

RISK

1. This guidance has been extracted from the [Northern Ireland Practical Guide to the Green Book](#), which provides fuller guidance on risk, particularly in the context of the preparation of economic appraisals. For the purposes of completing an Integrated Impact Assessment, the key requirement is to identify and give some initial consideration to managing risks.

Identify and Analyse Risks

2. Risk arises because of the possibility of more than one outcome occurring. This possibility may exist because, for example:
 - construction costs depend on ground conditions, or the weather;
 - operating costs depend on the success of a new technology;
 - the demand for an outcome or output depends on future incomes;
 - there are uncertainties about future wage or fuel costs, or changes in consumers' tastes, or competition from other suppliers.
3. No matter how robust the assumptions about these and other factors, there will still generally be risks to consider, and there will be uncertainty over the range of possible outcomes.
4. A distinction may be drawn between a *risk*, which is measurable and has a known or estimable probability, and an *uncertainty*, which is more vague and of unknown probability. In practice, this distinction is not always clear cut.
5. *Variability*, or *Variance*, is the spread of possible outcomes around an expected outcome. All projects have a range of possible outcomes, although the range will be wider, and variability more important, for some cases than for others. For instance, the range may be wider for cases involving new technology.
6. In general, for proposals where the benefits and costs accrue to the community as a whole, the cost of variability is so small relative to the margin of error in appraisal or evaluation as to be negligible, and Government may be regarded as *Risk Neutral*. In other words, decisions should be based on expected outcomes, not their variability.
7. However, there may be some situations where it is appropriate to take account of variability as well as expected outcomes and be *Risk Averse* i.e. be inclined to reject certain risky investments despite positive expected outcomes. For instance, this may apply where risk is:-
 - *concentrated* i.e. where risks are large relative to the income of the section of the population that must bear them; and

- *systematic* i.e. where variability is correlated with income e.g. where better outcomes from a project or policy are likely to accrue in good times and worse in bad times.
8. If a set of circumstances or course of action or inaction could lead to a very adverse outcome, even if with a very small probability, action to avoid that outcome may be appropriate. This is the “precautionary principle”. It also applies where the probability attaching to a possible outcome involving significant harm is uncertain. In such circumstances, it may be appropriate to consider precautionary action specifically to mitigate or avoid the risk of the particular outcome. An example would be restrictions on movements of people and cattle during an outbreak of foot and mouth disease.
 9. Where a project or programme risks potentially irreversible consequences (e.g. it would rule out important subsequent investment opportunities or a use of resources that might subsequently be preferred) this should be carefully appraised. Examples of irreversibility are destruction of natural environments or historic buildings.
 10. Some projects expose the government to contingent liabilities – that is commitments to future expenditure if certain events occur. These should be appraised (and monitored if the proposal goes ahead). One class of contingent liabilities is the cancellation costs for which the government body may be liable if it terminates a contract prematurely. Such liabilities, and the likelihood of their coming about, must be taken into account in appraising the initial proposal. Redundancy payments fall into this category, but as the wider social and economic consequences of these should also be assessed, advice from economists should be sought.
 11. A vital first step in the analysis is to identify and analyse the important risks and uncertainties relevant to the case, and to show how they compare under each option. This risk analysis should help inform the adjustments for optimism bias and identification of risk management and reduction measures (see below). It is good practice to summarise the relevant information in a tabulation, called a Risk Log or Risk Register, which identifies each relevant risk and compares how it impacts upon each option. This should cover not only the 'economic' risks and uncertainties, such as possible variations in cost/benefit assumptions, but also relevant managerial, legal, financing and other risks and uncertainties.
 12. The Office of Government Commerce (OGC) website provides an example of a risk log and further information on risk identification and management. See <http://www.ogc.gov.uk>

Adjusting for Optimism Bias

13. There is a demonstrated, systematic tendency for project appraisers to be overly optimistic. This is a worldwide phenomenon that affects both the private and the public sectors. Many project parameters are affected by optimism; appraisers tend to overstate benefits and understate timescales and costs, both capital and operational. It may occur, for example, through failing to reflect fully the chances

of cost underestimation or time overruns; or by including projections of demand that are too generous.

14. To redress this tendency, HM Treasury has developed an approach that is designed to complement rather than replace the good practice work that is often currently undertaken to identify project-specific risks. More details can be obtained in the [Northern Ireland Practical Guide to the Green Book](#).

Risk Management and Risk Reduction Strategies

15. Risk management is a structured approach to identifying, assessing and controlling risks that emerge during the course of the policy, programme or project lifecycle. It involves a series of well-defined steps to support better decision making through good understanding of the risks inherent in a proposal and their likely impact. Risk management includes:
 - Identifying possible risks in advance and putting mechanisms in place to minimize the likelihood of their materialising with adverse effects
 - Having processes in place to monitor risks and access to reliable up to date information about risks
 - The right balance of control in place to mitigate the adverse consequences of the risks, if they should materialise; and
 - Decision-making processes supported by a framework of risk analysis and evaluation
16. Strategies to prevent and mitigate risks and uncertainties include:
 - **early consultation** - to identify needs at the outset and avoid costs increasing later due to poor initial understanding of requirements
 - **deferring irreversible decisions** - to allow more time to investigate mitigating measures or alternative ways to achieve objectives
 - **pilot studies** - to acquire more information about risks and take steps to mitigate adverse consequences or increase benefits
 - **design flexibility** - increasing the flexibility of designs to make proposals more robust against changes in future demand
 - **taking precautionary action** - to reduce the risk of a very bad outcome, even where the probability is considered small
 - **transferring risk to the private sector** - through contractual arrangements e.g. insurance. (The *Green Book* elaborates on ways to transfer risk)
 - **making less use of leading edge technology** - where simpler methods can reduce risk considerably

- **reinstating or developing different options** - where risk analysis suggests this is worth doing
- **commissioning research** - to confirm or disprove the reliability of new technology, or to reassess the nature of a danger
- **undertaking site investigations** - to reduce risks from unforeseen ground conditions or refurbishment costs
- **staging a project** - so that it can be altered at successive review points
- **abandoning the project** - because it is too risky.