



The NDA Value Framework

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1.0 Purpose and scope

The primary purpose of this document is to describe the NDA's Value Framework; the factors that the NDA and its businesses (the NDA group) considers when assessing the performance of options during decision-making. It describes each of the factors in the Value Framework and sets out when and why the Value Framework is applied.

Selecting the right decision-criteria is only one part of good decision-making. A good decision is dependent on how the decision is made, if and how the decision-criteria are weighted, how stakeholders are engaged and so on. This document is not intended to be a comprehensive guide to decision-making, but Part 2 of the document picks out a few important points about applying the Value Framework during decision-making. It also recognises the existence of factors that can constrain the choices that we make, such as the availability of resources or waste routes (achievability factors). It explains how assessing the achievability of different options allows us to express how confident we are that an option can deliver its potential value.

This guidance is primarily aimed at those individuals or groups responsible for analysing options, but should also provide external stakeholders with useful insight.

Part 1 | The Value Framework

2.0 Introduction to the Value Framework

Decisions taken by the NDA group must deliver value for money. Value for money is not about achieving the lowest cost. It is about using resources in a way that maximises value. The programme for which we are responsible is funded primarily by UK government. We must demonstrate to our stakeholders that we are spending the funds allocated to us on the right things and in the right way. This means doing more than simply meeting regulatory obligations. Consequently, shortly after the NDA's creation, we worked with stakeholders to agree those things that we value in relation to our mission. These factors were gathered together as the NDA Value Framework as presented in Figure 1.

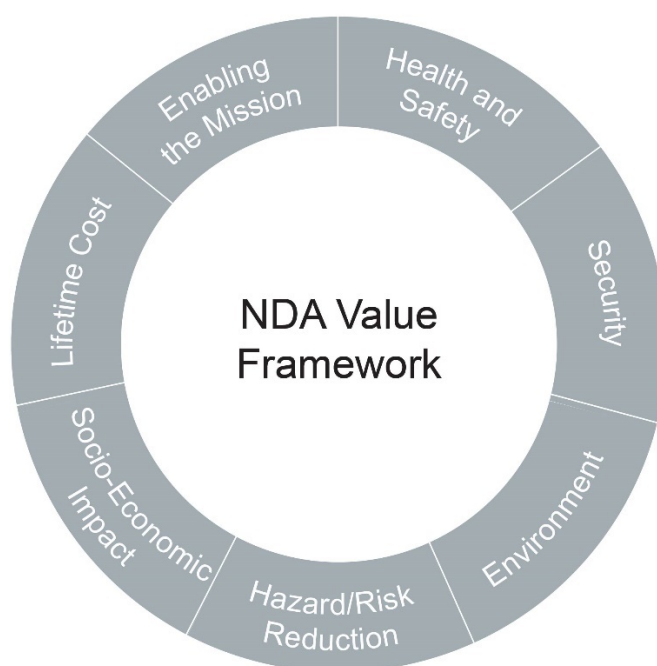


Figure 1: NDA Value Framework

The Value Framework is not a decision-making process; processes are set out in relevant guidance, e.g. the NDA's Strategy Management System, HM Treasury's Green Book. The Value Framework is the basis of decision-criteria against which the performance of options can be assessed.

No attempt is made to pre-empt the weighting of different factors in the Value Framework because the weighting will be specific to the decision in question. It may

be that only a subset of factors is relevant, and that detailed assessment criteria need to be developed to interpret the factors for in the options evaluation. As such, the Value Framework is not intended as a mandatory checklist; only relevant factors need be considered and the approach should be proportionate to the nature of the issue being addressed. The resources and effort employed should be related to costs, benefits and risks to society from the options under consideration.

Applying the Value Framework ensures that the decision-maker considers the value that each option would deliver in relation to a range of different decision-criteria and offers a way to present a rational assessment of the advantages and disadvantages of each option. Applying the Value Framework in our decision-making means:

- never compromising on safety or security
- taking full account of our social, economic and environmental responsibilities
- putting the three pillars of sustainability and social value at the heart of the decisions we make.

2.1 Sustainability and social value

It is widely accepted that to achieve sustainability (meeting the needs of the present generation without compromising the ability of future generations to meet their own needs) requires us to balance whole-life economic, social and environmental factors. Similarly, the Public Services (Social Value) Act 2012 obliges us to consider ways in which procuring a public service might “improve the economic, social and environmental well-being of the relevant area”, and how the process of procurement, employment and investment might secure that improvement. These 3 pillars of sustainability and social value are captured within the Value Framework (see Figure 2).

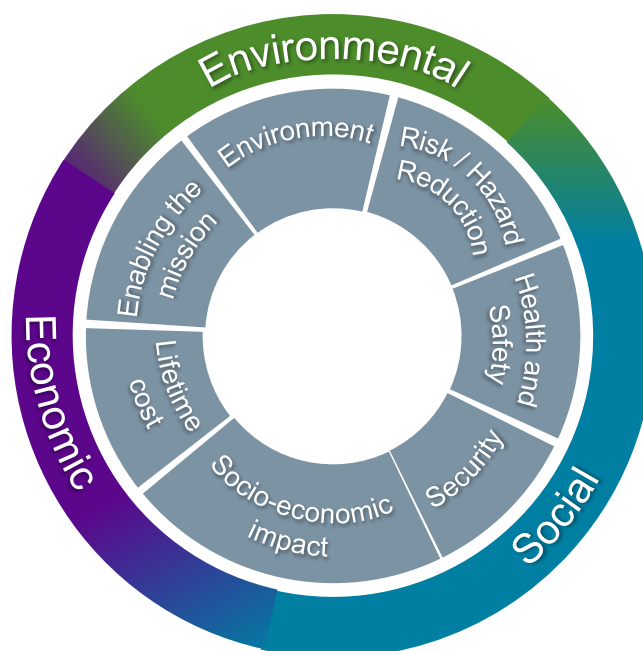


Figure 2: NDA Value Framework and the 3 pillars of sustainability and social value

The NDA is committed to the UN Sustainable Development Goals (UN SDGs) which are the blueprint to achieve a better and more sustainable future for all. We have mapped the Value Framework factors against the UN SDGs to ensure the goals are embedded appropriately in our decision-making (see Appendix A). The SDGs were developed for nations rather than organisations. Our mission does not contribute to each goal equally, but the SDGs are covered at least indirectly by the Value Framework factors.

2.2 When the Value Framework is used

The Value Framework can be used whenever there is a need for a holistic, evidence-based evaluation of alternative options. In practice, the Value Framework is particularly useful for strategic decisions when setting the direction of travel and deciding what to do rather than how to do it (see Figure 3). By using the Value Framework in these early stages, we have greater confidence that everything stakeholders value about our mission will pervade decisions right through to implementation and delivery. Identifying the preferred option for addressing a [strategic objective] for the NDA is process that occurs over several [organisational levels] and often takes many years. It starts with the development of strategy and subsequently decisions are made on how to enact this strategy through multiple stages (e.g. group business strategy, site masterplans) until finally a project is presented for approval via the Sanction process.

Consequently, the Value Framework is embedded in several of our key processes supporting strategic decision-making and sanctioning.

Value Framework assessments form the basis of strategic decision-making as part of the Strategy Management System process defined in SMSG04 (Strategy Management System).

At Gate 0 we use the Value Framework to support the identification of Strategic Objectives and Outcomes. Here the Value Framework can also help in informing discussions with stakeholders about the case for change, the rationale for intervening and outcomes that the preferred option should aim to deliver.

At Gate A the Value Framework is used to assess Achievability, which informs selection of absolute, aligned with the HM Treasury Green Book (and NDA Business Case guidance) EGG08 (Preparing an NDA Business Case) and EGG12 (Business Case Acceptance & Sanction Process). The Value Framework is used at the NDA Gate [3] (Strategic Outline Case) to identify the Preferred Way Forwards, and it builds directly on previous options appraisal (e.g. NDA Strategy). The eight factors (and their sub-factors) should be used at the Long Listing phase as the Critical Success Factors against which options are evaluated. The factors incorporate coverage of the HM Treasury Green Book CSFs.

At NDA Gate 4 (OBC stage) the Value Framework analysis should be revisited to ensure that it is still correct given any new information which has come to light since the Gate 3 approval. In addition, a cost benefit analysis should be performed to meet the requirements of HM Treasury Green Book and to further demonstrate the VfM of the Preferred Option.

Assessments undertaken at a strategic, enterprise or portfolio level should flow through to programme-level and ultimately project-level assessments, each time checking that the strategic objectives can be met and remain valid. Whether assessing a programme within a portfolio or a project within a programme, its objectives need to be understood in terms of its individual contribution to the wider group of interventions of which it is part.

The closer decisions move towards design and delivery, the more they are subject to regulatory scrutiny, e.g. in accordance with licence or permit conditions. While regulatory scrutiny of decisions is often focussed on a subset of the Value Framework factors (e.g. the regulatory requirement to identify and use the Best Available Techniques prioritises preventing or minimising emissions and impacts on

the environment, and the regulatory requirement to reduce risks as low as reasonably practicable prioritises reducing risks to health), Value Framework assessments provide important context for such decisions.

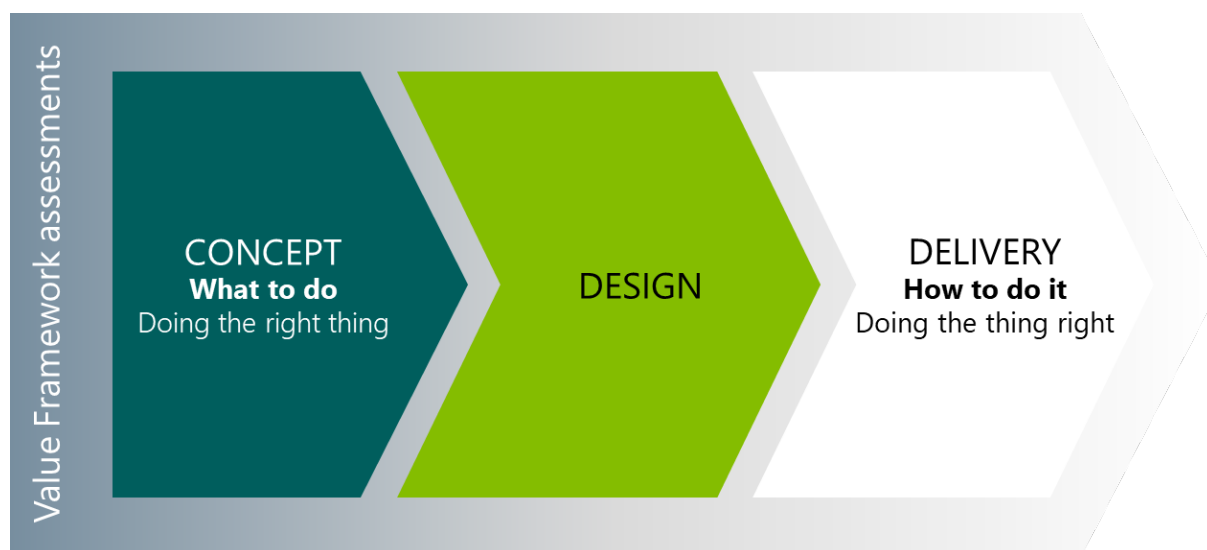


Figure 3: When to apply the Value Framework

Assessing options against the Value Framework should allow the user to identify the option that delivers the greatest value for money with reference to the objectives, outcomes and benefits associated with the intervention.

When assessing the performance of options against the Value Framework, it is necessary to assess whole-life performance and the full lifecycle implications, i.e. assessing performance associated with all stages of the activity. Taking the lifecycle view provides an opportunity to consider wider issues such as fairness over generations (intergenerational equity).

2.3 Why the Value Framework is used

Using the Value Framework as the basis of decision-criteria within a sound decision-making process enables:

- **Selection of good, sustainable solutions that deliver value to society**
The Value Framework was developed with stakeholders to capture those things that are valued in relation to our mission. Consequently, assessing the performance of options against the Value Framework helps us to demonstrate to our stakeholders that we are spending the funds allocated to

us on the right things and in the right way. Furthermore, using the Value Framework as the basis of decision-criteria ensures we capture the three pillars of sustainability and social value.

- **Smooth, efficient decision-making**

By starting with the factors in the Value Framework, we give ourselves a head start in selecting decision-criteria, and help to smooth the governance of decisions, which requires confidence that our interventions deliver value to society.

- **Important context for decisions subject to regulatory scrutiny**

Value Framework assessments provide important context and evidence for decisions that are subject to regulatory scrutiny.

- **Lifecycle context of decisions**

Using the Value Framework allows the taking of the lifecycle view where consideration can be given to wider issues such as fairness over generations (intergenerational equity). As well as assessing impacts from a geographical perspective, e.g. the impacts of removing waste from one site and taking it to another, or indirect impacts (e.g. supply chain maintenance).

Using the Value Framework also ensures alignment to the strategic objective and outcomes. Whether the assessment is for a programme within a strategic portfolio or is a project within a programme, its objectives need to be understood in terms of its individual contribution to the wider group of interventions which it is a part of. This continuity of alignment and support is sometimes known as a “golden thread”, which can be expressed in terms of performance against factors in the Value Framework and hence the three pillars of sustainability (environment, economy and society) and social value. To ensure this, the Value Framework needs to be applied consistently and transparently, and rationale of decisions need to be recorded and a handover needs to be performed from one stage to the next. This handover should include:

- the objective and outcomes being sought;
- the criteria and sub-criteria used to make the decision;
- the relative weighting of the different criteria and rationale;
- where a factor has been quantified, the basis and assumptions underpinning the analysis;
- any key constraints, dependencies and assumptions underpinning the analysis;
- risks and opportunities identified;

- any issues which are considered material and where changes in the scoring could impact the Preferred Way Forwards;
- the potential scope of future optioneering, cognisant of the previous options analysis.

Wherever possible objective criteria and quantification should be used at all stages when applying the NDA Value Framework. For some factors/sub-factors the NDA is considering standardised application which should be used on all decisions unless a justification is provided for using an alternative measure.

3.0 The Value Framework factors

The Value Framework (the factors that stakeholders value in relation to the NDA's mission) are shown in Figure 1 and comprise:

- Health and Safety
- Security
- Environment
- Risk/Hazard Reduction
- Socio-economic impacts
- Lifetime cost
- Enabling the Mission

The exact interpretation of these factors will depend on the intervention in question. Typical interpretations are shown in Appendix B. Since the number of potential interpretations is large, a tiered approach is adopted, with increasing levels of detail.

No list of factors can ever be considered exhaustive and, in theory, most factors could be used in an appraisal of options. However, for each options assessment some factors will be more important than others (see Section 5.2). Consequently, the tiered interpretations shown in Appendix B are a useful tool to identify factors of relevance, but it should not be regarded as 'set in stone'.

The following provides an overview of the Tier 1 factors only.

3.1 Health and Safety

Health and Safety relates to the potential for harm to human health associated with implementing the option or making the intervention. This includes potential harm to workers and the public from exposure to radiological and non-radiological substances, conventional hazards and nuisance (e.g. noise, dust, vibrations) at the site or sites in question and any transport between them. Taking this approach, Health and Safety factors include dose to workers and risk of falls from undertaking decommissioning through to risks to the public of accidents, for example associated with lorry moves around the country.

Safety, and provision of safe working practices, is a requirement within primary legislation. When considering any option, it is a requirement that a risk assessment be carried out to understand the effort involved to produce safe systems of work

(i.e. what needs to happen in order to manage worker safety), and ensure that the risk of accidents and injury to any individual are kept As Low As Reasonably Achievable (ALARA). So, while any selected option must be implemented safely, evaluation of options against the Health and Safety factor allows an assessment of the effort required to maintain safe working practices.

This factor covers performance of the work, whereas health implications associated with the time-period after the intervention has been completed are considered under 'Risk and Hazard Reduction' (Section 3.4). We have taken this approach within the Value Framework to ensure that the full lifecycle of effects is accounted for. An increase in short-term risk may provide overwhelming benefits in the long-term and hence be justified.

3.2 Security

As a legal requirement all Government facilities and nuclear licensed sites maintain a security plan; each plan is regularly reviewed to ensure they align with current risks and threats at both National and industry specific levels. Security plans cover the protection of a variety of assets such as, but not limited to; nuclear material; other radiological materials (including waste); and sensitive nuclear information. Security plans are designed to counter a variety of threats such as theft, sabotage, espionage or the proliferation of information.

More broadly, compromise of information and cyber security can have a wide set of consequences, including an impact on safety, reputation, regulatory non-compliance, business disruption and the significant cost of recovery. Some information risks relate to non-ONR regulated areas such as sensitive personal data, intellectual property rights, sensitive corporate records and information outside of our sites and facilities held by third parties and suppliers.

Security teams therefore work closely with a variety of other disciplines such as ICT, data protection, procurement and legal departments to ensure alignment of policies and processes in order to provide a range of protective measures that include physical, personnel and cyber security risk mitigations.

3.3 Environment

The environment, one of the pillars of sustainability, may be considered to include both the living and physical surroundings of an area, and their interactions. Impacts on the local environment include the potential to generate radiological and non-radiological discharges including solid waste (recognising our commitment to the Waste Hierarchy) and the effect of those discharges on wildlife, and controlled waters, including groundwater and surface water.

Beyond the local environment, the use of natural resources, impacts on ecosystems and contributions to climate change also represent potential environmental impacts. The importance of these factors has become increasingly visible since the NDA was formed, e.g. UK commitments to reduce greenhouse gas emissions to net zero in England and Wales by 2050 and in Scotland by 2045, and aspirations to eliminate waste and reduce use of natural resources by design through the reuse, repair, repurposing and recycling of assets (circular economy).

Consideration of the environment is a potentially complex issue as the natural environment and its ecosystems provide a wide range of valuable goods, services and benefits to society (known as natural capital or ecosystem services) such as:

- a place to live;
- natural resources, e.g. clean air and water;
- weather mitigation;
- the foundation for industry, agriculture, tourism and recreation.

SLCs and other companies often have limits set on both radiological and non-radiological solid, liquid and gaseous discharges by regulators. However, the quality of discharges as well as their quantity should be considered, particularly when considering indirect discharges such as foul or grey water.

Impacts on the environment should be assessed from a lifecycle perspective (see Section 2.2) from design and sourcing of materials through construction, operation and decommissioning to the end state. There must be an awareness of direct and indirect impacts over time (understanding how our decisions today impact and ideally benefit the environment in the future) and geographical extent. In some instances, local issues, such as loss of habitat, may have a regional or national importance. For example, an impact on endangered species can be a national issue even though the impacts occur at a local level.

Specific consideration is required if any development may impact on designated sites, such as Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) for Birds, Special Areas of Conservation (SACs), national parks or other habitats covered by the European Habitats Directive. Where degradation of such sites is justified and unavoidable, there may be a requirement to create equivalent replacement habitat.

3.4 Risk and Hazard Reduction

Risk and Hazard Reduction relates to factors that lead to a change in the risk or hazard after the implementation of an option and on completion of the intervention. In particular, we wish to know the intrinsic risk today, how much the risk to people will be reduced following the implementation of an option, and how long it takes to achieve that level of risk reduction (extent of burden on future generations). Reduction of risk can be achieved through either reduction of the inventory (removal from site), passivation of inventory (treatment to achieve a more robust waste form), as a consequence of enhanced shielding or via improved facility condition. Again, it is necessary to take a lifecycle view, e.g. understanding the impact of moving inventory from one site to another.

Risk and hazard should both be considered, where risk reflects the likelihood of occurrence as well as the potential impact arising from a hazard. For example, the volume and radiological inventory of a waste may define its hazard, whereas the form and location of the waste may define its risk.

As part of the development of the NDA prioritisation process, a consistent means of expressing the concern generated by different facilities was created: the Safety and Environmental Detriment (SED) score. This score has been used across the NDA estate, and takes account of the potential impact of the stored material being released into the environment along with its conditions of storage. The SED score indicates the concern posed by a facility, accounting for the physical and chemical form of the material, the age of the building that the material is in, and uncertainties regarding the condition of the waste material. The SED score can be useful in a broad comparison of different sites. However, the SED score is heavily influenced by a subjective judgement of the facility and waste condition. As such, separate consideration of the aspects contributing to the SED score, such as the physical or chemical form, may prove more insightful. Other approaches to quantifying risk

may also be appropriate, notably the evaluation of other on-site or off-site consequences.

3.5 Socio-economic impacts

The NDA's mission is to decommission and remediate the sites for which it is responsible. Whilst this mission is the NDA's primary consideration, the NDA has a legal requirement to consider the effect of its activity on local economies and the resilience of communities. Moreover, with increasing emphasis on social value, we should seek to maximise the positive social, economic and environmental well-being of society as a result of procurement, employment and investment. To determine the socio-economic value of an intervention, it is helpful to understand how the community aims to shape its future and improve the economic, social and environmental well-being of its places, such that decisions can take due regard of the community's vision.

Assessing the socio-economic impact includes considering directly creating or maintaining employment, but may also include the less direct impacts on existing businesses, future businesses, infrastructure (transport, hospitals, schools), and other community aspects.

For national or strategic issues, consideration of where to invest may be relevant for example to support the government's "levelling up" agenda and because many nuclear sites are situated in areas of low alternative employment. The NDA also acknowledges that impacts on the community will extend beyond the period of final site closure, emphasising the need to consider the full lifecycle implication of options.

'Nuisance factors', such as the amount of noise or dust resulting from an intervention could be considered part of socio-economic impact, but in this Value Framework, these factors are included as measures of overall 'Health and Safety', recognising that health encompasses mental, physical and social well-being.

3.6 Lifetime cost

Lifetime cost is not only about expenditure (outgoings), it should also consider potential for income. For example, a more costly option that enables earlier reuse of land may present an overall financial advantage compared to a less expensive

option with deferred reuse of land, depending on the use and the income (as well as the positive socio-economic impact) that might be expected from that recovered land.

It is important that estimating the cost of an option covers the full lifecycle implications and not just the immediate cost of implementation. For example, consideration should be given to the cost of doing the work, maintaining the asset, maintaining controls, decommissioning in the future, and so forth. Cost profiles over time, and hence approaches to discounting of spend, will also be relevant. Even a decision to do nothing, may have an effect further downstream that needs to be taken into account.

Advice on approaches to costing is available, for example in relation to the HM Treasury's Green Book. Costs and benefits incurred prior to the point of assessment should be treated as 'sunk' and should not be considered as part of the main appraisal.

3.7 Enabling the mission

Enabling the Mission offers an opportunity to consider whether an intervention helps the NDA to deliver its ultimate mission, and the extent to which an action contributes to government's broader policy objectives not captured elsewhere, such as the UK Industrial Strategy and the Nuclear Sector Deal.

Enablers may be physical or conceptual. For example, an intervention may create space, test new technologies or develop skills required for future decommissioning (physical enablers), or an intervention may set a helpful precedent, give direction to future activities or increase stakeholder confidence (conceptual enablers).

4.0 Achievability factors

When assessing a range of options, it is important to consider whether an option is achievable. In practice, the selection and implementation of options may be constrained by practical considerations. The factors that typically influence achievability and can constrain the choices we make are noted below.

Achievability factors	Examples of constraints to be managed
Resources	Is the product/activity affordable (do funds exist)? Do the skills exist to deliver the product/activity? Do the necessary materials and equipment exist?
Logistics	Is there adequate time to deliver the product/activity? Is there adequate space to deliver the product/activity? Is the product/activity dependent on successful implementation of another product/activity? Is the necessary waste infrastructure available?
Technology	Is the necessary technology available or compatible?
Procurement	Is it feasible to contract for the product/activity?
Policy and strategy	Does the product/activity align with policy, regulation and NDA strategy?
Stakeholder support	To what extent do interested parties support the product/activity?

Achievability of an option may change with time, for example as new technologies become available, the workforce develops, or funding changes. In some cases, some of the constraints may never be negotiable or may be non-negotiable given the time available between making and implementing a decision. When constraints are non-negotiable or absolute then affected options are not credible and need to be screened out (see Section 5.2). In cases where there is adequate time between assessing options and implementing the preferred option, identifying the constraints enables options to be reconsidered if the barriers are removed. Indeed, early consideration of constraints allows more time to influence achievability, for example developing a new technology, strengthening a workforce, making the case for additional funding, or even seeking to change policy. Options appraisal will then be informed by the degree of confidence in the ability to overcome any constraints (see Section 5.4).

Part 2 | Value Framework application

5.0 Using the Value Framework and achievability factors in option appraisals

Options assessment can be characterised as a logical comparison of alternatives based on consideration of a range of factors with the aim of identifying a single option that is preferred within the context and constraints of the project, programme or activity.

This section describes the ways in which the Value Framework and achievability factors are used to identify and assess options, noting that the options assessment and review process may be iterative and the steps may have multiple stages. Figure 4 shows the steps in a generic option appraisal process and highlights the steps in which the Value Framework has a role to play.

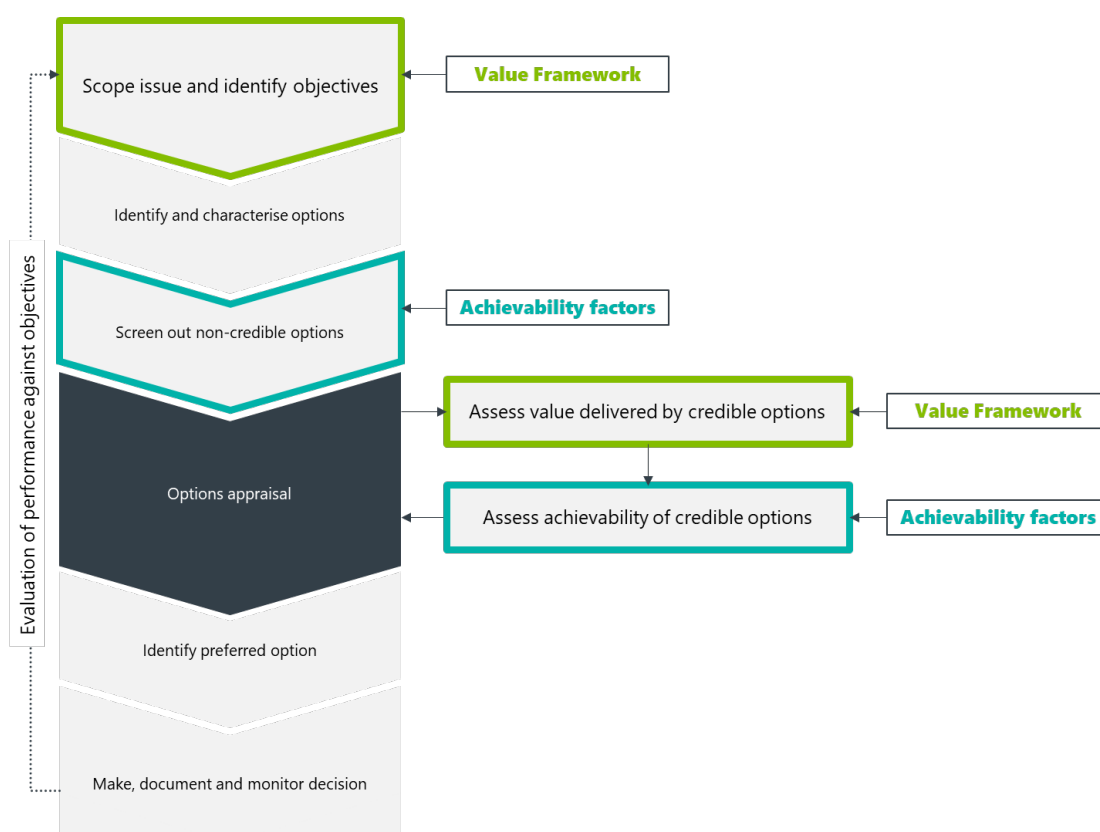


Figure 4: Use of the Value Framework in a generic decision-making process

An options assessment should be proportionate to the situation. Conclusions should be supported in a way that is reasoned, logical and transparent, and with sufficient information to allow an independent review to be undertaken. Where a previous appraisal has been undertaken, or good practice established, this can be used as part of the assessment. By reviewing the assumptions that underpin the original appraisal, it is possible to determine the extent to which previous conclusions continue to apply. There is no need to do the same work twice if the context and understanding is unchanged.

5.1 Identifying objectives and desired outcomes

It is necessary to start options appraisal by clearly setting out the purpose or rationale of the intervention, which should be aligned to the NDA's strategic objectives and outcome specifications as appropriate. The Value Framework can be a useful tool in this regard to help describe the objective of a project or programme, including its desired outcomes, measurable benefits and success criteria. A good first step is to understand what stakeholders value regarding the matter in hand, i.e. what is important to them in each situation. The Value Framework can be a helpful prompt for this discussion. The next step is then to identify and design alternative options to achieve the stated objectives.

5.2 Screening of options

Once all potential options have been identified, a high-level screening should be applied to remove non viable options, and thus produce a shorter list of credible options for further appraisal and evaluation.

One part of the screening process is to screen out options that will irrefutably fail to meet the stated objectives and desired outcomes of the strategy, programme or project (unless it is the baseline "do nothing" or "do minimum" option). However, care should be taken not to pre-judge the outcome of the options appraisal; screening is intended to rule out non-viable options, not to restrict evaluation of credible options.

Another part of the screening process is to screen out those options that are clearly not achievable because constraints will never be negotiable or are non-negotiable in the time available (see achievability factors in Section 4.0). Again, great care should be taken when determining whether a constraint is absolute and screening

out options from further assessment. If a constraint could be negotiable then it may be counter-productive to screen out the affected options. Having evaluated credible options it may become clear that it is worth trying to flex or remove the constraint(s) if time is available to do so. For example, rather than allowing waste management infrastructure to constrain options for decommissioning (part of the Logistics achievability factor), it may be preferable to improve the infrastructure and enable the preferred decommissioning option because of the value it will deliver. Similarly, rather than assuming that affordability is a constraint (part of the Resources achievability factor), it may be possible to attract additional funding if the return on investment is great enough. In some circumstances, undertaking an assessment assuming that there are no constraints may be useful, in order to understand how the constraints restrict the implementation of options within the 'real world' and to determine whether it is worth trying to remove or flex these constraints.

5.3 Options appraisal: Assess value delivered by credible options

One of the main roles of the Value Framework is to inform decision-criteria; factors against which the performance of options can be evaluated. It encourages decision-makers to consider all the ways in which a strategy, programme or project might cost or benefit society.

For each options appraisal, some factors will be more relevant than others. While some factors will be developed in to detailed assessment criteria, others may not discriminate between options and can be excluded from the list of decision-criteria at the relevant tier with a record of why they have been excluded. Time and effort should be focussed on assessing options against factors that do discriminate between options.

Some factors may be linked, requiring care to avoid double-counting. For example, both numbers of accidents saved and the money value of accident cost savings are sometimes recorded as separate items in appraisal of transport schemes. It is important, however, when moving from this multi-perspective form of presentation of options on to the process of choice between options, that the potential for any double counting is recognised and avoided where possible.

Once the decision-criteria have been identified, there are several methods that may be used for assessing the performance of options against these criteria. The HM Treasury Green Book (and NDA Business Case guidance) provides detailed guidance on techniques that can be used. These methods vary in complexity and consequent time and effort involved. The purpose, in each case, is to present an evidence-based comparison of alternative options, identifying the preferred option within the context of the strategy, programme or project, to inform decision-making. Selecting the approach for an assessment requires a sound understanding of its purpose. Re writing a business case to provide a BAT statement can be avoided by considering both needs in advance.

The options assessment may be either qualitative (using not readily measurable factors and/or subjective scoring) or quantitative (can be measured numerically), or a combination of both. Where a qualitative assessment is undertaken, based on reasoned argument, it will be supported by comparable factual information that allows discrimination between options. It is also important to undertake assessments on a collaborative basis to ensure they remain free from bias, whether conscious (e.g. having a preferred outcome) or unconscious (e.g. having different levels of information available to underpin different options). In this regard, it may be appropriate for decisions to be peer-reviewed.

When comparing options all relevant factors should be assessed independently. This requires that any interactions between factors are clearly considered. Against an individual factor options should be independently scored, rather than being ranked. One option does not always have to be identified as 'better' or 'worse' relative to another option. Some options will perform equally well against one or more factors, whereas some factors may introduce clear distinction between the options being considered.

Where a numerical approach has been adopted this prioritisation can be accommodated through weighting factors (see and using HM Treasury Green Book for a discussion of numerical techniques). Any weighting factors used should be explained and justified. Where a discussion-based approach has been adopted, a record of the importance attached to one or more factors should be maintained and explained.

5.4 Options appraisal: Assessing achievability of credible options (confidence in option implementation)

Assessing achievability involves considering the nature of constraints that will need to be addressed before an option can be implemented (see Section 4 for typical constraints). Identifying the number and severity of constraints that must be addressed informs the confidence that an option could be implemented. If time, cost, resources and technical readiness are all marginal there must be a lower confidence in achievability than for an option that has been used elsewhere, meets budgetary constraints and is available within the timescale.

As well as understanding the nature of constraints that challenge implementation, it is helpful to understand the degree of confidence required in the option. What are the consequences if the option does not deliver the anticipated outcome and does the risk outweigh the benefits? In some cases, the degree of confidence associated with implementing an option will be a key concern in identifying the preferred option. For example, there will be a high importance that the selected option performs as anticipated when decommissioning high risk/high hazard facilities because the consequences arising from failure may be serious.

5.5 Documenting and monitoring a decision

The purpose of evaluating options against the Value Framework and assessing their achievability is to provide the decision-maker(s) with the information necessary to determine a course of action. Therefore, an integral part of options assessment is to ensure that it is properly recorded and documented. This documentation should present the information base (including any assumptions) and the judgements concerning the relevant factors.

The outcome of an options assessment is a preferred option. However, a study leading to the identification of a preferred option should not be regarded as making the final decision. Before an option can be implemented, it will need approval. Even if a preferred option is supported by a solid business case it may not be implemented because of competing demands. For example, the NDA competes for funding with other national institutions and projects (for example, the NHS and education). The final decision rests with the identified decision-maker(s) who must ensure that the rationale for their decision is recorded. As such, documentation of

the options-assessment is just one component of documenting the decision-making process, although in practice, both the options assessment and the decision may be recorded in the same document.

In cases where a decision is not immediately followed by implementation then it will be necessary to monitor the continuing relevance of assumptions. If assumptions underpinning the decision prove to be incorrect then it may be appropriate to repeat the options analysis.

Assuming that the preferred option is implemented, monitoring performance enables a check to be made that the original objectives and desired outcomes are being delivered satisfactorily, e.g. within agreed tolerances. Likewise, monitoring performance ensures that any potential detriments associated with the implementation of an option have been managed. Where the performance is not as expected or assumptions prove incorrect, it may be appropriate to take corrective action, which could include revisiting alternative credible options.

6.0 Stakeholder engagement and participation

Stakeholder input is essential to good decision-making and discussions at an early stage are likely to ensure positive engagement. The definition of stakeholders is broad and may include internal users, operators of adjacent facilities and programme facilitators. External stakeholders may include regulators, contractors, designers and other suppliers as well as local government, the community and members of the public.

Consideration should be given to including the decision-maker(s), internal stakeholders (e.g. from within the NDA group) and external stakeholders, in addition to technical experts within the relevant assessment panel. When decision-makers are not part of the assessment panel, they should at least be aware of and supportive of the assessment approach. In general, wider stakeholder engagement is encouraged. At the same time, it is recognised that input to a programme of work entails time and effort. This should be borne in mind when inviting participation. For a simple technical study, minimal external stakeholder engagement may be required. However, where less-tangible factors are involved, where more complex and strategic issues considered, or where there is potential for a significant impact on stakeholders, then there is likely to be greater benefit from broad consultation. Indeed, depending on the decision, it may be appropriate to adopt participative decision-making, for example establishing a decision-making panel comprising a broad range of stakeholders.

Assuming that the preferred option is implemented, a review of performance enables a check to be made that the original objective is being met satisfactorily. Likewise, a performance review ensures that any potential detriments associated with the implementation of an option have been managed.

7.0 Conclusions

The Value Framework comprises factors that stakeholders value in relation to the NDA's mission, and is the basis of decision-criteria against which the performance of options can be assessed. Selecting the right decision-criteria is only one part of good decision-making. A good decision is dependent on how the decision is made, if and how the decision-criteria are weighted, how stakeholders are engaged or participate and so on. However, using the Value Framework provides a sound basis to explore the desired outcomes of an intervention, evaluate the performance of credible options against these objectives and enable a clear alignment between assessment of an intervention and the NDA's overall strategic objectives.

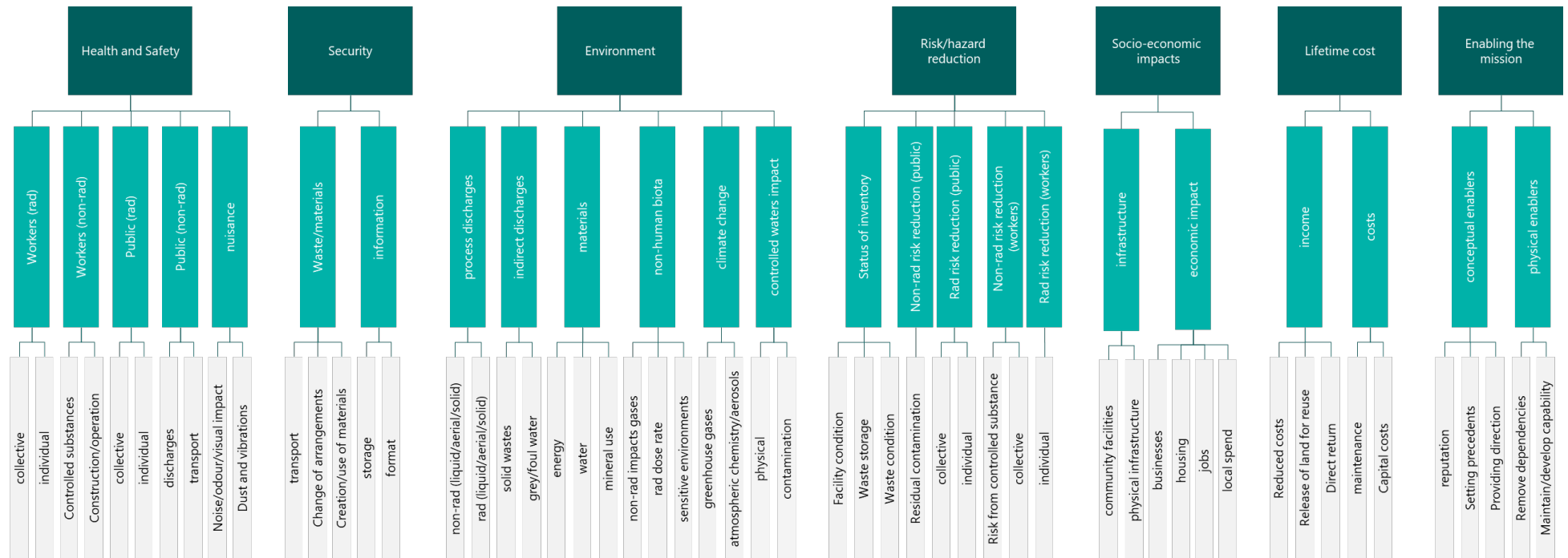


Appendix A: Mapping the Value Framework Factors against the United Nations Sustainable Development Goals

Key: GREEN Direct relationship
BLUE Indirect relationship

	Environment	Risk/hazard reduction	Health and Safety	Security	Socio-economic impact	Lifetime costs	Enabling the mission
1. No poverty					GREEN		
2. Zero hunger					BLUE		
3. Good health and well-being	GREEN	GREEN	GREEN	BLUE	BLUE		
4. Quality education					GREEN		BLUE
5. Gender equality					BLUE		BLUE
6. Clean water and sanitation	GREEN		GREEN				
7. Affordable and clean energy	GREEN					BLUE	BLUE
8. Decent work and economic growth					GREEN	GREEN	BLUE
9. Industry, innovation and infrastructure	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN
10. Reduced inequalities					GREEN		
11. Sustainable cities and communities	GREEN		BLUE		GREEN		GREEN
12. Responsible consumption and production	GREEN	BLUE		GREEN	GREEN	GREEN	GREEN
13. Climate action	GREEN	BLUE		GREEN			
14. Life below water	GREEN	GREEN	GREEN	BLUE			BLUE
15. Life on land	GREEN	GREEN	GREEN	BLUE		BLUE	BLUE
16. Peace, justice and strong institutions							BLUE
17. Partnerships for the goals					BLUE		BLUE

Appendix B: Tiered approach to interpreting factors in the Value Framework





Nuclear
Decommissioning
Authority