

Wellbeing Guidance for Appraisal: Supplementary Green Book Guidance

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The guidance has been prepared in accordance with the established process for Green Book supplementary guidance by the Social Impacts Task Force through a specialist cross government sub-group on wellbeing appraisal.

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1. Introduction and background

This guidance explains where, when and how wellbeing concepts, measurement and estimation may contribute to the appraisal of social, or public value in Green Book appraisal. The guidance is supplementary guidance to HM Treasury's (HMT) Green Book,¹ which provides the central government guidance on appraisal and evaluation, and the Better Business Case guidance, as well as the Aqua and Magenta books.² This means it must be used according to the framework and processes provided by the Green Book five case model alongside existing welfare estimation methodologies.

1.1 What is wellbeing?

Wellbeing is about how people feel. Throughout history, wellbeing has been the subject of philosophical, sociological and wider scientific thinking. Since early developments in economics, the concept of wellbeing has been implicitly and explicitly expressed through utility theories. More recently, wellbeing has been associated with a desire to go beyond the use of a single measure of performance using Gross Domestic Product (GDP). Improvements in the measurement of wellbeing measurement in the second half of the twentieth century have enabled consideration of wellbeing as part of the microeconomics of social welfare.

Throughout modern times, the UK government has always had the welfare – or wellbeing - of the population in mind. It has been officially measured in the UK since 1991 through the British Household Panel Survey, more recently incorporated in the Annual Population Survey, and covered by the wider Office of National Statistics (ONS) Measuring Wellbeing Programme since 2011. The ONS defines wellbeing as “‘how we are doing’ as individuals, communities and as a nation and how sustainable this is for the future.”³ Personal wellbeing is measured by the ONS through subjective reports of satisfaction, purpose, happiness and anxiety. The ONS also produces indicators on areas of our lives that have been shown to be most important for personal, community and national wellbeing.⁴

1.2 Wellbeing in policy development

Wellbeing evidence and research can provide additional insights into:

- the relative importance of policies and objectives to the public
- choices about implementation strategies

The datasets and research on wellbeing now available have increased the scope to use wellbeing evidence across policy development. Figure 1 provides an overview of where wellbeing evidence and research may be used.

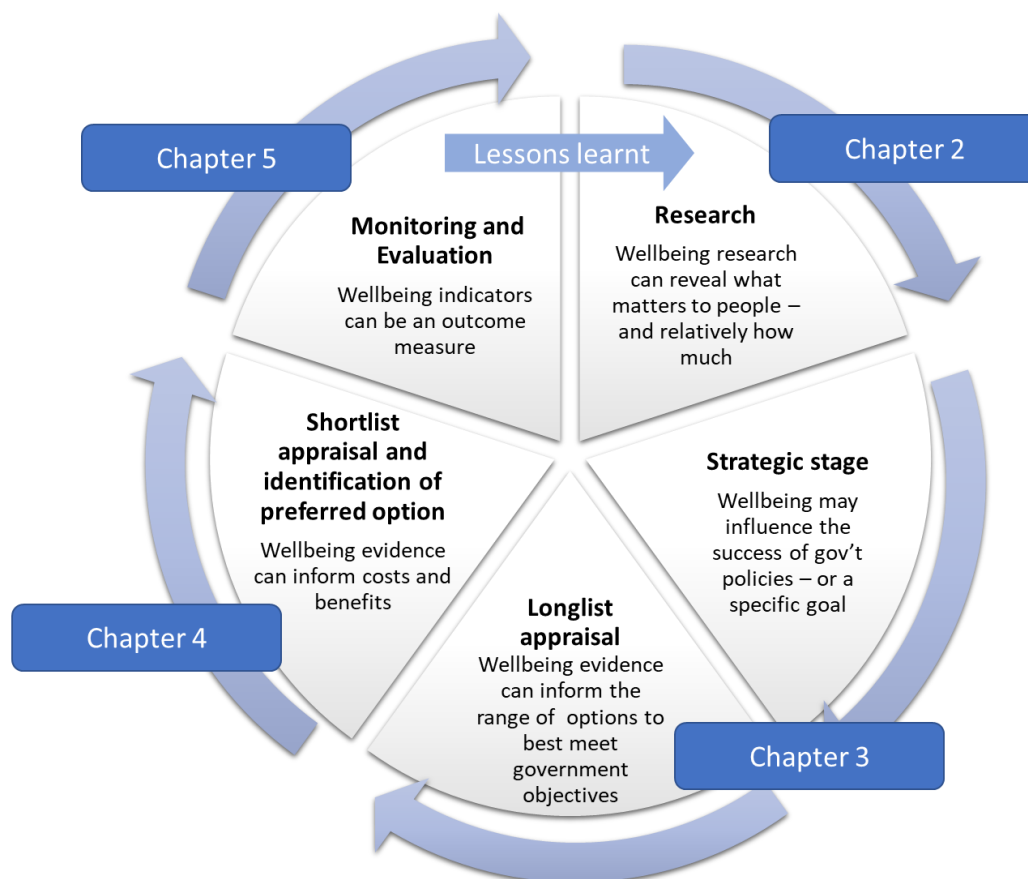
¹ [HM Treasury Green Book](#)

² HM Treasury [The Magenta Book](#); [HM Treasury The Aqua Book](#)

³ [Measures of National Well-being Dashboard](#)

⁴ [Measures of National Well-being Dashboard](#)

Figure 1: Wellbeing in policy development



Source: *Outline of Key Appraisal Steps from The Green Book (HM Treasury, 2020, Box 2 page 6)*, amended to add wellbeing considerations and background research stage

Research: Strong and credible causal wellbeing evidence can be helpful as part of the initial research that predates policy formation, revealing what matters to people – and relatively how much.

Strategic stage: This can in turn help to inform choices about policy objectives and priorities.

Longlist appraisal: Wellbeing evidence can also help to shape choices of how to achieve a policy objective and the choice of implementation options. Similarly, it can form a useful part of the evidence used in deciding the service scope and service solution at the longlist stage.^{5 6}

Shortlist appraisal: At this stage, the choices concerned consider different implementation options with varying levels of ambition, risk and cost. This requires data from more focussed studies or from shared values if available. Where evidence allows, wellbeing questions and approaches can be used along with existing approaches.

Monitoring and evaluation: Wellbeing can also be valuable as part of the evaluation of policies. This includes the assessment of proposals intended to have a direct impact on wellbeing. Wellbeing is also potentially a useful way of evaluating collateral effects resulting from policies

⁵ See the Green Book paragraphs 4.24 to 4.45 on longlist appraisal; Project Business Case Guidance page 29 to 32

⁶ See in more detail Project Business Case Guidance page 29 to 32

that are not specifically aimed at wellbeing results. Wellbeing effects may reflect systemic effects across society and the economy in areas such as health, education, mobility, communication, working conditions, local environment, public spaces, crime, social cohesion and public safety. They may also assist in quantifying aesthetic and cultural issues.

1.3 Guidance structure

The remainder of this guidance is structured as follows:

Part I: Background and overview for analysts, policy professionals and decision-makers

- [Chapter 2](#) provides an overview of wellbeing evidence and how it may relate to the standard economic assumptions generally used in formulating and evaluating policy options
- [Chapter 3](#) sets out the specific steps which analysts can take to understand where, when and how wellbeing evidence can be incorporated in compiling the strategic case and in longlist appraisal

Part II: Practical steps for analysts

- [Chapter 4](#) offers a step-by-step guide for analysts on how to incorporate wellbeing into consideration of social / public value and its use in social cost-benefit analysis
- [Chapter 5](#) discusses how wellbeing can be incorporated in the monitoring and evaluation stages of the policy process
- [Chapter 6](#) provides a checklist for analysts incorporating wellbeing into appraisal

Annexes: Further background

[Annexes A1 – A5](#) provide background information to aid understanding and technical detail on the wellbeing literature discussed in this guidance; they include tables of values from wellbeing research, sources of further reading and detail on wellbeing measurement

2. Wellbeing evidence and assumptions

This chapter summarises how wellbeing is measured in official statistics and provides some of the evidence.

2.1 Measuring wellbeing

The Office for National Statistics (ONS) uses four survey questions to measure **personal wellbeing**. The questions are:

- “Overall, how satisfied are you with your life nowadays?”
- “Overall, to what extent do you feel the things you do in your life are worthwhile?”
- “Overall, how happy did you feel yesterday?”
- “Overall, how anxious did you feel yesterday?”¹

People are asked to respond to the questions on a scale from 0 to 10 where 0 is “not at all” and 10 is “completely”.

These are known as the ONS4. ONS first added these questions to the Annual Population Survey (APS), in April 2011. The APS is the source of the national estimates of personal wellbeing in the UK that are published quarterly by ONS.

Community wellbeing can be measured through a range of indicators (See Annex A for more information).

The ONS also measures ten broad dimensions (the ONS calls them “domains”) that have been shown to matter most to people in the UK (Figure 2) – the measures of **national wellbeing**.²

The wellbeing dimensions are assessed with a set of indicators including objective measures - such as crime rates - and subjective measures such as how people feel about their lives. For example, the ‘Where we live’ dimension includes objective measures such as accessing the natural environment and crime rates, while the ‘Our relationships’ dimension includes self-reported assessment of feelings of loneliness. The ONS Measuring National Wellbeing programme reports progress against these dimensions twice a year.

¹ See Annex A for more information on the source of and reasoning for these questions

² [Measures of National Well-being Dashboard](#)

Figure 2: The ten dimensions of wellbeing



Source: Office for National Statistics ([Measures of National Wellbeing Dashboard](#))

Alongside ONS data, there are a variety of datasets available which have been collated for specific research or relate to the wellbeing of specific groups such as children. Prior to the Annual Population Survey, wellbeing data were collected by the British Household Panel Survey and the Gallup World Poll. Annex A5 provides links to further datasets, while Chapter 4 discusses data for use in cost-benefit analysis.

2.2 Important findings from wellbeing research

People are all different, and age, gender and genetics all affect wellbeing. Evidence suggests that between a third and a half of the variation in wellbeing within a population is fixed, presumed to stem from people’s genetic makeup. The remainder can be partially explained by other factors.³ Based on the findings of the research literature, and organised around the ONS dimensions, important factors that are linked with changes in wellbeing include:⁴

- **Physical and mental health:** an individual’s health, both physical and mental, is consistently recognised in research as an important component of their wellbeing.
- **Relationships:** positive relationships have one of the biggest impacts on quality of life and wellbeing. This includes close relationships, having someone to rely on, as well as wider

³ Diener and Lucas, 1999; Clark *et al.*, 2018

⁴ Note that many of these factors may have a direct influence on our wellbeing, such as mental health, relationships, our environment and work. Other factors, such as education, skills and personal finance, may work in part indirectly – they are valuable for our wellbeing through what they enable us to do.

interactions in a neighbourhood or community. Conversely, feelings of loneliness have a negative impact.

- **What people do:** generally, having a job is good for wellbeing and considered one of the most important factors linked with wellbeing.⁵ Being in a 'high quality' job is even better.⁶ Other types of activity can also affect wellbeing, to a lesser extent - from physical exercise to taking part in music or art. How people feel when they take part in activity also matters. For example, giving to others or learning something new can give a sense of purpose, which has a positive effect on wellbeing. Some activities have an immediate impact, others might have a longer-term effect.⁷
- **Where people live:** an individual's dwelling (including aspects such as heating and dampness), their local environment and the type of community in which they live are important, including having a safe, clean and pleasant environment, access to facilities and being part of a cohesive community.
- **Personal Finance:** level of income has a significant effect on wellbeing. As income increases, it becomes less important for improving wellbeing. A high level of debt can be stressful and debilitating, and may have a negative effect on feelings of wellbeing.⁸
- **Education and Skills:** have an impact on employment opportunities and the types of job available to individuals. Evidence has shown that adult training and education also have impacts on wellbeing, with varying effects for different groups.⁹
- **Governance:** trust in institutions alongside the ability to influence decisions, which are important for people's lives, are important not only in the workplace and at a community level, but also at a national level.
- **Economy:** the state of the economy, including GDP movements, unemployment rate movements, and inflation, have major effects on happiness levels.¹⁰
- **Environment:** wellbeing evidence has shown that experiencing nature can improve wellbeing, for example by reducing stress.¹¹ Similarly, studies have shown a positive link between wellbeing and environmental factors such as air and noise pollution, temperature and precipitation.¹² Environmental actions can also play a role in the wellbeing of future generations, through impacts on natural capital.

Contributory factors to wellbeing

Many of the aspects which influence personal wellbeing **simply add up**, to a certain extent. For example, people are:

⁵ See e.g. Clark and Oswald (1994), Winklemann and Winklemann (2003), Jahoda (1982) as well as a systematic review in What Works Centre for Wellbeing (2017a)

⁶ For a review of interventions influencing wellbeing through changes to job quality, see Daniels et al. (2017) and associated What Works for Wellbeing (2017) briefing.

⁷ See Annex A1 and <https://measure.whatworkswellbeing.org/> for an overview of relevant measures

⁸ See e.g. Butterworth *et al.* (2009), Bridges and Disney (2010), Selenko and Batinic (2011).

⁹ For a literature review as well as a systematic review of interventions focusing on adults at greater risk of inequalities or marginalisation see Tregaskis and Nandi (2018).

¹⁰ See e.g. Di Tella, MacCulloch and Oswald (2001)

¹¹ See relevant aspects of Defra Evidence Statement: [Health and the Natural Environment](#) and Defra Evidence Statement: [The wellbeing and human health benefits of exposure to the marine and coastal environment](#)

¹² Krekel and MacKerron, 2020 as well as literature from Luechinger, Levinson and Welsch

- happier on average when in a job rather than unemployed
- even happier if the job is higher quality
- happier still with a high quality job, and in good health

Different aspects also **balance each other out**. For example, evidence shows that losing a job has one of the biggest negative impacts on wellbeing. However, where people have social support from friends and family, they suffer less.¹³ These positive relationships ‘buffer’ the negative impact. In the workplace, additional demands or stress can be negative, but this can be compensated by an increase in purpose, meaning that these jobs can be associated with higher wellbeing overall.¹⁴

Other factors may be **positively or negatively reinforcing**. For example, better support from family could be the key to finding a job. Being in work can then provide more opportunities for connecting with others, becoming physically active, or taking part in cultural activities. The initial improvement in support could have a ‘multiplier effect’ since each of the following changes can contribute to people feeling happier about their lives. The reverse is also true: some evidence suggests that mental health issues and lower wellbeing may impact negatively on employment trajectories,¹⁵ which in turn could further lower wellbeing.

Factors **do not influence people in the same way**. Initial wellbeing levels play a role. Evidence suggests that those who have lower wellbeing show a greater increase in wellbeing when they participate in cultural activities or spend time in green spaces.¹⁶ It also depends partially on characteristics, for example, the impact of employment on wellbeing depends on personality, values, gender, age, among others.¹⁷

Reflecting this, it is important to consider the **external conditions** which affect wellbeing, the choices people make alongside the options available, as well as people’s **personal capacity and response** to these factors.

Basic needs and low wellbeing

Evidence suggests that meeting certain ‘basic needs’ is highly important, for example meeting a ‘minimum standard’ across levels of health, relationships, security, feelings of purpose, and the environment.

It has been estimated that around one percent of the UK population score ‘low’ (0-4) across all ONS4 measures of wellbeing in 2014-2016 (ONS, 2018).¹⁸ The factors that are consistently associated with people experiencing lowest wellbeing include bad or very bad health, unemployment, long-term illness or disability (among other things causing economic inactivity),

¹³ See Gedikli *et al.* (2017) *What Works Centre for Wellbeing briefing* for a systematic review of relevant evidence

¹⁴ See Daniels *et al.* (2017) *What Works Centre for Wellbeing briefing* for a systematic review

¹⁵ See Gedikli *et al.* (2017) and Longhi *et al.* (2018) *What Works Centre for Wellbeing briefings* for reviews

¹⁶ See for example, Hartig *et al.* (2014), Mitchell and Popham (2008) and Heritage Lottery Fund (2011)

¹⁷ See above references

¹⁸ Scoring “low” across ONS4 measures, or 0-4, from the 2014-16 Annual Population Survey. Data from ONS publication:

[Understanding well-being inequalities: Who has the poorest personal well-being?](#)

having no-one to rely on, being single, widowed, divorced or separated, having basic or no education.¹⁹

2.3 Subjective wellbeing effects and economics

Many of the results in the wellbeing literature are consistent with standard economic insights, theory and assumptions. For example, increases in income improve reported quality of life more for those on lower incomes than for those on higher incomes, is consistent with the law of diminishing marginal utility of income (Layard *et al.*, 2008). Similarly, one additional contact is more important for the wellbeing of someone with very limited social contacts than for someone with many, or a new green space is more beneficial for those who previously had none than for those living in the countryside.²⁰

However, other findings from the wellbeing – and related behavioural economics - literature diverge from common economic assumptions. For instance:

Reference points

There is a growing body of evidence that both comparisons and positions; and direction of change are important. For example, a loss from an existing state matters more than an identical gain. Wellbeing evidence also suggests that individuals' relative positions can matter more than absolute positions (Di Tella and MacCulloch, 2010; Clark and Oswald, 1996 and Easterlin, 1974). As such income comparisons can affect satisfaction: an increase in someone else's income can reduce the sense of wellbeing of a person whose income does not rise (Clark *et al.*, 2018).

This would have implications for policy making if wellbeing was related only to interpersonal comparisons of wealth or status: as one person's wellbeing improved, someone else's wellbeing would necessarily deteriorate.²¹ However, not all aspects of people's lives are subject to comparative effects. For example, voluntarily giving to others improves the wellbeing of the giver as well as that of the recipient (Dunn *et al.*, 2014). Improving the quality of relationships improves the wellbeing of all parties. Improving the mental health of one partner in a relationship - say, through counselling - may improve the wellbeing of the other partner as well (Mervin and Frijter, 2014).

19 For the wellbeing responses of the Annual Population Survey more than 300,000 adults (those aged 16 years and over) are sampled every year. The survey does not cover adults living in communal establishments such as care homes or prisons. Factors may relate to underlying aspects – for example, renting is also a factor which ONS analysis identified as associated with scoring 'low' across all ONS4 measures. It may not be renting per se which causes low wellbeing, but rather the broader insecurity around accommodation and in some cases, housing quality. Having a basic or no education may have an impact on employment prospects and job quality.

20 These findings are consistent with the economic concept of social welfare maximisation, which generally requires prioritising meeting 'basic needs' before seeking to improve an already 'adequate' situation because the former has a greater impact on overall social wellbeing.

21 See range of papers by Gordon D.A Brown

Adaptation

In the economics literature it is often assumed that consuming more, or a lasting improvement in individual's circumstances, raises utility. However, wellbeing evidence shows that people adapt to many life events and changes so that the wellbeing impact can diminish over time.²²

This would have significant implications for policy if all changes simply become 'normalised' due to acclimatisation over time. In that case every policy change could only temporarily influence wellbeing. However, importantly, this does not apply to all aspects of life and studies that have followed the same participants over time show that wellbeing can change significantly over the long term.²³

For example, when people are in a stable partnership, their wellbeing ratings are higher than those of people not in such relationships. They also stay higher.²⁴ People who are unemployed have lower ratings of wellbeing than others, and wellbeing stays low while they remain out of work (Clark *et al.*, 2018). Further, research suggests that people do not adapt to the negative impact of noise (Weinstein, 1982), disagreeable job conditions, nor to the positive benefits of volunteering (Binder and Freytag, 2013). People tend to adapt little to situations that regularly draw their attention (Dolan, 2014). Positive interventions such as cognitive-behavioural therapy for people with moderate to mild depression has been shown to have a lasting impact on wellbeing (Butler *et al.*, 2006).

Importance of relationships, trust and fairness

Wellbeing evidence emphasises the contribution to welfare of social relationships to family and friends (Clark *et al.*, 2018). These relationships are generally given less attention in standard economic literature.

Economics generally focuses on the outcomes which are achieved – and the resources which are allocated among individuals or groups. In contrast, wellbeing research suggests that procedural fairness matters as well. There are conditions under which a less favourable outcome is preferred if the process has been considered fair (see Lind and Tyler, 1988; and Hollander-Blumoff and Tyler, 2008).

Challenges of predictions

Classic methods for valuation of social welfare rely on predictions of utility: they ask people what they think will make them happy or observe their actions (such as tracking what they buy). Surveys in which large numbers of respondents were asked to rate their subjective wellbeing have shown, however, that what people think will make them happy is not necessarily what actually does make them happy.²⁵ Nor do actions, such as the jobs people take or the neighbourhoods they move to, always reveal "experienced" preferences. Experiences may be different from predictions.

Box 1 summarises what these wellbeing findings imply for appraising policy proposals.

²² For example, see Gilbert *et al.* (1998) for adaptation to promotion, di Tella & MacCullough (2010) for adaptation to changes in income beyond "basic needs". For adaptation to negative changes in life: Riis *et al.*, (2005) to requiring regular medical treatment and Lucas (2005) for adaptation to becoming divorced, Graham (2011) for a review of international literature.

²³ Fujita and Diener, for example, documented changes in over 17 years of wellbeing data from Germany (Fujita and Diener, 2005). Hendriks *et al.* show that those who move to happier countries become happier (Hendriks *et al.*, 2018).

²⁴ Even though the wellbeing 'boost' of marriage is short lived, see Lucas *et al.* (2003)

²⁵ See Dolan and Kahneman (2008) for a discussion of the interpretations of utility and implications

Box 1: Wellbeing and policy analysis

- **Diminishing marginal utility:** The benefit of an additional unit of consumption or income to individuals depends on how much they initially have. See Chapter 4, Step 9 for an overview of current *Green Book* guidance for distributional analysis.
- **Comparisons matter:** Unintended consequences and impacts on other parties are important to include in policy analysis. See Chapters 3 and 4, including text on distributional analysis.
- **Adaptation:** As set out in Chapter 4, it is important to include the timeframe of the wellbeing impact, incorporating insights from the literature on adaptation impacts.
- **Wellbeing impacts of, for example, employment, volunteering, relationships:** The impacts on individuals – and costs and benefits of policies - rest upon more than the changes in income and physical resources. Use the wellbeing literature to understand the evidence to inform the formation and analysis of options (Chapters 3 and 4).
- **Importance of expectations and fairness:** The way in which a policy is implemented, including the perceived fairness (and communication of expectations), could be as important as the outcome of the policy.
- **Our predictions may be different to our actual experiences:** As set out in Chapter 4, Table 4, utility misprediction is one of the factors to consider when choosing the appropriate monetisation approach.

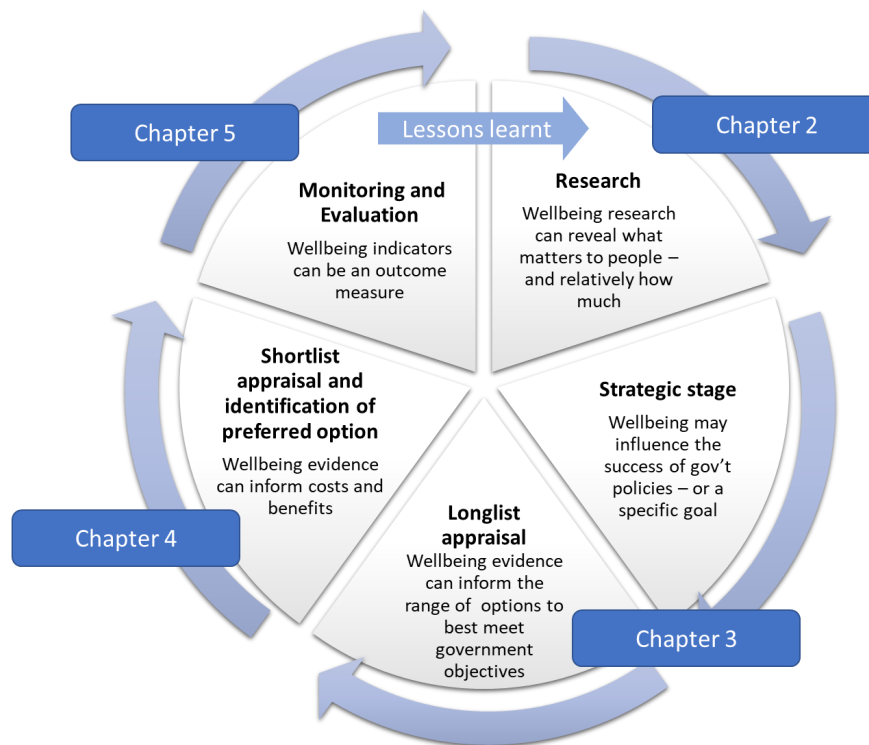
3. Wellbeing in the policy-making process

As noted in Chapter 1, wellbeing is an important consideration throughout the entire policy-making process, from identifying areas requiring policy action, to defining policy objectives to assessing long and short lists of policy options to evaluating implemented policies (Figure 3).

This chapter provides best practice recommendations for the use of wellbeing evidence in the policy-making process from policy formation to the longlisting stage. Wellbeing evidence can provide additional information to support understanding and estimation of the social or public value of alternative proposals.

Chapter 4 discusses the shortlist appraisal stage in more detail while Chapter 5 covers monitoring and evaluation.

Figure 3: Wellbeing in the policy making process



Source: 'Outline of Key Appraisal Steps' from *The Green Book* (Box 2 page 6, HM Treasury, 2020). Background research stage and wellbeing considerations added

3.1 Research - identifying areas requiring policy action

Policy formulation stands at the beginning of the policy cycle. Wellbeing research and evaluation can inform policy formulation by revealing 'what works' and what is important to people.

Before a business case is started, relevant wellbeing evidence should be included in the research, along with other evidence and considerations of welfare. This may include wellbeing evaluations

from previous policy interventions as well as general evidence of what matters to the group in question.

3.2 Strategic stage

In central government, overall policy objectives are determined by ministers or other appointed decision makers.

Wellbeing may be:

- **a direct objective to meet specific needs;** examples include the needs of specific groups of people who may experience low wellbeing
- **a favourable policy outcome resulting from the achievement of other objectives** such as 'raising employment' levels which has well-understood long-term effects on wellbeing
- **part of a constraint** within which the proposal must be developed, for example avoiding damage to an environmental factor that is significant for maintaining wellbeing

With this in mind, analysts and policy officials could consider in what way wellbeing evidence may support the strategic stage and:

- **inform the development of policy objectives,** for example through highlighting needs of specific groups and using evidence of what is most important to people. Wellbeing evidence can also help assess whether a policy may be confounded by adaptation and comparison.¹ Improving wellbeing may be most effective where interventions are specifically designed with this in mind – for example, concentrating on areas where evidence suggests there is a long-term impact on wellbeing.
- **support modifications or additions to traditional policy objectives.** As discussed above, raising employment levels has well-understood long-term effects on wellbeing. Going further, long-term epidemiological studies show that the *type* of employment is also important for wellbeing.² Existing policy outcomes thus might have to become more subtle and targeted to improve wellbeing outcomes. See Box 2 for examples.
- **support meeting other policy objectives.** Improved health and wellbeing can in turn increase productivity³ and reduce exit from the workforce – leading to the more effective delivery of objectives. See Box 3.

As will be covered in Chapter 4, when considering claiming wellbeing effects as part of benefits calculations, care must be taken not to double count what may also be claimed as a welfare effect.

¹ A change in policy might not have the desired effects if it improves wellbeing only temporarily because of these adaptation or comparison effects.

² Long-term epidemiological studies show that improvements in autonomy, support, use of skills, variety at work, balancing demands and security in the workplace yield long-term mental and physical health benefits. See Marmot *et al.* (1991.).

³ De Neve *et al.*, 2013

Box 2: Wellbeing in policy goals

Wellbeing evidence has informed UK policy goals in numerous areas.

- Recognising the importance of social relationships for wellbeing, the UK has developed an evidence-based strategy to address loneliness across the life course (DCMS, 2018).
- Schools have been testing a new curriculum, developed as part of a programme to teach resilience, with lessons in areas important for wellbeing, including relationships, healthy habits, social media awareness, and mindfulness, to increase the curriculum's effectiveness, the programme has a strong focus on teacher training.
- With the 2018 Good Work Plan, the government placed equal importance on the *quality* of work alongside *quantity* of work. Boosting the quantity of work remains an important policy objective, but the Good Work Plan also values job quality, i.e. job satisfaction; fair pay; participation and progression; wellbeing, health and safety; and voice and autonomy – recognising the importance of these factors for personal wellbeing.

References:

- A connected society: A strategy for tackling loneliness – Laying the foundations for change (DCMS, 2018).
- Bounce Forward. (n.d) Healthy Minds research project
- Good Work Plan (UK Government, 2018).

Box 3: Impact on productivity and pro-social behaviours

Evidence shows that improvements in people's sense of wellbeing can improve health, productivity and pro-social behaviours (Graham *et al.*, 2004, De Neve *et al.*, 2013, Oswald *et al.*, 2015). This means that policies with an impact on wellbeing may not only have impacts on how individuals feel, or the functioning of communities, but also have an effect on among other things the productivity of these individuals, or the readiness for communities to provide voluntary support for others.

As described in the Magenta Book,⁴ it is important to consider evaluation early, in the context of this strategic dimension, to maximise opportunities to collect good evidence.

3.3 Drawing up and narrowing down the longlist

Chapter 4 of the Green Book⁵ describes the longlisting stage in full detail, including the required "options framework filter" approach. The section below highlights how and where wellbeing considerations may fit into this existing Green Book framework.

No amount of detailed analysis helps if good policy options are omitted from the start. Wellbeing evidence, where relevant, can play a valuable role in developing options around the

⁴ See e.g. Section 1.6 of the Magenta Book (HM Treasury, 2020)

⁵ See [Green Book 2020 Chapter 4 from paragraph 4.1 to 4.11](#)

scope of the service to be provided, choices about the technical service solution and, in some cases, inform options for service implementation, delivery and funding. Table 1 summarises.

Table 1: Choices in the Strategic Options Framework-Filter with wellbeing considerations

Option choices	Broad description	Potential wellbeing considerations
Scope	Coverage of the service to be carried out	Relevant wellbeing considerations may include: Where needs are greatest; who has lowest wellbeing; wellbeing implications of including and / or excluding certain groups or geographies
Solution	How this may be done	Relevant wellbeing considerations may include: Evidence of 'what works'; the ONS wellbeing domains and whether these could be supported by certain solutions (see Chapter 2 and Annex A4)
Delivery	Who is best placed to do this	Wellbeing is unlikely to be the central focus, but relevant wellbeing considerations may include satisfaction with how the service is provided, perceptions of fairness
Implementation	When and in what form can it be implemented	Relevant wellbeing considerations may include: Does uncertainty on effects require the use of a piloting and a "phased learning development roll out process," with adaptation and building on what works between each phase?
Funding	What this will cost and how it shall be paid for	Information on wellbeing could inform decisions on who pays

Source: First two columns from Box 10, The Green Book (HM Treasury, 2020).

Detailed guidance in Chapter 4 of the Green Book and the accompanying Business Case guidance should be followed for carrying out the full steps.

Even where policies focus on areas such as infrastructure, housing or productivity, analysts might be able to use wellbeing evidence in the consideration of choices as outlined above. See Box 4 below for an example in transport appraisal and Annex A4 for some prompts for different types of programmes.

Box 4: Wellbeing in transport appraisal: generating options at the longlist stage

A transport improvement scheme may primarily be planned to reduce congestion and improve productivity. Wellbeing evidence may help to draw up the longlist of options. For example, considering the service **scope**: wellbeing evidence may identify needs of those in a particular area, or particular groups, informing the choice of options for geographic scope. Some of the distributional consequences of transport policy – such as accessibility for no-car households or the relative affordability of public transport for different socio-economic groups – could be explored in subjective wellbeing terms. This may offer insights beyond what conventional, more aggregate, appraisal techniques can offer.

Wellbeing evidence may also inform the proposed service **solutions**. Alternative options at the longlist stage may involve promoting active modes, following different route alignments, or relocating stations and/or multi-modal interchanges. Part of the design could incorporate the addition of planting trees along the route or in connecting areas – to reduce noise impacts as well as reflecting the evidence linking wellbeing and local environmental quality. Different designs may create community ‘meeting points’ with a positive impact on wellbeing.

Wellbeing evidence may also be relevant for informing the service **implementation** options. Should approaches first be trialled, to build on what works for wellbeing?

Using the framework outlined in the Green Book Chapter 4, wellbeing may also be a **dependency** for the effective delivery of a programme as well as a **constraint** within which the proposal must be developed, for example as part of avoiding damage to an environmental factor that is significant for maintaining wellbeing.

For an effective focus on improving wellbeing outcomes, it is important not only to change the external conditions, but also to support personal (internal) resources, and the activities which people take part in which help to develop the collective wellbeing in the community. For example, if we are creating cycle infrastructure, do people have the skills, equipment and motivation to cycle? How could this be changed? What supportive infrastructure or programming can be set up so that people may adapt the activities they take part in, to use the cycle infrastructure? Can local connections be drawn upon through this infrastructure, in order to build community wellbeing?

Table 2 summarises the main stages in Green Book longlist appraisal, alongside the potential wellbeing considerations at each step.

Table 2: Navigating the Longlist Appraisal Framework– with consideration of wellbeing impacts

Stage of Longlisting	Potential wellbeing considerations	Resources
Identify Constraints and Dependencies	Wellbeing may be a dependency for the effective execution of a programme ⁶ – or a programme may depend on the existence of a defined level of wellbeing in order to succeed. Wellbeing may provide a constraint within which the proposal must be developed, e.g. a requirement not to cause damage that has significant negative wellbeing effects.	Chapter 2 and Annex A2 for an overview of wellbeing evidence
Consider Place Based, Equalities, and/or Distributional <u>objectives</u>	As described in Section 3.2 above, wellbeing considerations may inform the development and choice of SMART policy objectives, including specific place-based, equality and distributional objectives.	ONS for analysis of wellbeing inequalities
Identify Critical Success Factors (CSFs)	Wellbeing may be incorporated as part of the critical success factors (e.g. wellbeing may be an important part of strategic fit and meets business needs; potential Value for Money). Longlist options are assessed against these CSFs.	In order to assess wellbeing impacts: Consider <i>who</i> will be impacted, <i>how</i> they will be impacted (drawing e.g. on Chapter 2 and Annex A2 where relevant)
Consider unquantifiable and unmonetisable factors	Further unquantified wellbeing impacts may be an important consideration for each of the options	
Consider a longlist of option choices with the Options Framework-Filter	Wellbeing considerations may help to define alternative options for the scope, the solution as well as implementation.	More detailed guidance in the Green Book, Chapter 4. Annex A4 includes prompts for the types of wellbeing impacts which could be relevant
Consider Place Based, Equalities, and Distributional effects	Some of the equalities and distributional consequences of policies may be important to explore in wellbeing terms, considering the ONS domains.	
Using the Options Framework-Filter create a viable shortlist and preferred way forward	As per steps above	See Chapter 4 of Green Book, specifically Figure 8

Source: First column from Box 8, page 31 *The Green Book (HM Treasury, 2020)*.

⁶ For example, where it is important for people to willingly cooperate.

4. Wellbeing in shortlist appraisal

Chapter 4 sets out how wellbeing evidence may be used to improve the assessment of costs and benefits in appraisal of shortlist options. This chapter should be read alongside and used in conjunction with Chapter 5 of the Green Book (2020).

4.1 Overview

HM Treasury's *Green Book* states: "...The appraisal of social value, also known as public value, is based on the principles and ideas of welfare economics and concerns overall social welfare efficiency.... Social or public value therefore includes all significant costs and benefits that affect the welfare and wellbeing of the population...." (Paragraph 2.3, The Green Book 2020, HM Treasury).

The main function of shortlist analysis is to differentiate between the shortlisted options that have been produced at the longlist analysis stage. At the shortlist stage, Social Cost-Benefit Analysis or Social Cost-Effectiveness Analysis, is used to identify the option which will optimise public value and support advice on achieving value for money as defined by the Green Book.

Evidence from wellbeing research and analysis, where relevant and credible, can provide additional information on positive and negative effects, improving the assessment of **important** costs and benefits in shortlist appraisal.⁷ As discussed below, measurement and valuation should be proportionate, focused on areas which can make a difference to the choice between options that is being considered.

Table 3 sets out the steps in the Green Book Chapters 5 and 6, alongside an overview of where wellbeing may be relevant.

Table 3: Navigating the Shortlist Appraisal Framework – with consideration of wellbeing impacts

Stage of shortlisting	Wellbeing considerations	Resources
Select Social Cost Benefit Analysis or Social Cost-Effectiveness Analysis	Social Cost Benefit Analysis is the default, preferred option. Where wellbeing fully captures all the outcomes affected by a proposal, Social Cost-Effectiveness analysis may be appropriate, with wellbeing as the outcome variable.	See Figure 4 and section 4.2 of this guide.
Identify and value costs and benefits of all shortlisted options	There are a number of different methods available for monetising or valuing impacts, including stated preference, revealed preference and the wellbeing valuation approach, where high quality subjective wellbeing data can also be used to value outcomes.	See section 4.3 and Table 4, Box 7 for method of monetising. Annex A2 includes a selection of available evidence to support quantification of wellbeing effects.

⁷ A WELLBY equates to a one-point change in life satisfaction on a 0-10 scale, per person per year. See for example, Frijters and Krekel (2021). It is discussed in detail in the following sections.

	Where no high-quality research or evaluation evidence exists, there may be a case for trialling an approach based on wellbeing.	See Chapter 5 on monitoring and evaluation.
Estimate the financial cost to the public sector	No additional wellbeing considerations.	
Ensure all values in the economic dimension are in real base year prices with inflation removed	No additional wellbeing considerations.	
Qualitatively assess non-monetisable costs and benefits	Wellbeing impacts which are not proportionate to monetise with high confidence may be quantified where possible, alongside high-quality studies, and qualitatively described where not.	Annex A4 for prompts of the types of wellbeing impacts which could be relevant; Section 4.4.
Apply appropriate Optimism Bias	No additional wellbeing considerations, other than an assessment of the quality of evaluation data where relevant – and whether an optimism bias of benefits realisation needs to be applied.	
Maintain Risk and Benefits Registers	Wellbeing is likely to be a benefit and may also be a constraint or a risk.	See Annex A1 for measurement of wellbeing.
Assess Avoidable, Transferable and Retained Risk, build in additional Risk Costs and reduce Optimism Bias accordingly	There may be risks to wellbeing which should be considered.	
Sum the values of costs and benefits in each year	In the steps above, it is important to consider when wellbeing benefits and costs will occur. The impact on wellbeing may be short-lived for very short-term interventions. As described in Chapter 2, individuals may adapt to some changes, meaning that the scale of impact on wellbeing may not last for the life of the programme or policy. This depends on the type of change and type of intervention. Short term effects may still be important, where, for example, many people are impacted.	Using the available literature, the expected timings of these effects should be estimated (see Annex A2).
Discount the yearly sums of costs and benefits in each year to produce Net Present Social Values (NPSVs)	Changes in wellbeing which occur in future years should be discounted using the Green Book 'health' discount rate which starts at 1.5% (years 0-30) and declines gradually thereafter. This is because the 'wealth effect', or real per capita consumption growth	HMT Green Book, Annex A6. Note, the 'WELLBY' ⁸ value should also always be updated to the appraisal

⁸ A WELLBY equates to a one-point change in life satisfaction on a 0-10 scale, per person per year. See for example, Frijters and Krekel (2021), [DeNeve et al.\(2020\)](#). It is discussed in detail in the following sections.

	element of the discount rate, is excluded, again preserving constant a utility value per point change in life satisfaction in future years.	base year using the formula in Annex A2.
Add the NPSVs over time to produce The Net Present Social Value (NPSV) of each option	No additional wellbeing considerations.	
Calculate BCRs if using CBA or Social Unit Costs if using CEA as appropriate	Robust monetised wellbeing values should be included in BCRs, other values should be incorporated as sensitivity and quantitatively or qualitatively described. As described above, wellbeing (life satisfaction years, or another consistent measure of wellbeing) may be used as the Social Unit.	Box 6 for a description of where estimates can be assessed as robust; Section 4.3-4.5.
Identification of the preferred option		
Identify preferred option considering NPSV, BCR, unmonetisable features risks and uncertainties	All points above. There may be wellbeing impacts which are not proportionate to monetise, which can be quantified where possible and qualitatively described to present to decision-makers.	Section 4.4 for s discussion of unmonetized features; Annex A1 for an overview of measuring wellbeing.
Conduct sensitivity analysis and calculate switching values, for each option	Where robust wellbeing impacts have been monetised, use the provided value range as well as the 95% confidence interval for the effect size.	Annex A2 demonstrates 95% Confidence Intervals for a number of changes.

Source: Green Book 2020, Box 11: Navigating the Appraisal Framework and the Shortlist, with RHS column added.

4.2 Wellbeing in Social Cost Benefit Analysis and Social Cost-Effectiveness Analysis: Overview

Social Cost Benefit Analysis

As set out in the Green Book, “Social Cost Benefit Analysis (SCBA) assesses the impact of different options on social welfare. All relevant costs and benefits are valued in monetary terms unless it is not proportionate or possible to do so. Social CBA is the recommended approach for detailed comparison of the shortlist of options.” (Section 5.1, The Green Book 2020, HM Treasury). Wellbeing impacts are central to this and can be incorporated as monetised values, where these values are considered robust enough, using the non-market monetisation approach which is most appropriate for the impact and context⁹ (see section 4.3, The Green Book 2020, HM Treasury).

⁹ Note that this can include both utility based and wellbeing based approaches to social value measurement including stated preference and revealed preference See Table 2.

Where it is not possible to monetise all impacts, it is possible to use Social cost-benefit analysis (CBA) with description of non-monetised wellbeing benefits, quantified where possible (see section 4.4).

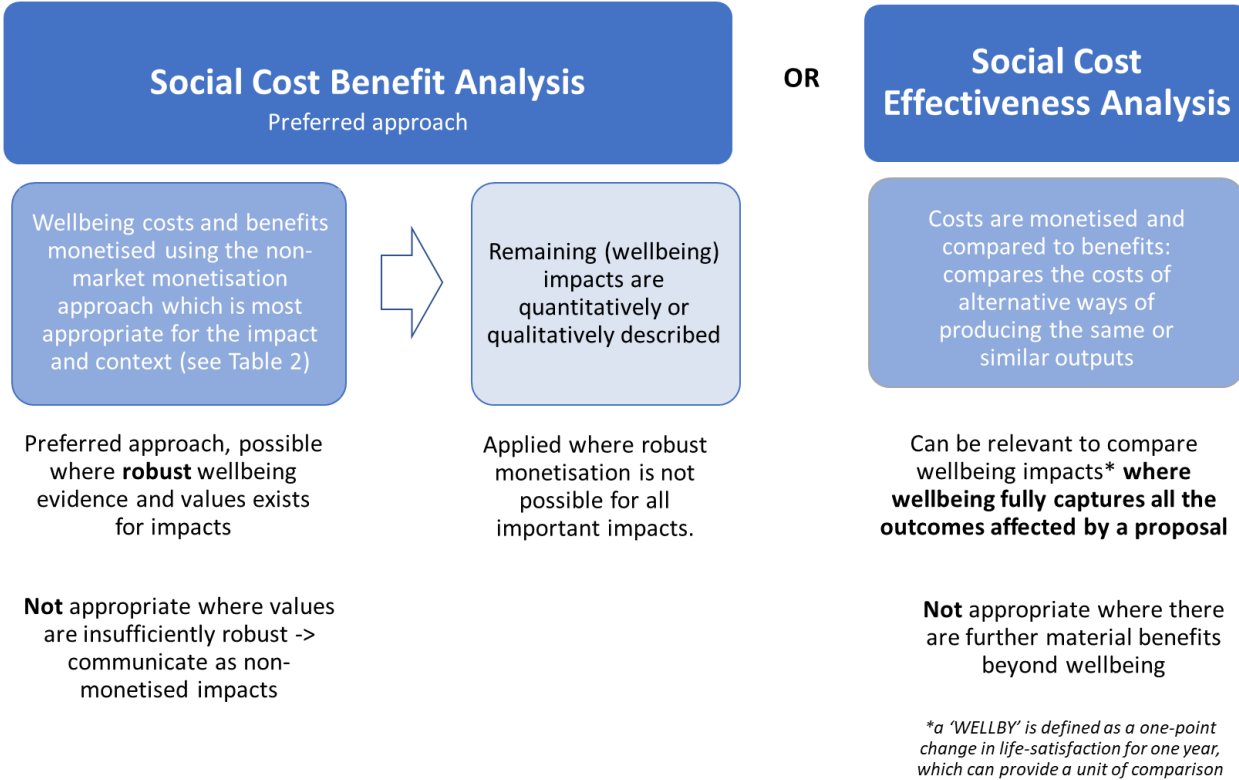
Social Cost Effectiveness Analysis

Social Cost-Effectiveness Analysis (SCEA) is a variant of Social CBA which compares the costs of alternative ways of producing the same or similar outputs with no change in social welfare / wellbeing, it measures the internal efficiency and effectiveness of the public organisation applying it. Social CEA may sometimes be appropriate where:

- wider social costs or benefits will remain broadly unchanged or for the delivery of a public good, such as defence¹⁰
- output may not be proportionately quantified

Subjective wellbeing may be a relevant outcome variable¹¹, where it fully captures all the outcomes affected by a proposal. It is not appropriate where there are further material benefits beyond wellbeing (see Section 3.5).

Figure 4: Incorporating wellbeing in Social Cost Benefit Analysis and Social Cost Effectiveness Analysis



¹⁰ or where there is non credible way of measuring social welfare / wellbeing but it is agreed to be largely the same - as is the case in some defence spending

¹¹ SCEA can also be performed using other outcomes for example in health the use of EQ5D based QALYs. This guidance focuses on comparing 'wellbeing adjusted life years', or changes in life satisfaction (on a 0-10 scale) per year – referred to as 'WELLBYS'.

As set out in the Green Book, the preferred approach is social cost benefit analysis, but the appropriate approach will depend on the evidence and the nature of the case under consideration.

Box 5: Quantifying wellbeing impact to incorporate in SCBA and SCEA

In this Chapter subjective wellbeing is mainly quantified through changes in ‘life satisfaction’ on a 0 – 10 scale. Life satisfaction has become fairly standardised in policy and economic studies due to increased data availability and its use in numerous studies, which makes it easier to compare effects consistently.¹ The effects provided in Appendix A2 mainly show the impacts on life satisfaction on a 0 – 10 point scale.

However, depending on the policy, wellbeing may best be measured and quantified in other ways, including mental health scales or momentary measures. See Annex A1 on measuring wellbeing for more information on alternatives.

¹ Life satisfaction is also preferred by many analysts as it incorporates positive and negative emotions (overall wellbeing being a balance of these) together with a cognitive assessment of how well one’s life measures up to aspirations, goals and the achievements of others (Kahneman and Krueger, 2006; Diener, 1984), which means it provides a more holistic view of wellbeing than momentary measures.

4.3 Social Cost Benefit Analysis: monetise relevant costs and benefits

Social Cost Benefit Analysis seeks to express the full costs and benefits of a project in monetary terms by looking at the impact on people’s wellbeing.¹² There are several different methods available for monetising or valuing these impacts on wellbeing. These include stated preference methods, revealed preference methods and the wellbeing valuation approach, where subjective wellbeing data can also be used to value outcomes.

Choosing the most appropriate approach for monetisation requires understanding of the strengths and weaknesses of different non-market valuation techniques.¹³ For wellbeing impacts that can be credibly and proportionately monetised, the ‘type’ of benefit which is being measured as well as the availability of information will be important. Table 4 sets out where the different approaches may be more or less appropriate.

It is common to use values from a range of methods in Social Cost Benefit Analysis. Regardless of which approach is used, it is good practice to:

- consider whether the impact is a loss or a gain and use the appropriate value¹⁴

¹² As set out in HM Treasury’s Green Book: “Social Cost Benefit Analysis (CBA) assesses the impact of different options on social welfare. All relevant costs and benefits are valued in monetary terms, unless it is not proportionate or possible to do so. Social Cost Benefit Analysis (CBA) is the recommended approach for detailed comparison of the shortlist of options.” (Paragraph 5.2 and 5.3, The Green Book 2020, HM Treasury).

¹³ see the Green Book for further information, Chapter 6.

¹⁴In the case of stated preferences, this will represent the difference in WTA and WTP. Where monetising wellbeing impacts using the approach recommended in Box 7, the wellbeing impact will be monetised with the same unit value whether it is a gain or a loss. However, robust wellbeing impacts will show that the wellbeing impact of a gain being different to the impact of a loss. Where this information is not available, impacts should be adjusted appropriately, with uncertainty where required.

- use a clear logic to avoid double counting across monetised impacts (see ‘Avoiding double counting’, below)
- “quality assure” the method of the study used, as discussed in Box 6 below:
 - assess whether the important econometric and other assumptions hold
 - consider whether the context, population and change which takes place in the study is relevant to the policy question¹⁵
- carry out a sense-check of whether the monetised figure make sense, for example if the scale of the monetised impact is plausible if scaled up to a relevant population
- compare with findings from elsewhere, including other countries, regions or time – a process known as ‘triangulation’. Monetised subjective wellbeing values and conventional WTP/WTA values are not generally expected to coincide, except where an individual’s stated preferences align perfectly with maximising their own subjective wellbeing.¹⁶ This means that triangulation should not be seeking to assess whether valuations are the same, but whether differences are plausible given an assessment of the limitations/omissions that may be a feature of market prices, stated or revealed preference values
- carry out sensitivity analysis on the value, which in the case of wellbeing may include taking different valuation methods and more than one subjective wellbeing value

Robust values can be included as monetised values in Social Cost Benefit Analysis. The points above should be considered for all valuation approaches, including stated and revealed preference. Robustness in the context of subjective wellbeing valuation is discussed in more detail in Box 6.

Values where there is less confidence, based on the points above and the principles in Box 6, may be more appropriate to include as a sensitivity or as additional, non-monetised impacts (see section 4.4).

¹⁵ Value Transfer refers to the use of existing economic valuation evidence in a new appraisal context.

For more information, Defra’s Enabling a Natural Capital Approach guidance discusses Value Transfer methods.

¹⁶ Fujiwara and Campbell (2011).

Table 4: Approaches for monetising social/public value effects

	Market prices	Revealed preference	Stated preference	Subjective Wellbeing valuation	
				<i>Evaluative measures</i> – i.e. measures which assess overall satisfaction	<i>Momentary measures</i> – i.e. measures which assess wellbeing from moment to moment
May be more appropriate when...	Well-functioning, competitive markets exist.	Real-world trade-offs can be identified, and confounding factors sufficiently controlled for – i.e. there is confidence that the difference in value or behaviours are due to the change of interest, not another factor that changes at the same time.	Good or service is not or cannot be reflected in other market prices. Going beyond the value associated with <i>using</i> goods and services ('use-value') to 'non-use values' such as knowing that something exists, having the option of using or visiting, or passing on to the next generation.	Real-world trade-offs not possible to identify, convincing payment vehicles do not exist, and /or responses may be subject to strategic bias in stated preference.	
				Individuals tend to systematically and materially mis-predict utility when stating preferences in advance, or through revealed behaviour.	
				There is a clear change of state, e.g. flooding, noise, ongoing frequent events such as social groups, which could cause a level shift in wellbeing. Where existing survey information exists, can be a cost-effective method of valuing non-market goods and impacts.	There is a transitory change, such as a trip to the cinema or one-off cultural event, which does not necessarily have an ongoing impact on life satisfaction, but is nonetheless a source of happiness.
May be less appropriate when...	There are material market failures or no market exists.	Cannot provide non-use or existence values. There are material failures in the secondary market or no secondary market exists.	The intentions of the survey are apparent e.g. to influence a certain policy.	The good being valued is marginal and probabilistic so unlikely to register in subjective wellbeing, for example marginal road safety improvements. The change in question has not already taken place in some form, meaning there is no existing survey or evaluation data which can be used. These measures struggle to capture non-use values.	
To be aware	There may be positive or negative externalities not included in the market price.	Hard to find sources of exogenous variation in price (natural experiments). Restricted to a few markets such as housing and labour markets.	Subject to many known biases such as strategic responses, rationalisation and ordering effects. Contingent valuation surveys are particularly prone to these issues. In some cases, best-practice in survey design	Values very sensitive to the marginal wellbeing impact of income (see Annex A2 and accompanying discussion paper) It is important to reflect the dynamics of how individuals adjust to changes in state, e.g. adaptation processes. Correct interpretation of the coefficients and values is important.	It is important to reflect the likely duration of impacts appropriately in the analysis, especially for infrequent or one-off events. It is likely that life satisfaction responses will only reflect the impact of infrequent or one-off events if the survey is conducted very soon after the event.

	Market prices	Revealed preference	Stated preference	Subjective Wellbeing valuation	
				<i>Evaluative measures – i.e. measures which assess overall satisfaction</i>	<i>Momentary measures – i.e. measures which assess wellbeing from moment to moment</i>
			can help to mitigate these issues.		
	Assumes there are no significant consumption externalities between individual, i.e. that individuals do not evaluate their income or consumption levels relative to others. Assumes individuals are well informed about their choices and the associated benefits/costs and do not 'mis-predict' utility.			<p>Studies of wellbeing effect sizes (including the impact of income) typically assume (i) even intervals between wellbeing scores (for example, going from 3 to 4 on a 0-to-10 scale confers as much utility as going from 7 to 8); and (ii) cardinality of wellbeing scores, so that the difference in utility corresponding to a 1 point change in wellbeing is the same for everybody.</p> <p>Approach to monetisation (see Box 7 and Annex A2) relies on assumptions around consistency and comparability of concepts measured. In addition, the approach to monetisation described in Box 7 is based on the effect of noticeable changes in consumption. The approach ignores negative consumption externalities, which would act to reduce the net wellbeing impact of a given change.</p>	

Where a subjective wellbeing approach to monetisation is most appropriate (RHS column), this will involve directly, robustly estimating the wellbeing impact of the policy change and converting to monetary estimates.

This requires a high degree of confidence in the estimate of the subjective wellbeing impact. Box 6 describes the principles to follow to there is high confidence in wellbeing impacts. These principles are primarily for analysts who are using analysis rather than conducting their own analysis. The principles should be considered broad guidelines of the evidence which could be considered sufficiently robust for incorporating in monetised estimates. The desired confidence of the wellbeing evidence – and the valuation – will depend upon the purpose for which it is used. Wellbeing evidence with lower confidence in the causal impact⁴⁸ can still provide important information at the research and long-listing stages described in Chapter 3 above.⁴⁹

Box 6: Robust estimates of causal wellbeing impact¹

To draw out the causal impact on any outcome with high confidence, there are several general principles which apply, summarised below and in Annex A3.

Many of these are important considerations for all robust evaluation.

In general, confidence tends to be highest:

- in estimates from **well-designed randomised control trials** where wellbeing has been measured;
- where there are **naturally occurring conditions** that replicate randomisation such as a natural experiment, randomised encouragement (instrumental variable approach), threshold randomisation (regression discontinuity approach). This often requires longitudinal data, but this is not always the case (e.g. instrumental variables). For example, expansion in education, lottery wins, stock market crashes, opening up Norwegian tax records, regulatory changes.

There are only a small number of such studies for wellbeing, however data is becoming more readily available with an increase in well-designed wellbeing trials.

Cont'd

^[1] Principles developed from HMT, Social Impacts Task Force and What Works Centre for Wellbeing (WWCW) Wellbeing Appraisal Expert Roundtable 21st June 2018

⁴⁸ For example, from cross-sectional regressions

⁴⁹ Figure 3 of Defra's 'Enabling a Natural Capital Approach Guidance' (2021), based on Eftac (2015), provides a useful overview of the desired robustness for valuation for different uses.

Box 6: Robust estimates of causal wellbeing impact ^(cont'd)

In most cases, there is no data from randomised control trials or natural experiments. In these cases, confidence tends to be highest in:

- Techniques using **believable sources of random variation similar to the policy intervention in mind** (prevalent techniques usually centred around an argued random source of variation include Dif-in-Dif, Regression Discontinuity, IV-estimation, exclusion restriction estimation). The better studies allow control for the impact of exogenous individual unobserved factors that have caused the treatment of interest (including hereditary factors), or exogenous area specific factors when using geographic information. In all cases though, judgments about the causal structure will be involved;
- As discussed in Section 4.3 above, this would need to be backed up with a clear logic, consistent with theories from social science in general; and ideally where it is possible to triangulate with other estimates, including e.g. market prices, and across sources of variation (within-person, between-person, across regions, across countries, across time, across similar changes in slightly differently worded variables).

There can be confidence in some **cross-sectional regressions** only where the effect is backed up with theories or evidence from wider social or medical science **and** this holds across regions, time, etc – as above.² This should be reasonably judged.

There is less confidence in:

- a one-off **cross-sectional** analysis of choices which are deliberated, including for example, diet, choices of purchases;
- estimates of a change in a global measure such as life satisfaction where the change is **marginal** (e.g. additional trips to a cinema) rather than a change in state **or** frequent visits.

There is almost no confidence *in* very small trials on relatively trivial interventions using measures with high measurement errors.

Caution should be applied when interpreting studies:

- Selection bias may occur where the policy variable is correlated with unobserved factors about the individual;
- Reverse causality (leading to bias) will occur if happier people select into policy programme rather than the other way around.

Cont'd

^[2] The most famous example of this is the early evidence on smoking and lung cancer, published by Richard Doll in the British Medical Journal in 1950. Statistical purists objected at the time because the results were cross-sectional. Confidence grew with lung dissections, demonstrating the theory of why this could be the case alongside the cross-sectional evidence.

Box 6: Robust estimates of causal wellbeing impact ^(cont'd)

The above principles apply in general for estimating causality with confidence.

In addition, there are a number of principles for robust, non-biased estimates in wellbeing studies:³

- consider measurement error; subjective wellbeing and policy variables need to be measured accurately or else will lead to bias;
- marginal changes (e.g. one-off visits and events) are less likely to produce realistic figures for evaluative wellbeing;
- appropriate controls; this will depend on the factor of interest, but most likely include the important drivers of wellbeing: permanent factors not caused by the factor of interest in or transient factors which in theory could be caused by the factor of interest as long as it is measured before.⁴ Fixed effects should be used where possible.

[3] See also Fujiwara and Campbell (2011) and OECD Guidelines on measuring subjective wellbeing <http://dx.doi.org/10.1787/9789264191655-en>

[4] Note that multicollinear variables will reduce accuracy of our estimates (increased standard errors)

Annex A2 draws together a selection of values for wellbeing impacts where there is higher confidence. For a number of policy areas, there will be a range of additional studies which can be drawn from and to which these principles should be applied.

To improve our estimates of the *causal* impact on wellbeing, the wellbeing impact of policy changes should continue to be robustly evaluated, using consistent measures as described in Annex A1.

Where there is confidence in the wellbeing impact (as above) and where life satisfaction may be the most appropriate method for monetisation (see Table 4), Box 7 provides an overview of the technique used to monetise wellbeing impacts.

This depends upon having robust life satisfaction effect sizes (on a 0-to-10 scale): Annex A2 provides an overview of translating between scales. There is currently no recommended standard approach for monetising wellbeing changes based on eudemonic or affective measures⁵⁰, but this guidance will be updated in the case of such developments.

Box 8 provides a practical applied example and Annex A2 provides further discussion of the income effects used in wellbeing studies.

⁵⁰ See Glossary and Annex A1 on measuring wellbeing. Eudaimonic measures are an assessment of how 'worthwhile' life is; Affective (or equivalently 'experience') measures of wellbeing focus on people's positive and negative emotional experiences (or affect) over a short timeframe to measure personal wellbeing on a day-to-day basis.

Box 7: Monetising life satisfaction impacts

Once we have a robust, causal wellbeing effect estimates, the change in life satisfaction should be expressed on a 0 to 10 scale. Appendix A2 provides a formula for converting impacts from other to a 0 to 10 scale.

A factor should also be applied to represent time periods less than one year. For example, if a wellbeing effect lasts six months, the reported impact on life satisfaction should be halved before the below monetisation methods are applied.

The resulting change in life satisfaction can be converted to a monetary value by multiplying by £13,000 [Low: £10,000, High £16,000]. This is the recommended standard value of one wellbeing adjusted life year – a one-point change in life satisfaction for one year - a 'WELLBY' - in 2019 prices and values.

This approach best achieves broad consistency with the existing evidence base, and through the use of a single unit value per 'WELLBY', is transparent and easy to apply. Annex A2 provides further details. Because the 'WELLBY' is constant, losses and gains of the same change in life satisfaction are valued equally in magnitude. However, evidence is likely to highlight that losses of a certain state or good are may have a greater wellbeing impact than gains of the same state or good – this higher change in wellbeing will then be multiplied linearly.

Example: a RCT of a specific policy change finds an improvement in wellbeing of 0.2 points of life satisfaction (on a 0-10 scale) for participants, sustained over 2 years.

The monetary estimate of this change in wellbeing, per individual, per year, in 2019 prices is given by:

$$\text{wellbeing valuation} = 0.2 \times \text{£13,000} = \text{£2,600 per year (for 2 years)}$$

With a range of £2,000 - £3,200 per year (for 2 years).

Box 8: Arriving at robust estimates of wellbeing: *applied example of monetised wellbeing impacts*

For the 2019 Price Review, water company Anglian Water commissioned research on the impact of flooding and roadworks on their customers using the wellbeing valuation approach. The resulting study, *Valuation of the impact of roadworks and flooding using the Wellbeing Valuation method (2018)* provided monetised estimates of wellbeing impacts.

The first stage of the research was to estimate the impact of flooding and roadworks on subjective wellbeing. To do this, data on subjective wellbeing from the ONS Annual Population Survey (APS) were merged with data on actual flooding and roadworks incidents experienced by Anglian Water customers. This dataset was then used to conduct a multivariate ordinary least squares regression to estimate how flooding and roadworks incidents impacted on wellbeing of customers who experienced them, relative to a control group who did not.

The regression estimates suggested a negative impact on wellbeing from all types of flooding incidents. The largest negative impact was from internal sewer flooding.

Estimated impact on wellbeing of flooding incidents

Incident type	Water flooding (internal)	Internal sewer flooding (domestic)	External sewer flooding
Wellbeing coefficient estimate β_2	-0.273 (3 months duration)	-0.508 (6 months duration)	-0.041

From Table 5, page 21.

In this study, estimates of the impact of income changes on wellbeing were then used to convert these flooding impacts to monetary values using the 3-stage approach (Fujiwara, 2013).

As set out in the Anglian Water paper, there are a number of steps taken to convert these estimates to the estimated, per property value.

Estimated impact of flooding impacts in monetary terms (per property)

Incident type	Water flooding (internal)	Internal sewer flooding (domestic)	External sewer flooding
Estimated impact on wellbeing using WELLBY	£42,172	£145,220	£16,375
<i>Low – High range of WELLBY</i>	<i>(£33k-£52k)</i>	<i>(£112k-£179k)</i>	<i>(£13k-£20k)</i>
Estimated impact on wellbeing using compensating surplus ¹	£47,226	£180,501	£17,751

Calculated using the life satisfaction effects from Table 5, page 21, and the monetisation approaches suggested in this guide

A critical component of this type of analysis is the extent to which the flooding incidents observed did have the estimated causal effect on wellbeing, i.e. that there were no other factors causing the changes. The authors conclude that confounding factors may be at play that are not observed in the data, although this limitation is true of much evaluation where experimental data, such as randomised control trials are not feasible. In this case, the approach uses a 'natural experiment' where it is possible to closely enough focus in on specific geographic areas in a specific timeframe. Based on this, there is more confidence in causality than there would be with than a 'straightforward' cross-sectional regression.

Triangulation

It is useful to compare wellbeing valuation estimates with other non-market valuation techniques. In this case, Stated Preference values were available. As shown below, the estimates most directly comparable with the wellbeing values were lower across all three types of flooding incident.

Stated Preference flooding valuations

Incident type	Water flooding (internal)	Internal sewer flooding (domestic)	External sewer flooding
Estimated impact	£32,869	£101,500	£7,200

These differences reflect differences in the analytical techniques. The wellbeing values used *actual* flooding incidents *experienced* by customers. In contrast, Stated Preference surveys ask them about *reducing* risks to flooding in a *hypothetical* scenario. This may help explain why the wellbeing valuations are higher and suggests a case for lowering wellbeing valuations from 100% likelihood of happening with certainty.

[Reference: Fujiwara et al.. \(2018\) *Valuation of the impact of roadworks and flooding using the Wellbeing Valuation method*](#)

[1] additional sensitivity analysis for top end of range, demonstrating difference in approaches. Only recommended where life satisfaction coefficients are >0.5, i.e. only for Internal sewer flooding

4.4 Social CBA where full monetisation is not possible

In practice, it may be challenging to derive a monetised value for all wellbeing benefits and costs. Some impacts may have been identified that are not proportionate to monetise. At the minimum, non-monetised costs and benefits should be assessed, "*recorded and presented as part of the appraisal*" (Paragraph A1.63, The Green Book 2020, HM Treasury).

As set out in HM Treasury's *Green Book*: "*Where credible values cannot be readily calculated but it is clear they relate to a significant issue, they should then be factored in early on in preparation of a proposal, and accounted for during option design, at the longlisting stage (and) during shortlist selection.*" (Paragraph 2.17, The Green Book 2020, HM Treasury).

In some cases, these benefits or costs may be as important for decision-making as the impacts which are possible to monetise.⁵¹

If these additional features are desirable but not essential, two versions of the option should be developed, one with and one without the additional inclusion of the features concerned and the resulting impacts on wellbeing. The costs of the option with and without this additional impact should be compared – and this cost divergence explained to decision-makers, alongside

⁵¹ If they are regarded as 'essential to provision of the objectives', then they are a constraint and they must be incorporated into all of the options.

the potential wellbeing benefits. These wellbeing benefits may be qualitatively described, or quantified as much as possible, for example, the number of people affected, the likely scale of the impact (see Annex A2), or the likely duration of the impact. This cost divergence alongside the description of wellbeing benefits can enable decision-makers to weigh up the options and take appropriate decisions.

This approach may also involve switching point analysis - “how much would this change in wellbeing / change in quality of job / environment / social relationships have to be worth, to make this a less-preferred option?”

Supporting evidence, referenced to good quality research, should be cited when stating wellbeing benefits and costs.

Box 9: Social Cost Benefit Analysis with non-monetised wellbeing options: *illustrative example*

This is a purely stylised example, please see the Environment Agency guidance⁵² for developing flooding business cases.

A new flooding scheme is under consideration for a community at risk of flooding. There are a variety of options for implementation. It is not possible to monetise the wellbeing impacts. However, these additional impacts are important to consider as they relate to further government objectives in the areas of health and the environment. Wellbeing impacts can be presented within the options to enable informed decisions.

All estimates are provided in present value terms for a 20-year time period.

Do Nothing:

Risk-adjusted costs of £78m-81mn due to predicted flood risks.

Option 1: Do minimum - Basic design.

Flood protection benefits of £56m-62mn, construction and maintenance costs of £9mn.

Option 2: Design with additional access to enable walking and cycling on the flood barriers.

Flood protection benefits of £56m-62mn, construction and maintenance costs of £10.2m. Wellbeing benefits: higher number of recreational visits / use of the area over the 20-year time period, associated with improved wellbeing and mental health. The area will mainly be accessed by those in the local community, but it is expected that others from neighbouring communities will also access the recreational area.⁵³

Option 2 results in £1.2m of additional costs compared with potential wellbeing benefits for 20,000 up to 22,000 people, who will more easily be able to use the structure for

⁵² [Flood and coastal defence: develop a project business case - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/444444/flood-and-coastal-defence-develop-a-project-business-case)

⁵³ Contact with nature has been shown to result in moderate but significant increases in positive affect as well as in small but significant decreases in negative affect (McMahan and Estes, 2015). Exercises in green spaces have been found also to improve hedonic well-being. Physically active forms of transport (e.g., walking or cycling) can have mental health benefits, such as lower levels of depression or stress (Lee and Sener, 2016)

recreational purposes.

It is not possible to monetise the wellbeing benefits due to the lack of data for the particular project, however decision-makers can be presented with the comparison between option 1 and 2 – i.e. the option *with* and *without* this estimated wellbeing change, alongside the difference in costs. In this case, the value for money recommendation is based upon the net social value alongside the additional costs of including key objectives, with a description of the unmonetised benefits⁵⁴

4.5 Wellbeing CEA: Monetise costs and compare to wellbeing benefits

In some cases, it may be most appropriate to use Social Cost-Effectiveness analysis.

As set out in HM Treasury's *Green Book*: "*Social Cost-Effectiveness Analysis (CEA) is a variant of Social CBA which compares the costs of alternative ways of producing the same or similar outputs.*"

"Where there is evidence that wellbeing fully captures all the outcomes affected by a proposal and there is sufficient evidence available for different options being considered, social CEA, using subjective wellbeing as the outcome variable, may be appropriate for use in shortlist appraisal." (Paragraph 5.3 and Paragraph 6.22 with Footnote 18, The Green Book 2020, HM Treasury).

Wellbeing CEA may be particularly relevant when the direct aim of the policy is to improve the wellbeing of a certain group, such as through mental health services or interventions for children or young people. For consistency, the change in life satisfaction per year on a 0-10 scale can be compared (change in 'WELLBYS').

The important difference in this approach is that the wellbeing benefits are rather compared directly to the costs of the intervention across options.⁵⁵ Box 10 provides an illustrative example. Where monetisation of outcomes is possible, or where there are other material benefits beyond wellbeing, social cost benefit analysis should be used as set out in the Green Book.

Box 10: Comparing costs to quantified wellbeing benefits: *illustrative example*

Where the outcomes of a policy can be specified entirely in terms of changes in wellbeing, options can be compared in Social Unit Costs – in this case, the cost per change in

⁵⁴ As set out in HM Treasury's *Green Book*: "The value for money recommendation is based upon a range of factors including the net social value of the option ... and the additional costs of including key objectives, the benefits of which are unquantifiable." (HM Treasury, 2020, page 21).

⁵⁵ Note that whilst CEA gets around the problem of monetisation it can only be used in relative assessments. That is, two or more policy options can be compared and the one with the lowest cost-effective ratio (greatest impact per £ spent) is preferred but CEA does not tell us whether the benefits outweigh the costs. To do this all costs and benefits need to be assessed in the same metric and this is where SCBA is able to provide additional information and insight: costs to benefits can be directly compared as everything is converted into monetary terms

wellbeing, measured in this example as change in life satisfaction per year on a 0-10 scale, or 'WELLBYS'.

The options below consider alternative ways to achieve the objective of improving the wellbeing of GP-referred patients in deprived areas. The options are compared assessing the costs of each proposal with the wellbeing impacts they generate. For simplicity, the effects are only estimated for the first year, though in practice it would be important to take subsequent impacts into account, including any adaptation.

This technique is appropriate as changes in wellbeing capture all the key outcomes of the proposal and there is sufficient evidence available on the likely wellbeing impacts. Wellbeing

Do nothing:	No change in wellbeing
Low wellbeing of affected patients, ongoing and increasing GP costs.	
Option 1: Wellbeing programme 1 (8 weeks of support)	£3.2k per unit of wellbeing gained
Costs: £2,000 per person Benefits (Illustrative): Evaluations show an average improvement in life satisfaction of 0.8 (on a scale of 0-10) at the end of the programme, reducing to 0.6 after 12 months <u>Cost per change in wellbeing:</u> $\text{£2,000} / 0.63 \text{ average change in wellbeing over the year} = \text{£3,158 per change in wellbeing (per 1 point change in life satisfaction for one year, per person -i.e. per 'WELLBY')}$	
Option 2: Wellbeing programme 2 (fixed activity, 12 weeks of group support)	£1k per unit of wellbeing gained
Costs: £550 per person Benefits (Illustrative): Evaluations show an average change in life satisfaction of 0.7 during the 12 weeks of group support, reducing to 0.5 after that. <u>Cost per change in wellbeing:</u> $\text{£550} / 0.55 \text{ average change in wellbeing over the year} = \text{£1,000 per change in wellbeing (per 1 point change in life satisfaction for one year, per person - i.e. per 'WELLBY')}$	

is measured in life satisfaction impacts on a 0-10 scale in this illustration. Alternative approaches are discussed in Appendix A1.

Options comparison

The options analysis provides evidence on which option may improve wellbeing for the lowest cost per unit change in wellbeing. The analysis would suggest that Option 2 has the potential to lead to the highest change in wellbeing, it is also the most cost-effective option for a unit change in life satisfaction.

Again, for simplicity the central estimate has been applied above, based on illustrative evaluations. In practice, sensitivity should be applied to these numbers, for not only the costs, but also the change and length of time of wellbeing impact.

Figure 5 shows a decision tree for determining which approach is likely to be most appropriate for including wellbeing impacts in options analysis.⁵⁶ This applies **only** for important impacts: those which are material for shortlist decision-making (and those which are *proportionate* to consider).

Figure 5: Appraising wellbeing impacts:⁵⁷

Starting point: CBA with other impacts monetised		Approach	Further comments and references
Is there an existing, agreed methodology for monetising this wellbeing impact? (for example, health impacts, wellbeing impacts of crime, impacts of air quality and other environmental impacts)	Yes →	Use existing methodology	See Annex A2 for a selection of areas with existing guidance on valuation, plus Green Book Supplementary Guidance for a full overview and methodology.
No ↓			
Is this a good or service valued in a well-functioning and competitive market?	Yes →	Use market prices. Consider any externalities, including that individuals might not be fully aware of the impact on them.	Where there are likely to be utility mispredictions in choices / purchases / market decisions, answer 'no'.
No ↓			
Can real world market trade-offs be identified, e.g. through time or purchase?	Yes →	Consider using revealed preference. Consider externalities, including that individuals might not be fully aware of the impact on them.	Where there are likely to be utility mispredictions in choices, answer 'no'.
No ↓			
Is it possible to identify a survey or an evaluation, which assesses the causal wellbeing impact?	Yes →	Consider using subjective wellbeing measures. Where most impacts are monetised, monetise the wellbeing impacts (See approach A). Where wellbeing captures all important outcomes, wellbeing Cost-Effectiveness may be the most appropriate approach for comparing options.	See Box 6 for an overview of principles for robust estimation of causal impact and Annex A2 for a selection of results from wellbeing studies
No ↓			
Other than the additional wellbeing impacts, are the	Yes →	Use social cost-benefit analysis with description of	See Chapter 2 and Annex 5 for an overview of the

⁵⁶ This approach can be followed for individual impacts – the approach to take will likely be different for different types of wellbeing benefits

⁵⁷ Note that where wellbeing is a constraint, it will be included in all options

majority of important impacts monetised?		non-monetised wellbeing benefit(s) (Section 4.5)	types of issues which may be important
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4.6 Wellbeing in appraisal: wider considerations

Distributional analysis

This section signposts to the current guidance on considering this within policy and appraisal, including welfare weighting, but does not include any new guidance on inequalities and welfare weighting.

As described above, wellbeing evidence suggests that distributional effects of a policy are particularly important to analyse, since:

- *“the value of an additional pound of income is higher for a low-income recipient and lower for a high-income recipient”* (Paragraph A3.4, The Green Book 2020, HM Treasury)⁵⁸
- losses have a greater ‘value’ than gains of the same amount (which should to the most part, already be incorporated in evidence even when not using wellbeing evidence)
- relative income (and relative ‘visible status’) may have greater impact on wellbeing than income itself

The impacts of a policy will likely be different for different groups: looking beyond averages and understanding who will be worst affected is important.

Note that distribution should already be considered in the longlisting stage, see Chapter 4 of the Green Book and Chapter 3 of this guide.

HM Treasury’s *Green Book* Section A3 sets out the guidance for distribution appraisal which should be followed.

Avoiding double counting

There are likely to be many wellbeing impacts of a policy, which may be assessed in different ways. It is important to have a clear logic, setting out the different impacts and how they are best quantified and monetised where applicable, to ensure the highest confidence in the method as well as to avoid “double counting” impacts.

Figure 6 below provides an example on avoiding double counting, based on the illustrative example of the provision of youth programmes described in Box 11:

- **any ‘ongoing effects’ of an improvement in wellbeing need to be included carefully**, to avoid double counting. In Figure 6 below, the wellbeing benefits of volunteering are estimated only for the years participating in the programme. Beyond the years of the programme, volunteering may also influence opportunities or life choices – in this example, the chance of employment. However, since the associated wellbeing impact of employment is included already, it would be double counting to include any ‘ongoing wellbeing impacts’ from volunteering.
- **caution needs to be applied when considering wellbeing alongside QALY estimates**. In this example, only the wellbeing impacts of the volunteering programme are included.

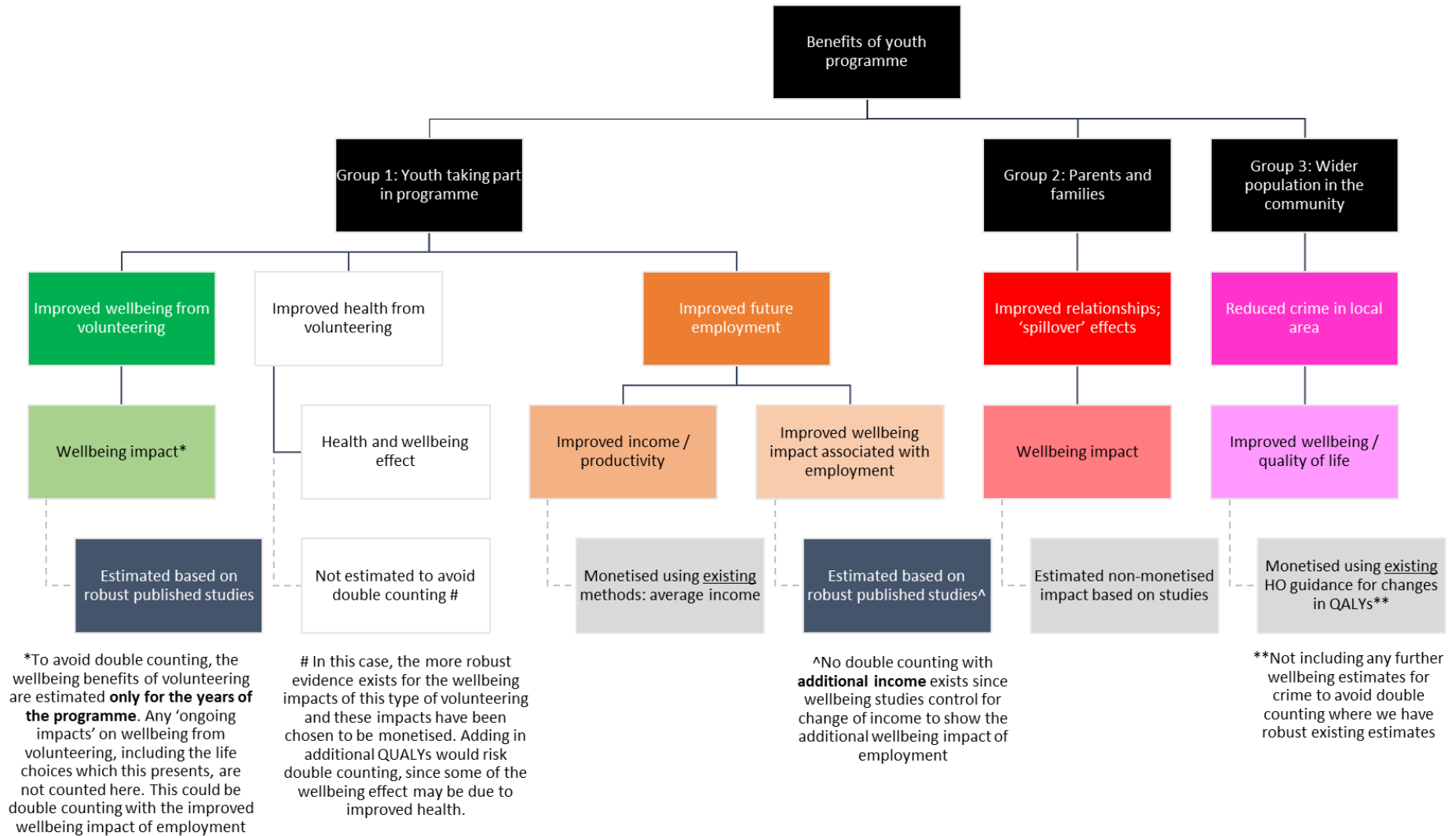
⁵⁸ This underpins the reasoning for distributional weighting being presented alongside unweighted cost-benefit analysis.

Incorporating additional QALY estimates (if available) may be useful as triangulation,⁵⁹ but including both would be double counting.

- the impacts due to a reduction in crime, including physical and mental health impacts, are best monetised using existing Home Office guidance, which in turn rests upon QALY estimates. No additional wellbeing impacts associated with crime are included, to avoid double counting.
- **analysts should be clear on what aspects of value are included (or specifically excluded) in a valuation.** In the example below, there is no double counting between the wellbeing impacts associated with moving into employment and the other measures of benefit associated with employment (productivity). The wellbeing values are *additional* to the improved productivity, monetised using average income. Wellbeing estimates can be considered additional to the income since the impact of income is controlled for in the studies used.

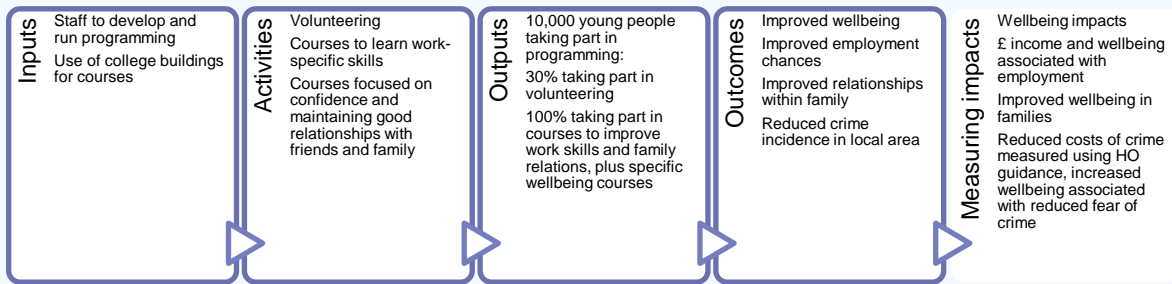
⁵⁹ Triangulation is where findings are compared with those from elsewhere, including other countries, regions or time, alongside a logic check of why there may be similarities or differences between the values. It is used as a 'sense-check' of a value. e

Figure 6: Illustrative example for avoiding “double counting” impacts



Box 11: Full illustrative example: provision of a specific youth programme aiming to increase employment chances and reduce crime

This example describes illustrative wellbeing impacts for the provision of a youth programme, aiming to improve confidence, increase employment chances and reduce crime. Note that this is highly simplified, concentrating on one option: a full appraisal would compare the impacts across the shortlist of options.



The target group for attending the youth programme are unemployed (currently and in the future 5 years) and those not participating in volunteering opportunities. A small proportion are expected to be involved in criminal activities. These would be captured in Business as Usual.

Those affected by the programme will include i. those who participate in the programme, ii. those close to the directly affected such as friends and family and iii. those not close to the directly affected such as the wider population in the community.

For those taking part in the programme, the estimated benefits include:

- i. Improved wellbeing as a result of taking part in the programme.*

There is evidence from RCTs available for a range of targeted wellbeing programmes. Evaluation evidence has shown an improvement of 0.4 life satisfaction points for a specific summer programme based on developing values, specific skills and volunteering in the community. This has been valued using the valuation method described in Box 7, with a central value of £5,200 if effects last for one year (See Annex A2).

Previous evaluations have shown a 80% completion rate, however, based on the target group for this intervention, an optimism bias is applied, assuming that only 40% of the young people starting the programme will complete it.

Monetised benefit of volunteering during the programme:
10,000 young people x 40% completing programme x wellbeing impact of £5,200 = £20.8mn (central value)

- ii. Improved employment opportunities*

This example is illustrative, proposing that the specific focus of this programme on learning job skills would increase employment for 2% compared to the counterfactual for those

taking part in the programme. The benefits of increased employment opportunities are estimated as:

- Additional income, monetised based on hourly wage. Assuming the minimum wage, with hourly salary of £8.20 for a 21-24 year-old working 40 hrs a week, gives an annual salary of £17,056. Deducting average Universal Credit payment for a single person of £550 per month (£6,600 per year) gives a net income gain of £10,456. This can be multiplied by the current Green Book distributional weight for someone in the bottom income quintile of 2.4, giving a distributionally weighted benefit of $2.4 \times £10,456 = £25,094$

The additional wellbeing effect associated with being in employment can be estimated to be worth $0.46^{60} \times £13,000 = £5,980$ per year (with a range of £3,800-£8,480, using confidence intervals on wellbeing effect size as well as range of monetisation) drawing from the table of values in Annex A2 and the approach to monetisation described in Box 7 above. Income is included in the life satisfaction regression and therefore the coefficient on unemployment is estimated as the impact on wellbeing over and above (or in addition to) the loss of wage income that comes with unemployment. The full benefit of employment to the individual who would otherwise have been unemployed is therefore the £25,094 (additional wage valued at minimum wage less loss of universal credit) + £5,980 (wellbeing impact) = £31,074 per year (with a range of £28,894 - £33,574).

Monetised benefit of improved employment opportunities after the programme:

10,000 young people x 2% in employment compared to counterfactual x total benefit (£31,074)
 = £6,214,800 per year (range on wellbeing value impact and value: £5,778,800 - £6,714,800. Additional sensitivity would be applied any other key assumptions such as % in employment)

Note, the saving to government of Universal Credit payments should also be included in the appraisal as a benefit (cost saving) to government, calculated as follows:

10,000 young people x 2% in employment compared to counterfactual x saved UC payments (£6,600) = £1,320,000.

Total Benefit = £6,214,800 + £1,320,000 = £7,534,800 (central value)

Without distributional weights this would be: Total Benefit = $10,000 \times 0.02 \times (£10,456 + £6,600 + £5,980) = £4,607,200$.

For the families of those taking part in the programme, the estimated benefits include:

- i. Reduction in stress and better social relations*

⁶⁰ Note that a selected value has been used here. Evidence should be based on the employment in question and ideally sensitivity analysis should be done.

Wellbeing evidence in Australia has shown that when the mental health of an individual improves, there is a 'spillover' within families of 15% (Frijters and Mervin, 2014). Using this evidence, it could be assumed that there will be a similar impact from this programme, if less marked.

However, in the absence of specific evidence for this type of programme and the absence of evidence for parents and other family members in the UK, this is not monetised, but included as an important non-monetised impact.

Non-monetised benefit of better social relations during the programme:

Assumed 2,000-10,000 family members x wellbeing benefit of better family and social relations

For the local population, the estimated benefits include:

i. Reduced crime

This should be calculated based on the [Home Office Costs of Crime](#) calculations, including the reductions in quality of life associated with certain injuries (see Table 10 in above linked document).

5. Wellbeing in monitoring and evaluation

Chapter 5 should be read in conjunction with HM Treasury's *Magenta Book*, the UK Government's central guidance on evaluation⁶¹ as well as departmental and programme-specific evaluation guides.⁶²

As described in the *Magenta Book*, evaluation should be considered early and embedded in the design of interventions to maximise opportunities to collect good evidence.⁶³

5.1 Principles for measuring and evaluating wellbeing

As a multidimensional concept, different people may interpret wellbeing in different ways. As such, analysts should keep the following principles in mind when measuring and evaluating wellbeing:

- **consider observable factors** (also referred to as objective measures, such as crime rates) **as well as non-observable factors**, which are subjective to the person experiencing them (such as how safe they might feel). Measuring observable factors is useful where they have an evidenced link to wellbeing, but including subjective measures can help to validate that addressing these factors could indeed lead to improved wellbeing
- **look beyond present wellbeing**, and consider and assess the factors which may have an impact on future wellbeing, such as changes in the stocks of human, social and natural capital.⁶⁴ As wellbeing is such a complex, interlinked concept it is important to consider factors which lie beyond what we are observably changing, including the unintended consequences on wellbeing⁶⁵
- **use validated measures where possible**. When including wellbeing measures, the wording of individual questions is important, as well as the grouping and ordering of questions. There are a range of measures which have been subject to thorough scientific testing to demonstrate their validity (see Annex A1)
- **be consistent with existing and standardised measures**. Consistency in measurement makes it possible to compare findings with other approaches, helps to build the evidence base, allows the findings to be considered and applied in other contexts, and could help to influence future programme and policy design

⁶¹ <https://www.gov.uk/government/publications/the-magenta-book>

⁶² [Measuring Impact by Design](#) (2019) contains an overview of methods for impact measurement

⁶³ See section 1.6 of the *Magenta Book*

⁶⁴ See existing guidance on measuring natural capital and ONS guidance on measuring social capital

⁶⁵ For example, moving a family into permanent housing may increase their wellbeing by providing a sense of permanence and security, but equally may yield additional positive or negative effects in terms of changing distance from support networks or e.g. commute to a job.

- **different forms of evidence** may be needed to understand and assess wellbeing in different contexts. Mixed method approaches including quantitative and qualitative evidence may be appropriate
- **use a measure which is best suited for the relevant group**, e.g. children, adults with dementia or communication difficulties⁶⁶
- bear in mind the **existing frameworks** which are followed for the group, issue or region in question⁶⁷

5.2 Incorporating wellbeing in evaluation

Using the stages of the evaluation process as set out in HM Treasury's *Magenta Book*, wellbeing can be incorporated in the following ways:⁶⁸

Scoping evaluation

Key evaluation steps (from the Magenta Book, see Table 1.1)

- understand the intervention, what it aims to achieve, by when and for whom
- understand the evidence base surrounding the intervention
- develop the Theory of Change
- understand the questions to be answered

Wellbeing considerations for this stage

- understand the wellbeing aims of the intervention and the pathways through which this will be achieved
- include any wellbeing considerations for target groups, e.g. elderly, disabled, rural communities
- use existing wellbeing evidence (Annex A2) to inform the links between similar types of interventions and wellbeing as well as highlighting important gaps. Interventions may have different effects on diverse population groups. Consider how the evaluation adds to the existing knowledge base
- draw out, where relevant, wellbeing as part of the theory of change
- many systems and factors converge to effect wellbeing: consider the Magenta Book Supplementary Guidance on handling complexity in evaluation
- plan early to allow sufficient opportunities to collect good wellbeing evidence⁶⁹

Resources

⁶⁶ For example, the '[Measuring Wellbeing Creatively](#)' project works with people who have communication difficulties as a result of a brain injury or stroke. It explores how different colours and sensations can help them express feelings and emotions, which may help to measure their wellbeing.

In addition, some measures are only appropriate for adults above 15 years (see A1: Measuring Wellbeing)

⁶⁷ For example, a framework for evaluating rural wellbeing is in development. The Devolved Administrations have their own specific approaches for assessing wellbeing, based on data availability as well as local/regional issues

⁶⁸ These sub-sections are based on Table 1.1 in HM Treasury's *Magenta Book* (HM Treasury, 2020).

⁶⁹ For example, to collect baseline information and the opportunity for experimentation in the intervention where feasible and relevant

- Wellbeing Supplementary Green Book Guidance (this guide): ONS dimensions, Table 1, Overview of evidence, Section 2
- What Works Centre for Wellbeing⁷⁰ for topic-specific overviews and systematic reviews of the existing wellbeing evidence base
- [Magenta Book Supplementary Guidance on handling complexity in evaluation](#)

Designing evaluation

Key evaluation steps

- identify the evaluation approach(es) that will help meet the learning goals
- begin to plan the evaluation, deciding on the design and questions to be answered and the reporting points where evidence is needed.

Wellbeing considerations

When seeking to understand or assess changes in wellbeing:

- consider observable factors ('objective measures') as well as factors that are subjective to the person experiencing them
- consider unintended consequences, both positive or negative. Many factors interrelate to have a final impact on wellbeing: a change in one area can result in unintended impacts in other areas
- draw from the range of validated measures and consider consistency with measures where baseline information is available. Using the ONS Harmonised Principles for Measurement can add to a coherent database and address gaps in evidence (See Annex A1)
- if conducting an impact evaluation, consider what an appropriate counterfactual might be to estimate changes in wellbeing caused by an intervention
- consider how often and when wellbeing will be measured and monitored: acknowledge that wellbeing may be subject to adaptation and there is benefit to longer-term follow-up⁷¹
- ensure the scale of the intervention is sufficient to allow impacts on wellbeing to be measured

Resources

- What Works Centre for Wellbeing (WWCW) [How to Measure](#) for an overview of measurement
- ONS [Harmonised Principles for measuring personal wellbeing](#)⁷²
- WWCW [Recommended Questions](#)

Choosing the appropriate methods

Key evaluation steps

⁷⁰ www.whatworkswellbeing.org

⁷¹ See also Magenta Book Supplementary Guidance on Handling Complexity in Evaluation

⁷² <https://gss.civilservice.gov.uk/policy-store/personal-well-being/#dissemination-output->

- decide on the methods, both for analysis and data collection, that can answer the evaluation questions
- ensure the chosen methods complement each other and are as efficient as possible

Wellbeing considerations

- when considering changes in wellbeing, using with measures where baseline information is available may reduce costs. For both objective and subjective measures, there are a range of existing surveys which can be used or replicated
- consider the best form of evidence to understand and assess wellbeing in different contexts, including where mixed methods and qualitative evidence may be appropriate

Resources

- WWCW [Recommended Questions](#).
- WWCW [Analysing and Using Your Results](#) (Section 5) for information on benchmarking ONS4 and SWEMWBS⁷³
- Canada Government [Measuring Impact by Design](#) (2019) contains an overview of methods for impact measurement

Conducting evaluation

Key evaluation steps

- execute the evaluation, modify design in response to learning and policy changes or stakeholder requirements
- feed in evidence where possible in line with known and new decision points

Wellbeing considerations

- the ordering of the wellbeing questions is important. Asking the wellbeing questions after another theme can influence the responses which individuals give, since attention is drawn to a specific topic. It is recommended that these questions are placed after the key demographic questions in surveys. This allows rapport to be developed between the interviewer and the respondent, as well as ensuring the main survey questions do not impact on the responses to the personal wellbeing questions
- some measures are only designed to be carried out in particular ways, such as face to face
- ONS has published data on mode effects for two interviewer led modes (telephone and face to face), showing significant mode effects. Because of this, it is not recommended to compare wellbeing data that have been collected in different modes

Resources

- ONS [Harmonised Principles for measuring personal wellbeing](#)⁷⁴
- specific guidance documents for the chosen wellbeing measure, see Annex A1: measuring wellbeing

⁷³ Short Warwick Edinburgh Mental Well-Being Scale

⁷⁴ <https://gss.civilservice.gov.uk/policy-store/personal-well-being/#dissemination-output->

Disseminating, using and learning

Key evaluation steps

- prepare final evaluation analysis and outputs

Wellbeing considerations

- communicate the impact clearly, including the detail of how wellbeing was measured and the questions used
- where relevant, report differences across groups
- report unexpected wellbeing consequences as well as the outcomes which were set out to be changed

Resources

- WWCW [Analysing and Using Your Results](#)

6. Checklist for analysts

This chapter provides a 'checklist' for analysts. It is intended as a set of questions that analysts can use to assess wellbeing impacts across the policy development process.

Since wellbeing is an overarching concept, interchangeable with social welfare or social value, there is no separate requirement for reporting beyond what is required for good economic appraisal. The existing Impact Assessment template and Business Case approach should be followed, referring to wellbeing as part of the costs and benefits.

Throughout the policy cycle, the questions you may wish to consider are:

- At an early stage of the policy cycle, are you familiar with the relevant wellbeing research, including the wellbeing implications of related policy interventions?
- Have you considered wellbeing impacts in your critical success factors, at longlist appraisal stage?
- Have you developed a Theory of Change to consider wellbeing impacts for the proposed way forward?
- Have you considered unintended consequences, including wellbeing externalities and relative wellbeing effects?
- Have you considered set an appropriate timeframe over which to appraise wellbeing impacts? Have you given regard to the duration of impact and the potential for adaption to a change of state?
- In your shortlist appraisal, have you weighed the relative merits of cost benefit analysis, cost-effectiveness analysis and other methods, given the nature of the policy options and available evidence?
- In appraising the quantifiable impacts on wellbeing, have you taken care to avoid "double counting" outcomes?
- Where monetisation of wellbeing impacts is feasible and appropriate, have you identified appropriate valuation method(s) and evidence?
- Where wellbeing impacts are not quantified and/or monetised, have you assessed whether these are likely to be decisive and ensured that these are reported alongside the cost-benefit metrics?
- In undertaking your wellbeing appraisal, have you critically appraised the standard of evidence that was available, performed appropriate quality assurance, sense checks and sensitivity analysis? Have you presented any related risks and uncertainties transparently and objectively?
- Is your distributional analysis in line with the Green Book, and does this give regard to variable wellbeing impacts across different groups of society?
- Have you incorporated wellbeing into the monitoring and evaluation plans, in alignment with the HM Treasury's Magenta Book?
- Have you taken steps to ensure that the evidence gathered through your evaluation feeds back into future decisions?

Annexes

Annex 1 - Measuring wellbeing

This Annex provides an overview of the different approaches that can be used to measure wellbeing. The different approaches used together can provide a fuller picture of wellbeing at the individual, community and national level than when used in isolation.⁷⁵

Measuring adult wellbeing

Objective measures

The objective approach to wellbeing measurement examines the objective components of wellbeing by concentrating on visible factors – how someone’s life looks from the outside. Objective indicators attempt to measure societal development and quality of life using aggregate measures of education, employment, health, housing, income and environmental quality, among other “domains” which form part of the ONS National Wellbeing framework. The objective approach informs national and international statistical indicators such as the OECD’s Better Life initiatives (OECD⁷⁶). As stated in Chapter 2, the Office for National Statistics (ONS) measures wellbeing in ten “domains”. The ONS regularly updates its wellbeing measurements and reports the results on a live dashboard.

Subjective measures - the ONS4 national measures

Subjective wellbeing is referred to as “personal wellbeing” by the ONS. It is about people evaluating their own lives. The ONS regularly asks individuals how they evaluate their own lives by asking them how satisfied they are with their life overall, whether their lives have meaning and purpose, and about their emotions during a particular period. Table A1.1 shows the specific questions asked by the ONS (the so-called ONS4) to assess subjective wellbeing.

Table A1.1: ONS4 - the national measures for subjective wellbeing in the UK

Next I would like to ask you four questions about your feelings on aspects of your life There are no right or wrong answers. For each of these questions I’d like you to give an answer on a scale of 0 to 10, where 0 is “not at all” and 10 is “completely”.	
Measure	Question
Life satisfaction	Overall, how satisfied are you with your life nowadays?
Worthwhile	Overall, to what extent do you feel that the things that you do in your life are worthwhile?
Happiness	Overall, how happy did you feel yesterday?
Anxiety	On a scale where 0 is “not at all anxious” and 10 is

⁷⁵ Further information can be found on [Well-being](#) and [How to measure wellbeing?](#)

⁷⁶ [Better Life Initiative: Measuring Well-Being and Progress](#)

	"completely anxious", overall how anxious did you feel yesterday?
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Source: ONS. [Personal wellbeing frequently asked questions](#).⁷⁷

Subjective data on wellbeing in the UK have been systematically collected since 2011. These are collected quarterly by the ONS as part of the Annual Population Survey (APS) from 300,000 people per year and are publicly available, providing a means for comparison, benchmarking and building the evidence base. Breakdowns are available for specific geographies, characteristics and industry sectors, among others.⁷⁸

The ONS personal wellbeing measures are included in a large number of national surveys in the UK.⁷⁹

There is a large and ever-expanding collection of data and research using the life satisfaction measure which can be used to test and compare different determinants of wellbeing. A benefit of wellbeing surveys is that they do not ask if particular things (such as income) or activities (such as smoking or exercising) make respondents happy. Behavioural economics shows that such assessments may be unreliable, since attention is overly drawn to a specific aspect of our lives.⁸⁰ Instead, investigators identify how strongly various factors affect wellbeing by examining the relationship between those factors (such as socioeconomic status or views about the value of hard work) and self-reported wellbeing.

Subjective measures can be split by the 'type' of wellbeing they are seeking to measure (evaluative, eudemonic and affective wellbeing, see box A1 and Glossary) as well as the timescale they aim to represent.

Those included in longer-term panel data surveys (such as the ONS4) aim to capture ongoing differences in wellbeing and changes in 'states', or an individual's *evaluation* or their state. Other measures use 'in-the-moment' data which are very short term - and aim to capture *experiences*.⁸¹ These two sets of data can be used for different things. 'Momentary' or experiential measures may capture certain impacts not captured by longer-term / evaluative wellbeing measures, such as the effects of singular events or visits to museums,⁸² however evaluative measures capture longer-term effects related to civic engagement, or a change in 'state' such as unemployment.

⁷⁷ Further information on the development of the questions available: Dolan, Layard and Metcalf (2011) Report to the ONS [Measuring Subjective Wellbeing for Public Policy](#)

⁷⁸ [Personal well-being frequently asked questions](#)

⁷⁹ For a list of surveys that use the four ONS personal wellbeing questions please see: [Surveys using our four personal well-being questions](#)

⁸⁰ See GES (2011) [Valuation Techniques for Social Cost-Benefit Analysis for preference anomalies, including anchoring](#)

⁸¹ An example of this is 'Mappiness', an application that permits individuals to record their wellbeing scores via their phone.

Individuals receive randomly timed requests to complete a very short survey which asks them to rate how they feel at the current moment, stating how happy, how relaxed, and how awake they feel. This has allowed for the collection of more than one million observations from tens of thousands of individuals in the UK since August 2010, alongside information of location and activity.

Dolan and Kudrna (2016) also propose how experiential data can be used and applied in practice

⁸² By the time you are asked in a survey, these smaller events are harder to identify.

Box A1.1: Personal subjective wellbeing

Personal subjective wellbeing measures can include:

- an overall assessment of someone's life, usually to find out whether they feel generally satisfied or not (sometimes referred to as evaluative wellbeing)
- their overall sense of purpose, and how well they function (sometimes referred to as eudaimonia)
- the positive or negative feelings they've had recently – for example, how happy or anxious they've been (also referred to as positive affect and negative affect). See Annex A for more information on measurement.

Subjective measures - other

There are other subjective measures of wellbeing that relate mainly to physical health, and mental and psychological aspects of individual wellbeing.

For example, the Warwick-Edinburgh Mental Wellbeing Scales (WEMWBS) were developed to help measure the mental wellbeing in the population, and to help evaluate projects, programmes and policies aimed at raising wellbeing.⁸³ The WEMWBS questionnaires - or inventories - measure the feeling and psychological functioning aspects of wellbeing in a systematic way. Other scales include the EuroQol-5D (EQ5D), World Health Organisation Quality of Life instrument (WHOQOL-BREF) and the General Health Questionnaire (GHQ12).

In addition, measures specific to certain themes or "domains" are used and surveyed in the UK and worldwide. These include satisfaction with job, neighbourhood or service, among others. These can be helpful for service design as well as understanding contributing drivers of overall wellbeing.

In a global setting, indexes such as The Global Person Generated Index (GPGI)⁸⁴ allows people to define their own wellbeing.

Measuring child and young person wellbeing

There are a number of specific initiatives that measure the wellbeing of children and young people.

The ONS has specific measures for children's wellbeing (aged 0-15 years, varies by question)⁸⁵ and young people's wellbeing (aged 16-24)⁸⁶, which complement the national measures of wellbeing. These are organised under 7 of the national wellbeing "domains" described in Chapter 2: personal wellbeing, our relationships, health, what we do, where we live, personal finance, and education and skills.

Some questions match those asked in the adult measuring national wellbeing programme (e.g. participation in arts or cultural activities, feelings of safety), others are specifically designed to

⁸³ For more information visit [About WEMWBS](#).

⁸⁴ Martin, Camfield & Ruta (2010)

⁸⁵ [Dataset Children's well-being measures](#)

⁸⁶ [Dataset young person's well-being measures](#)

reflect themes important for these age groups (e.g. talking to parents about things that matter; quarrelling with parents). Questions vary slightly for child and young person wellbeing. These are designed to shed light both on their current wellbeing and on their future prospects. As with the adult national wellbeing programme, some measures are objective and others subjective. The aim is to provide a holistic view of life in the UK for children and young people, reflecting both the circumstances of their lives and their own perspectives.

Another example is the Good Childhood Index developed by the Children's Society. It is a measure of subjective wellbeing intended for children aged eight and over.⁸⁷ The index is based on ten "domains", covering themes such as relationships with family and friends, appearance, school, choices available, and money and material possessions. A survey developed by the organisation found that the most important "domains" for children are: family; friends; appearance; school; school work. They now use the topics in all their surveys for children, asking how satisfied they are with them on a scale from 0 to 10.

The [Education Endowment Foundation](#) (EEF) provides a list of validated measures to be used in relation to child and adolescent outcomes as part of the SPECTRUM database.⁸⁸

As part of this, for example, the WEMWBS has also been validated for use with children aged 13 and over and has been used in the Health Survey for England since 2010. SWEMWBS has been validated for use with children aged 11 and over. Mean WEMWBS scores are reported each year for the age group 16 to 24 years and are available from the UK Data Service.⁸⁹

Measuring community wellbeing

Community wellbeing is the combination of social, economic, environmental, cultural and political conditions that people and their communities say they need to fulfil their potential. Similar to individual wellbeing, community wellbeing can be measured through objective measures including access to healthcare, security and social relations as well as subjective measures, such as how safe people feel and the trust they have in others. However, community wellbeing is more than the sum of individuals' wellbeing as it also includes the relationships between people, and collective attitudes and behaviours.

One important component of community wellbeing is social capital, which describes the extent and nature of connections with others, and the collective attitudes and behaviours between people that support a well-functioning, close-knit society. The ONS, for example, measures social capital through a 25-indicator framework, covering topics such as social network support, trust and co-operative norms, personal relationships, and civic participation.⁹⁰ Loneliness is an important consideration within community wellbeing and social capital.

See the What Works Centre for Wellbeing Social Capital [recommended questions](#) for the detail of these validated questions and how to benchmark.

87 <https://www.childrenssociety.org.uk/what-we-do/research/wellbeing/background-programme/good-childhood-index>

88 For a list of measures, see [SPECTRUM Database](#)

89 <https://ukdataservice.ac.uk/>

90 [Social capital in the UK](#). The ONS domains match the OECD's framework for measuring social capital, see [Four Interpretations of Social Capital: An Agenda for Measurement](#)

The What Works Centre for Wellbeing '[Systematic scoping review of indicators of community wellbeing in the UK](#)'⁹¹ explores existing [community wellbeing](#) measures that organisations and groups around the country are using.

Box A1.2: Scotland's National Wellbeing Framework

The Scottish Government describes the National Performance Framework (NPF) as Scotland's 'wellbeing framework'. This recognises that for Scotland to become 'a more successful country with opportunities for all to flourish through increased wellbeing' requires progress towards all of the 11 outcomes, and application of the NPF values. This approach recognises that increasing wellbeing means improving lives across Scotland now as well as creating the conditions to ensure wellbeing for future generations.

Bringing individual and societal perspectives together, wellbeing can be defined as 'living well' both as individuals and collectively, as society. The Scottish Government view 'living well' in broad terms and see this as encompassing the following areas, which form the focus of our National Performance Framework outcomes: Health; Fair work & Business; Economy; Poverty; Environment; Education; Children; Communities; Human Rights; Culture; International. Scottish Government also consider 'wellbeing' to be about living well now and in the future and believe it is fundamental to protect and invest in the capital stocks that sustain wellbeing over time including: natural capital (the stock of natural assets), economic capital (those assets which can be easily monetised), human capital (the skills and competencies of the population, including democratic participation) and social capital (how society is organised, networks and levels of trust) to ensure the sustainability of Scotland's wellbeing.

91 Bagnall *et al.*, (2017), 'Systematic scoping review of indicators of community wellbeing in the UK' <https://whatworkswellbeing.org/product/community-wellbeing-indicators-scoping-review/>

Annex 2 - Quantifying and monetising wellbeing effects

Monetising wellbeing impacts

Once we are content with a robust wellbeing effect size, there are a range of options which can be considered for ‘translating’ a change in life satisfaction into income⁹².

In seeking an approach which can achieve **approximate consistency** with existing government values which are accepted and used;⁹³ fits within the **existing theoretical framework** of values used within SCBA; can be **practically applied** and is easy to adopt; is **consistent with evidence** on the link between wellbeing and income; is **robust and based on published research** and does not lead to any **unintended consequences** or disadvantage for certain groups.

The accompanying discussion paper sets out a review of approaches against these criteria. On the basis of the options and these criteria, in particular consistency, this guide **proposes that a robust estimate of a change in life satisfaction can be converted to a monetary value by multiplying by £13,000** [Low: £10,000, High £16,000]. This is the recommended standard value of one wellbeing adjusted life year - a ‘WELLBY’⁹⁴ - in 2019 prices and values.

The value of WELLBY derived in this way can then be applied linearly to any change in life satisfaction. For example, reducing life satisfaction by 0.4 for 1 year would have a value of $0.4 \times £13,000 = £5,200$, with a range of £4,000 - £6,400. The same WELLBY value should be applied to all individuals regardless of income and represents a population average willingness to pay. This is justified on equity grounds, as per the approach taken for valuing life and health impacts in the Green Book.⁹⁵ As the WELLBY is a constant unit value, losses and gains are valued equally.

While the behavioural economics literature suggests losses are often valued more highly than equivalent gains (beyond what can be explained by diminishing marginal utility of income), using the same per-unit value for all wellbeing impacts has the benefit of being transparent and easy to apply. Furthermore, it is in line with the existing Green Book approach to valuing life and health impacts.

Derivation of the recommended WELLBY value and low-high range

There are two main approaches to estimating the monetary value of a WELLBY, defined as one statistical unit of life-satisfaction on a 0-10 scale for one person for one year. Both are aiming to estimate the Willingness to Pay for changes in Life Satisfaction.

Approach 1: Pivoting off the Green Book value of a QALY

- This approach focuses on achieving consistency with existing valuations used in Government. It is based on Frijters & Krekel (2021) and applies the monetised value of a QALY, derived

⁹² Note this is not simply a focus on how our wellbeing is affected with a change in income, but rather how best to monetise a change in wellbeing, in the same way that a change in health related quality of life is monetised through the QALY approach and monetisation of the QALY.

⁹³ For example, for the Value of a Statistical Life Year and value of a Quality Adjusted Life Year as set out in the Green Book.

⁹⁴ See Frijters & Krekel, 2021.

⁹⁵ See Green Book annex A1.

from the Value of a Statistical Life Year⁹⁶, to the appropriate number of WELLBYs. As described above, a WELLBY is defined as a one-point change in life satisfaction for one year.

- To determine the number of WELLBYs equivalent to one life year, we need to consider what is incorporated in the relative measures. As is described in Brazier *et al.*'s (2016) paper for the Department of Health, a QALY is a sub-set of what is captured within life satisfaction. A QALY, when measured with the EQ-5D, represents the value of an additional life year lived with no problems with mobility, self-care or usual activities, no pain or discomfort, and no anxiety or depression.⁹⁷ Brazier *et al.*'s research sponsored by NICE emphasises that there are additional dimensions to wellbeing (and wellbeing as measured by Life Satisfaction) which are not captured within these dimensions of the QALY.
- We can broadly align life satisfaction scores with the upper and lower bound of a QALY based on research and papers from Frijters *et al.* (1999, 2021) as well as data from the ONS. Frijters & Krekel (2021) note that the average life satisfaction of someone with no health problems is around 8 (on a 0-10 scale).⁹⁸ There are different assumptions which can be taken for the bottom end of the range. There are QALY states worse than 0 – i.e. negative QALYs, yet the bottom end of the life satisfaction range is 0. Very little is known about individuals who answer 0 on a QALY and 0-2 on a life satisfaction scale.⁹⁹ Frijters (1999) look at the life satisfaction point at which individuals become indifferent between continuing to live or not. Peasgood *et al.*, (2018) implemented a very similar idea on UK respondents and found the zero-point to be around 2.¹⁰⁰
- However, this may be an overestimation of the point of indifference, when comparing with observed behaviour (in this case, committing suicide): approximately 0.01 take their own lives, yet a higher proportion of ONS respondents give 2 or lower on a life satisfaction score. In the other direction, ONS data shows that the average Life Satisfaction of those self-reporting their health to be 'very bad' is around 5.¹⁰¹ Based on the limited data available, the point of indifference with a QALY of 0 is considered to align with a life satisfaction score of greater than 0, which we assume is a score of 1 (on a 0-10 scale).
- One QALY is then associated with a 7- point change in life satisfaction (from someone with no health problems, to as bad as death: 8-to-1).
- Given a QALY is worth £60,000 as per HMT Green Book guidance (2014 prices and values), or £70,158 in 2019 prices and values,¹⁰² one WELLBY would have a value of £70,158/(8-1) = £10,023.

This conversion relies on a number of assumptions, but these assumptions can be considered logical, given the evidence available. In addition, this *broad* magnitude of the WELLBY is corroborated by research by Huang *et al.* (2018), which uses an instrumental variables approach

⁹⁶ In turn estimated through Carthy *et al.* (1999) willingness to pay values

⁹⁷ The highest level of health which can be expected

⁹⁸ Previous ONS data from 2014/15 [Personal well-being estimates personal characteristics - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/personal-well-being-estimates-personal-characteristics) shows that the mean life satisfaction of individuals reporting 'very good' health is over 8 on a 0-10 scale. Recent data from ONS [Coronavirus personal and economic well-being impacts - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/coronavirus-personal-and-economic-well-being-impacts) shows that those reporting that they do not have specific health conditions report a mean life satisfaction of over 8 (See Row 120, tab 'changes for parts of population').

⁹⁹ Respondents in Peasgood *et al.* (2018) found lower ends of the life satisfaction scale difficult to imagine

¹⁰⁰ With a small sample: further research is encouraged.

¹⁰¹ [Personal well-being estimates personal characteristics - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/personal-well-being-estimates-personal-characteristics) Note that 'very bad' health is considered higher than a 0 QALY

¹⁰² Uplifted to 2019 prices using GDP deflator growth (ONS series MNF2), and real GDP per capita growth (ONS series IHXW) in conjunction with the marginal utility of income elasticity parameter of 1.3 as recommended in the main text.

that ensures 'noticeability' of the income change.¹⁰³ We rely on the QALY based derivation as it is based on established existing approaches to valuing life and health impacts in the Green Book.

This consistency with existing government values should be continually reviewed. If and when any government figures for the value of a statistical life year update - including the methods and approaches taken for this valuation - the consistency to the wellbeing income approach will need to be reviewed.

Approach 2: Calculating the willingness to pay for life satisfaction changes

The second approach is based on analysis of the relationship between ln(income) and life satisfaction. Fujiwara (2021) finds the coefficient on ln(income) is 1.25 (with life satisfaction measured on a 1-7 scale). We can define a WELLBY in this context as the aggregation of WTP for many infinitesimally small individual gains in life satisfaction which sum to 1 point of life satisfaction for one year (i.e. 1 WELLBY).¹⁰⁴ If life satisfaction is related to ln(income), this can be computed as the inverse of the marginal utility of income:

$$WTP - WELLBY = \left[\frac{f'(\ln(M))}{M} \right]^{-1} = \frac{M}{\beta_Y}$$

This expression is simply the marginal rate of substitution between income and life satisfaction. In this expression β_Y is the coefficient on ln(income), converted to a 0-10 scale. Given we are using a ln(income) coefficient of 1.25 on a 1-7 scale, this needs multiplying by 11/7 to be expressed on a 0-10 scale. Then, we have:

$$\beta_Y = \frac{11}{7} (1.25) = 1.96$$

We can then calculate the WTP per WELLBY with reference to average earnings based on ONS data, which were £30,673 in 2019 as follows:

$$WTP (WELLBY) = \frac{£30,673}{1.96} = £15,649.$$

For simplicity this is rounded to £16,000.

Deriving the central recommended WELLBY value

Summarising, we have derived two estimates of the monetary equivalent value of a WELLBY, £10,023, and £15,649 (both in 2019 prices and values). We treat these as the upper and lower bound, and take the mid-point as the recommended central estimate of the WTP-per-WELLBY, which is then:

$$WTP (WELLBY) = \frac{10,000 + 16,000}{2} = £13,000.$$

Therefore, the recommended value of a WELLBY, alongside the low-high range recommended for sensitivity testing, is given in the below table.

¹⁰³ These authors find that a one-off loss of income of approximately £9,000 reduced life satisfaction by 1 point for 1 year (2015 prices). The value of a WELLBY under this approach would therefore be £10,246 in 2019 prices – aiding comparability.

¹⁰⁴ This is analogous to the definition of the Value of a Life Year and Value of a Prevented Fatality. See <https://www.gov.uk/government/publications/valuation-of-risks-to-life-and-health-monetary-value-of-a-life-year-vol1/a-scoping-study-on-the-valuation-of-risks-to-life-and-health-the-monetary-value-of-a-life-year-vol2>.

	WTP-WELLBY value (2019 prices and values)	Source
Low	£10,000	Based on QALY value (updated to 2019 prices), broadly using approach in Frijters and Krekel (2021) but adapting to reflect wider academic comment on low-point conversion
Central	£13,000	Midpoint of low and high
High	£16,000	Based on ln(income) coefficient of 1.96 ¹⁰⁵ from Fujiwara (2021)

Further details: price year and discounting

To convert to convert this figure into a different price and value base year using outturn ONS economic data, the following formula should be used:

$$WTP (WELLBY_t) = WTP (WELLBY_{base}) \cdot \frac{GDP_deflator_t}{GDP_deflator_{base}} \cdot \left(\frac{GDP_per_capita_t}{GDP_per_capita_{base}} \right)^{1.3}$$

Where 1.3 is the negative of the marginal utility of income elasticity, taken from the HMT Green Book Annex 3 on distributional weights (HMT, 2020). Applying the elasticity in this way ensures that the 'utility value' of one unit of life satisfaction change is held constant over time.

In appraisal, changes in wellbeing which occur in future years are **discounted using the Green Book 'health' discount rate** which starts at 1.5% (years 0-30) and declines gradually thereafter. This is because the 'wealth effect', or real per capita consumption growth element of the discount rate, is excluded, again preserving constant a utility value per point change in life satisfaction in future years. Please refer to the HMT Green Book, Annex A6. Note, the WELLBY value should always be updated to the appraisal base year using the formula above.

Optional consideration: Monetising wellbeing impacts for non-marginal changes using the ln(income) approach

For large changes in life satisfaction it may be important to consider the impact of diminishing marginal utility of income on valuations, which is not reflected in the WELLBY approach. This means the monetary equivalent value will not be a linear function of the size of the change (as under the WELLBY approach) but the slope will increase (decrease) as the required gain (loss) in income to offset the life satisfaction change increases. This follows directly from diminishing marginal utility of income and the concavity of the utility function. For small changes in life satisfaction this makes little difference to appraisal values.

Drawing on standard welfare economics, there are two possible ways of measuring the monetary equivalent of a given change in life satisfaction. The formulae given below are based on the ln(income) approach described above and are taken from Fujiwara (2013).

¹⁰⁵ On a 0-10 scale, original study based on 1-7 scale and noted coefficient of 1.25

- i. **Compensating Surplus (CS)** calculates the amount of money, paid or received, that will leave the agent in his/her initial welfare position following a change from the status quo.

The formula for calculating the CS of a change in outcome Q (i.e. the wellbeing value of Q) is:

$$CS = M \left[1 - \exp \left(-\frac{\beta_Q \Delta Q}{\beta_Y} \right) \right]$$

- ii. **Equivalent Surplus (ES)** is the amount of money, to be paid or received, that will leave the agent in his/her subsequent welfare position in the absence of a change from the status quo.

The formula for calculating the ES of a change in outcome Q is:

$$ES = M \left[\exp \left(\frac{\beta_Q \Delta Q}{\beta_Y} \right) - 1 \right]$$

where

M = average net personal income;

β_Y = the coefficient of log income (1.96)¹⁰⁶, from Fujiwara (2021);

β_Q = the coefficient on the good/outcome (Q) being valued.

ΔQ = change in the good/outcome being valued.

Note, in most wellbeing appraisal applications, $\beta_Q \Delta Q$ will simply be the total life satisfaction effect size (per person per year) for the policy impact being appraised, denoted ΔLS in the main text.

For changes in Q which **increase** wellbeing, CS represents the income loss individuals would be willing to sustain to secure Q (similar to the notion of WTP), whereas ES represents the gain in income which is as good as the impact of Q on SWB (similar to the notion of WTA). In this case, ES will always exceed CS and both will be positive.

For changes in Q which **decrease** wellbeing, CS represents the income gain which would compensate individuals for the loss in wellbeing, whereas ES represents the amount of income people would be willing to forgo to avoid the loss in wellbeing. In this case, the absolute CS will always exceed absolute ES, but both will be negative. Therefore, the sign needs to be flipped positive if the appraisal values are to be reported as 'costs'. For example, an ES of -£1000 effectively corresponds to a willingness to pay £1,000 to avoid the decrease in wellbeing.

The table below summarises the relationships between CS, ES, WTP and WTA.

Change in life satisfaction is...	Compensating surplus	Equivalent surplus
Positive	WTP to obtain increase	WTA to forego gain
Negative	WTA to tolerate decrease	WTP to avoid loss

¹⁰⁶ For life satisfaction on a 0-10 scale

In general, CS is the preferred measure for appraisal, which corresponds with the idea that individuals have a 'right' to the status quo situation, so we ought to look at the income change needed in the new (post-policy situation) to offset the change, not how much we would need to change income by in the pre-policy situation to equal the change.

For changes in excess of around 0.5 points of life satisfaction per person per year, analysts may wish to carry out a sensitivity test using the following formula for the compensating surplus given above. Note that this will give alternative sensitivity values for the **high** end of the range, not the central value.

For further background on monetising wellbeing and the range of approaches available, please see the accompanying discussion paper.

Converting life satisfaction impacts from one scale to another

Life satisfaction can be measured on many scales, most commonly 1-5, 1-7 and 0-10. The following formula can be used to convert scores from one scale to another.

$$New\ score = \frac{l_{max}}{2} - \frac{l(k - 2i + 1)}{2k}$$

where

l_{max} = highest score on new scale;

l = number of levels on new scale;

k = number of levels on old scale;

i = position on old scale;

This formula ensures equal intervals between points on any desired scale. This means that a straightforward formula can be used to adjust estimated effect sizes from one scale to another. If an effect sizes of β_k is estimated on a scale with k levels, the effect size on a scale with l levels can be calculated as:

$$\beta_l = \beta_k \frac{l}{k}$$

Selection of wellbeing values from literature

There is a large and expanding collection of data and research on wellbeing. The table below sets out a summary of wellbeing effects which may be relevant for policy analysis, including a sub-set of those in Frijters *et al.* (2020) and drawing from further relevant studies.

The rows below have been selected to show a broad spectrum of the ONS dimensions of wellbeing and are not exhaustive of the wellbeing studies which are available. It should be noted that the relative importance of these factors varies across individuals and groups, including geographies, ages and other characteristics. In some cases, the specific wellbeing impacts for certain groups have been drawn out and where possible, analysis should be specific for the group in question.

The table mainly focuses on studies showing the effect on life satisfaction along with a selection of monetised values. As set out in the guide (Chapter 4), the life satisfaction approach for monetisation will not be relevant in all cases. This depends on the effect as well as the techniques and data available in a certain area of focus. Where a specific change is already robustly monetised using e.g. QALYs or a damage cost method, this is signposted in the table. In these situations, these existing methods for monetising wellbeing should be used.

Where shown, monetary values below have been calculated by applying the recommended monetisation approach by the life satisfaction figures available in the data. These monetary values – when applied to life satisfaction figures - are drawn out to be illustrative of the data available and **should not be considered HMT recommended values**. Figures should not be used without first assessing the data for the context and policy change in question, plus assessing any further evidence available.

ONS dimensions of wellbeing		Illustrative Change	Selected effect on 0-10 Life Satisfaction where relevant	Approach for monetisation and selected monetised value, where relevant ¹⁰⁷	Confidence	Dynamics. Duration. Scaling and spillovers.	Interpretation – to avoid double counting	Key References
Physical or mental health		Change in physical or mental health	Physical and mental health are consistently among the most important factors for wellbeing.	<p>Values from existing UK approaches:</p> <p>In the UK, we use the established approach of changes in quality adjusted life years (QALYs) or disability adjusted life years (DALYs).</p>	High. Valuation based on established stated preference studies and included in the HMT Green Book.	<p>Depends on condition. Mental health conditions show permanent effect on wellbeing, little evidence of a peak.</p> <p>Improvements in mental health have been shown to have a positive effect on the wellbeing of the partner.</p>	<p>These values are not based on subjective wellbeing, but on stated preference.</p> <p>Reflect individual willingness to pay to avoid negative health consequences.</p> <p>Where direct evidence on QALY/DALY impacts is available, this approach is recommended for appraisal. Using SWB values in addition would pose a significant risk of double counting</p>	<p>2019 Global Burden of Disease disability weights</p> <p>Frijters and Mervin (2014)</p>
Our relationships	Loneliness	Reduction in loneliness	<p>If we feel lonely most or all of the time, it can have a serious impact on wellbeing, and ability to function in society. Loneliness has been linked to poor physical health, mental health, and poor personal wellbeing.</p> <p><u>UK Selected values</u> (Peytrignet, <i>et al.</i>, 2020) UK</p>	<p>Monetising effect on life satisfaction:</p> <p>£9,100 per year for change from moderate loneliness¹⁰⁹ to mild loneliness¹⁰⁹ (95% CI: £5,900 - £12,960¹¹⁰)</p>	<p>Effect significant in cross-section and panels, but causality unclear.</p> <p>The What Works Centre for Wellbeing review of reviews highlights the range of evidence for interventions around addressing loneliness.</p>	<p>Loneliness, whether infrequent or persistent, has large and significant negative impacts on life satisfaction. As the frequency of self-reported loneliness increases, its detrimental effect tends to be greater. No current evidence on duration or adaption but the assumption is that there is no adaption.</p>	<p>Health and other standard factors are included in the regression and therefore the coefficient on loneliness is understood as the impact over and above any contributing effects on health.</p>	<p>What Works Centre for Wellbeing (2018) Tackling loneliness: Review of Reviews</p> <p>Peytrignet, <i>et al.</i> (2020)</p> <p>Figures for specific age groups and male and female :</p>

¹⁰⁷ Where drawing from Departmental guidance, values are those believed to be correct at July 2020

¹⁰⁹ from 3 - "occasionally" lonely - to 2 - "hardly ever" lonely - on a 1 to 5 self-reported scale

¹¹⁰ Using high and low range for wellbeing valuation and 95% figures

			Improvement from moderate loneliness to mild loneliness ¹⁰⁸ : +0.7 (95% CI: -0.59 to -0.81)			There are negative spillover effects that stem from a loss of productivity and increased burden on health services (such as GPs)		Clark <i>et al.</i> (2018) Table A.9.2 and A.9.3 in Annexes
What we do	Employment	From employment to unemployment	Unemployment is one of the most important factors affecting individual wellbeing, The What Works Centre for Wellbeing systematic review highlights that, when measuring life satisfaction on a 0-10 scale, the unemployed report about 0.5 points lower compared to those who are in employment. However, the effects are different for different groups in different contexts. <u>Selected values</u> (Clark <i>et al.</i> , 2018): UK: -0.46 (95% CI:-0.38 to -0.53)	Monetising effect on life satisfaction: Example value, based on figures from Clark <i>et al.</i> (2018) is £5,980 per year [£3,800-£8,480] ¹¹¹	High. Large effects found in longitudinal studies, cross-sections, recession-related, and employment shock-related (plant closures).	Immediate effect life satisfaction remains consistently lower while unemployment persists. No adaptation. No negative spillover effects on others – theory would suggest that there are likely to be positive effects on others	Income, health and other standard factors are included in the life satisfaction regression and therefore the coefficient on unemployment is understood as the impact on wellbeing over and above (or in addition to) the loss of wage income that comes with unemployment.	What Works Centre for Wellbeing (2017) Employment, (re)employment and Wellbeing Systematic Review <u>Specific figures:</u> Clark <i>et al.</i> (2018) Table 4.2 in Annexes
		Change in job quality	Evidence is clear that being in a 'high quality' job is better for wellbeing, where 'job quality' is defined as: how secure it is; the social connections we have; the ability to use and develop skills; clear responsibilities; opportunities to have a say in a supportive workplace. If we move into a role with none, or fewer, of these elements, life satisfaction drops.		Med-high confidence in the direction of effect, from long-term epidemiological studies See Marmot <i>et al.</i> . (1991.) Lower confidence in specific values. Effect significant in cross-section and panels, but causality unclear.	Long-term epidemiological studies show that improvements in autonomy, support, use of skills, variety at work, balancing demands and security in the workplace yield long-term mental and physical health benefits, rather than demonstrating adaptation. See Marmot <i>et al.</i> . (1991.)	Income, health and other standard factors are included in the life satisfaction regression and therefore the coefficients on the range of job quality characteristics seeks to represent the impact on wellbeing over and above (or in addition to) differences in wage income that may be associated with these	<u>Specific figures:</u> Clark <i>et al.</i> (2018) Table 4.8 in Annexes <u>For further context and review:</u> De Neve & Ward (2017)

¹⁰⁸ from 3 - "occasionally" lonely - to 2 - "hardly ever" lonely - on a 1 to 5 self-reported scale, using recommended figure of £13.5k per 1 point change in life satisfaction

¹¹¹ Applying life satisfaction impact in LHS column and range of values of £13k (range £10k-£16k) per 1 point change in life satisfaction. Impact of unemployment will depend on group in question

			<p>Selected Values (Clark <i>et al.</i>, 2018) Europe: ~0.25 (95% CI: 0.12-0.37) for a range of positive job quality characteristics such as security, autonomy and support;¹¹²</p> <p>~ -0.3-0.4 (95% CI: ~0.20-0.56) for a negative aspects such as danger, poor work-life balance and worry about work.¹¹³</p>				different 'types' of job or job conditions.	
How we spend our time ¹¹⁴	Volunteering	Volunteering is associated with enhanced wellbeing, but context matters, as set out in the Volunteering and Wellbeing Rapid Evidence Assessment	The main approach which has been used for monetising the wellbeing impact associated with volunteering is using the subjective wellbeing valuation approach, which gives a value of £911 per volunteer per year on average	Med-high. Controls for reverse causality	Effect continues while volunteering activity continues	Researchers use first-difference estimation techniques to better control for volunteering leading to a <i>positive</i> change in wellbeing, not just higher initial starting values.	What Works Centre for Wellbeing (2020) Volunteering and Wellbeing Rapid Evidence Assessment	Lawton <i>et al.</i> (2020)
	Participation in arts and culture	Evidence shows that activities, including specific music and singing activities, visual arts activities and heritage activities have wellbeing benefits for particular groups.		A range of confidence is provided for each study in the What Works Centre for Wellbeing Systematic Reviews (RHS)			What Works Centre for Wellbeing (WWCW) (2016) Music, Singing and Wellbeing WWCW (2018) Visual Arts and Mental Health	

¹¹² Job is secure (Very True) +0.230 (0.035); Good opportunities for promotion (Strongly Agree) +0.248 (0.064); Job Has High Autonomy (8-10/10) +0.230 (0.025); High variety in work (Very True) +0.251 (0.032); Co-workers Are Supportive (Very True) +0.266 (0.031). Robust standard errors in parenthesis

¹¹³ High Time Pressure (Strongly Agree) -0.108 (0.028); Job prevents giving time to family/partner (Often/Always) -0.489 (0.037); Worry about work when not working (Often/Always=1) -0.316 (0.043); Job is dangerous (Very True) -0.371 (0.062). Robust standard errors in parenthesis

¹¹⁴ See ONS for general time use data and statistics as well as values for unpaid work

								WWCW (2019) Heritage and Wellbeing
		Visiting and using cultural and heritage assets	Evidence has shown the positive impacts which culture and heritage assets have on wellbeing, both directly through visits/access as well as indirectly, whereby people value the existence of an asset and the access family, friends and future generations have and will have. There is also some higher and lower quality evidence on community wellbeing impacts, including outcomes on social relationships, sense of belonging, pride of place and ownership (What Works Centre for Wellbeing, 2019)	DCMS's approach to valuing culture and heritage assets is set out in: Valuing Culture & Heritage Capital: A framework towards informing decision making Values are available using a range of approaches to estimate willingness-to-pay which can be used as a proxy for the benefits people receive. These methods include contingent valuation, benefit transfer and revealed preference methods.	A range of confidence is provided for each study in the DCMS Rapid Evidence Assessment: Culture and Heritage Valuation Studies and the What Works Centre for Wellbeing Heritage and Wellbeing Scoping Review	Further research is needed to understand the components of the value a person receives from culture and heritage and how long this value lasts. These values are likely to include shorter term wellbeing benefits as well as longer term improvements from education and place making.	For heritage sites, there may be overlap with some of the benefits associated with regeneration and a clear logic should be applied to avoid any double counting of impacts.	What Works Centre for Wellbeing (2019) Heritage and Wellbeing Valuing Culture and Heritage Capital: A framework towards informing decision making , DCMS Rapid Evidence Assessment: Culture and Heritage Valuation Studies
		Time in nature	A meta-analysis of 32 randomised-control studies with over 2000 participants has revealed that contact with Nature results in moderate but significant increases in positive affect as well as in small but significant decreases in negative affect (McMahan and Estes, 2015). Exercises in green spaces have been found also to improve hedonic wellbeing. There is evidence too that repeated contact with Nature contributes not only to long term hedonic wellbeing, but	See Defra's Enabling a Natural Capital Approach (ENCA) Databooks for more non-market and subjective wellbeing valuation evidence on the recreation, amenity, health benefits, environmental benefits and non-use values of green space and vegetation.	A range of confidence is provided for each study in the databook.			See relevant aspects of Defra Evidence Statement: Health and the Natural Environment and Defra Evidence Statement: The wellbeing and human health benefits of exposure to the marine and coastal environment Plus McMahan and Estes, (2015)

			also to life satisfaction (Dasgupta <i>et al.</i> , 2021)					Dasgupta <i>et al.</i> (2021)
Where we live	Crime, safety and security	Crime	Crime and being a victim of crime has been shown to have an impact on wellbeing.	Values from existing UK approaches: Wellbeing impacts are valued through established QALY analysis, see existing Home Office Costs of Crime approach which includes the estimated (physical and) emotional costs of crime. ¹¹⁵ See Table 11.	High. Valuation for impacts on emotional effects of crime based on established stated preference studies and included in the HMT Green Book.	Time frame of effect and adaptation depends on type of crime and is incorporated in Home Office analysis.	These values are not based on subjective wellbeing, but on stated preference along with stated experience of victims of crime (to which Gov-t wide QALY value is applied).	UK: Home Office Costs of Crime approach
	Local Environment quality	Noise	Evidence of significant negative impact on life satisfaction of exposure to aviation noise, but no UK evidence on subjective wellbeing currently available for noise from other sources. Selected Values (Lawton & Fujiwara, 2016): Daytime aircraft noise (>55db): -0.147 (95% CI: -0.225 to -0.069)	Values from existing DEFRA damage costs , covering effects on sleep disturbance, annoyance, hypertension, productivity and quiet. These cover noise from a variety of sources. A sensitivity test , adding in the SWB based valuations, can be undertaken for aviation noise. ¹¹⁶	High: fixed effects regression with multiple controls. Based on panel data (USoC).	Physiological response leads to a fairly instant and sustained effect, but wellbeing adaptation effects not explicitly tested for. No known spillover effects on others	The wellbeing value includes numerous controls, so unlikely to pick up indirect pathways – represents a relatively pure marginal effect. There are some concerns around overlap with existing DEFRA values, hence additional wellbeing values should only be added as a sensitivity analysis. However analysis for DfT (unpublished) shows only a small proportion of the impact on life satisfaction can be explained by impacts on health.	Environmental Noise: Valuing impacts (Defra, 2014) Lawton & Fujiwara (2016)
		Increase of vacant land	UK: not knowingly available			Medium for wellbeing effects: Panel-data based but no		There may be overlap with some of the benefits

¹¹⁵ The cost of the injury is the likelihood of sustaining physical and emotional injuries (LIKE) multiplied by the percentage reduction in quality of life (REDUCEQL) multiplied by the duration of the injury (DUR) as a fraction of a total year. This is then combined with the value of a year of life at full health (VOLY) to give an estimate of the average cost associated with the crime. This is done for each crime type. The formula is as follows: LIKE * REDUCEQL * DUR * VOLY = Average physical and emotional cost

¹¹⁶ Using the wellbeing monetisation approach the effects of -0.147 can be monetised at £1,911. However currently the DEFRA values are preferred for monetisation.

	(abandoned areas)	<p><u>Other</u> Germany: -0.0395 for increase of 1 hectare of vacant land /abandoned area within 1 kilometre around household</p>		clear-cut exogenous variation. However, results are from Germany and may not be possible to apply to UK context.		associated with regeneration and a clear logic should be applied to avoid any double counting of impacts.	
	Cultural and heritage assets	<p>Goods and services produced by culture and heritage assets provide benefits to people, for example improving wellbeing, education and sense of place. (Sagger et al., 2021) What Works Centre for Wellbeing Heritage Review and DCMS Rapid Evidence Assessment: Culture and Heritage Valuation Studies (REA) provide an overview of the literature.</p>	<p>The DCMS REA Evidence Bank provides valuation details and overview of approaches used, which include contingent valuation, hedonic (house) pricing method, travel cost method, discrete choice, wellbeing valuation and benefit transfer.</p>	<p>The REA Evidence Bank provides a grading of the quality of each study.</p>	<p>There are 171 values available in the REA Evidence Bank, and they will differ in dynamics from duration of benefits, to the types and levels of externalities.</p>	<p>There may be overlap with some of the benefits associated with regeneration and a clear logic should be applied to avoid any double counting of impacts.</p> <p>Natural capital and culture and heritage capital can come into close proximity; parks with monuments, historic houses with gardens and canals with industrial heritage to name a few. (Sagger et al., 2021) Care should be taken to ensure the services from natural capital do not overlap with the services from culture and heritage capital.</p>	<p>What Works Centre for Wellbeing (2019) Heritage and Wellbeing Valuing Culture and Heritage Capital: A framework towards informing decision making , DCMS Rapid Evidence Assessment: Culture and Heritage Valuation Studies</p>
	Increase of green space in surrounding area	<p>UK: Effects on 0-10 Life Satisfaction have been generally estimated at ~ +0.0031 for an increase of green space (White <i>et al.</i>, 2013), however geography-specific and existing approaches to monetisation should be applied (see next column)</p>	<p>Values from existing approaches: Outdoor Recreation Valuation Tool (ORVal) is a random utility / travel cost model of recreational demand for all sites in England and Wales, generating probabilistic predictions of visitor numbers for any publically accessible outdoor</p>	<p>ENCA provides guidance on confidence and transferability of valuation studies.</p>	<p>Alcock (2014) suggests the positive change is permanent, but also hypothesises that a negative change from moving to a less green area is only temporary: more research on dynamics may be needed</p>	<p>Defra's ENCA Databooks provide further guidance on potential overlaps between different categories of ecosystem services and benefits.</p>	<p>UK: White <i>et al.</i> (2013), Alcock <i>et al.</i> (2014) Germany: Krekel <i>et al.</i> (2016)</p>

				recreation park, path or beach. ¹¹⁷ See Defra's Enabling a Natural Capital Approach (ENCA) Databooks for more non-market and subjective wellbeing valuation evidence on the recreation, amenity, health benefits, environmental benefits and non-use values of green space and vegetation.				
		Living near a Sewage Treatment Works with odour problems	UK: -0.0457	A range of approaches for monetising impacts are used as part of the OFWAT price review. Wellbeing evidence has added to this evidence base.	Med-High confidence in wellbeing effects. Geolocating households and specifying timeframe enables separation of effect due to incident			Fujiwara, D. Gramatki, I. and Keohane, K (2020).
		Single flooding incident caused by water and wastewater utilities; Single roadwork incident caused by water and wastewater utilities	UK (Anglian Water area): -0.044 impact on life satisfaction for individuals living with 500m of flood, within six months UK: -0.026 impact on life satisfaction for individuals living with 500m of roadworks, within one month	A range of approaches for monetising impacts are used as part of the OFWAT price review. Wellbeing evidence has added to this evidence base. See Fujiwara (2018) for Anglian Water values and discussion re triangulation with SP values.	Med-High confidence in wellbeing effect. Geolocating households and specifying timeframe enables separation of effect due to incident	Effect within six months for single flooding incident Effect within one month for single roadwork incident	These wellbeing impacts will be one of a range of impacts related to flooding, including e.g. longer term damage to properties and business disruption – each of which will be valued in a different way. A clear logic should be applied when monetising to avoid double counting with these wider impacts.	Fujiwara <i>et al.</i> (2018)
Education and skills	General education and skills	Improvement in primary, secondary and tertiary education	Range of figures in reviewed literature for direct and indirect effect. Note that education influences employment and quality of employment, which in turn		Lower. Results mainly from compulsory schooling law, with varying results.			Clark <i>et al.</i> (2018) Annex 3a

¹¹⁷ Takes account of scarcity of sites and substitution possibilities, as well as travel distances to sites and their attributes. ORVal can also estimate how predicted visits would change when a site is altered, and can model visits and newly created visits from new sites.

			has implications for wellbeing.					
		Adult education	A review of the evidence highlights that people who keep learning have greater satisfaction and optimism; a greater ability to cope with stress; more feelings of self-esteem, hope, and purpose. There is strong evidence for specific wellbeing trainings in the workplace, but learning in the workplace is not always associated with positive wellbeing.					What Works Centre for Wellbeing (2017) Learning at Work and Wellbeing Fujiwara and Dolan (2012) report for BIS
	Specific programmes	School wellbeing / resilience programmes	Life satisfaction score improvement is positive and significant at 10% level, relating to participation in Healthy Minds programme. Estimated effect size of 0.182. (95% CI: 0.001 to 0.735).	Monetising effect on life satisfaction: Effect could be monetised at £2,366 per year if effects last for one year [£10-£11,760] ¹¹⁸	Medium. The trial was a well-designed randomised controlled trial and the Education Endowment Foundation provided a “moderate to high” security rating. However, this rating was for the primary outcome (self-assessed general health). The EEF do not provide a security rating on the life satisfaction outcome, although this estimate is also drawn from the randomised control trial.	The questionnaire was administered at baseline (t=0; either 2013 or 2014 depending on when schools entered the trial), at an interim point (t=2; two years after baseline), and at endline (t=4, two years after the interim administration). The study therefore considers life satisfaction during school not adulthood. Scalability is unclear from the study - the trial was an efficacy trial, which tested whether the intervention worked under developer-led conditions in a number of schools.		Lordan and MacGuire (2019). Healthy Minds evaluation report.
		Personal, social & civic development	The summer National Citizenship Service programme had positive impacts on all four ONS	Monetising effect on life satisfaction: Effect could be monetised at £5,200 per year if effects	Medium: NCS participants were matched to a comparison group of non-participants using propensity	Baseline survey at the start of the programme and a follow-up survey three months later.		Bates <i>et al.</i> (2020), National Citizen Service 2018 Evaluation.

¹¹⁸ Applying 95% CI life satisfaction impact in LHS column and range of values of £14k (range £12k-£16k) per 1 point change in life satisfaction

		wellbeing measures: a) life satisfaction (+0.4); b) worthwhile (+0.5); c) happiness (+0.4); and d) anxiety (-0.5).	last for one year [£4,000 - £6,400] ¹¹⁹	score matching. Difference in difference analysis was used to assess the impact NCS participation had on a range of outcomes. Further detail on the methodology used can be found in the evaluation technical report.	Longer term impact and spillovers are uncertain.		
Our environment	Change in air quality: e.g. Increase in SO ₂ or PM ₁₀	UK: A study specific to London shows that an increase of 10 µg/m ³ in annual mean nitrogen dioxide concentration appears to correspond on average to -0.5 The existing damage costs approach is considered to capture the main impacts on wellbeing, through impacts on health and ecosystems. Additional wellbeing effects through e.g. concern or disamenity may only be relevant in specific circumstances. Studies from other countries have shown an effect on wellbeing considered to be in addition to health, but this has not been tested in the UK. ¹²⁰	Values from existing DEFRA damage costs approach For valuation evidence on wider environmental impacts by type of habitat and type of impact or ecosystem service, see Defra's Enabling a Natural Capital Approach (ENCA) .	High, based on established, peer reviewed methodology and updates are made when new evidence becomes available. SO ₂ : High: Natural experiment: effects driven by unanticipated changes in power plant emissions due to policy. PM ₁₀ : High: Effects of air pollution sufficiently exogenous for single individual.	Air pollution is the biggest environmental threat to health in the UK, with deaths a year attributed to long-term exposure. There is strong evidence that air pollution causes the development of coronary heart disease, stroke, respiratory disease and lung cancer, and exacerbates asthma.	In wellbeing studies from other countries, health, income and other standard factors are included in the life satisfaction regression ¹²¹ and therefore the coefficient on changes in air quality is understood as the impact on wellbeing <i>over and above</i> these differences. This is plausible - there might be some circumstances when wellbeing is affected in addition to the factors accounted for in damage costs – the study for PM suggests that the change in wellbeing only takes place where changes in AQ are “visible” or detectable by smell. An additional wellbeing impact, beyond damage	UK: damage costs approach Other: SO ₂ : Luechinger (2009) PM ₁₀ : Levinson (2012)

¹¹⁹ Applying life satisfaction impact in LHS column and range of values of £14k (range £12k-£16k) per 1 point change in life satisfaction

¹²⁰ For example, Germany: -0.08 for an increase of 10 µg/m³ in SO₂; US: ~ -0.051 for an increase of 10 µg/m³ in PM₁₀

¹²¹ Or in the case of PM₁₀, longer term impacts of air quality on health are unlikely to be relevant for the wellbeing estimation which is carried out, since the data used is based on *daily* fluctuations in air quality and wellbeing – not a long enough time frame to demonstrate physical changes in health. In this study, including health in the estimation does not change the effect for the average respondent

						costs, could be worry of the impact of visible AQ on health ¹²² . Overall, the damage costs approach is considered to capture the main AQ impacts and this additional wellbeing impact is likely to be relevant only in specific circumstances.	
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¹²² In a sense, this additional wellbeing impact of concern about health may 'double count' the health impacts which are already incorporated in the damage costs approach

Annex 3 - Determining cause and effect in wellbeing studies¹²³

This is additional, background text and should be read alongside Box 6.

Distinguishing between correlation and causation

Determining whether a given factor that shows an association with wellbeing actually contributes to the feelings that are reported can be difficult. Part of the difficulty is that much of the evidence about wellbeing comes from regression analyses of cross-sectional data. Investigators compare groups that display different levels of wellbeing and seek to understand how much of the variation between them is explained by factors whose influence on wellbeing is generally known (for example, age, gender, socioeconomic characteristics, where someone lives) as well as by an additional factor of interest.

As an illustration, consider that in a hypothetical study the additional factor is commuting time and that a shorter commute accounts for some of the wellbeing difference between two groups after all other factors are accounted for. While there is a correlation between commuting time and wellbeing, it cannot be concluded that a shorter commuting time causes wellbeing to increase. This is because the true cause could be something unmeasured that happens to result in a shorter commute. For instance, innate confidence - a factor not explicitly considered in this hypothetical study - could cause people who want to work from home more often to be more likely to ask for permission to do so. The result would be less time spent commuting and higher wellbeing, even though reduced travel time was not itself the source of the increased happiness.

Establishing causation

Nevertheless, cross-sectional regression analyses can be critical for identifying factors that could potentially affect wellbeing and are often the precursor for research that can help to establish causality.

Certain econometric techniques, such as *individual fixed effects and area-specific fixed effects analyses*, can make it possible to identify causal channels leading from a factor of interest to a change in wellbeing. Among the research approaches that can help to establish causality are longitudinal panel studies, which observe changes over long periods of time in the same people. For instance, using the example above, if the time spent commuting fell in parallel with a rise in wellbeing, investigators could have more confidence that commuting time, not innate confidence, contributed to the rise, because the innate trait would be unlikely to change over time.

Natural experiments can also help to establish causality. In these cases, something occurs that happens to affect groups differently, such as when those born after a certain date are subject to a different education or health policy than those born earlier. Because the groups that were subject to different policies were formed randomly, any overall difference in wellbeing between the groups is likely to stem from the policy changes rather than from differences in individual characteristics.

¹²³ Content originally published in Graham & MacLennan (2020)

Experiments that randomly assign people to an intervention or a control group are another tool for helping to establish causality. They are used widely in medical research and are becoming more common in social science. They are not silver bullets, however. While random allocation makes it easier to identify what causes a particular change, at the same time it isolates the effects of that intervention from real-world contextual factors that are often critical to how an intervention works and why. Investigators who want to replicate the findings from earlier trials often also have difficulty doing so and in retrospect it is not always possible to discern which aspect of an intervention was most important in producing differences between a control group and the volunteers who received an intervention (Deaton and Cartwright, 2018).

There are other approaches to create an appropriate control group or counterfactual, such as regression discontinuity and propensity score matching.¹²⁴ The Magenta Book provides guidance on where these approaches may be most effectively used.

The desired robustness of the wellbeing evidence – and the resulting valuation – will depend upon the purpose for which it is used. Wellbeing evidence with lower robustness¹²⁵ can still provide important scoping information at the research and longlisting stages described above.

¹²⁴ See section 3.5 of the Magenta Book: <https://www.gov.uk/government/publications/the-magenta-book>

¹²⁵ For example, from cross-sectional regressions

Annex 4 - Wellbeing policy tool

Consider the tables below as a ‘first screening’, to identify where wellbeing evidence may be relevant and be important to consider in development of options and appraisal.

They can be used as a checklist in the stages set out above:

- **policy formation:** to understand how wellbeing may form part of the objectives, either directly or indirectly (see Chapter 2)
- **longlisting:** to identify where wellbeing may be a consideration for screening and developing options (see Chapter 2)
- **shortlisting:** to identify the full range of wellbeing benefits and costs. All should be described, a subset may be possible to quantify (see Annex A1) and a subset may be possible to monetise (see Chapter 4)

The wellbeing policy tool at <https://policy-wellbeing-tools.org/> has further information on wellbeing evidence and further exercises to test how wellbeing may be relevant in a particular policy area.

Table A4.1: ONS dimensions of wellbeing, with examples of intervention impacts

Will the policy / programme have an impact on...		
ONS dimensions of wellbeing		Examples
Physical or mental health		either directly, or indirectly, through activities, sport, access to healthier foods, access to nature
Relationships	social and close relations	this may be through direct support or counselling, or more likely indirectly, through changes in pressure facing a certain group or time available
	loneliness	this may be directly, through changes in services, or indirectly, through for example, changes in public spaces, activities and accessibility
What people do	how people spend their time	for example, through changing the time requirement for transport, or improving / decreasing the offer of cultural or sporting activities in a certain area, volunteering, participation
	employment	either access to employment, or job quality
Where people live	feelings of safety or security	this could be safety from crime, or financial / housing security
	housing quality or availability	this may include insulation, affordability, accessibility as well as standards in rented housing
	local environment	including e.g. noise, air quality, access to nature and design of public spaces
	community relations	this may be directly, or indirectly through the design of public spaces and the way in which consultations are carried out
Personal finance		including e.g. low-income households, level of debt, satisfaction with household income, managing financially
Education and skills		for adults as well as young people

Governance	participation in decision-making	this could include direct opportunities to influence matters which are important for lives and wellbeing
	trust	this could be influenced by the way in which policies are developed and implemented, including perceived fairness
Environment		including actions which can influence the wellbeing of future generations, through impacts on natural capital.

Many different types of programmes may have positive or negative impacts on wellbeing – either as direct objectives or as an unintended consequence. The table below sets out the types of things to consider when assessing whether a programme may have wellbeing impacts. This is not exhaustive and each programme should be assessed considering the available wellbeing evidence.

As discussed in the guidance, it is important to set out a clear logic of the different benefits and how they are quantified, to avoid double counting these effects.

Table A4.2: Programme types and examples where there may be relevant wellbeing costs or benefits

Programme Type	Possible wellbeing costs	Possible wellbeing benefits
	<i>Which aspects of a programme could have a negative impact on wellbeing?</i>	<i>Which aspects of a programme could have a positive impact on wellbeing?</i>
Infrastructure including energy and transport	Community and social relationships (due to access), inequality of access to transport or other infrastructure, distribution of impacts, disruption impacts (caution should be applied to avoid double counting e.g. of noise and air quality).	Community and social relationships (due to access), reduced loneliness, activities / how people spend their time, local environment, and quality of living environment (fuel poverty). ¹²⁶
Land use, forestry and marine planning	Inequality of access, activities / how people spend their time, local environment.	Community and social relationships, activities / how people spend their time, local environment.
Urban planning and development	Community and social relationships, housing quality or availability, local environment, activities / how people spend their time, employment, commuting, inequality of access, loneliness.	As per possible wellbeing costs
Manufacturing and industry	Local environment, activities / how people spend their time.	Job quality, local environment, activities / how people spend their time.
Security	Community and social relationships including trust, how people spend their time.	As per possible wellbeing costs

¹²⁶ For example, an evaluation of a Welsh Government programme to improve the energy performance of hard-to-heat, hard-to-treat homes in low-income areas shows positive changes in wellbeing, see Grey *et al.* (2017).

Education and skills	Inequality of opportunities.	Community and social relationships, reduced loneliness, activities / how people spend their time, employment and job quality.
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Annex 5 - Sources of wellbeing data

ONS Measuring Wellbeing Programme

For the latest data, back series, demographics where applicable, and quality information on the full set of ONS headline measures of national wellbeing see: [Dataset Measuring national wellbeing: domains and measures](#).

ONS4

The dataset above includes the scores for the ONS4 personal wellbeing questions (see tabs 1.1-1.4). These have been split to show the differences for regions, age and gender.

There are a few other ways the ONS4 personal wellbeing data has been split to allow for benchmarking:

- Wellbeing for [personal characteristics](#) – including self-reported health, economic activity, reason for economic activity, reason for part-time work, tenure, different levels of education;¹²⁷
- Split by [protected characteristics](#), including sex, age, relationship status, ethnicity, religion, sexual identity and disability;
- At the [UK and local authority level](#);
- For [over 65s in each Local Authority](#)

Children and young people's wellbeing

As described above, there are a number of sources of children and young people's wellbeing data, including different domains and covering different age ranges:

- [Young people's wellbeing](#) (16-24 year olds) including domains: personal wellbeing (including ONS4), our relationships, health, what we do, where we live, personal finance and education and skills. Collected by ONS.
- [Children's Wellbeing \(0-15 year olds, range depends on the question\)](#)¹²⁸ including data for the 31 measures of children's wellbeing, within seven domains and complementing the national measures of wellbeing. Domains are: Personal wellbeing (excluding the ONS4 question on anxiety), Relationships, Health, Sport, arts and culture, local neighbourhood and educational achievements. Collected by ONS, The Children's Society and Understanding Society, among other national surveys.

Surveys using the ONS4 personal wellbeing questions

A review in 2019 identified surveys using the harmonised principle for personal wellbeing. Some adopted only a subset of the principle, e.g. just the question on satisfaction, or all but the question on anxiety. Surveys which provide data perfectly comparable to the harmonised principle are:

- Armed Forces Continuous Attitude Survey (2019), happiness and satisfaction
- Community Life Survey (2018/19), happiness, worthwhileness and satisfaction

¹²⁷ Note that the ONS4 are broken down by the characteristics listed here only up to 2014/15. From 2016 onwards, statistical bulletins only include summary data broken down by country, region and selected individual characteristics. Those seeking disaggregated data can use the APS dataset, available at the [UK Data Service](#).

¹²⁸ With a subset of measures collected by the Children's Society available here: [Children's wellbeing](#)

- Continuous Household Survey Northern Ireland (2019/2)
- Crime Survey for England and Wales – Adult (2017/18)
- English Housing Survey (2017/18)
- Families Continuous Attitudes Survey (2019), happiness and satisfaction
- Family Resources Survey (2014/15 onwards)
- Food and You Survey (2018)
- Health Survey Northern Ireland (2017/18)
- Labour Force Survey (2019), and the Annual Population Survey which combines Labour Force Survey data with boosts
- Living Costs and Food Survey (2017/18)
- Metropolitan Police Public Attitudes Survey (2017)
- Monitor of Engagement with the Natural Environment (MENE): The Natural Survey on People and the Natural Environment (2019)
- National Citizen Service Evaluation (2016), happiness, worthwhileness and satisfaction
- National Survey for Wales (2018/19), happiness, worthwhileness and satisfaction
- Opinions and Lifestyle Survey (2019/20)
- Scottish Health Survey (2017), satisfaction only
- Taking Part Survey (2015/16), worthwhileness, satisfaction and anxiety
- Time Use Survey (2014/15)
- Wealth and Assets Survey (2016-18)
- Young People and Gambling (2019/20)

Other surveys which provide data that is probably comparable or near comparable to the harmonised principle are:

- Active Lives Children and Young People (2019/20), happiness, satisfaction and worthwhileness
- Armed Forces Continuous Attitude Survey (2019), anxiety and worthwhileness
- Community Life Survey (2018/19), anxiety only
- English Longitudinal Study of Ageing – ELSA (wave 8)
- Families Continuous Attitudes Survey (2019), anxiety and worthwhileness
- Health Survey for England (2017), satisfaction only
- Healthy Ageing in Scotland – HAGIS (wave 8)
- National Citizen Service Evaluation (Cabinet Office), worthwhileness only
- National Survey for Wales (2018/19), anxiety only
- Taking Part (2015/16), happiness only

These surveys can be used to explore wellbeing evidence for specific issues and themes.

Useful websites for accessing data include:

- [ONS, Annual Personal Wellbeing Estimates](#): Estimates of personal wellbeing from the Annual Population Survey (APS): UK, year ending September 2012 and updated annually. [Quarterly updates](#) are also available.
- [ONS, Measuring national wellbeing: domains and measures](#)
- [Understanding Society](#): Longitudinal survey of the members of approximately 40,000 households in the United Kingdom.

Overview / Repository of evidence

For a link to wellbeing evidence generated and collated by WWCW
<https://whatworkswellbeing.org/resources/>

Glossary

Affective / experience measures

Affective (or equivalently 'experience') measures of wellbeing focus on people's positive and negative emotional experiences (or affect) over a short timeframe to measure personal wellbeing on a day-to-day basis.¹

Causality

Causality is the influence by which one event, process, state or object (a cause) contributes to the production of another event, process, state or object (an effect) where the cause is at least partly responsible for the effect, and the effect is at least partly dependent on the cause. In particular, in assessing policy options, we are interested in establishing whether relationships are *causal*, i.e. a policy change leads to a certain change in process or state; or merely *correlated*, where two changes may take place at the same time, but without one leading to the other.

Community wellbeing

Community wellbeing is the combination of social, economic, environmental, cultural and political conditions that people and their communities say they need to fulfil their potential.

Compensating Variation and Equivalent Variation

Compensating variation (CV) is the adjustment in income that returns the consumer to their original utility level after an economic change has occurred. By comparison, *Equivalent variation (EV)* is the adjustment in income that changes the consumer's utility equal to the level that would occur if the event had happened.

As an illustration, when assessing the impact of a negative economic change, such as a rise in prices, CV is the minimum increase in income the consumer needs for their utility to be unchanged after the change. EV would be the amount of income that would be taken away to lower the consumer's utility to the level that would happen if the change occurred.

Contingent Valuation

Contingent valuation is a survey-based economic technique for the valuation of non-market resources. While these resources do give people utility, certain aspects of them do not have a market price as they are not directly sold – for example, people receive benefit from a beautiful view of a mountain, but it would be tough to value using price-based models. Contingent valuation surveys are one technique which is used to measure these aspects. Contingent valuation is often referred to as a 'stated preference' model, in contrast to a price-based revealed preference model.

Decision utility

A prediction of the benefit we are likely to get out of something, often measured based on what people are willing to pay or accept. When used in cost benefit analysis, an underlying assumption is that what people are willing to pay or accept *in advance* reflects the benefits they get.

¹ <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/personalwellbeingfrequentlyaskedquestions#what-is-meant-by-evaluative-eudemonic-and-affective-well-being>

Eudemonic measures

Eudemonic measures of wellbeing, sometimes referred to as the psychological or functioning or flourishing approach, draws upon self-determination theory and measure such things as people's sense of meaning and purpose in life, connections with family and friends, a sense of control and whether they feel part of something bigger than themselves.²

Evaluative measures

Evaluative measures of wellbeing ask individuals to step back and reflect on their life and make a cognitive assessment of how their life is going overall, or on specific aspects of their life. This is commonly measured by a question which asks how satisfied we are with our life overall, as in the 'ONS4'³.

Experience utility

The benefits *experienced*, which may differ from predictions of the benefits which may be received ('utility mis-prediction').

Regression

Regression analysis is a set of statistical processes for estimating the relationships between a dependent variable (often called the 'outcome variable') and one or more independent variables. Regression Analysis is used to understand economic relationships through quantitative estimation. Regression is used to infer causal relationships, estimating the change in the dependent variable that is due to movement in other independent variables. Additionally, regression is often used as a method for forecasting, using the relationship between the dependent variable and the independents.

Social capital

Social capital describes the extent and nature of our connections with others and the collective attitudes and behaviours between people that support a well-functioning, close-knit society.

Wellbeing measures

See Annex A1: Measuring Wellbeing for an overview of wellbeing measures.

Willingness-to-accept (WTA)

Willingness to accept (WTA) is the minimum monetary amount that a person is willing to accept to sell a good or service, or to bear a negative externality. WTA is often used within Contingent Valuation techniques with respondents asked what they would be willing to accept for different hypothetical scenarios.

Willingness-to-pay (WTP)

Willingness to pay (WTP) is the maximum amount of money a consumer (a buyer) is willing to sacrifice to purchase a good/service or avoid something undesirable. WTP is often used within Contingent Valuation techniques with respondents asked what they would be willing to pay for different hypothetical scenarios.

² Ibid

³ Ibid

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