Capital. These founding partners continue to be united in their aim to focus on collaboration to ensure companies large and

small have access to practical solutions and education on decarbonisation. We thank them for their enlightened leadership on such an urgent issue.

The publication of these guidelines now opens a period of consultation to allow us to refine this document and incorporate improvements from experts tackling this issue on a day-to-day basis. Over the coming months, we will be engaging with the industry individually, across companies and in specialist groups.

We encourage you to take the time to read and feedback your views. Help us ensure that C Change is real change.



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Chair, ULI Europe



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C Change Founding Partners



Introduction

The proper quantification of climate risk into real estate is an existential issue. With the built environment contributing around 39 percent of global carbon emissions, and global real estate investment representing \$9.1trillion in 2021, without effective integration and resultant action, both the environment in which buildings can thrive and the investment that builds and maintains them is at stake.

The proper integration of transition risks, especially, holds the key to galvanising action on decarbonisation – of the asset itself and its interdependent infrastructure.

At present, transition risks are known to be impacting the investment value of property but without a standardised method by which to assess it, there is risk of some investors selling above market rate or divesting. This results in lower efficiency properties lacking the vital decarbonisation and upgrade works in the timelines they require for the world to achieve its net zero goals.

These proposed guidelines have been developed at a time when the identification and integration of transition risks is nascent in the real estate investment industry, and as such aim to create a new best practice standard for owners and managers that can be built on over time, as the field of transition risks matures.

They are the first phase towards a consistent and sophisticated approach to tackling transition risks by identifying 14 transition risks of material impact to real estate assets now and in the future. Today, nine of these can be financially modelled and standardised with a method for assessing and integrating each into the discounted cash flow. The final five risks are not currently possible to financially model but will be monitored and included in future editions.

Alongside these guidelines, also seeking consultation on the specific data points to go into future standardised reporting and disclosure templates.

Looking forward, we also plan to use the results of the industry consultation of 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.

The publication of these guidelines now begins a period of consultation. As a starting point, the appendix includes a set of questions to guide your feedback and share insights on page 40. Over the coming months, we will be engaging with the industry to encourage feedback from individuals, companies and specialist groups.

For the latest information on the consultation process, please refer to the [C Change webpage](#).

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1. Introduction

1.1. Industry support

The following consultation paper was prepared thanks to the generous support of the founding partners of C Change: Allianz Real Estate, Arup, Catella, Hines, Immobel, Redevco and Schroders Capital, together with extensive technical support from a large number of the Urban Land Institute's Europe membership.

For all contributing organisations, please see the acknowledgements on page 39.

1.2. Objective

The objective of this consultation paper is to present a first draft for the standardisation of the treatment and disclosure of transition risks up and down the value chain of real estate investment to be reviewed by the industry and supporting experts, before it is developed into an actual set of draft guidelines.

1.3. Why this is important

The proper quantification of climate risk into real estate is an existential issue. With the built environment contributing around 39% of global carbon emissions, and global real estate investment representing ca. \$9.1trillion in 2021, without effective integration and resultant action, both the environment in which buildings can thrive and the investment that builds and maintains them is at stake.

The proper integration of transition risks, especially, holds the key to galvanising action on decarbonisation – of the asset itself and its interdependent infrastructure. At present, transition risks, such as additional resourcing needs and the cost of decarbonisation, are known to be impacting the value of property - but without a standardised method by which to assess it, there is risk of disinvesting of carbon-heavy portfolios or assets from informed investors, to less sophisticated purchasers, which have a temporary lower knowledge base of the risks concerning the decarbonisation of real estate.

1.4. Scope of transition risk assessment

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

- 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 or throughout the holding period
- Decarbonisation audit or assessment on an asset or portfolio

The consultation paper broadens the application of where transition risks can be used, to:

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

1.5 Guidelines use and positioning

After consultation, the proposed new guidelines will be intended to be used by asset owners and managers when conducting asset and portfolio level assessments in Europe. The associated disclosure templates 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.

We propose that the future guidelines and its associated definitions should intend to be adopted into already existing industry practice. The ideal location will be subject to public consultation.

1.6 What this consultation paper intends to do

The consultation paper is intended to provide insight and structure around the treatment of a priority set of transition risks considered material to real estate assets. It will:

- Highlight the key transition risks known to have an impact on real estate assets.
- Classify which transition risks are able to be quantified and thereby integrated into an associated discounted cash flow budget line.
- Classify which transition risks are not able to 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 transition risks.
- 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 valuation service providers, and to institutional investors.

1.7 What the consultation paper does not intend to do

The proposed future guidelines included in this consultation paper are not meant 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. They must be used in conjunction with this valuation.
- 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 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 proposed guidelines focus on asset and portfolio level assessment only.
- replace the use of an industry standard discounted cash flow. These proposed guidelines are 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 proposed 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.

1.8 Revision and change procedure

It is proposed that after consultation, the future guidelines will be reviewed in full on a regular basis.

Each review process must be supported by a public consultation.

All changes made to the proposed guidelines over time will be recorded in a change log and will be publicly available.

The review of the proposed guidelines will be supervised by a designated technical expert committee, which will be responsible for the quality and accuracy of the content.

2. Format of proposed guidelines

The proposed future structure of the guidelines is intended to be in line with comparable industry standard guidelines. To include principles, best practice, additional guidance, standardised templates, and tools and examples.

2.1 Principles

Each transition risk highlighted in the proposed guidelines will have a draft principle for review. The intention is that this will serve as a basis for the requirements and best practices.

2.2 Best practices

Each transition risk highlighted in the proposed guidelines will have a suggested best practice. Best practice in this context will align with industry comparables and will aim to be considered the new minimum standard. At present, all risks are listed as best practice, with some additional guidance. However it is expected that the public consultation will support the decision of which risks can be included in best practice in Version 1 of the proposed guidelines and which need to be included in additional guidance.

2.3 Additional guidance

It is expected that some transitions risks will be difficult for the industry to integrate at the point of the future publication of the Guidelines Version 1. This will be decided in the public consultation and will go into the first draft of the guidelines.

2.4 Standardised templates

It is proposed that three templates are to be provided with the future guidelines:

- Transition risk assessment – manager disclosure sheet
- Transition risk assessment – valuation service provider disclosure sheet
- Transition risk assessment – investor reporting sheet

The *Transition risk assessment – manager disclosure sheet*, the *Transition Risk Assessment - Investor Reporting Sheet*, and the *Transition risk assessment – valuation services industry disclosure sheet* are all intended to be standardised templates that seek alignment and direct integration, either through standardisation of data points or application programming interfaces (APIs) with pre-existing industry tools and procedures. The specific integrating organisations, the choice of data points and format are subject to consultation. Please see section 9 for more detail.

2.5 Tools and examples

The **Preserve** discounted cash flow tool (see section 3.2 below) is a tool that will be developed as a result of the public consultation for these proposed guidelines. The final specification for its development will undergo an industry and technical committee design and development process. Once finalised, applied examples of the tool in use will be created and are meant to assist in the application of these guidelines and to ease rapid industry adoption.

3. Interdependent delivery needs for implementation

3.1 Data sharing – required

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, a new data sharing initiative must be developed, to:

- (i) Standardise the disclosure of transition risks to transacting parties
- (ii) Standardise the reporting of transition risks to institutional investors
- (iii) Standardise and facilitate a secure method of data sharing for transition risk transaction data to be shared with the valuation services industry

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

3.2 Preserve tool – desired

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 proposed 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 as a result of this consultation, and the resultant final tool specification will aim to reach a beta version by Q3 of 2023 as part of the wider Urban Land Institute's C Change programme.

3.3 Mediated industry carbon price - desired

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, an uneven playing field may be experienced and as such 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 how difficult the task of industry mediation is. 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, an industry-mediated price and method for integration.

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

4. Important relationships

4.1 The relationship between transition risks assessments and property valuations

It is proposed that the assessment of transition risks in accordance with the future guidelines must be in addition to a fair or market value assessment, conducted by an independent and suitably qualified valuer, with suitable review periods and guide criteria as described in the Royal Institute of Chartered Surveyors (RICS) Red Book.

In this instance, the valuer would continue to observe fair or market values on the basis of comparables based evidence and not integrate additional speculative transition risks, as instructed by the RICS's Red Book. Where impacts of transition risks can be evidenced as specifically and causally impacting market value, it is proposed that the valuers should present this assessment to the manager in the usual formats of explicit mentions within the assessment of value or additional strategic advice.

It is proposed that the result of this transition risk assessment, including target discount rate and the impact on final transaction price should be shared by the owner or manager back to the valuation services industry, via a secure data sharing method, using the Transition Risk Assessment - *Valuation Services Industry Disclosure Sheet*.

4.2 The relationship between this transition risk assessment and associated industry experts/data partners

Carbon Risk Real Estate Monitor (CRREM)

For the effective assessment and standardisation of the treatment of transition risks, it is proposed that an owner or managers baseline decarbonisation pathway aligns with the Carbon Risk Real Estate Monitor (CRREM) 1.5°C pathways, wherever possible.

It is understood that not all asset classes are covered with the CRREM pathway or tool, nor some of the nuances of specific needs within asset classes (eg 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.

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 with a real material risk to the potential value or investor return of an asset, then it is strongly recommended that the path of extra due diligence and assessment is followed.

5. Transition risk assessment readiness

The following transition risks (see section 5.2 and 5.3 below) have been identified as part of the foundational research for this consultation. A selection have been prioritised and are thereby proposed to be included in version 1 of these guidelines as indicated in the right hand column of the chart in section 5.2.

Please note, the following risks have initially been identified in isolation from each other, so that each risk can be assessed thoroughly. However, it is expected that upon consultation, these isolated risks may be recommended to be clustered for greater simplicity. However, it should be noted that a careful balance must be struck between the desire for simplicity and the importance of disaggregating risks to support industry education and transparency.

It is proposed that all new and existing transition risks should be reviewed regularly as part of the revision and change procedure and integrated into the future revisions of the guidelines when ready to do so.

5.1. Transition risk readiness assessment terms

The following terms are used in the right-hand column of the transition risk readiness charts below, and delineate if a risk is ready to be included in this first version of the proposed guidelines, and if so under what terms.

Transition risk readiness

The term “readiness” relates to the ability to convert the risk into a quantifiable monetary value, with enough granularity that it can be applied to specific asset classes and specific countries, across the full 27 countries in Europe and entered directly into a discounted cash flow assessment. By deciding a risk is ready, it means that it is deemed ready to be included in Version 1 of the future guidelines.

Instantly transferable to monetary value

The term “instantly transferable to monetary value” relates to the observation that the risk is easily transferable into a discounted cash flow as a monetary value because the risk can be directly translated into a cost, and obtained by the owner and manager without the need to add assumptions into the value. An example of this is the cost of decarbonisation. This can be obtained as a result of a decarbonisation audit or a cost analysis internally or externally, with a suitably qualified team member or specialist third-party provider, respectively. The monetary value that is provided as a result of this activity is then considered accurate enough to be included in the discounted cash flow, without further consultation needed.

Transferable with assumptions

The term “transferable with assumptions” means that the risk is not as easily and clearly defined as to be instantly transferable into a discounted cash flow. Instead, such a risk would need additional supporting assumptions to be able to be included. An example of this would be the cost of decarbonisation in the future. As mentioned above, the cost of decarbonisation at that one moment in time that a discounted cash flow is being completed, can be obtained by an owner or a manager and included in a discounted cash flow. But to calculate the cost of decarbonisation in a future year, to comply with the CRREM decarbonisation pathways, as an example, would require further assumptions to be considered accurate enough to include in a discounted cash flow - for example with the use of cost indices, a blended inflation rate etc.

5.2 Transition risk readiness chart - proposed for version 1 of the guidelines

The transition risks that are proposed to be included in version 1 of the guidelines are as follows:

Name of transition risk	Description of risk	Transition risk readiness	Guideline integration recommendation
Cost of decarbonisation	<p>Now – this refers to the amount of investment required to decarbonise an asset in line with a 1.5°C aligned decarbonisation pathway. This includes the cost of materials, labour, systems and advisory project management services.</p> <p>Future – the level of this risk can be impacted in future by geopolitical-linked uncertainties such as inflation and supply chain issues.</p>	<p>Now – instantly transferable to monetary value</p> <p>Future – transferable with assumptions</p>	<p>Now - integrate into Guidelines Version 1</p> <p>Future - integrate into Guidelines Version 1</p>
Energy costs	<p>Now – this refers to the change in energy costs before and after the theoretical acts of decarbonisation, to include all forms of energy usage (eg 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. There is an assumed rise in energy costs in the short term due to geopolitical volatility and an assumed reduction in energy costs after decarbonisation. In some cases, e.g., onsite renewables, there is an opportunity to produce an energy surplus and as such earn additional income as a result of decarbonisation.</p> <p>Future – this risk and earning opportunity is impacted by inflation and supply/demand economics and can be very volatile to predict, but nevertheless inflation linked assumptions can be made.</p>	<p>Now – instantly transferable to monetary value</p> <p>Future – transferable with assumptions</p>	<p>Now - integrate into Guidelines Version 1</p> <p>Future - integrate into Guidelines Version 1</p>

<p>Carbon price</p>	<p>Now – this refers to all forms of carbon pricing: national and 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 through energy costs and interlinked rental income. Internal carbon price is currently voluntary, but is a standard requirement in the TCFD framework and is on track for mandatory disclosure in several regions. Carbon offsets are not recommended unless tackling residual emissions as detailed in the Science-based Targets Initiatives (SBTi) Net Zero Standards revision of 2021, and, as such, these are not included in this assessment.</p> <p>Future – carbon pricing may become mandatory in TCFD requirements or national markets (beyond shadow into actual internal fees) and the EU Emissions Trading System (ETS) may extend into instruments that impact owners and tenants directly. This is impacted by geopolitics and is highly volatile to predict.</p>	<p>Now – voluntary, transferable with assumptions</p> <p>Future – voluntary/ mandatory, transferable with assumptions</p>	<p>Now - integrate into Guidelines Version 1</p> <p>Future - integrate into Guidelines Version 1</p>
<p>Depreciation</p>	<p>Future – this refers to the depreciation of associated technologies and hardware implemented as part of the decarbonisation activities.</p> <p>NB. There is an additional risk element to depreciation which includes the expected ratcheting of quality and efficiency of today's retrofit technologies, which will render existing technologies obsolete. As this is difficult to predict and therefore model, it is proposed that this additional consideration is not included in the version 1 of the guidelines.</p>	<p>Future – transferable with assumptions (existing retrofit only)</p>	<p>Now - integrate into Guidelines Version 1</p> <p>Future - integrate into Guidelines Version 1</p>

<p>Rental income change</p>	<p>Now – this refers to the potential change in the rental income as a result of decarbonisation activities. The valuation services industry is already observing an increase in potential rental income as a result of best-in-class examples of energy efficient buildings, but is exclusively in the office asset class. In addition, the reduction in income potential for very low efficiency buildings is also predicted but this income variance may only be short-lived, while the early adopters enjoy a high income potential with net zero-aligned tenants, before this becomes industry standard.</p> <p>However, it is a known industry challenge that the impact on value has, as yet, not been able to be causally linked to decarbonisation activities alone. However, there is a direct, causal and quantifiable link between breach of minimum building standards and the inability to rent or lease a property until it is suitably decarbonised to the minimum standard required. There is also early evidence of a direct, partially causal and quantifiable link between energy costs and rental income negotiations, as such to support the further quantification of this risk in future guideline editions, this has been included in additional guidance.</p> <p>Future – this risk can be impacted by wider market influences than its level of decarbonisation, and indeed, can override any potential impact under specific circumstances eg net zero building in a catastrophic flood plain.</p>	<p>Now and future – whole Decarb, not possible without sensitivity analysis</p> <p>Now – energy costs, instantly transferable to monetary value</p> <p>Now – minimum standards, instantly transferable to monetary value</p> <p>Future – energy costs and minimum standards, transferable with assumptions</p>	<p>Now and future whole decarb - integrate into Guidelines Version 1</p> <p>Now – energy costs, integrate into Guidelines Version 1</p> <p>Now – minimum standards, integrate into Guidelines Version 1</p> <p>Future – energy costs and minimum standards, integrate into Guidelines Version 1</p>
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<p>Tenant voids (as a result of decarbonisation activities)</p>	<p>Now – tenant voids refers to the amount of rental income lost due to tenants needing to vacate the property as a direct result of decarbonisation works. This risk can take two forms - tenants moving out during an existing tenancy, or tenants moving out at the end of tenancy, when works would then need to be conducted and the property relet after that.</p> <p>Future – This future risk is quantifiable through the proportionate estimation of future rental income loss.</p>	<p>Now – instantly transferable to monetary value</p> <p>Future – transferable with assumptions</p>	<p>Now – integrate into Guidelines Version 1</p> <p>Future – integrate into Guidelines Version 1</p>
<p>Embodied carbon</p>	<p>Now – this refers to the financial responsibility for embodied carbon within an asset, meaning the carbon that was emitted as a direct result of the European standards EN19578 A1–3 product creation and construction, B 3–5 in-use and C end-of-life, life cycle stages. Inclusive in this risk is a historic embodied carbon risk, which is the embodied carbon emitted as a result of the historic construction (A1–3) and in-use (B3–5) activities for a later acquired building. However, there has been limited data available to accurately assess all assets.</p> <p>There is also a future embodied carbon responsibility which should record the carbon emitted as a result of planned future in use (B3–5), and end-of-life activities. This risk is compounded by a rising carbon price by which to value it and the improving embodied carbon efficiency in materials and technologies over time.</p>	<p>Now – transferable with assumptions</p> <p>Future – transferable with assumptions</p>	<p>Now – integrate into Guidelines Version 1</p> <p>Future – integrate into Guidelines Version 1</p>

<p>Exit yield</p>	<p>Now – this refers to the part that decarbonisation has to play on the total potential impacts or influences on total property yield upon point of sale. This can be cumulatively impacted by many of interrelated risks identified in these guidelines, including tenant strength and quality, institutional investor demand, decarbonisation costs, energy costs and rental income. 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, eg due to varying economic cycles.</p> <p>Future - this risk can be impacted in many ways, by many variables, as identified above. As such the quantification of this risk needs to be supported by a systematic method to integrate all transition risks.</p>	<p>Now – transferable with assumption, excluding noted exceptions</p> <p>Future – transferable with assumption, excluding noted exceptions</p>	<p>Now – Integrate into Guidelines Version 1</p> <p>Future – Integrate into Guidelines Version 1</p>
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5.3 Transition risk readiness chart – proposed as not suitable for Version 1 of the Guidelines

The following transition risks are proposed not to be included in version 1 of the guidelines. Explanations as to why are included in the description of the risks.

Name of transition risk	Description of risk	Transition risk readiness	Guideline integration recommendation
<p>Reputational Risk (investor specific)</p>	<p>Now – this refers to the varying level of interest of investors investing in assets or funds, as a direct result of the sustainability of an asset or fund. This is especially pertinent as a result of the galvanising efforts of the Glasgow Financial Alliance for Net Zero (GFANZ) to decarbonise all assets in line with a 1.5°C trajectory. Focusing on specific European regulation, the recent Sustainable Finance Disclosure Regulation (SFDR) has provided time bound impetus to ensure specific assets are decarbonised in order to reach Article 9 criteria. As a result, there is a risk that certain sustainable funds may be deselected from institutional investment portfolios or strategies who are investing in article 9 funds – and, thereby, impact the manager and owners access to equity based finance and ultimately performance. However, investors make judgements on the basis of these risks and wider organisational sustainability criteria, so it is not possible to model the impact on a singular asset within a portfolio at this time.</p> <p>Future – this risk is proportionately growing with the investors 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.</p>	<p>Now – not possible to model for now, but monitoring</p> <p>Future – not possible to model for now, but monitoring</p>	<p>Now – monitor and reconsider at next revision</p> <p>Future – monitor and reconsider at next revision</p>

<p>Tenant strength and quality</p>	<p>Now – this refers to the small portion of the tenant strength and quality assessment that is attributable to a high-quality tenant’s preference for grade A energy efficient buildings as observed predominantly in office buildings. However, this is not attributable across all asset classes, and like the rental income increase opportunities detailed earlier, the exact value adjustment to rental income, tenure and risk profile is not causally linked to high efficiency buildings alone and therefore is particularly challenging to model.</p> <p>However, there is an additional consideration for tenant quality risks linked to reduced energy costs resulting in lower risk of rental payment default. This is already a pertinent risk due to the exceptionally high energy costs experienced across Europe in 2021/2022, but, at present it is not possible to quantifiably and causally link to a wider tenant quality assessment.</p> <p>Future – like the previous rental income increase calculations, this high-quality tenant risk is expected to be short-lived and limited to specific asset classes only, with early adopters in the office sector enjoying higher quality tenants while there is a lack of high quality building stock. Once this reaches industry average, this perceived income increase potential will return to industry norm. Tenant quality risk linked to rental payment default will be impacted by risk amplifiers such as energy cost and supply chain cost volatility/inflation over time.</p>	<p>Now – high quality tenant, not possible to model for now, but monitoring</p> <p>Now – rental default, not possible to model for now, but monitoring</p> <p>Future – high-quality tenant, not possible to model for now, but monitoring</p> <p>Future – rental default, transferable with assumptions</p>	<p>Now – high quality tenant, monitor and reconsider at next revision</p> <p>Now – rental default. Future – monitor and reconsider at next revision</p> <p>Future – high quality tenant, monitor and reconsider at next revision</p> <p>Future – rental default. Future – Monitor and reconsider at next revision</p>
<p>Insurance</p>	<p>Now – this refers to the rising cost of an insurance premium as a result of an unsustainable asset. At present, there is clear evidence for physical risks impacting the cost and availability of insurance, but significantly less 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, so should continue to insure with clear change incentives (eg insurance premium reductions if property is decarbonised) included.</p> <p>Future – similar to the banking and institutional investment sectors, this risk is proportionately growing with the insurance industries own decarbonisation journey. At present, this is not mandated or regulated at sector level.</p>	<p>Now – not possible to model for now, but monitoring</p> <p>Future – not possible to model for now, but monitoring</p>	<p>Now – monitor and reconsider at next revision</p> <p>Future – monitor and reconsider at next revision</p>

<p>Access to debt capital</p>	<p>Now – this refers to the reduction in access to debt capital as a direct result of not decarbonising an asset.</p> <p>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.</p> <p>Future – this risk is proportionately growing with the capital providers own decarbonisation journey. At present, this is not mandated or regulated at sector level, but through voluntary activities such as the Bankers for Net Zero Initiative (B4NZI), as part of the Glasgow Financial Alliance for Net Zero (GFANZ) which is aiming to trigger an industry shift, progress is being made, sector by sector, and fast.</p>	<p>Now – not possible to model for now, but monitoring</p> <p>Future – not possible to model for now, but monitoring</p>	<p>Now – monitor and reconsider at next revision</p> <p>Future – monitor and reconsider at next revision</p>
<p>Cost of debt capital</p>	<p>Now – this refers to the fluctuations in the cost of capital before and after decarbonisation activities. At present, the cost of capital associated with green loans is regulated to be within 10–20 basis points for penalisation or reward, related to specifically agreed decarbonisation objectives only and therefore may have presented an opportunity to partially model the cost of capital. However, green loans are not explicitly linked to decarbonisation activities and as such the timelines of the loan may not coincide with the decarbonisation activities, and may only be a contributing factor to the agreed rates. There are other anecdotal examples of debt capital costing more outside of green loans due to the perceived risk, but this is by no means unilateral and varies considerably between countries, regions and competitor capital providers.</p> <p>Future – this risk is proportionately growing with the debt capital providers own decarbonisation journey. At present, this is not mandated or regulated at sector level, so the wider implications for interest rates are currently difficult to model, but voluntary action to trigger an industry shift is already growing fast.</p>	<p>Now – not possible to model for now, but monitoring</p> <p>Future – not possible to model for now, but monitoring</p>	<p>Now – monitor and reconsider at next revision</p> <p>Future, wider integration. Future – monitor and reconsider at next revision</p>

<p>Internal resourcing</p>	<p>Now – this refers to the amount of additional investment required to facilitate the effective decarbonisation of an asset in line with a 1.5°C 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. This is currently listed in not possible to model for now, as evidence suggests additional internal resourcing would be added to expenses of the fund, and would not be included as a proportionate impact to asset level.</p> <p>Future – the level of this risk can be impacted by inflation and supply shortages of suitably qualified professionals.</p>	<p>Now – instantly transferable to monetary value</p> <p>Future – transferable with assumptions</p>	<p>Now – integrate into Guidelines Version 1</p> <p>Future – integrate into Guidelines Version 1</p>
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6. Preparation for transition risk assessment and affiliated reporting/disclosure.

6.1 Behaviours and practices

The assessment of transition risks is proposed to be conducted once a year, per asset, in line with the regular review process as laid out in the revision and change procedures in Section 1.8.

The assessment of transition risks is proposed to be conducted on a potential new asset acquisition or an existing portfolio managed asset, including in preparation for sale.

The assessment of transition risks is proposed 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.

6.2 Setting up the discounted cash flow for transition risk assessment

In the assessment of transition risks, it is proposed that owners and managers must first calculate an industry standard discounted cash flow process 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, the following additional transition risk-related data points (See section 6.4 below) are proposed to be entered into a separate transition risk-adjusted assessment section. For this purpose, it is proposed that a transition risk-adjusted section of the discounted cash flow should be created and used on all transactions to support the identification of clear causalities in the adjustments to potential value. This separation will also support better analysis when disclosed or reported to third parties.

6.3 Ensuring a shadow bottom line in the discounted cash flow

It is proposed 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. It is proposed that both results should be disclosed using the standardised disclosure sheets proposed in section 2.4 and detailed in section 9.

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

Transition risk
Operational carbon emissions – tenant
Embodied carbon emissions – historic
Embodied carbon emissions – future

With the disclosure of this additional shadow information, it is proposed that it should be up to the transacting entities as to how material this shadow risk is to the assessment of value and ultimate price negotiation, but the final negotiated price and reasoning must be disclosed using the proposed *Transition risk assessment – valuation service provider disclosure sheet*, provided in more detail in section 9.

6.4 Additional required transition risk assessment data points

It is proposed that the following additional transition risk data points (see chart below) should be prepared in order to conduct a transition risk assessment. Where the below data is not available, an automated transition risk assessment tool such as Preserve, that is being developed based on the outcome of these guidelines, can be used. Alternatively, managers can compile and analyse a set of industry averages, derived from credible data sources.

However, it is proposed that owners and managers must not revert to benchmarks and averages where identified transition risks have significant potential to impact the targeted returns of the asset. As such, it is proposed that owners and managers should use this transition risk assessment to identify the highest priority transition risks and commit to achieving greater certainty from deeper due diligence or service provider support where most necessary to do so.

Required transition risk assessment data points

Required data point	Unit/typology
Floorspace of asset	Square metres or square feet
Asset class or typology of asset	Asset class 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 historic embodied carbon responsibility (EN 15978: A1–3, B3–5)	kg/tonnes CO ₂ e
Total future planned embodied carbon responsibility (EN 15978: 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 asset class

6.5 Further utilisation and interpretation of transition risks assessments

It is proposed 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 risk 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 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:

Name of transition risk	DCF primary impact	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 value	Income	

7. The assessment process

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

- risk principle
- recommended treatment of the risk – now
- recommended treatment of the risk – future
- recommended placement of risk within the discounted cash flow.

NB. In some risks, e.g. carbon price, an additional sub-heading has been created:

- Additional guidance

At present, all risks remain disaggregated, but it is expected in the consultation, that potential clusters and allocations of risks to certain budget lines in the discounted cash flow may be recommended.

NB. It is important to understand that these proposed risks are further impacted by key financial metric inputs; for example inflation, discount rate, and the weighted average cost of capital. Light touch mentions to these interrelated financial inputs/metrics will be included within each risk within the discounted cash flow section, then are explained in full at the end of this section.

7.1 Transition risk 1: cost of decarbonisation

Proposed principle

If the asset is not currently compliant with the 2050 year within the 1.5°C aligned CRREM pathway (v1.093), then an accurate estimation of the inflation adjusted decarbonisation costs must be conducted for the asset, inclusive of all works required for the full duration of the intended hold period.

Proposed treatment of risk – now

It is proposed that the actual estimated cost of decarbonisation for an asset should be calculated against the baseline of the latest CRREM pathway analysis (currently v.1.093).

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.

It is proposed that in some cases, owners and managers may not be able to conduct a full decarbonisation audit in the time frame. 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.

Proposed treatment of risk – future:

It is proposed that to estimate the rise in the cost of decarbonisation over the time frame of the discounted cash flow, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium in the nominal discount rate. Please see section 8, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed discounted cash flow placement

TRANSITION RISK ADJUSTED MODULE EXCERPT	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9
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 (See Section 8 for more detail)				Total Cost of Act of Decarbonisation 3 + impacted by Nominal Inflation rate inclusive of 3 top risks adjustments (See Section 8 for more detail)
Decarbonisation									

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

It is proposed that once an assessment of the appropriate decarbonisation expenditure is agreed, the capital investment should be entered into the capital expenditure budget line in the discounted cash flow in the appropriate years, in accordance with (i) the CRREM pathway, and (ii) proposed business plan for the asset.

7.2 Transition risk 2: energy costs

Proposed 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.

Proposed treatment of risk – now

It is proposed 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 risk and risk reduction opportunities as a result of action or inaction on decarbonisation, it is proposed that an accurate estimation of each energy type be included to ensure a complete picture of (i) the potential additional costs (eg rising energy prices), (ii) the potential cost reduction (eg reduced energy usage as a result of decarbonisation activities), and (iii) new potential income opportunities (e.g., surplus energy sold to the grid) are clearly understood.

To calculate these risks, owners and managers should first obtain the most recent reporting year energy usage of the asset (kWh/ annum), the types of energy being used by the building now (e.g. 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 this asset and in what timeframe for the entire intended holding period for the asset.

This effective estimation and experimentation as to the right time to make the decarbonisation to maximise savings or returns can be a manual and iterative process, so it is recommended that an owner or manager uses either 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.

NB. To understand the complete risk of the building, it is proposed that a full assessment of both the tenanted and managed parts to the building must be completed.

Proposed treatment of risk – future

Is it proposed that to estimate the rise in the cost of energy sources over the time frame of the discounted cash flow, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium calculation in the nominal discount rate. Please see section 7, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed discounted cash flow placement:

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
OPERATING EXPENSES										
	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
Utilities										
	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										
	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 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)										

NB. This is a simplified fractional excerpt from a discounted cash flow for illustrative and explanatory purposes only. (this illustration shows whole building responsibility only)

It is proposed that all energy costs should be included in the operating expenses section of the discounted cash flow, under “Utilities”, including a breakdown of whole building responsibility and tenanted parts.

It is proposed that the most recent reporting year energy costs should be recorded in year 1 of the holding period, and then adjusted accordingly in line with inflation adjustment and the proposed acts of decarbonisation, in the appropriate year in the discounted cash flow.

It is proposed that that the energy costs for tenants are included below the bottom line in the shadow part of the assessment as follows.

It is proposed that within the utilities section, a detailed view of the energy cost mix is included for full transparency in disclosure. However, upon presentation of discounted cash flow results for owner and manager decision making, an aggregated total can be presented.

7.3 Transition risk 3: cost of carbon

Proposed principle:

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

Proposed treatment of risk – now

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

For the purposes of property value assessment in Europe, it is proposed that the industry use the EU Carbon Permits Benchmark as a shadow carbon price of €98.

It is proposed 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 7.2 in kWh by the emissions factors (eg g CO2e/kWh) for that energy type and region, plus (ii) the historic embodied carbon emissions in kg/tonnes CO2e (see 7.7 embodied carbon historic risk below), and (iii) the total embodied carbon emissions of any future decarbonisation works in kg/ tonnes CO2e (see 7.8 embodied carbon future risk below) to reach a total carbon carbon cost responsibility.

NB. This calculation is complex and multi-faceted, as such it is recommended that owners and managers use a tool to support the decision making process, such as CRREM or the forthcoming Preserve tool.

Proposed treatment of risk – future

Is it proposed that to estimate the rise in the cost of carbon emissions over the time frame of the discounted cash flow, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium calculation in the nominal discount rate. Please see section 7, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed placement in discounted cash flow

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
		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 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 Historic	Total cost of embodied carbon historic	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	total cost of carbon + inflation adjustment + 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 Operational Emissions - Tenanted	Total cost of operational carbon	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment + 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	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment	total cost of carbon + inflation adjustment

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

It is proposed that the total carbon cost is provided in the shadow section of the discounted cash flow below the bottom line of free cash flows. The total carbon cost should be disaggregated for full transparency in disclosure, but open presentation of cash flow results for owner and manager decision making an aggregated total can be presented.

Proposed additional guidance

It is proposed 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 from the asset returns and, as such, can be reallocated to further decarbonisation activities.

In this instance, it is proposed that the operational emissions-linked cost of carbon, and future embodied carbon emissions should both be provided dedicated budget lines in the discounted cash flow as an operational expense. The historic embodied carbon expense should continue to be included in the shadow value underneath the free cash flow bottom line, as illustrated above.

7.4 Transition risk 4: depreciation

Proposed principle

The depreciation of new technologies and solutions used to support decarbonisation should be accurately costed and included in the discounted cash flow.

Proposed treatment of this risk – now

It is proposed that when calculating this risk, owners and managers should assess the specific lifespan of each new retrofit technology and include the depreciation, using the industry standard calculation of the cost of the retrofit technology or solution – less residual value, divided by the expected lifetime of the asset.

NB. This is an easy calculation for the third-party decarbonisation service provider to prepare for owners and managers, or, if this is not available it is recommended to use an industry averaging tool, such as the forthcoming Preserve tool.

Proposed treatment of this risk – future

Is it proposed that to estimate any adjustment to the depreciation over the time frame, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium calculation in the nominal discount rate. Please see section 7, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Additional guidance

It is proposed that owners and managers remain aware that retrofit technologies deployed in near term years, may not be efficient or effective enough to enable alignment with the CRREM 1.5°C decarbonisation pathways through to 2050. As such, in some cases, technologies or solutions may need to be replaced or upgraded before their effective lifespan. It is recommended 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 is made, and, if appropriate, factor these additional costs into the discounted cash flow for full transparency.

Proposed placement in discounted cash flow

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
Depreciation (Physical Deterioration & Functional Obsolescence) & Amortisation	Wider asset depreciation total	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment	Wider asset depreciation total + inflation adjustment
Retrofit depreciation	Nil	Nil	Nil	(retrofit event)	Total retrofit depreciation + inflation adjustment	Total retrofit depreciation + inflation adjustment	Total retrofit depreciation + inflation adjustment	Total retrofit depreciation + inflation adjustment	Total retrofit depreciation + inflation adjustment	Total retrofit depreciation + inflation adjustment

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

It is proposed that the depreciation calculation is entered into discounted cash flow as a sub-cost of the wider depreciation costs calculated for the asset. The depreciation costs should be distributed evenly over the lifespan of the retrofit technology or solution in the appropriate years of the cash flow.

7.5 Transition risk 5: rental income change

Proposed principle

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

Proposed treatment of this risk – now

Minimum standards – it is proposed that this estimated rental change risk can be calculated by first identifying the local building regulations specific to the asset class and location of the asset.

Should the local regulation not be in place, then it is proposed that the manager should use the European Commission Europe-wide recommendations, as laid out in the Energy Performance of Buildings Directive (EPBD).

Next, it is proposed that the owner or manager should identify the year in which the asset will not reach minimum standards. If the owner or manager is not planning a decarbonisation event to bring the asset within minimum standards in that year, then it is proposed that the manager must enter a 100% reduction in rental income in the discounted cash flow for the years after that date.

It is proposed that the 100% reduction in income values should also include 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 treatment of this risk – future

It is proposed that to estimate any adjustment to the rental income growth over the time frame, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium calculation in the nominal discount rate. Please see section 7, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed placement in discounted cash flow

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	-100% 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
			(Minimum standard breach in Month 6)							

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

It is proposed 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 for full transparency at disclosure. This sub-heading should show a proportionate reduction in income for that year and every year thereafter until an appropriate decarbonisation event can bring it up to minimum standard. If no such decarbonisation event is planned, then it is proposed that the rental income should be recorded as 100% loss for the remaining full duration of the intended holding period.

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 manually enter in their adapted discounted cash flow or use a tool such as Preserve to support them.

Additional guidance

Energy costs – It is proposed that the risk of rental income change linked to energy costs be calculated as a direct result of the prior assessments of (i) the cost of decarbonisation (inclusive of the accurate assessment of decarbonisation works required) as detailed in section 7.1, (ii) the energy costs as detailed in section 7.2, (iii) the shadow carbon price, as detailed in section 7.3 and finally, (iv) the inflation adjustment as detailed in section 8.

It is proposed that by having this information and its financial impacts already included in the appropriate years in the discounted cash flow, clear energy cost increases (linked to inaction and inflation/volatility linked energy price hikes) or energy cost decreases (linked to the a reduction in energy usage as a result of decarbonisation activities) will be able to be identified.

It is proposed that these absolute value savings can be *considered* and thereby used in the rental negotiations at the appropriate time in the letting schedule, however owners and managers should not assume that the rental adjustment will be accepted by the market, but use their discernment to make a market-insight-adjusted estimation within these parameters.

In this instance, it is proposed that rental income increase be considered and modelled as a result of this assessment, then it should be included as an additional line in the discounted cash flow under the standard rental income and labelled as “energy cost savings premium”.

7.6 Transition risk 6: tenant voids (as a result of decarbonisation activities)

Proposed principle

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

Proposed treatment of this risk – now

It is proposed 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 accurate assessment of decarbonisation works required) as detailed in section 7.1, and (ii) the asset business plan (inclusive of tenant renegotiation and leasing events).

It is proposed 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 to be vacant.

If the estimated tenancy vacancies have not been provided, or should this data not be available, then it is proposed that a proxy from an industry average can be used as follows:

Tenancy void: industry standard	Tenancy void: decarbonisation proxy	Treatment of risk
Renewals	Minor decarbonisation works	No void
Market blend	Major decarbonisation works	3 months
End of lease and relet	Relet after decarbonisation works	6 months

NB. It is proposed that if any of these above assumptions are used, it must be explicitly listed in the discounted cash flow and disclosure sheets, for full transparency and opportunity to override assumptions.

Proposed treatment of this risk – future:

It is proposed that to estimate any adjustment to the tenancy void costs over the time frame, owners and managers should make an informed decision on the appropriate rate of inflation linked to the rental income and include that as part of the risk premium calculation in the nominal discount rate. Please see section 7, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed placement in the discounted cash flow

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 (Decarbonisation event - end of lease, major works, month 9)	-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

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

It is proposed that owners and managers must 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. This is to show full transparency at disclosure.

7.7 Transition risk 7: embodied carbon – historic

Proposed principle

The total historic 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.

Proposed treatment of this risk – now

It is proposed that to calculate the historic embodied carbon emissions risk of a pre-existing asset, there are two routes available: average and assessed. These proposed guidelines recommend the average approach. This is to encourage adoption and increased awareness of the historic embodied carbon shadow costs, without dramatically increasing resource intensity in order to achieve it, as a result.

For the average approach, it is proposed that owners and managers should estimate the historic embodied carbon emissions of an asset through the use of a credible third-party data provider or an estimation tool such as the forthcoming Preserve tool. These service providers aggregate embodied carbon databases, inclusive of carbon factors and carbon data associated to materials, per unit of mass or volume, over decades of imperfect or piecemeal data to create industry averages, which can be used as a proxy for shadow assessment purposes.

For the assessed approach, it is proposed that owners and managers should undergo a detailed assessment of specific building materials, fit-outs and technologies against the year of the asset build and each of its upgrades since. This data is partially available through embodied carbon databases in relevant countries, but are invariably not complete data sets, and becomes less accurate or available the longer the time period since the asset was built.

It is proposed that in the case of a pre-existing asset, once a historic embodied carbon emissions estimate for an asset is available (in tonnes or kg of Co2e), this must be multiplied by the cost of carbon (see section 7.3 Cost of carbon above) to arrive at a total shadow cost.

Proposed treatment of this risk – future

It is proposed that to estimate any adjustment to the shadow historic embodied carbon cost over the time frame, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium calculation in the nominal discount rate. Please see section 7, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed placement in discounted cash flow

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
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 Historic	historic	total cost of embodied 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	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	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

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

It is proposed that the total historic 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 historic embodied carbon cost will have a dedicated budget line for full transparency in disclosure, but upon presentation of cash flow results for owner and manager decision making an aggregated total can be presented.

7.8 Transition risk 12: embodied carbon – future

Proposed 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.

Proposed treatment of risk

To calculate the future *embodied carbon emissions* risk of an asset, it is proposed that the owner or manager must identify the key actions in its business and decarbonisation plan 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.

For new build assets, it is proposed that this should include product and construction stage activities, as described the British Standard *BS EN 15978:2011: Sustainability of construction works standard* as A1-3: Raw material supply, transport and manufacturing, and A4-5: Transport and construction-installation process. As well as projected in-use activities as described below.

For existing assets, it is proposed that this should include the in-use activities (described by the British Standard *BS EN 15978:2011: Sustainability of construction works standard* as B3-5: Repair, refurbishment and replacement), owners and managers should use a thorough decarbonisation audit to assess the embodied carbon emissions responsibility of the predefined retrofit solutions as detailed in section 7.1.

In regards to the wider upgrades and owner responsible fit outs not linked to decarbonisation activities but included in life stages B3-5 (in use: repair, refurbishment and replacement) in the asset business plan, it is proposed that this should be requested from the contractors instructed to complete the future works. If the contractor is not instructed, it is proposed that estimations should be sourced through specialist third-party data providers or comparable internally conducted assessments with suitably qualified professionals. It is proposed that all related assumptions should be explicitly disclosed for full disclosure.

Should an asset be considered for demolition and new build, then it is proposed that the end of life stages C1-4: Deconstruction, demolition, waste processing and disposal, should be accurately assessed and recorded. For this information, it is proposed that data should be sourced through specialist third-party data providers or comparable internally conducted assessments with suitably qualified professionals.

It is proposed that once a total future embodied carbon emissions estimate for an asset is available (in tonnes or kg of CO2e), this must be multiplied by the cost of carbon (see section 7.3 Cost of carbon above) to arrive at a total shadow cost.

Proposed treatment of this risk – future

Is it proposed that to estimate any adjustment to the shadow future embodied carbon cost over the time frame, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium calculation in the nominal discount rate. Please see section 8, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed placement in discounted cash flow

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
		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	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 Historic	Total cost of embodied carbon historic	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	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 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 Operational Emissions - Tenanted	Total cost of operational 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

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

It is proposed 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, but upon presentation of cash flow results for owner and manager decision making an aggregated total can be presented.

7.9 Transition risk 13: exit yield

Proposed 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.

Proposed treatment of this risk – now

It is proposed that due to the deep interconnection between the risks detailed in these proposed guidelines and the resultant potential cumulative impacts on an already complex wider set of influences on estimated future sale prices, this forms 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) shortlist the most material impacts to include in the considerations for the estimation of the future sale price.

Proposed treatment of this risk – future:

Is it proposed that to estimate any adjustment to the exit yield as a result of cumulative risks identified in these guidelines, owners and managers should make an informed decision on the appropriate rate of inflation and include that as part of the risk premium calculation in the nominal discount rate. Please see section 7, *The treatment of transition risk impacted financial metrics/inputs*, for more information on both discount rates and inflation.

Proposed placement in discounted cash flow

It is proposed that the quantified material risks deemed to have a potential impact to the exit yield must be included in the final value stated in the discounted cash flow. The underpinning assumptions of which must be included in the disclosure sheets for full transparency.

8. The treatment of transition risk impacted financial metrics/inputs

It is proposed that owners and managers should pay careful attention to financial inputs in order to prevent double counting and/or proper treatment of transition risks. For the purpose of these future guidelines, the proposed two most pertinent financial inputs are the discount rate, and inflation.

8.1 Discount rate

Risk premium

The industry standard discount rate calculation refers to the owner or manager's required rate of return on an asset. The simple equation is as follows: discount rate = risk free rate + risk premium. The risk free rate is an easily identifiable interest rate linked to government bonds. The risk premium part of the calculation is the more speculative element, and can be calculated in several ways; including:

- Method 1: Through the bottom up assessment of wider market risks, such as liquidity, country, environmental and wider sectoral risks.
- Method 2: Using a proxy for the wider market risk from an appropriately benchmarked corporate bond.
- Method 3: Using a proxy for the wider market risk from the weighted average cost of capital.

With method 2 and 3 there is no additional risk premium calculation included. However, within method 1, the risk premium is a less absolute sum which requires owners and managers to assess the additional rate of return that an investment is expected to yield, as a result of the subjective added value of organisation within the constraints and additional risks of the market environment. On this basis, it is proposed that when using this method, owners and managers must be careful to clearly delineate between any additional environmental risks as identified in the risk premium assessment and what is already included in the transition risk assessment and disclose specific directly related assumptions made in the disclosure sheets for full transparency.

8.2 Inflation

Nominal versus real discount rate

Another 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.

As current industry standard, the appropriate inflation adjustment to the risk premium is often driven from a general assessment of 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 or project.

When assessing transition risks, it is proposed that owners and managers must pay closer attention to more specific components of the inflation rate. Through the transition risk assessment process, it is proposed that owners and managers must identify the most pertinent risks which have the potential to impact the targeted returns of the project or asset. For example, national inflation rates cannot account for the heightened volatility that is being experienced in supply chains for retrofit materials and technologies. It is proposed that these agreed prioritised focus areas should require more detailed assessment or consultation, either through suitably qualified third party providers or internal capacity. When pursuing best practice, it is proposed that managers must adjust the inflation rate to include a suitably weighted adjustment according to these specific risks, and evidence this in their discounted cash flows and disclosure accordingly.

9. Standardised disclosure templates

It is proposed that the following data points be reviewed in line with this current consultation, and then the results will be designed into industry templates to accompany the future guidelines. These disclosure sheets will be in line with industry standard data disclosure and reporting methods, so that it can be easily uploaded to or downloaded from tools and reporting sites such as GRESB, CRREM, Measurabl and Altus Group products.

For consultation the critical data points have been listed for review.

9.1 Transition risk Assessment – owner or manager disclosure sheet

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

It is proposed that the owner or manager that is preparing to sell the asset, should complete this disclosure sheet and include it in the data room as part of the industry standard due diligence procedures.

Data point required	Standard data	Description of risk impact on value	Underlying assumptions/ data sources	Requirements for 1.5oC compliant
Property name/identifier	Y			
Property address	Y			
Property type	Y			
Floorspace	Y			
Property stranding date			Y	Y
Energy use per energy type in kWh (last reporting year)	Y		Y	Y
Energy cost per energy type in kWh (last reporting year)	Y		Y	
Total emissions tonnes/ kg CO2e: operational (last reporting year), embodied future (life stages EN15978 A3-5, B3-4, C-14 as appropriate to asset), embodied historic A1-5 estimation.	Y	Y	Y	Y
Cost of decarbonisation through to 2050 compliance		Y	Y	Y
Carbon price	Y	Y	Y	
Depreciation		Y	Y	Y
Rental income change		Y	Y	
Expected tenant voids (as a result of decarbonisation and relet if not renewal)		Y	Y	Y
Embodied carbon – historic	Y	Y	Y	
Embodied carbon – future		Y	Y	Y
Expected impact on exit yield		Y	Y	Y
Top 3 risks impacting exit yield			Y	
Risk Premium (transition risk specific)	Y		Y	
Inflation rate	Y		Y	
Top 3 risks impacting inflation rate			Y	

9.2 Transition risk assessment – valuation service provider disclosure sheet

The proposed *Transition risk assessment – valuation service provider disclosure sheet* is proposed to be completed after the transaction of a property at an agreed price that has been informed by a transition risk assessment. This proposed data disclosure will be disclosed to the valuation service provider industry using a secure method to be decided in 2023.

It is proposed that the critical information to be shared with the valuation service provider industry is in the top half of the chart and the additional desirable information is in the second half. This prioritisation is expected to be finalised during consultation.

Data point required	Standard data	Description of risk impact on value	Underlying assumptions/ data sources	Requirements for 1.5°C compliant
Property name/identifier	Y			
Property address	Y			
Property type	Y			
Floorspace	Y			
Property stranding date			Y	Y
Adjustment to market value assessment made by third party VSP assessment as a direct result of the transition risk assessment	Y	Y	Y	
Final negotiated price, including reasoning for any deviation from adjusted market value	Y	Y	Y	
Expected impact on exit yield		Y	Y	Y
Top 3 risks impacting exit yield			Y	
Risk Premium (transition risk specific)	Y		Y	
Inflation rate	Y		Y	
Top 3 risks impacting inflation rate			Y	
Energy use per energy type in kWh (last reporting year)	Y		Y	Y
Additional data points				
Energy cost per energy type in kWh (last reporting year)	Y		Y	
Total emissions tonnes/ kg CO2e: operational (last reporting year), embodied future (life stages EN15978 A3-5, B3-4, C-14 as appropriate to asset), embodied historic A1-5 estimation.	Y	Y	Y	Y
Cost of decarbonisation through to 2050 compliance		Y	Y	Y
Carbon price	Y	Y	Y	
Depreciation		Y	Y	Y
Rental income change		Y	Y	
Expected tenant voids (as a result of decarbonisation and relet if not renewal)		Y	Y	Y
Embodied carbon – historic	Y	Y	Y	
Embodied carbon – future		Y	Y	Y

9.3 Transition risk assessment – investor reporting sheet

The proposed *Transition risk assessment – investor reporting sheet* is proposed to be completed and shared in line with the standard disclosure schedules associated with investor reporting, which will be designed after the results of this consultation. It is proposed that this will not be on an asset by asset basis, and will fall in with usual quarterly, biannual or annual reporting cycles.

It is recognised that due to alignment between entities such as CRREM, GRESB and the SFDR adverse impact reporting metrics, many of the metrics included in this assessment will already be reported to investors.

It is also noted that due to the portfolio level reporting norms and the agreed discretion of/ mandate for the manager, that significantly less data will be required than what is proposed to be assess in these future guidelines. However, it is proposed that particular quantified transition risks and adjusted values should be included for full disclosure and educative purposes.

Data point required	Standard data	Description of risk impact on value	Underlying assumptions/ data sources
Number of assets in portfolio	Y		
Number of compliant assets in portfolio (based on emissions and intensity in line CRREM pathways within intended holding period)		Y	Y
Number of non compliant assets in portfolio (based on emissions and intensity in line CRREM pathways within intended holding period)		Y	Y
Total market value of portfolio	Y	Y	Y
Total estimated transition risk adjusted value of portfolio		Y	Y
Market value of each component asset	Y	Y	Y
Estimated transition risk adjusted value of each asset		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
Top 3 transition risks with a material impact on asset value		Y	Y
Total value of each transition risk and its estimated value for the full portfolio		Y	Y

10. Tools and examples

10.1 The Preserve tool

Specification to follow after public consultation

10.2 Examples

To follow when tool prototype is complete and can be tested

11. 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 goes to Paul Kennedy, Brenna O’Roarty and Susana Saiz.

11.1 Key contributing organisations

Allianz, Alstria, APG, Aviva Debt, Axa, BNP Paribas, Bouwinvest, Catella Residential Investment, COIMA, DEAS, Deems Group, DENEFF, DWS, EPRA, Europa Capital, Europa Capital, Hines, Immobel IM, INREV, Invesco, Ivanhoé Cambridge, JLL, JP Morgan, Kempen Capital, L&G, LaSalle, Legal and General Investment Management, Longevity Partners, Mitiska REIM, NN Group, NREP, Nuveen, Oxford Properties Group, Orion Capital Managers, Patrizia, Redevco, Savills Investment Management, Schrodgers and Triston.

Acre management, Allianz Real Estate, Alstria, Aon, APG, Arup, Aviva Debt, AXA Investment Managers, Bankers Without Boundaries, Barclays, Bouw Invest, BNP Paribas, Carbon Risk Real Estate Monitor (CRREM), Catella Residential, CBRE Investment Management, COIMA, DEAS, Deerns, Deloitte, DENEFF, Deutsche Bank, DWS, EPRA, Equinox, Europa Capital, European Mortgage Federation (EMF), European Property Federation (EPF), The European Group of Valuers Associations (TEGOVA), Evora Global, Global Real Estate Engagement Network (GREEN), HSBC, Icebreaker One, Immobel, Immobel Capital Partners, INREV, Institutional Investors Group on Climate Change (IIGCC), Invesco Real Estate, JLL, JP Morgan, Kempen Capital, La Salle, Laudes Foundation, Legal & General Investment Management, Longevity Partners, Madaster, MandG, Nuveen Real Estate, Oxford Economics, Oxford Properties Group, Patrizia, PF and Brief Banck, PGGM, Ramboll, Redevco, RICS, Savills Investment Management, Schrodgers and Tristan Cap.

11.2 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 Transition Risk Adjusted Value (Preserve) Tool.

12. Appendix

12.1 Consultation feedback questions

This set of questions may be helpful to support your feedback on the consultation guidelines. It is not designed to be comprehensive so please feel free to comment on aspects outside these questions or in a different format.

1. Scope (1.4, 1.6)

Please comment on the scope of these future guidelines – specifically, what it is and it is not intended to do. Is this the correct positioning? Would you change anything, if so what and why?

2. Format (2.1–2.3)

Please comment on the chosen format of these guidelines. Specifically, the choice to follow the industry format of principles, best practice and additional guidance.

3. Important relationships (4.1)

Please comment on the proposed relationship between the valuation service providers and the owners and managers conducting this assessment.

4. Transition risk readiness (5.2, 5.3)

Please comment on the following:

- Are there any critical risks which may have a material impact on your real estate investment that is not highlighted in this paper? If so, please describe.
- Please comment on the chosen prioritisation of risks (5.2) possible to include in Guidelines Version 1.
 - Is there any you feel should not be there? If so, which and why?
 - Is there any you feel should be there and aren't? If so, which and why?
 - Any other general comments related to the definitions and descriptions
- Please comment on the chosen deprioritisation of risks (5.3)
 - If not already mentioned through inclusion above
 - Is there any you feel should not be there? If so, which and why?
 - Is there any you feel should be there and aren't? If so, which and why?
 - Any other general comments related to the definitions and descriptions

5. Behaviours and practices (6.1-6.3, 6.5)

- Please comment on the proposed frequency of assessment (6.1)
- Please comment on when the proposal of when in the investment lifecycle this assessment should be used (6.1)
- Please comment on the proposed use of the shadow bottom line (6.3)
- Please comment on the further utilisation and interpretation of transition risks (6.5) – specifically, these risks are currently disaggregated. Where if any do you see opportunities to cluster risks for the actual recording in the discounted cash flow budget line? Please explain.

6. Assessment Process (7.1-7.9)

- Please review each transition risk and make comments on any concern or build you have in relation to the following sub-headings:
 - Principle
 - Treatment – now
 - Treatment – future
 - Placement in the discounted cash flow

7. Standardised disclosure templates

- Please comment on the proposal to share data - specifically, any concerns or ideas about the principle of sharing data, the need for the specific data points listed, or if any specific data points are missing - for all three stakeholder groups:
 - Transacting entity - vendor to purchaser
 - Valuation service provider
 - Investor

8. General feedback

- Please provide any general feedback which has not otherwise been covered above.