

Note to HM Treasury: IFoA Green Book reform Task & Finish Group response to the Green Book Discount Rate Review

Executive summary

The IFoA Green Book Reform Task & Finish Group welcomes the Green Book Discount Rate Review and broadly supports its central proposition that the discount rate should primarily reflect maturity and systematic risk, with wider societal objectives addressed elsewhere within the appraisal framework. We consider that this proposition provides greater conceptual clarity and a stronger basis for future Green Book development.

In our view, the key decision for HM Treasury is whether it accepts this proposed role for the discount rate. Most of the Review's recommendations follow directly from that choice. If HM Treasury accepts the proposed framework, the principal challenge becomes implementation rather than discount-rate design.

If the revised discount rate role is accepted, we recommend that implementation focuses on:

- strengthening appraisal approaches for resilience, uncertainty and transformational change before major reforms to the discount-rate framework are introduced;
- establishing robust governance arrangements for social-insurance treatment, project-specific risk premia and any other exceptions;
- building capability and consistency across government to support the wider use of judgement-based appraisal methodologies; and
- ensuring that uncertainty, resilience and intergenerational impacts remain visible to decision-makers.

We also believe the Review has implications beyond discount-rate design itself. In particular:

- **Social insurance and fiscal sustainability:** We see value in the Review's concept of social insurance beyond discount-rate design. Government already acts as insurer of last resort for many systemic risks. The social insurance concept could support a more integrated approach linking appraisal, resilience, fiscal sustainability and the management of explicit contingent and implicit liabilities, consistent with HM Treasury's emerging framework for managing implicit liabilities.
- **Intergenerational transparency:** As assumptions about future growth, time preference and systemic risk continue to influence how costs, benefits and risks are distributed across generations, we do not regard discount-rate calibration as entirely technical or value-neutral. We therefore believe intergenerational transparency should remain an important consideration as the framework evolves.

The IFoA would welcome the opportunity to continue supporting HM Treasury as these reforms are developed and implemented.

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Date: August 2026

Section 1: Main paper and conclusions

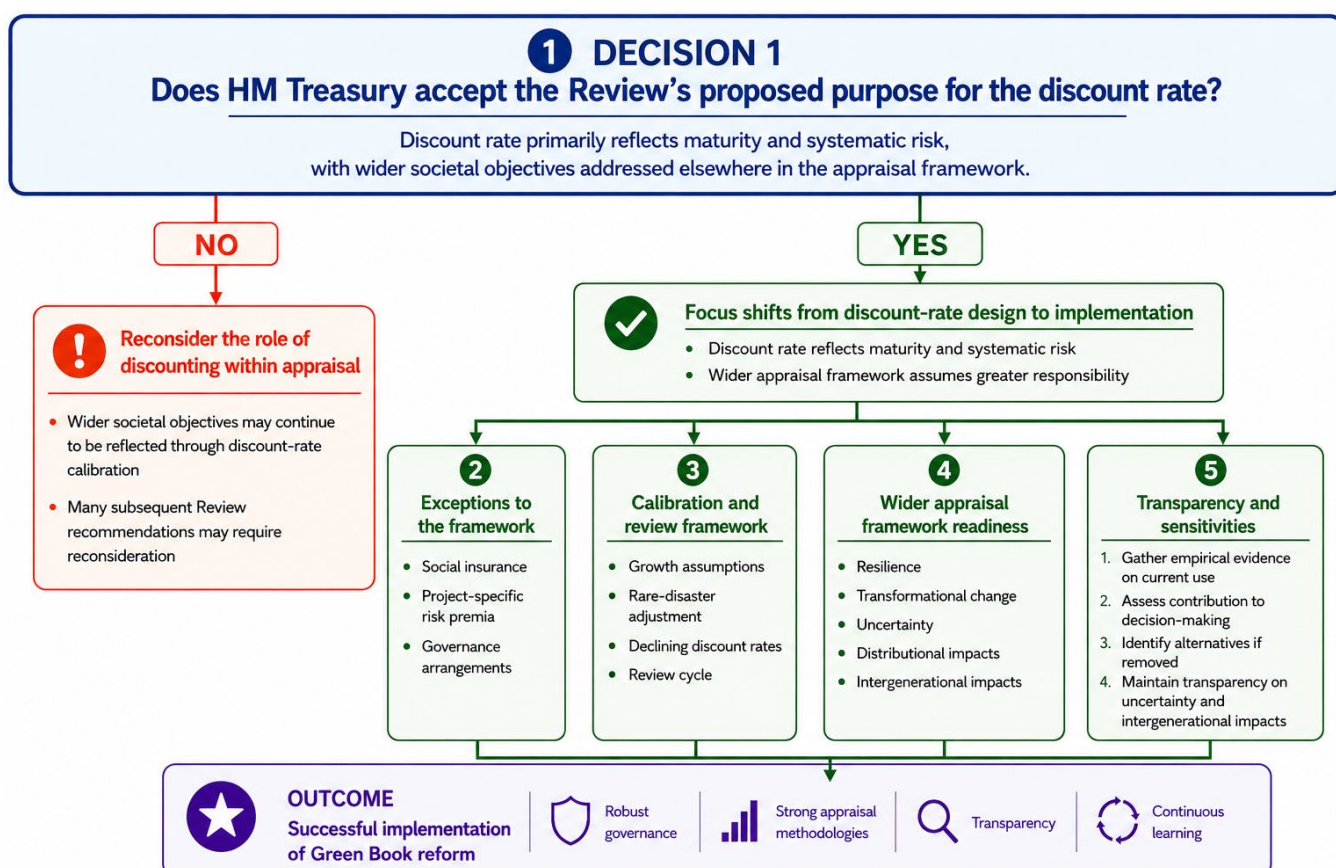
The IFoA Green Book Reform Task & Finish Group has reviewed the recommendations provided by Professors Groom and Freeman in their [Green Book Discount Rate Review paper](#). This builds on our previous work which culminated in the publication of [Green Book Reform – An actuarial perspective on transformational change and the Green Book discount rate](#), which formed part of the evidence base to the Review.

Overall, we consider the Review to be a significant and constructive contribution to Green Book reform. We welcome its recognition of lower long-term growth expectations, greater emphasis on uncertainty and resilience, more frequent review of assumptions, and the need for broader appraisal approaches for transformational projects. The Review also reflects many of the concerns raised in our earlier paper regarding the limitations of relying on discount-rate adjustments alone to address transformational change, resilience, uncertainty and wider societal objectives.

The central strategic question

In our view, the most important contribution of the Review is not its proposed recalibration of the discount rate, but its redefinition of the role that the discount rate should play in appraisal. The Review proposes a narrower role for the discount rate, focused on maturity and systematic risk, with wider societal objectives addressed elsewhere within the appraisal framework. Many of the Review's recommendations flow directly from this conceptual shift.

The Review's recommendations should therefore not be viewed as a series of independent technical changes. Most are contingent upon accepting the proposed purpose of the discount rate. HM Treasury's first and most important decision is therefore whether it agrees with this conceptual framework. In our view, the proposed framework offers greater conceptual clarity, transparency and consistency. However, its success depends on confidence that the wider Green Book framework can robustly and consistently address the wider considerations that the discount rate has historically been expected to capture. The graphic below shows a decision framework that we recommend HM Treasury adopt, with further detail on each step included in Annex A of this paper.



Implications of accepting the Review

If HM Treasury accepts the Review's proposed framework, greater reliance will be placed on complementary appraisal methodologies to address considerations that would previously have been reflected, at least in part, through discount-rate calibration. The principal challenge therefore becomes implementation rather than discount-rate design.

However, we believe that, whilst progress has been made, some complementary methodologies identified by the Review remain unevenly developed and inconsistently applied across government. As a result, implementation risk may currently exceed discount-rate design risk.

The success of the Review will therefore depend not only on the strength of the wider appraisal framework, but also on ensuring that uncertainty, resilience and intergenerational implications remain visible to decision-makers. We therefore recommend that implementation focuses on:

1. **Complementary appraisal methodologies:** Strengthening approaches to resilience, uncertainty, transformational change, environmental valuation and wider welfare analysis to support the responsibilities increasingly transferred from the discount-rate framework, particularly for transformational projects whose benefits often arise through system-wide effects, resilience, option value and long-term change.
2. **Governance of exceptions:** Establishing robust governance arrangements, evidential standards and approval processes for social-insurance treatment, project-specific risk premia and any other exceptions to the standard discount-rate framework.
3. **Capability and consistency:** Building capability across government to support increased use of judgement-based appraisal approaches and improve consistency of application.
4. **Monitoring and evaluation:** Monitoring implementation and outcomes to inform future refinement of the framework and build evidence on the effectiveness of the reforms in practice.

We also believe the following broader considerations should also inform implementation:

- **Social insurance and fiscal sustainability:** The concept of social insurance has value beyond discount-rate calibration. Government already acts, both explicitly and implicitly, as insurer of last resort for many systemic risks, with the costs of major societal shocks often ultimately falling on the public balance sheet. Pandemic response, climate adaptation, resilience, energy security and critical infrastructure failures can all create significant explicit contingent and implicit liabilities.

Recent [HM Treasury guidance](#) on managing government's implicit liabilities provides a useful framework for understanding how risks normally borne by households, businesses or insurers can create pressure for government intervention. We therefore see value in a more joined-up approach linking appraisal, resilience, fiscal sustainability and the management of these liabilities. This could help ensure that investments which reduce government's exposure to long-term systemic risks are recognised consistently across the wider appraisal framework.

- **Intergenerational fairness and transparency:** Ensuring decision-makers retain visibility of intergenerational impacts. We do not consider that discount-rate calibration becomes purely technical or value-neutral under the revised framework, as assumptions regarding time preference, future growth, inequality aversion and systemic risks continue to influence how costs, benefits and risks are distributed across generations. Greater transparency regarding the timing of costs and benefits, potentially through duration metrics, could help support this objective

We have provided wider areas for consideration in Annex B and further detail on our recommended implementation priorities in Annex C.

Annex A: Decision making framework

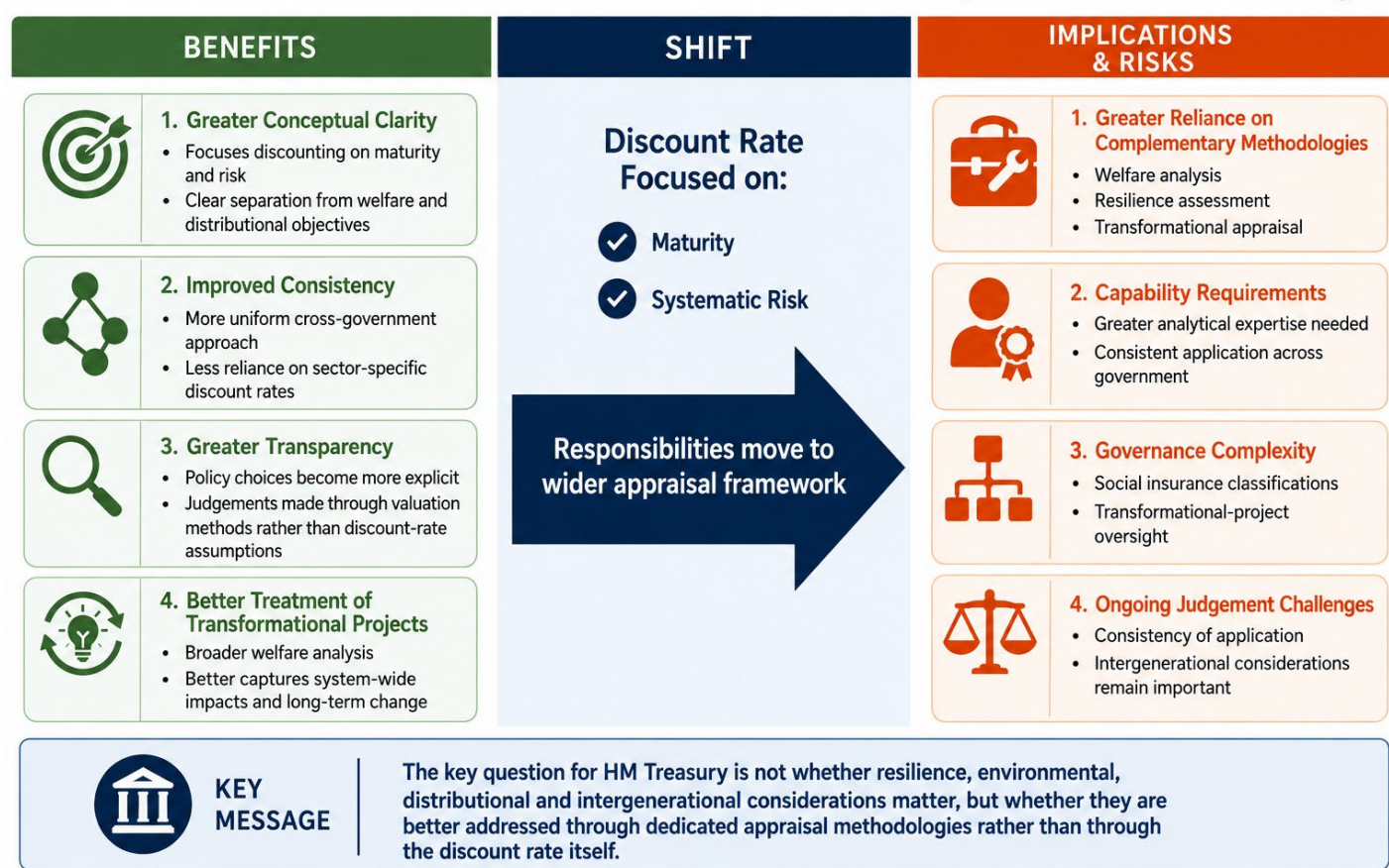
We do not view the Review's recommendations as a series of standalone decisions. Many are contingent on earlier choices regarding the purpose of the discount rate and the extent to which broader societal objectives should be addressed through discounting or elsewhere within the appraisal framework. We have therefore organised our commentary around a sequence of strategic decisions that we believe HM Treasury will need to consider when determining its overall response to the Review.

Decision 1: Does HM Treasury agree with the Review's proposed purpose of the discount rate?

The Review proposes a narrower role for the discount rate focused on maturity and systematic risk, with wider societal objectives addressed elsewhere within the appraisal framework. Many of the Review's subsequent recommendations flow directly from this conceptual position.

In considering its response, HM Treasury may wish to assess both the advantages and potential challenges associated with this proposed shift.

Narrower Role for the Discount Rate: Benefits and Implementation Challenges



IFoA T&F Group Perspective

The Group broadly supports the Review's objective of providing greater conceptual clarity regarding the role of the discount rate and agrees that many long-standing appraisal challenges cannot be resolved through discount-rate adjustments alone. The treatment of transformational change, resilience, uncertainty, system-wide effects and co-benefits often requires analytical approaches that extend beyond the capabilities of a single discount-rate mechanism. However, our support for a narrower discount-rate framework is conditional upon being satisfied that:

- the wider appraisal framework is sufficiently mature to assume these additional responsibilities;

- appropriate governance, guidance and capability arrangements are in place;
- resilience, uncertainty and intergenerational impacts remain visible within decision-making processes; and
- transferring responsibilities away from discount-rate calibration does not create gaps elsewhere within appraisal practice.

Ultimately, the choice facing HM Treasury is not simply whether to narrow the role of the discount rate. It is whether there is sufficient confidence that the wider Green Book framework can robustly, transparently and consistently address the societal considerations that the discount rate has historically been expected to capture. If that confidence exists, the Review's proposed framework offers a coherent and logically consistent basis for future Green Book development. If it does not, HM Treasury may wish to consider whether further strengthening of complementary appraisal methodologies should accompany any reform of the discount-rate framework.

Decision gate: The remaining decisions assume HM Treasury accepts the Review's proposed purpose for the discount rate: a measure primarily of maturity and systematic risk, with wider societal objectives addressed elsewhere in the appraisal framework.

- **If YES:** proceed to Decisions 2-5.
- **If NO:** reconsider the role of discounting within appraisal, as many subsequent recommendations are contingent on this conceptual foundation.

Decision 2: If HM Treasury agrees with the proposed purpose, should any exceptions be recognised?

Once the purpose of the discount rate has been established, the next question is whether any projects possess sufficiently different maturity or systematic risk characteristics to justify different treatment. The Review proposes a largely standard framework with only limited exceptions, principally for social insurance projects and, where justified by robust evidence, project-specific risk premia.

IFoA T&F Group perspective

The social insurance proposal is broadly consistent with the Review's overall framework. If HM Treasury accepts the proposed purpose of the discount rate, there is a logical case for treating projects that provide protection during periods of acute societal stress differently because of their distinctive systematic risk characteristics. The key challenge is likely to be implementation rather than theory. We suggest HM Treasury considers four questions:

- **Scope:** Where should the boundary be drawn around social insurance projects? While the Review highlights pandemic preparedness, similar arguments could potentially apply to adaptation, resilience, energy security and critical infrastructure.
- **Governance:** What evidence, criteria and approval processes should be required before social insurance treatment or project-specific risk premia are applied?
- **Consistency:** How can exceptions be applied consistently across government while avoiding pressure for increasingly broad interpretations?
- **Capability:** Does government have sufficient analytical capability to estimate and justify project-specific risk premia in a proportionate and evidence-based manner?

We support the Review's cautious approach to both social insurance exceptions and project-specific risk premia. Any departure from the standard framework should be supported by clear criteria, robust evidence and transparent governance arrangements.

More broadly, we believe the concept of social insurance has value beyond discount-rate calibration. Consistent with HM Treasury's emerging framework for managing implicit liabilities, we see value in a more joined-up approach linking appraisal, resilience, fiscal sustainability and the management of explicit contingent and implicit liabilities.

Potential early-warning indicators include changes in the availability, affordability or scope of private insurance cover, which may signal that risks are becoming increasingly difficult for private markets to absorb and are migrating towards the public balance sheet.

Decision 3: Assuming HM Treasury accepts the conceptual framework, does it agree with the parameter calibration and review framework?

Assuming the conceptual framework is agreed, HM Treasury can then consider the individual parameter recommendations. These include:

- reducing the growth assumption (g);
- increasing μ (the elasticity of marginal utility of consumption);
- introducing a rare-disaster adjustment;
- revising the risk-free component;
- updating declining discount rates;
- introducing a five-year review cycle

The Review proposes not only a recalibration of the discount rate but also a different interpretation of the economic outlook facing future generations, characterised by lower expected growth and greater recognition of downside risks.

IFoA T&F group perspective

There is substantial alignment between the Review and our earlier paper. We particularly support:

- reducing the growth assumption;
- recognising greater uncertainty and downside risks; and
- more regular review of assumptions.

We also welcome the recommendation that assumptions should be reviewed at least every five years, with earlier reviews where underlying conditions change materially. HM Treasury may wish to define more explicitly the governance arrangements, indicators and decision-making responsibilities associated with such reviews. Relevant triggers could include material revisions to OBR growth forecasts, sustained divergence between Green Book assumptions and market indicators, or significant new evidence on systemic risks.

In particular, we note that long-term growth assumptions remain highly uncertain, particularly in the context of climate, environmental and geopolitical risks. While we support the proposed reduction in the central growth assumption, continued monitoring of evidence on long-term growth dynamics will remain important.

Looking further ahead, HM Treasury may wish to consider whether traditional consumption- and GDP-based measures remain sufficient indicators of future prosperity in a framework that increasingly recognises resilience, natural capital and wider wellbeing outcomes. It may also be helpful to consider whether a more explicit articulation of government's intergenerational risk appetite could inform future calibration and appraisal decisions.

Decision 4: Is the wider appraisal framework sufficiently mature to assume the responsibilities transferred from the discount rate?

If HM Treasury accepts the Review's proposed purpose for the discount rate, an important implementation question becomes whether the wider Green Book framework is sufficiently mature to assume the responsibilities that would increasingly be addressed outside the discount-rate framework. In particular, we recommend that appraisal methodologies are capable of:

- assessing transformational projects;
- evaluating resilience and social-insurance benefits;
- supporting decision-making under uncertainty and deep uncertainty;
- capturing system-wide effects and co-benefits;
- reflecting environmental and distributional objectives; and
- assessing and communicating intergenerational impacts.

IFoA T&F Group perspective

We strongly support the direction of travel proposed by the Review. Our earlier paper highlighted that transformational projects often involve uncertainty, long-term effects, spillovers, co-benefits and system-wide impacts that cannot be adequately addressed through discount-rate adjustments alone. As such, transformational projects may not be well suited to standard cost-benefit approaches because they are often characterised by profound uncertainty, where future outcomes and probabilities cannot be estimated reliably, as well as wider system-level effects.

However, narrowing the role of the discount rate necessarily increases reliance on complementary appraisal methodologies. The practical success of the Review will therefore depend less on the calibration of the discount rate itself and more on the maturity, capability and consistency of the wider appraisal framework.

We recommend that any implementation programme accompanying discount-rate reform includes continued development of:

- welfare analysis and welfare weighting;
- resilience appraisal and social-insurance assessment;
- approaches to decision-making under uncertainty and deep uncertainty, including scenario analysis and stress testing;
- methodologies for assessing system-wide impacts and co-benefits;
- environmental valuation and distributional analysis; and
- approaches for assessing and reporting intergenerational impacts.

We further recommend that HM Treasury supports these developments through appropriate guidance, governance arrangements and capability-building, particularly where methodologies require significant judgement and interpretation.

Decision 5: Should Discount-Rate Sensitivities be Removed?

The Review recommends removing discount-rate sensitivity analysis on the basis that, for any given maturity and risk profile, there should be a single best-estimate discount rate rather than a range of alternative values.

This recommendation follows logically from the Review's broader objective of providing a clearer and more consistent discounting framework. However, it represents one of the most significant

departures from current Green Book practice and one of the principal areas where our views differ from those of the Review.

IFoA T&F Group perspective

We acknowledge the conceptual case for removing conventional discount-rate sensitivities and agree that, under the Review's proposed framework, there is a logical argument for using a single best-estimate discount rate.

However, we believe the key question is not whether sensitivities are retained, but whether decision-makers continue to have sufficient visibility of uncertainty, resilience and intergenerational consequences to support robust long-term decision-making. The practical value of sensitivities has often been less about identifying an alternative discount rate and more about illustrating the importance of long-term assumptions and their influence on appraisal outcomes.

We are also not yet persuaded that the empirical case for removing sensitivities has been fully demonstrated. While the conceptual arguments presented in the Review are coherent, there is limited evidence on how the absence of discount-rate sensitivities would affect decision-making in practice. Before concluding that sensitivities should be removed, HM Treasury may wish to consider how appraisal practitioners and decision-makers actually use sensitivity analysis, and whether it continues to provide value in communicating uncertainty, long-term risks and intergenerational trade-offs. Experience from implementation and user feedback would help establish whether sensitivities remain useful in practice, even if their original conceptual justification has weakened.

We therefore recommend that, if sensitivities are removed, HM Treasury considers alternative ways of ensuring that:

- uncertainty associated with long-term assumptions underpinning the discount rate remains visible;
- intergenerational impacts and trade-offs are communicated clearly; and
- resilience and long-term risk considerations remain explicit within appraisal.

We also note that, while the Review narrows the role of the discount rate and seeks to address intergenerational considerations outside routine sensitivity analysis, the proposed central discount rate continues to embody assumptions regarding pure time preference, future growth, inequality aversion and systemic risks. As a result, it still reflects an implicit position on intergenerational fairness and the balance between present and future generations.

While we support the Review's objective of making intergenerational impacts more explicit within appraisal, we are less persuaded that routine reporting of undiscounted cashflow profiles would provide the most practical and proportionate means of achieving this objective. As discussed further in Annex B, we believe there is merit in exploring the routine reporting of cost and benefit duration measures for major projects. Duration provides a simple and transparent indication of when costs are incurred and benefits realised, helping decision-makers understand exposure to discounting assumptions and the distribution of impacts across generations, while remaining consistent with a single best-estimate discount-rate framework.

However, on balance, we could support removal of discount-rate sensitivities provided alternative mechanisms are introduced to maintain visibility of uncertainty, resilience and intergenerational impacts.

Annex B: Important areas for wider consideration

We believe two additional areas addressed in our original paper warrant continued attention as the Green Book framework evolves. These are not necessarily issues requiring immediate policy decisions, but will become increasingly important as implementation progresses and experience develops.

A. Intergenerational fairness

The Review provides a coherent framework for addressing many intergenerational issues. However, we believe greater transparency around intergenerational impacts would support long-term decision-making. While we support the objective of making such impacts more explicit, we are less persuaded that routine reporting of undiscounted cashflow profiles is the most practical way of achieving this.

Instead, we suggest exploring the routine reporting of cost and benefit duration measures for major projects. Duration metrics provide a simple indication of when costs are incurred and benefits realised, helping decision-makers understand exposure to discounting assumptions and the distribution of impacts across generations. They also align naturally with the Review's emphasis on maturity within the discount-rate framework.

More broadly, we do not regard discount-rate calibration as entirely value-neutral. Assumptions regarding pure time preference, future growth, inequality aversion and systemic risks continue to influence how costs, benefits and risks are distributed across generations. As a result, discount-rate parameters continue to embody an implicit position on intergenerational fairness, even within the Review's proposed framework.

HM Treasury may also wish to consider whether:

- traditional consumption and GDP measures remain sufficient indicators of future prosperity in a framework that increasingly recognises resilience, natural capital, human capital and wider wellbeing outcomes. Intergenerational fairness is not only about how much weight is placed on future generations, but also how their prosperity is defined and measured.
- a more explicit articulation of government's intergenerational risk appetite could help inform future appraisal and calibration decisions.

B. Learning from implementation

Many of the Review's recommendations place greater reliance on complementary framework methodologies that require judgement and interpretation. Their effectiveness will therefore depend not only on the framework itself, but on how it is applied in practice.

HM Treasury may wish to monitor implementation closely, particularly in relation to transformational projects, social-insurance concepts, the treatment of uncertainty and resilience, and the use of alternative appraisal methodologies. Building an evidence base on how these approaches influence decision-making would support future refinement of the Green Book framework.

HM Treasury may also wish to collect information on the duration of project costs and benefits for major projects and portfolios. Duration provides a practical measure of exposure to discounting and could help assess how appraisal methodologies influence long-term, resilience and transformational investments, while identifying any unintended tendency towards short-termism.

Annex C: Implementation recommendations

If HM Treasury accepts the Review's recommendations, we consider the principal challenge to be implementation rather than discount-rate design. We therefore recommend focusing on the following priorities, ranked according to their importance for successful implementation of the Review's proposed framework.

Priority	Area	RAG	Recommendation	Why it matters
1	Complementary appraisal methodologies	Red	Continue developing approaches to transformational appraisal, resilience assessment, environmental valuation, welfare analysis and decision-making under uncertainty and deep uncertainty.	The Review relies on these methodologies assuming responsibilities that have historically been reflected partly through discount-rate calibration.
2	Governance of exceptions	Red	Establish clear criteria, evidential standards and governance arrangements for the application of social-insurance treatment and any project-specific risk premia.	Without robust governance, there is a risk of inconsistent classification, boundary disputes and gradual expansion of exceptions beyond their intended scope as departments seek to demonstrate that projects qualify for preferential social-insurance treatment.
3	Analytical capability	Amber	Support implementation through targeted guidance, training and access to specialist expertise, particularly in areas requiring significant judgement such as resilience, uncertainty, welfare analysis and intergenerational impacts.	The effectiveness of the framework will depend as much on capability and consistent application as on methodology.
4	Visibility of uncertainty and intergenerational impacts	Amber	If discount-rate sensitivities are removed, introduce alternative approaches to ensure that uncertainty, resilience, model risk and intergenerational implications remain visible to decision-makers.	A narrower discount-rate framework should not reduce transparency regarding long-term assumptions and their consequences.
5	Monitoring and evaluation	Green	Monitor implementation, including the use of exceptions, treatment of resilience and transformational projects, and the impact of reforms on long-term investment decisions. HM Treasury should consider collecting duration metrics routinely as a means of monitoring whether appraisal outcomes exhibit unintended short-term bias following implementation of the reforms.	Evidence from implementation should inform future Green Book development and continuous improvement.

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