# Tackling climate change, the left behind and infrastructure needs

## How changing the Green Book can help

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## Context

The Government faces significant economic and social challenges. Meeting climate change targets is going to require genuine transformational change to the way the economy works and society behaves, and meeting net zero carbon emissions by 2050 makes this very urgent. At the same time, there is an obvious and pressing need to tackle the relative economic inequality between the south of the country and the "left behind" towns and cities of the north and midlands, as well as between different social groups. There is also a recognition that the UK needs a massive injection of infrastructure investment, partly to meet these other objectives but also to keep it competitive in a rapidly changing global economy.

At one level it is just a matter of political will and the delivery of enough capable resources to these goals to get the job done. However, Government is a complex multifaceted organism, and it helps if the internal drivers for action are aligned with the direction of political will. Without that all kinds of usual practice can override and frustrate the policy priorities, and it will be as important for Government to examine how Departments and Civil Servants carry out their remit as it is to be clear about what the remit and priorities are.

To this end, it seems that the rules of the Treasury's "Green Book" are worth examining in detail. The Green Book sets the framework through which all significant public spending proposals are evaluated. The rules are critical in determining what does go ahead and what is blocked.

This study provides an introductory look as to what might need to be changed in the Green Book rules to help deliver the new key priorities of Government. I hope it stimulates debate and helps make the needed changes, as the issues we are concerned about are urgent and can't wait.

# 1 Executive Summary

The "Green Book" and its companion and supplementary guidance provides the Treasury's framework for the appraisal and evaluation of all significant public sector programmes and projects. Taken together it is a comprehensive manual of best practice in building business' cases, assessing their value for money, economic and social benefits, commercial and other risks, affordability, and deliverability.

At its heart, the Green Book uses orthodox neo-classical static equilibrium analysis, aiming to maximise collective "utility" as revealed by market prices as a measure of societal value.[1] It is an excellent tool for deciding between marginal projects set in a fixed landscape. The business tools, properly used and implemented, should produce risk assessed plans that deliver on project outputs.

The question a new Government should ask is 'how good is that tool set to deliver ambitious transformational change? Key priorities that the Government has set out include:

- Modernisation of the UK's infrastructure and industrial performance to drive up productivity and underpin a flourishing economy;
- Reducing the inequalities in wealth and income between different regions of the UK and people from different economic and social backgrounds;
- Effectively reducing carbon emissions to sustainable levels (net zero by 2050) and tackling other environmental threats.[2]

In that context the current Green Book, and the overall framework for policy decisions, have some weaknesses. Although the Book is presented as objective and value-free, it relies on presumptions, for example, in favour of existing distribution. Assessing project outcomes only by maximising social value (as measured by market prices) will not always deliver the best results for Government's priorities. While the Green Book recognises and has methods to deal with externalities, non-monetised costs and benefits and other market failures, these adjustments are "add-ons" and subject to a "proportionality" test that means concerns around distribution and the climate crisis are peripheral.

The Green Book methodology is poor at measuring inequalities and the impact of change on them. Both in the context of differences between groups and between regions. Maximising

[1] Apologies to non-economists. This means that we try to measure the total benefit or use-value or "utility" that everybody gets from everything they consume, and to do this it's assumed that the market price of a good or service is proportional to its "utility". It is also assumed, to make this work, that market prices clear all markets (supply equals demand), that there is perfect competition (no monopoly distortions and perfect information) and no "dynamism" or tendency for structures of markets to change, and every factor of production (i.e. labour, capital and land) receives by payment the value (price) of what the last unit produces (e.g. what is produced if you add one more day's labour). A good explanation of the use of "values" in economic theory is found in Joan Robinson "Economic Philosophy".

[2] The commitment is to make the UK net zero carbon dioxide and other Green House Gases by 2050 which will require rapid change not just to energy use but of patterns of consumption impacting everything in the economy.

value at a UK level may prevent changes that improve productivity and growth at regional tiers.

The Green Book relies on looking at small changes against a static background, not for assessing the need for transformational change which is “non-linear”.

Viability of projects are assessed in financial and Treasury funding terms only, rather than their economic and environmental impacts.

Within the current model future benefits and costs are reduced by “discounting”, to compare them with current costs and benefits. This is a foundation principle of economic and business theory, but its use in the context of evaluating the social benefit of public interventions is ambiguous and subjective. As discounting greatly favours existing generations compared to future ones, some modification is needed to properly assess intergenerational equity. The Green Book has some modifications that are quite limited and subject to the “proportionality” test. Changes are needed to deal effectively with existential threats such as climate change.

Despite setting out best practice for building, assessing, approving and delivering business cases, the history of the public sector is littered with examples of expensive failure to properly deliver policy objectives, and the programmes and projects designed to support them. There is a need to get better use from these tools in the design of policy, and to strengthen the resources and expertise available to support that design, otherwise more expensive failures will occur.

To tackle these weaknesses and to help better deliver the policy priorities it is recommended that the Green Book and associated guidance is amended in six main ways:

1. As evaluation methodology is inherently value laden, set out clearly that the purpose of evaluation is to help deliver transformational change for the economy, reduce income and wealth inequality between groups and regions, and deliver a sustainable environment including meeting carbon reduction targets.
2. Expand the viability testing of projects to include tests for a sustainable environment as well as public sector finances.
3. Ensure that projects are not evaluated in isolation from the contribution from all projects and programmes that impact on the social objective being pursued, so its value and priority is seen in the context all alternatives. This process will test the assumption that only additional spending is required to achieve improvement, when changing the structure and use of existing programmes may deliver outcomes more effectively.
4. In order to assess intergenerational equity, include assessments as a comparator that as appropriate either exclude discount rates or demonstrate no deterioration in the environmental balance sheet.
5. Include a methodology for assessing the quality of evaluations and business cases in order to test how well projects meet the objectives as an additional challenge to the viability tests.
6. Get better use of the commercial and management tools available and assess how well this has been achieved in order to reduce the failure rate of public projects.

In addition, a new Government should consider other changes to the way policy is developed and evaluated, especially:

1. Requiring all public spending, capital and revenue (not just new programmes and projects) to be subjected to the new evaluation criteria (transformational change, greater equity and environmental sustainability) to test its fitness for purpose. Ensuring that current projects are tested as well as future ones.
2. Making allocations of new infrastructure funds conditional on a review of existing spend to ensure that also prioritises the new objectives.
3. Create carbon budgets for every Government Department for both their own spend and for those parts of the economy they are responsible for. These can be used to test environmental viability with the same absolute rigour that applies to funding.
4. Create or consolidate central support resources, to provide critical technical advice on the use and application of new evaluation techniques, to assess the quality of their application and to ensure that proper commercial considerations have been built into project design and delivery.

The intention in this review is not to rewrite the Green Book and its associated material. That is a significant undertaking that will require efforts with civil servants and others to ensure internal consistency. Instead, I have set out a basis here for that more detailed work, with Annex A providing guidance for those revisions. The final recommendation is to establish an independent review panel to take these forward.

## 2 Scope and Approach

The new Government has ambitions to transform the UK economy and society. Three ambitions appear to sit at the heart of its programme;

- Modernisation of the UK's infrastructure and industrial performance to improve productivity and underpin a flourishing economy through use of significant additional public investment in infrastructure;
- Reducing the inequalities in wealth and income between different regions of the UK and people from different economic and social backgrounds;
- Reducing carbon emissions to sustainable levels (net zero by 2050) and tackling environmental threats.

Appraisal and evaluation of public sector projects is controlled by the application of the rules and guidance contained in the "Green Book" published by HM Treasury.[3] That guidance aims to ensure that decision-makers select projects which are financially viable and maximise the present value of societal "utility" as expressed in market prices, subject to capability to deliver. The question at the centre of this report is the extent to which the current Treasury approach will support the delivery of the above objectives, and what changes are needed to ensure it does.

The crucial test is the extent to which the outcomes desired by the Government's policy objectives are measured by the current criteria. In this regard, this report is not arguing that the Green Book is wrong – only that it will not lead decision-makers to choose programmes and projects that will deliver the Government's transformational ambitions. The Green Book is a comprehensive manual that has evolved under constant critical review to ensure that it reflects best practice. The intention is not to replace it with a different paradigm but to modify it to better complement different policy priorities.

The report recommends that the Government's overarching objectives are built into the appraisal and evaluation process, and that all programmes and projects are assessed against them. These could be translated as follows:

- Continue with a measure of maximised societal value using much of the existing methodology as that is still the best way of measuring a "flourishing economy" but only so far as the selected projects maximise the outcomes from …
- Reduced levels of income and wealth inequality measured across all income classes, social groups and geographical dispersion; and
- Reduced levels of $CO_2$ to achieve the UK's climate change goals.

While these measures are necessary, they may not always in many cases be sufficient. Other factors may need to be included depending on the particular policy objective e.g. it would be strange not to consider rates of recidivism when developing a policy on rehabilitation with the Ministry of Justice.

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[3] The use of the term "Green Book" includes all the related publications and supplementary guidance as described in more detail in section 3

Other examples might include the employment rate, which is clearly a vital factor to consider in many Treasury appraisals. Though it is not necessary to every decision. Similarly, raising productivity is critically important to sustain increases in real wages (and/or of course profits and rent) and it is a direct objective of the transformational policies related to new infrastructure investment. However, the evidence around direct drivers of productivity can be mixed, meaning it may not be an appropriate tool for every appraisal.

Changes to the Green Book are not in themselves enough to deliver the transformational change that the policy priorities are seeking. Where there are changes outside the Green Book which would improve the effectiveness of suggested revisions they have been included here. However, the recommended revisions to the Green Book can be made independently of any of those other suggestions.

The approach taken here is to analyse the strengths and weaknesses of the current documentation and make recommendations on how it should be re-written. Annex A to this report draws on the recommendations and sets out some high-level guidance on how this can be done. There will need to be more detailed work done, but hopefully the guidance set out here will provide a useful framework for further review.

The next section of the report describes the purpose and content of the Green Book in more detail and looks at its strengths. Section 4 examines the key conceptual weaknesses for ensuring the delivery of the Government's policy priorities. Section 5 draws on that analysis to make recommendations for change, while Section 6 makes conclusions and thoughts about next steps. Annex A extracts from the report the key guidance for those tasked to do the detailed revise of the Green Book.

## 3 What the Green Book does

The Green Book is a set of guidance (and some rules) about how civil servants should generate policy options, evaluate their social benefit, assess financial viability (in public spending terms), and aid decision making in respect of public sector interventions. These can be new capital spending schemes, revenue programmes or changes in regulations. The Green Book is not deterministic – there is always scope for the inclusion of non-financial and value judgement factors in final decision making. It sets a context in which those judgements and decisions are made.

> The Green Book is itself a summary document of an extensive range of Government guidance. There are 16 published supplementary guidance to the main document. The Green book has to be read and used in the context of other documents – "Managing Public Money", the "Aqua" book on standard of modelling and assurance, the "Magenta" book on evaluation methods, Better Regulation Guidance, the HM Treasury Business Case Guidance (which itself has a version for projects and one for programmes and its own supplementary guidance), and several other documents.

The Green Book is based solidly on mainstream equilibrium economics. It is seeking to evaluate the social benefit and financial cost of marginal changes to public programmes in a context when everything else is assumed to remain the same. These changes can be quite large when whole programmes are considered, but the methods rely on orthodox principles: that social benefit is measured by "utility", that marginal utility declines as quantity consumed increases, that actual prices "clear" markets and reveal preferences, and that consumption *now* is worth more than consumption in the future.

These principles have been subject to considerable criticism in recent years from within the economics profession. The Green Book takes account of many of the criticisms and presents guidance for how to deal with them. For example, it explains how you can measure and include "externalities" (factors caused by market failure), the impact of climate change and other environmental effects and the impact of distributional change whether in a particular region or location, or between people with different income levels[4].

One of the key sister publications is the HM Treasury Business Case Guidance which explains in detail the "Five Case Model", which requires that proposals are examined in five dimensions: Strategic (rationale for the proposal), Economic (net value to society of the proposal), Commercial (can a deal be struck to deliver), Financial (can it be afforded), Management (can it be delivered). The Green Book itself concentrates on the Strategic, Economic and Financial dimensions, while the issues for capability and delivery are dealt with in more detail in the Business Case Guidance. The advice in the Business Case

[4] See in particular Chapter 6 Valuation of Costs and Benefits, pages 39-47, Annex 2 Non-market Valuation and Unmonetisable Values pages 61-76 which includes valuation of environmental factors and climate change, and Annex 3 Sub-national and Distributional Analysis pages 77-82.

Guidance is state of the art, and if followed rigorously should produce properly risk-assessed robust and deliverable project plans.

There are some flawed criticisms of the Green Book worth addressing here briefly. One is that the Green Book ignores multiplier effects. In fact, it does not. It argues that the difference in multiplier effects between different options at the UK level are hard to reliably evidence, and that the multiplier effect of the total public spending will have been considered and included when public spending totals were agreed. However, if there is evidence of differential multiplier effects, especially in considering sub-national interventions, the Green Book does allow them to be used.

Another criticism is that the Green Book requires evaluation of "demand relief" but doesn't allow for "induced demand". A careful reading of the Green Book is that any effect that can be evidenced can be included in the evaluation process. The fact that it may not be is more likely due to other characteristics of the approach rather than the "rules".

These points are important because it means that the Green Book can be presented as a 'value-free', flexible tool, capable of evaluating all kinds of complex and unorthodox proposals, and adaptable to any policy priority. Its foreword says it helps civil servants provide "transparent, objective, evidence-based appraisal and evaluation of proposals to inform decision making". It is an excellent tool for assessing and evaluating choices between different projects in certain circumstances – where the goal is maximising aggregate "utility" in a largely static economic, social and environmental landscape. The next sections show it may not support effective choices when the goal is to change the equilibrium position – whether that is the structure of the economy, distributional choices or tackling climate change.

# 4 Limitations of the Green Book

## 4.1 Values

The economic theory on which the Green Book is based is heavily value laden. This shows in many of the assumptions it makes. For example, in paragraph 4.5 on page 13 it is asserted, following Pareto:

"*Economic efficiency is achieved when nobody can be made better off without someone else being made worse off.*"

This lays a presumption against distributive change as a way of obtaining social benefit, assuming the existing distribution of income and wealth to be optimal.

The Green Book relies on market prices as estimates of social value. An example of this is in Annex 2 paragraphs A2.30 to A2.38 about the treatment of Land Values. A2.30 states "Land value changes arising from a change in land use may be used to derive a social value for use in appraisal". A2.34 and A2.35 argue that the increase in land value less development costs gives you the social value of the development. Literally applied it would mean that private house building must always be better than building for social rent. There are caveats in the later text that could mitigate that result, but it's a stark example of where non-monetised land use (e.g. the value of community facilities) could easily be overlooked by the assumption that market prices measure social value.

The Green Book manages to combine orthodoxy with apparent flexibility using "proportionality". So wherever in the document it is assimilating a new element, it makes it clear that this need only be done if it is likely to be a significant effect and is proportional to the effort required. For example, at paragraph 4.26 page 18 in respect of equality considerations states "Distributional effects should be **proportionately** considered" (emphasis added). Or at paragraph 5.67 page 34, "Where distributional effects (e.g. on income) are relevant they should be appraised". Again, at paragraph 6.48 page 45, "Where appropriate therefore, … assessments should consider whether affected natural assets are being used sustainably."

As concluded below, it is inevitable and probably desirable that evaluation is value laden. But the Green Book must be explicit about the values it is attempting to promote.

## 4.2 Viability

Projects subject to Green Book appraisal must be demonstrated as viable, but only in one narrow sense; they must be affordable within the public expenditure constraints of the evaluating body. The financial viability test is separate from and calculated in a different way from the Cost Benefit Analysis (CBA). In calculating the affordability of projects or programmes, costs are not discounted as social benefit as in the CBA. While you can trade off one part of your activity for another to maximise social benefit, there is no scope to compare the social benefits of an intervention with the social costs of say additional taxation.

Given that financial discipline within the public sector is an imperative laid down ultimately by Parliament, it is not surprising that this test is set out how it is. Projects and programmes have other tests for viability, but these are not dealt with as absolutes. For example, a programme that increases environmental degradation could still be approved if the other social benefits outweighed those social costs. Other policy priorities, particularly those around climate change and distributional equity, could be subject to similar viability tests to strengthen the policy direction of change. This is considered further below.

## 4.3 Holistic considerations

The Green Book is designed for use by busy civil servants to assess interventions and choose between different options for delivery. Most often these are marginal changes in a largely unchanged landscape. Changes at the margin are largely assumed (based on available evidence and experience) to be "linear" to the current situation. For smaller interventions that don't have transformational[5] effects this is a practical and useful system, although it still has potential pitfalls, because lots of small, disconnected projects will add up to substantial change.

There are two types of "holistic" considerations that are not effectively captured by the current approach. The first arise from what might be called project myopia, and the second if changes to infrastructure networks are evaluated on a case by case basis.

Project myopia arises when outcomes are defined narrowly without reference to related programmes. For example, remodelling a road for a bus lane and forgetting at same time to re-surface to remove potholes and provide cycle lanes. This occurs most frequently when benefits of joined up project planning cross artificial governance boundaries. This is about basic value for money, and effective horizon scanning of opportunities to join together projects and programmes. A practical example is that the cost of connecting e.g. solar farms to the Grid is independent of the value of those connections – which leads to development of some solar farms in sub-optimal places to ensure financial viability.

This approach also fails when you consider infrastructure, systems and networks investments. The value of the national grid, our water system, fibre for Broadband, transport networks, the education or health system, do not lie in a node but in the network. A CBA of any small addition is not the right approach to inform how to invest and improve the whole system. This is of some importance in thinking about new systems or significant gaps in existing ones. An evaluation of where individual electric car charging points should be located is unlikely to conclude that we need a new network. Conventional CBA is unlikely ever to support a new charging network, but that will be essential if we are to end dependency on oil based transport. A rural broadband network, for example, is unlikely to be conceived through a case by case analysis.

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[5] Transformational change in this context means changes in the economic "equilibrium" position and encompasses changes to networks and the structure of the economy, distributional change and impacts on environmental change.

Instead, wider considerations should be applied. Projects should not be evaluated singly but as part of a programme. They should be chosen to maximise value over a wider envelope of spending. New interventions should be considered against the value of existing spending, and those spending programmes modified if they don't deliver value or the new policy priorities. There will be opportunities in developing networks to tackle project myopia as well – how can rural broadband or electric vehicle charging points be delivered through other existing projects.

The usual approach to implementing new policy objectives in the public sector is to evaluate them in terms of how much more they are going to cost, with a presumption that existing programmes are justified. What is done much less frequently is comparing the impact of different programmes, both proposed and in train, on policy objectives and switching money to get better outcomes and better value for money.[6] When the objectives require transformational change, the likelihood is that much of existing spend is working against new priorities, so it is imperative to evaluate their impact as well as the new programmes to ensure that all spending is effectively deployed.

These approaches are going to be required given the scale of the changes being proposed. For example to use conventional evaluation techniques for carbon reduction targets would identify significant cost but ignore the impact of the programmes on job creation, energy security, health benefits and net GDP growth.[7]

Requiring programme evaluations and comparisons with "Business as Usual" is more than can be achieved by just changing the Green Book and is no simple undertaking. However, this wider challenge is likely to be needed to complement changes to the evaluation framework.

## 4.4 Equalities

The approach to economic equality within the Green Book is very limited. Paragraph 4.24 page 18 makes it clear that equality impacts must be considered using the Public Sector Equality Duty (PSED) under the Equalities Act 2010, but this is a weak requirement[8] that doesn't properly account for distributional effects. Paragraph 4.26 requires "Distributional effects should be proportionately considered", though 'proportionality' can again be used to avoid detailed analysis.

Two types of distributional effect warrant further concern. Firstly, policies that change the distribution of income and wealth. The Green Book is sceptical about the value of assessing these effects (see paragraphs 5.67 to 5.75 pages 34 and 35). There is a presumption that

[6] For illustration purposes, assume Programme A already implemented costs £100m and delivers 10,000 jobs. Proposal B is made that costs £10m and creates 2,000. So, commonly Government would do A+B costing £110m and delivering 12,000 jobs. If both are scale-able an alternative approach is A-£20m+2xB costs £100m and also delivers 12,000 jobs. These types of effects can only be captured by wider assessment of spending when creating and evaluating policy, programmes and projects.

[7] See Cambridge Econometrics 2014 study

[8] The PSED only requires that impacts and mitigations are *considered* for groups with protected characteristics. Not all distributional effects will discriminate uniformly for a protected group, low income is not a protected characteristic, and neither is geographical location.

distributional effects are bad (e.g. 5.68), but there is a reference to how income can be weighted (5.69) to assign greater value to additional income to lower income groups than higher ones (Annex 3, A3.13 onwards shows how). Paragraph 5.71 suggests that this methodology is challenging, and subsequent guidance argues that distributional analysis should be presented as an aside to the main evaluation. What is true, is that there are a lot of value laden assumptions included in the methodology of weighting.

The second type of effects are those that impact on different geographies. The guidance remains generally concerned with the impact at a national level than the outcome of a deliberate regional policy and much of the Green Book presumes a national outlook. But it does explicitly consider sub-national impacts in Annex 3, A3.3 to A3.10 on pages 77 and 78. For example, paragraph A3.4 requires “results should be presented alongside and separate from UK level analysis”. There is an emphasis on measuring “leakage, displacement and diversion effects, substitution and deadweight” and a presumption that if the outcome for a regional impact is positive for the region but negative (by more) for the UK then you don’t do it. What this illustrates is that maximising “utility” at a UK level is not a good way of developing and delivering regional policy. What is needed are alternative metrics that better measure the objective of a regional policy – whether that is about closing wage or productivity gaps or other measures of distributional difference.

It is clear that measurement and evaluation of distributional and equality effects within the Green Book is weak and requires considerable modification to ensure that policies that promote a fairer society are effectively evaluated.

## 4.5 Discount rates

Discount rates are commonly used in both economic analysis and in evaluating business propositions. It is important, however, to understand the context and purpose of their use, and that varies considerably and makes their use hard to understand, unambiguously.

When a business is thinking about making an investment it is likely to discount the income flows that the investment generates by at least the cost of capital, because if the Present Value of the discounted income flow exceeds the investment, they know they will get their money back. They may well add a risk premium to the cost of capital, because they want to make a profit and guard against fluctuations in the value of the assumed income flow.

In the context of CBA, while the investment may well still be real public money, the benefits are likely to be a combination of “social value” converted into a monetary equivalent and some real cash (e.g. increased tax receipts). The Government still wants to make sure it gets its investment back, in the sense that the future social value created turned into a cash equivalent exceeds the real money investment it is spending now. But it’s not obvious, that the future benefits should be reduced in making that comparison.

Firstly, the Green Book assumes that all public spending is funded, subject to the financial viability test. In consequence, the CBA evaluation doesn’t need to consider where the money comes from, and if it is borrowed what interest is being paid. This is left to the Treasury to resolve in its budgeting role.

Instead a discount rate is used to measure social time preference, and the risk that the future benefits (and costs) don't arise as a consequence of "catastrophic" events. In this case the catastrophic risk assessed excludes project risks (and optimism bias) included in the project evaluation. "Catastrophic" risk is assumed to be 1% per annum.

It can be generally observed that people prefer money in their pocket now to in the future. The actual rate of time preference for an individual may vary considerably – for example 20% plus for a credit card transaction to generally much less than 10 or 5% for high long term borrowing like a mortgage. Social Time Preference is the assumed rate that society as a whole prefers benefits now to those in the future. There is no clear answer to what that should be. The Green Book relies on some clever thinking by some economists who assess that the "social" time preference is somewhere between 0 and 1%. The Government have chosen 0.5% as the social time preference.

There is one other effect that is taken into account. It is assumed that the social value of a £ to a rich person is less than to a poor person. But in the future, the Green Book assumes, we will all be richer at the rate of 2% per annum, so we need to discount future social value by 2% per annum.

When you put all those assumptions together you get a discount rate of 3.5% (risk 1%, plus social time preference of 0.5%, plus wealth effect of 2%). If you accept the assumptions, you must discount future added social value (or cost) by 3.5% annually compounded to compare it with the same value today.

It is necessary to set the preceding paragraphs out in detail, because it is important to understand the consequences when you deconstruct it and change the assessments, to decide how relevant that approach is to the new priorities.

The Green Book itself deconstructs part of it. So, because future values of some parameters are uncertain it reduces the value of some components after 30 years. In particular, it assumes the social time preference rate is 0% after that time. The rate is reduced by another 0.5% after 75 years.

Secondly, for the evaluation of health effects calculated in terms of QALYs (additional quality years of life), the wealth effect is removed as it is assumed that no matter how rich or poor you are the value of life is the same. This means the standard discount rate for health effects is 1.5%.

Thirdly, in assessing benefits which are related to intergenerational wealth transfers (for example interventions that are about mitigating or adapting to climate change) they look to the evidence of the Stern Review. That concluded that it was not appropriate to use the social time preference for such issues, although the Green Book asserts that the wealth effect and catastrophic risk should continue to be used. In the Supplementary Guidance alternative discount rates are given which are up to 0.5% lower than the standard rate.

The effect of discounting future benefits and costs is very significant with respect to the evaluation of options. It is useful to set out what the discount rates are and the present value of future benefits and costs to demonstrate that point:

| Time period in years | 0-30 | 31-75 | 76-125 | 126-200 | 201-300 | 301+ |
|---|---|---|---|---|---|---|
| Standard discount rate | 3.5% | 3.0% | 2.5% | 2.0% | 1.5% | 1.0% |
| Reduced rate STP=0 | 3.0% | 2.57% | 2.14% | 1.71% | 1.29% | 0.86% |
| Value of Benefit/ cost in last year of time period today | | | | | | |
| Standard Discount rate | 36% | 9% | 3% | 0.6% | 0.0% | 0.0% |
| Reduced rate | 41% | 13% | 5% | 1% | 0.0% | 0.0% |
| | | | | | | |

Notwithstanding the risks and values that are being calculated, discounting brings a short-term perspective to public policy decision making. While long-term issues such as mitigating climate change future costs become negligible compared to current costs. It should be questioned whether, in policy terms, that is the correct approach to issues about the viability of the planet.

The two factors left after removing the social time preference rate are the wealth effect and catastrophic risk. Are they the right measures in dealing with climate change for example?

Without serious reforms to the productive economy, assuming 2% growth per annum for ever is potentially at odds with planetary constraints. It implies that UK GDP will double in 36 years (and increase sevenfold in 100 years). If we started planning public services on that set of assumptions, we should be able to provide for all our needs from the growth in wealth and income. Is growth on that scale sustainable or certain? Especially when the conclusion of that evaluation is that we should put off investment in reducing carbon emissions, protecting bio-diversity, enhancing water quality, etc. because the future costs are simply too small compared to the present sacrifices needed?

Similarly, if we are investing to mitigate and adapt to climate change what is the worst outcome that the 1% per annum compounded risk assessment is protecting us against? After all it is one of the catastrophic risks that the 1% is measuring! Only something like a meteorite strike or a nuclear war is on a comparable scale, and if such events were to occur current evaluation would be meaningless anyway.

Despite this analysis it is clear that “we” don’t really care about the fate of people who are sufficiently distant from us. No one would advocate a programme of action now that will “save” humans in say a million years from now. Probably we cannot conceive of helping people in even 1,000 years. “We” do not even take effective action now to help starving people in developing and poor countries. We need a different way of posing these existential questions rather than tweaking a tool that has some serious limitations.

In sum, discounting does have its value, but as a way of evaluating relatively short-term projects of a modest size that are not shifting the policy paradigm and where the costs and benefits are concentrated in those living in today's society. Beyond these circumstances new tools are needed.

## 4.6 Delivery

Options appraisal is the consideration of different ways of delivering a programme and an objective assessment of which is best. Here the public sector considers which skills, knowledge and experience it needs to deliver the planned outcomes and who is best placed to provide them. This may be done by civil servants themselves, but for most capital projects there are a range of contracted parties commissioned to deliver, and this is true for much revenue spend as well. The way in which these contracts are specified, procured and managed is critically important for the delivery of good value for money and effectiveness.

The Green Book does not directly address these issues. Instead, with one exception, matters concerned with commercial terms and risks, capability and deliverability of programmes and projects are delegated to related guidance. Of most importance is the HM Treasury Business Case Guidance which promotes the "Five Case Model". Two of the cases are the Commercial Dimension and the Management Dimension, which are almost entirely concerned with these matters. That Guidance is state of the art and should deliver robust, properly risk assessed deliverable projects.

Notwithstanding that conclusion, there are many examples of poorly delivered programmes and projects in the public sector[9]. It is worth exploring what might be done to improve and strengthen delivery considerations and how the excellent advice in the Business Case Guidance can be more uniformly implemented.

Projects are generally delivered through contracts. A tremendous effort often goes into developing projects using the Green Book business case method. However, commercial experts in the field, with both public sector and private sector experience, believe the effort that goes into the commercial and contractual elements is a very small percentage of the overall effort despite the contract generally being the core document covering project delivery.

How to contract can sometimes seem an afterthought. Frequently those responsible for contracting have not been involved in the project development, potentially they don't know of the wider benefits or requirements, let alone know how to properly contract for them.

This problem is often compounded by poor contract management. Especially in relation to wider benefits and the requirements expected through the project and contracts. The contract manager may not understand the environmental requirements, how to measure their delivery, or push for improved performance for example.

Such issues are highly likely to result in sub-optimal contracts and sub-optimal benefits delivery. Across the public sector this can mean tens of billions of pounds wasted and under

[9] See for example King A and Crewe I "The blunders of our governments"

delivery of benefits.  The NAO has produced many reports that demonstrate that to be the case.  That these issues are not properly integrated into the evaluation process, and therefore threaten the effective delivery of major projects, should be a concern for the use of new infrastructure investments.

The issue of Public Private Partnerships (PPPs) is dealt with explicitly in Annex 4 of the Green Book.  Paragraph A4.3 on page 83 says: "PPPs can be included as an option in long-list appraisal … alongside delivery alternatives such as direct public provision, outsourcing, market creation, not-for-profit solutions, changes to regulation, the use of nudge techniques and grant giving".  Annex 4 gives some detailed advice about how to assess PPPs, but all the other options referred to in this sentence (and in Chapter 4, paragraph 4.14 pages 15-16) are dealt with only in the Business Case Guidance.

There are two types of weakness in the approach set out.  Firstly, some biases in the assessment of PPPs, and secondly, a lack of consideration of the commercial elements of contracting (as just discussed).

The issues around PPP are perhaps now less pressing given the Government's policy position that PF2 should not be used in the future.  However, Annex 4 is still extant and in this context requires significant re-writing.

One of the issues is the treatment of costs.  Where the public sector is paying for projects over their useful life through a PPP then those costs will be discounted.  However, in the Public Sector Comparator the costs are all counted up-front and not discounted.  The accounting treatment is determining part of the outcome of the evaluation for a project that may have the same actual costs and benefits.  It is hard to see how the social benefits of a project can be driven by the accounting treatment.

It may be that the "relegation" of detailed advice on how to manage the commercial and management aspects of project design and delivery to the Business Case Guidance which is reducing the importance placed on those considerations.  But delivery is too important not to have proper focus.

# 5 Recommendations for change

Having considered the weaknesses from the point of view of delivering the objectives set out in the scope, there appear to be two types of recommendations and change needed. Some of these are direct changes to the Green Book, its Supplementary Guidance and other documents in the family of advice. Some are changes to the way the Government does its business. The latter may be more difficult to achieve and are strictly outside the scope. Both are covered because together they will be more effective, but it is also possible to think of ways in which the Green Book can help change the approach and behaviours that seem necessary to deliver the key objectives.

The recommendations, for changes in the Green Book, come in six main areas:

1. As evaluation methodology is inherently value laden, set out clearly the purpose of evaluation is to help deliver transformational change for the economy, reduce income and wealth inequality between social groups and regions including the gender pay gap, and deliver a sustainable environment including meeting carbon reduction targets.
2. Expand the viability testing of projects to include tests sustainable environment as well as public sector finances.
3. Require holistic assessment of projects as part of programmes, and programmes as part of the totality of public sector spending, to test the assumption that everything currently being done is already efficient and effective.
4. In order to assess intergenerational equity, include assessments as a comparator that either exclude discount rates or demonstrate no deterioration in the environmental balance sheet.
5. Include a methodology for assessing the quality of evaluations and business cases in order to test how well projects meet the objectives as an additional challenge to the viability tests.
6. Get better use of the commercial and management tools available and assess how well this has been achieved in order to reduce the failure rate of public projects.

In addition, consider making changes to the way Government does its business that would strengthen the impact of the revisions to the Green Book by:

1. Require, as far as practical, all public spending, capital and revenue to be subjected to the new evaluation criteria (transformational change, greater equity and environmental sustainability) to test its fitness for purpose and ensure that current projects are tested as well as future ones.
2. Make allocations of new infrastructure funds conditional on a review and change of existing spending priorities to ensure that mainstream funding is consistent with the new objectives.
3. Create carbon budgets for every Government Department for both their own spend and for those parts of the economy they are responsible for that can be used to test environmental viability with the same absolute rigour that applies to funding.
4. Create or consolidate central support resources to provide critical technical advice on the use and application of new evaluation techniques, to assess the quality of their

application and to ensure that proper commercial considerations have been built into project design and delivery.

The sections that follow deal with each of the proposed Green Book revisions in order, but also include the relevant changes to Government business as well. As the recommendations are made together, Annex A extracts the guidance and presents them as an instruction set for those that will carry out the revisions.

## 5.1 Make Values Explicit

As argued above, economic evaluation is inherently value laden. This is not currently acknowledged in the Green Book and the values it promotes are not made explicit. This should be rectified.

An additional chapter should be added after the "Introduction" which sets out the purpose of the evaluation. Measuring social value of different projects that are financially viable would still be an objective, but in the context of:

- Proposals that help achieve our carbon emission reduction targets and other environmental objectives;
- Proposals that reduce the Gross Value Added per head gap between different parts of the UK;
- Proposals that reduce income and wealth inequality between different social groups within the economy;
- Proposals that help promote the other objectives of the infrastructure investment.

This doesn't mean that standard business cases aimed to deliver, say, operational efficiency cannot be delivered. Basic Value for Money remains a core objective and where savings can be made without impacting on policy objectives they must be made. However, where, for example, an office move saves costs but harms the environment, or widens regional inequalities alternatives need to be considered. What this framework does deliver is to place socially progressive projects on a par with cost considerations, as those objectives are now part of what every project needs to achieve.

The Green Book places a lot of emphasis on the Five Case Model for preparing business cases. This model needs to be revised to make explicit the objectives set out above. The Strategic case should reflect the new priorities and the need to horizon scan all relevant public spending projects to evaluate their comparative impacts. The economic dimension should include the equality objectives and those of new infrastructure investments.

There needs to be added an Environmental dimension to make it a Six Case Model. The policy requirements needed to meet the challenges of the environment require greater change to the economy than anything seen since the Industrial Revolution. To achieve zero net emissions of Green House Gases by 2050 requires not just changes in energy production but significant reductions in consumption of non-renewable resources and waste.

## 5.2 Viability tests

One of the features of the Green Book is that while the social value tests are relative and allow trade-offs between benefits and costs (for example a Benefit-Cost Ration (BCR) can be positive even if it includes negative impacts), the financial viability test is absolute. If the funds cannot be identified the project cannot proceed no matter how beneficial the social value. It is possible to require this test not because it is a feature of the Green Book but because it's a feature of how public finances are managed – each public body has a budget that constrains its expenditure.

There is a case for testing projects for their viability against other policy objectives, in particular carbon dioxide emissions.[10] One way this might be achieved is if the scale of the carbon emissions reduction required to achieve net zero emissions before 2050 was allocated as a policy objective to each Government department or public body in the same way that financial budgets are allocated. Then a key test would be whether any project or programme makes a claim on a departmental carbon budget, providing an absolute constraint in support of environmental aims. This test, like the financial test, would not be subject to discounting as the carbon budget is an absolute limit just as finance is.[11]

Giving every department a carbon budget is beyond what can be achieved by changing the Green Book however desirable it might be in achieving environmental objectives. A less rigorous test can be adopted in the context of the Green Book alone. This would require the Carbon impact of projects to be identified and reported as part of the decision-making process. This would be an explicit requirement of the expansion of the Five Case Model to include the environmental dimension. How this test might be scored could be done in a variety of ways. See section 5.5 below for some.

This approach could be expanded to include other key objectives if appropriate tests can be developed. For example, reducing economic equality might be measured through statistical dispersion of income distributions and/or productivity levels with a requirement to report the impact of all options on those measures. The current methodology is to give more weight to social value accruing to lower income than higher income groups. This has two significant drawbacks. Firstly, the size of the weights is purely subjective (no matter what the research underpinning it says). You could change the weights to get the results you want. Secondly, the test is still maximising social value – so it is possible even with weighted income distributions to have an option that both maximises social value and increases

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[10] By Carbon emissions is shorthand for all Green House Gases. The tests devised need to be simple to be universally applicable but are part of a wider metrics that need to be developed quickly.

[11] Establishing Carbon budgets in this way is something that Cities have been better at with their closer connection to all activities in their location. See for example what Oslo have done: http://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2018/05/Oslo_Climate_Budget.pdf

This suggestion is outside the remit and if taken up would need careful consideration. While the tests might be carried out through the Green Book, allocation of targets, their trading and other considerations would need to be informed by expert opinion and not just another Treasury target income inequality.  Much better to measure and test the objective you are seeking to achieve rather than an indirect proxy.[12]

So, the key requirements are to change the Green Book by:

- Adding an environmental dimension to the Five Case model, which will require the carbon impact of any project to be assessed and considered against environmental objectives no matter what the prime purpose of the project is;
- Expanding the economic dimension of the Five Case Model to require measures of income dispersion and sub-national GVA gaps to be produced for all projects;
- Defining absolute measures of environmental impacts and economic equality to replace the relative measure currently implied by the CBA methodology.

The new Government may also wish to set departmental targets for environmental and equality objectives, so that the tests set in the new Six Case Model can be made absolute viability tests in the same way financial viability tests currently are.

## 5.3 Holistic assessments

As we have seen, a weakness of public policy appraisal is to consider each project in isolation from wider public interventions.  By looking at projects as marginal changes to continuing activity it is possible to overlook important impacts.  One project on its own is unlikely to be transformational, so it becomes possible to ignore (as not proportionate) costs and benefits which in practice are important over the totality of public interventions.

One way to tackle this weakness is through direct policy levers.  For example, the Treasury could insist as part of each Spending Review that Departments assess their programmes against the environmental and income distribution and productivity effects that they have. Access to new Infrastructure funding could be predicated on a detailed examination of the extent that existing capital and revenue programmes could deliver policy objectives, and that transformational change in existing programmes needs to be designed into approval for use of new infrastructure funds.

There is a case for a review of existing spend at the start of a new Government as these changes are being introduced.  Large scale capital projects often take years to plan and implement and the most immediate effects seen under new Governments are the result of decisions made by their predecessors.  It will be important not to allow policy inertia from the past to determine the bulk of early expenditure.  Existing business cases should be re-tested under the changed rules to ensure that they are still fit for purpose.  There should be a comprehensive review of “Business as usual” spend as well as that contains the greatest potential to help meet new objectives as it is many times greater than the scale of the new investment.  If there are to be regular Spending Reviews, every three years or so, there should be a further re-testing of the alignment of all public spending against the key policy objectives.

[12] Models that measure other outcomes than just aggregate social value have been developed for some of the new Combined Authorities and some strategic transport projects by KPMG amongst others

The Green Book could be revised to emphasise that projects should not be considered in isolation from wider programmes of activity, and programmes should be considered in the context of the impact of total spending by the public body. This should be written into the criteria for the long listing chapter and brought out in the presentation chapter. There should be added an Annex or Supplementary Guidance on how Departments and other public bodies can carry out whole programme and total spending reviews using standard techniques such as zero-based budgeting, not to identify savings but to help deliver transformational change in existing programmes and achieve environmental and economic equality goals. Other ways of reinforcing holistic assessments are considered below in 5.5.

## 5.4 Intergenerational evaluations

Recommendations above suggest that there should be new environmental tests included in all assessments using different measures of social value such as the level of carbon emissions. Standard Cost Benefit analysis still has a role to play in assessing the relative value of different interventions as an aid to decisions. However, the existing Green Book advice on how to do these, in particular the Supplementary Guidance on Intergenerational assessments, is inadequate for the new purpose.

The advice on discount rates, both in the Green Book and the Supplementary Guidance, needs to be rewritten. For all projects the environmental assessment, apart from its direct impact in terms of, for example, carbon emission levels, needs to be stated in terms of the future society as well as today's. As was explored in some detail in section 4.5 above, there are some significant difficulties in working out what the best way of doing that is.

One approach is to remove discount rates from assessments especially for long term projects (those of, say, more than 20 years life). The difference between assessments with and without discount rates gives an estimate of the extent of wealth transfer that is taking place between generations and will show up particularly where current costs are being transferred to future generations. As shown above though this is technically wrong, as it implies that there are no limits on the extent to which current decision makers are willing to make sacrifices on behalf of future generations no matter how far in the future that might be.

An alternative approach might be to think about a balance sheet assessment now and, say, every 30 years of natural assets and the state of key networks and systems, and ask the question what investment is needed to ensure that there is no degradation in the value and worth of assets transferred to the future. For example, when limited natural resources such as oil and gas reserves are consumed there would be a negative movement in the assets on the country's balance sheet that would need to be made good, by for example creating a renewable source of energy delivering the same level of output and action to remove the carbon emissions released. The same approach will determine the level of investment needed to maintain networks or change them to more sustainable forms.

The balance sheet approach is well suited to the allocation of resources across major spending areas, but it is much harder to apply to smaller programmes and projects because the scale of the change will not always show up in the evaluation. Interestingly though, at the large scale the difference between removing discount rates and the balance sheet approach is very similar in terms of the results and conclusions of the appraisal. Therefore the pragmatic solution is to require one or other of the two techniques to be applied to all projects to assess intergenerational effects, acknowledging the limitations of removing discounts for time distant effects but using it as a proxy for the balance sheet approach where that is too difficult to assess.

This is also an area where the weakness of using current market prices as a measure of social value now and in the future is apparent. Economic theory suggests that with perfect inter-temporal knowledge and competitive markets, current prices will factor in present and future consumption levels. However, even where there is some validity in the analysis, such as some commodity markets, the prices will reflect a heavy discounting of future consumption as prices are not measuring social value but anticipated private profit. The Green Book has a section on future prices (entitled "Adjusting for Inflation" paragraphs 5.11 to 5.13 pages 23-24) but it advises not to make differential adjustments without strong evidence. However, the likelihood is that many raw material prices will rise in real terms if there is no mitigation of planetary growth and the default should be to adjust for this. An annex can be added with a schedule of rates for those carrying out assessments.

## 5.5 Quality of assessments

There is a risk that despite the changes recommended above evaluations will still fail to capture and deliver the objectives that are going to be set out in the "Values" section of the revised Green Book. A classic Government response to setting objectives and targets is to inspect and assess the extent to which they have been achieved. Applying a scale such as "Failing", "Inadequate", "Needs improvement", "Good" and "Outstanding" to assess the worth and approach of projects and evaluations will change the mindset of those doing the work and have as much if not more impact on what is done than the changes to the rules themselves.

There are important weaknesses in the Green Book that can be tackled in this way. One of the difficulties with the existing approach is that dimensions that are considered important can be ignored by the "proportionate" rule. This includes environmental and distributional effects, non-monetised costs and benefits, as well as enabling evaluators to consider only marginal change rather than the need for transformational change in larger systems. The evaluator can assert that these effects are small, or it would be disproportionate effort to calculate and include them. An assessment of the quality of an evaluation can test the extent to which projects, their design and evaluation took account of the need (that will be stated in the Values part of the Green Book) to deliver distributional benefits, reduce the impact of climate change and support the regeneration of UK infrastructure.

What will be needed are a set of criteria that map the content of the project and its evaluation onto the subjective labels by which it is going to be judged. Kate Raworth in her book "Doughnut Economics" (pages 215-219) sets out a possible scale in the context of environmental effects. Although that was designed for business it could be adapted for public sector evaluation.

The first stage was "do nothing" – continue with business as usual and only adapt to any changes in regulations that require changes in approach. This would include all projects and their evaluations that measured no environmental effects and put in place no mitigation even if the argument was considered disproportionate.

Next is "do what pays". This is about projects that make savings in energy costs, recycle materials and other changes that incidentally improve environmental effects, but which are justified principally by their impact on the financial viability of the project. For example, in a building project including the $CO_2$ generated by concrete (almost 1 tonne of $CO_2$ per tonne of concrete) or steel (almost 2 tonnes $CO_2$ of per tonne of steel) and replacing where possible if the design allows with cheaper materials that generate less $CO_2$.

The third stage is "do your fair share". This is an approach that recognises the need to tackle the key requirements of the revamped Green Book, but assesses the scale of mitigation by a proportionate calculation. So, in the above example, continuing to use concrete and steel but planting some trees in the scheme as mitigation.

The fourth stage is "do no harm". This requires the scheme to design in a zero impact on $CO_2$ emissions. Materials are substituted to reduce impact, and where that is impossible, full mitigation is generated and alternative designs considered that have less impact.

Finally, we arrive at "be generous". This sets out to design solutions that improve the environment and put back into the living systems that we are part of. This requires projects to be considered as part of systems and not stand-alone additions and can only be achieved by taking a holistic approach to public spending and its impact.[13]

By analogy, similar tests can be devised for the other key dimensions, such as equality and economic transformation.

One can imagine a grid that works for each of the key dimensions. It might look like this:

[13] The "Be Generous" approach is not just about carbon emissions but all 9 of the planetary boundaries proposed by international Earth-system scientists: climate change, ocean acidification, chemical pollution, soil degradation, freshwater withdrawals, loss of forests, biodiversity loss, air pollution and ozone layer depletion

| Environment | Equality | Transformation | Score |
|---|---|---|---|
| "Do nothing" – business as usual, no environmental assessment | Carry out PSED without mitigation with no distribution assessments | Marginal project not connected to wider design | Failing |
| "Do what pays" – environmental assessment and minimise CO2 effects in standard design | Distributional assessments to ensure no widening of gaps | Projects aligned to priority outcomes but not connected to wider spending plans | Inadequate |
| "Do fair share" – Some wider mitigations including help to mitigate inherent CO2 effects | Projects and programmes selected that close regional GVA per head gaps and standardised income distribution | Projects as part of programmes aligned to key outcomes within one sector or industry group delivering modernised systems | Needs improvement |
| "Do no harm" – zero impact on CO2 emissions by design, including by connecting across sectors | Projects delivering wider programmes tested to deliver significant reductions in income inequality and wealth transfer | Investments that deliver benefits of re-designed networks and industry missions in a vision of a sustainable future | Good |
| "Be generous" – reduced CO2 emissions and other improvements to living systems connecting spending decisions across accountability boundaries | Community based developments that support self-regenerative growth | Part of whole system review and bends mainstream funding and links different infrastructure networks and industry missions | Outstanding |

Clearly, the table is only an overview of what a proper evaluative system would look like and it will need some considerable development work. It will be important though that the final shape is subject to high level approval as it is the method by which the values of the Government are going to be imbedded in the approach of civil servants to project design, assessment, evaluation and approval.

The need to do this scoring would be built into the Green Book rules and it can be an instruction to do a self-assessment and require it to be published as part of the evaluation or otherwise available (e.g. as part of a freedom of information request). It would be better and more powerful if these self-assessment scores were subject to external examination and review. That would require some external body (perhaps the NAO, or as part of

Gateway reviews) to carry out these tests and report accordingly.[14] Given that part of what needs to be done is change the culture of how projects are conceived and designed and not just how they are evaluated this might be the most powerful tool of all.

## 5.6 Better delivery

Great policies often fail because of poor delivery. While the Business Case Guidance covers how to deal with the Commercial and Management Dimensions of projects in exemplary manner, there is still too much failure to deliver effective outcomes. This is a particular concern in light of the scale of the planned new infrastucture investments.

It is less clear what changes are needed to make delivery more effective. But one key issue is to get an early focus on commercial and performance elements to understand how they can be defined, measured, and contracted. This is often an afterthought when the project has already been agreed. Suggestions as to how to improve performance are:

- Get the right people included from the start in project design. The Green Book is not explicit about what makes the best team to design, appraise and evaluate projects, so it is recommended that a chapter is added to cover this – and to ensure that commercial, procurement and management expertise is there at the start.
- Commercial and Management issues are not in the core documentation, except to deal with PPPs. Without replicating all the advice in the Business Case Guidance, further details about the processes needed to produce deliverable plans within the core Green Book itself are necessary
- The Green Book requires corrections to optimism bias by adding to costs and reducing benefits. Some of this is added because risks have not been properly assessed at early stages in project appraisal including those relating to commercial terms and management. Consider adding weight to these adjustments unless appropriate commercial, procurement and management expertise has been included from the outset and involved in properly assessing risks.
- The last section recommended a quality assessment of the evaluation of proposals in three policy dimensions. This framework could be extended to include proper assessment of the involvement of delivery skills in the development of the Business case.

In addition, there could usefully be some additions to the Business Case Guidance document. In what is otherwise an excellent document there is space for guidance on how to establish appropriate contract management arrangements both through project implementation and in operational mode. Especially where new interventions are being developed there can be a tendency to treat contract management as an afterthought when it should be core to project design.

There is also space in the Business Case Guidance to consider how additional social value can be added to the core outputs through contracting. This might be about terms and

[14] See also Tizard and Walker "Spending fairly, spending well" published by the Smith Institute that recommends an independent body to help assess how well public money is being spent

conditions for workers, creation of apprenticeships and training, or about contributions to delivering other parts of the policy priorities like reduced $CO_2$ emissions.  There should be useful advice on what to seek and how to manage it together with examples.

Interventions in the wider public sector should include specialist central support to help with the wider opportunities and how to deliver, and contract, for them. Project managers may not have an understanding of environmental opportunities or risks compared to a specialist in the field.

Secondly, greater focus on contract management, including the potential for specialist (central) resource to support delivery of the wider benefits. Potentially this could mean having the specialist support managing those parts of a contract directly to ensure they happen - it would seem better to have such specialists directly delivering rather than being an often-ignored voice trying to persuade others of the importance of their social, economic, or environmental area.

# 6 Conclusions and further work

This review has concluded that there are changes that need to be made to the Green Book to ensure that projects will align with the policy priorities of the new Government. The revised Green Book will feature:

- A revised set of objectives of evaluation that will emphasise the need to deliver on the agenda of transformational economic change, reduction in inequality and effective mitigation of climate change;
- Inclusion of environmental considerations as part of the strategic appraisal of every project;
- Guidance on who should design and evaluate projects to ensure that key commercial and management skills are included;
- Guidance on how to carry out holistic assessments of programmes and projects by including the impact of total public spending by each department and agency, so that individual programmes and projects are set and approved in a wider context;
- A requirement to assess the intergenerational wealth transfer of projects in ways that protect our infrastructure and environment;
- New viability tests that projects must meet alongside the affordability test;
- A requirement to assess the quality of the appraisal and evaluation in the context of how well it meets the new objectives.

A more detailed set of "instructions" about how to implement these changes is set out in Annex A.

The review also concludes that some other changes to how Government does its business would complement and reinforce the effect of the changes to the Green Book. These suggestions are beyond the scope of this review, but include:

- Requiring a testing of all current spending plans and capital projects against the key policy objectives;
- Make successful bidding for new infrastructure funds conditional on such testing and bending of mainstream funding towards the new goals;
- Create Carbon budgets for each department so that the environmental viability of public spending is assured;
- More and better support for commercial, procurement and management skills needed to effective design and deliver projects so that the public pound goes further.

This review starts a process of revising the Green Book to ensure that it can support the delivery of the Government's transformational ambition. There is still much more to be done.

The Green Book is a tour de force when it comes to evaluating business cases. While some of the suggestions made in this review may seem radical, they are building on the excellence that already exists, but adapting it to changed circumstances. That is what the Green Book in its various manifestations has done over many years and will continue to do so.

# Annex A – Draft outline instructions for revision of Green Book

## Green Book

The notes below follow the structure of the Green Book and its annexes to demonstrate at a high-level where the recommendations made in the main report should be incorporated.

## 1 Introduction

The layout of the structure of the Green Book needs to be revised to take account of the changes being made.

There is benefit in setting out here in a change to Figure 1 the explicit role that the new “values” will have within the structure by showing that achieving them is the objective of the appraisal methodology

## 1A Values

A new chapter that sets out the “Values” to be maximised drawing on the recommendations made in section 5.1 of the report. This will indicate that maximising social value is subject to achieving the other transformational changes.

Section should also place emphasis on the need to achieve Value for Money and take steps to avoid project myopia and scan for opportunities to achieve multiple objectives through option generation

## 2 Introduction to Appraisal and Evaluation

“Rationale for appraisal” to be re-drafted to emphasise the Values chapter.

Add new section on “Choosing the team”. Before you start an appraisal ensure that there is adequate access to the skills necessary to carry it out: policy leadership, technical and operational skills, analysis capacity, commercial skills, and empathise that projects will be partly assessed according to how well they have done this.

“Generating options” to include need for zero based budgeting of existing spend and horizon scanning for opportunities to connect with other agencies and departments to help find and implement more “holistic” solutions.

“Distributional analysis” to be revised to make it clear this is a requirement and by reference to 1A what is acceptable.

Add a section on “Environmental analysis” to capture the new requirements for an environmental assessment of all projects.

## 3 The Overarching Policy Framework

Reference to the Five Case Model to be the Six Case Model with the addition of an environmental case.

In Box 3 and in the summary of the Strategic Dimension, ensure that "holistic" approaches to generating options is highlighted, including: considering networks and systems as a whole; ensuring opportunities for multiple interventions across Governance structures are considered; challenging existing programmes as well as considering additional spend.

Similarly, for the economic dimension add the requirement to ensure that distributional analysis is always required, and to consider network infrastructure effects (see main report)

Add section on Environmental case. This will be a summary of the changes being made to HMT Business Case Guidance, but will set out briefly the imperatives to achieve our climate change and other environmental challenges.

Expand the sections on Commercial and Management Dimensions in line with the recommendations in the report.

## 4 Generating Options and long-list appraisal

Revise the "Rationale for intervention" to remove the definition of economic efficiency in 4.5 and refer back to the "Values" chapter.

Expand Box 4 on market failure to include distributional and environmental effects explicitly.

Generating the long list should be revised to make explicit reference to the need to see the impact of the proposal in context of wider public expenditure plans, to identify how to measure and exploit synergies with other public interventions.

Revise the references to "Equalities impacts" from 4.24 onwards to make clear the objective must always be to reduce distributional inequality either between groups or places and not just the PSED.

## 5 Short-list Options Appraisal

There is a lot of work needed to revise this chapter as many of the specific recommendations for change impact on the assessment of the short-listed options. Specifically:

"Adjustments for inflation" needs to reflect the long-term resource cost arguments in 5.4 of main report.

All projects need to be assessed for environmental effects, so long term effects need to be examined (i.e. revise Time Horizon section).

Viability tests for environmental effects need to be included, and for distributional effects if a framework for establishing them has been agreed.

Discounting and time preference section needs to reflect the recommendations in 5.4 of the report on Intergenerational evaluations.

Box 9 on Benefits register template needs revision to reflect new "Values"

Section on optimism bias should be adjusted to reflect the additional costs to be added if the team doing the appraisals lacks commercial and management skills

Summary measures of social welfare to include indicators introduced in the Values section especially around equalities, environment and productivity.

Equalities and distributional analysis sections to be revised to make clear these are not optional but central to the evaluation of outcomes.

Strengthen the appraising projects and programmes and portfolio appraisal sections to emphasise that as a rule projects and programmes need to be seen and evaluated in wider public expenditure plans.

Box 13 to be revised to include impact of CO2 viability, wider programme evaluation and centrality of equalities considerations.

## 6 Valuation of Costs and Benefits

This is largely a technical chapter about how to evaluate costs and benefits. Some of it depends on specific Departmental guidance (e.g. relating to environmental or health effects) and that guidance needs to be reviewed by relevant policy teams.

Some specifics need revision though:

Multiplier effects should be evaluated and in evaluating between options some of these are bound to be relevant e.g. between projects where the decision is made to buy within UK or abroad, or regional effects within the UK.

The section on transfers needs revision – transfers may not affect the total value (as argued in 6.7 of the chapter) but they clearly have a distributional effect which under the new approach is a relevant consideration and so should be evaluated.

The section relies heavily on inferring market prices to help assess non-monetised values, but this is a risky approach. For example, 6.23 and 6.24 values alternative uses of land by effectively who will pay the most, which undermines community and social uses of land. There may be a need to include policy driven values where the techniques being used (e.g. in Box 14) are potentially biased.

The section on PPP needs to reflect current Government policy subject to any further revisions.

## 7 Presentation of Results

This section needs considerable revision.

The appraisal of options needs to show which wider public expenditure programmes and objectives it impacts on and demonstrate that this has been widely considered.

The results table needs to include the environmental viability test. It should also show the "intergenerational distributional effect through either the removal of discounts or the balance sheet assessment (see 5.4 of main report)

The results table need to include the impact on distribution at both regional and societal level for each of the options.

The results table should indicate how project contributes to wider industrial strategy objectives and show relevant key indicators.

The results table should include the evaluation score of the assessment itself (see next chapter and 5.5 of main report).

## 8 Monitoring and Evaluation

This chapter gives sensible advice that does not need to change much. However, here would be the best place to set out the assessment of the quality of the evaluation scheme outlined in 5.5 of the main report (and including the suggestions in 5.6 on evaluating the effectiveness of delivery of projects and programmes).

## The Annexes

The Annexes give more detailed guidance on aspects of the ideas given in the main chapters. Where, above, changes are suggested to the approach these need to be followed through into the relevant annexes. What follows therefore is mainly high-level advice about how to make the right changes and isn't comprehensive.

## A1 Long List Appraisal

Changes suggested in chapter 4 need to flow through to this annex.

Boxes 17 and 18 need to reference distributional and environmental considerations and as part of the sustainability potential.

Equalities and distributional effects are not optional (so revise A1.13 to A1.17).

Optimum short list selection needs to reference sustainability and intergenerational effects.

## A2 Non-market Valuation and Unmonetisable Values

Environmental and natural capital – Firstly, environmental effects must be evaluated. In addition, the advice here needs to be reviewed by policy teams as it derives from DEFRA's "Environmental Valuation Look-up Tool".

"Amenity value" is assessed by changes to house prices. Given the vast difference in house prices in different parts of the country and unequal assess to housing revised approaches should be considered.

Approaches to climate change evaluation are determined by "The Climate Change Risk Assessment (CCRA)" and "Accounting for the effects of Climate Change". As above Policy teams should review this advice.

It is suggested that changes in land values measure changes in social value, but this will lead to biased results and alternatives need to be considered.

BEIS publish guidance, background, rationale and data tables that are recommended for use in measuring energy efficiency and green house gas values. The advice and data tables need to be reviewed by environmental policy teams.

Unmonetised values present a difficult area as they are likely to be important and efforts need to be made to put a value on them, otherwise they will be just recorded and easily overlooked.

## A3 Sub-national and Distributional analysis

This section needs significant revision. It suggests that sub-national results are to be presented but UK level analysis determines the outcomes, which is different from the new "Values".

It provides a scheme for measuring the social value of distributional effects which is highly subjective (meaning that a wide range of different values can be argued for) and only gives relative weight to these effects (so for example if the benefit to the rich is sufficiently great it can out-weigh the disbenefit to the poor. This report argues that absolute variations in both regional and societal equalities should be measured and use to score projects.

## A4 Public Private Partnerships

This annex needs to be renamed as about "Delivery Considerations" and PPPs made only a small part of the chapter. Instead, here is an opportunity to make more detailed references to commercial and management issues from the Five (Six) Case Model and in particular bring in contract management and the delivery issues covered in 5.6 of the main report. See also the comments made in 4.6 about this annex.

Some of the more "practical" aspects of the Treasury's Business Case Guidance documentation should be brought into this Annex, and a cross reference to its use being part of the way the quality of evaluations will be assessed.

## A5 Uncertainty, Optimism Bias and Risk

The annex refers to relevant Green Book Supplementary Guidance that should also be reviewed.

The Annex needs strengthening with respect to contractual negotiations and management risks. It is a little superficial in terms of risk transfer to the private sector (e.g. A5.34 is very weak) – it needs more analysis of which risks can be transferred to the private sector, the assessment of the cost the public sector pays for that transfer compared to carrying the risk itself, and the capability of the private sector to carry the transferred risk (as otherwise it comes back to the public sector).

The list of service risks (Box 25) only covers a limited dimension of environmental risks.

Reiterate the requirement to increase optimism bias for projects that have not had appropriate commercial and management team members developing the project.

## A6 Discounting

This is a fair presentation of how to do discounting and the component parts of the current discount rates. The section needs to be revised to take account of the concerns presented in the main report and changes to chapter 5 about the inadequacy of discounting to measure and evaluate intergenerational transfers.

Set out how the alternative assessments are to be carried out and presented.

## New A7 Assessment of Evaluations

Either here or as additional supplementary guidance set out how to carry out the assessment of the quality of the evaluation using the scheme developed in section 5.5 of the main report.

## New A8 Techniques to consider projects in wider public spending context

Throughout the revised Green Book there will be references to considering the project in the context of wider programmes and other public sector impacts. A new Annex needs to be written to set out different techniques for doing this work and pointing to other reference works where more technical detail is available. This will include:

- Ways of doing zero based budgeting or similar techniques that assess the impact of current spending against outcome priorities;
- Common themes of where spending in one area of public policy impinges on other areas to help provide check lists of areas to examine;
- Methods of horizon scanning and wider consultations to identify other ways in which projects can overlap.

There will be a link between the methods set out here and the scores in the assessment of the quality of evaluations in A7.

## Other documentation – Treasury's Business Case Guidance

The Green Book refers to and relies on much other guidance and public publications.

Of particular significance is the Treasury's Business Case Guidance. As the main report makes clear, it is a robust guide to helping to deliver successful projects, but some of its guidance has been missed in the practical application of projects. Therefore, the Green Book itself needs to refer to it more strongly.

The business guidance itself needs to be strengthened on guidance on appropriate contract management arrangements, and how best to capture additional social value through contract clauses (see 5.6 of main report).

Other documentation also needs to be reviewed for consistency with the revised approach to project evaluation consequent on implementing these changes.