The Outline Business Case for a Natural Environment Impact Fund

Report prepared for Defra

Outline Business Case
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1 The ambition of the 25 Year Environment Plan

1.1 Policy objective

1.1.1 The 25 Year Environment Plan

One of the commitments clearly stated in the 25 Year Environment Plan is to ‘explore the potential for a natural environment impact fund’ and to look at innovation in designing and implementing projects that can improve the natural environment and generate revenue to pay for project costs’. This report summarises the work which has been commissioned by Defra in response.

1.2 Investment appraisal

1.2.1 Screening of opportunities

A longlist of project models was screened for suitability for near-term support from a natural capital facility. An initial list of potential natural capital projects was set out, based on the policy objectives stated in the 25 Year Environment Plan and suggestions made by expert participants at a roundtable meeting hosted by Defra. An initial screening considered whether projects could be supported by a natural capital facility in the near term by applying two tests: first, whether it provides revenue streams of sufficient size and security to attract significant private sector participation; second, whether the project model and policy conditions are developed to the point that the project could be invested in in the near term. Six project models satisfied both conditions and were taken forward to a detailed strengths-weaknesses-opportunities-threats (SWOT) assessment. The long- and short-list of projects can be found in Figure 1, with the six priority investment areas listed in the upper left quadrant:

— new woodland creation, both for recreation purposes in peri-urban areas and for timber production;
— peatland restoration;
— biodiversity and natural capital net gain;
— place-based strategic investments;
— catchment services;
— sustainable drainage systems (SUDS).
Priority project models are those that have the potential to generate revenue under current policy conditions or policies under discussion currently and where public intervention now could leverage the greatest public benefits over the long term. Six project models meet these criteria most closely:

— **New woodland creation**, supported by revenues from timber and carbon credits. This is clearly aligned to the 25 Year Environment Plan’s objectives and follows an established business model, reducing risks. The facility’s role will be to create the conditions to further strengthen this business model. For instance, interventions by the facility may mitigate policy risk around carbon credits, aggregate projects to achieve economies of scale in finance, and address the mismatch between project return timescales and candidate investors’ time horizons.

— **Peatland restoration**, supported primarily by carbon credits. Though this is a strategic priority in the 25 Year Environment Plan and could produce a range of ecosystem benefits, the model’s viability hinges on uncertain levels of policy support in the generation of carbon credits and their market value.

— **Biodiversity and natural capital net gain**, where developers pay for creating or enhancing natural capital assets to mitigate the impacts of construction schemes. Key advantages of this model are its potential to deploy existing flows of contributions from developers to local authorities and its alignment with the government’s objective to improve the efficiency of the planning system. The role of the facility will be two-fold: first, to accelerate the emergence of this model by creating standards for local authorities to assess developer contributions; second, to allocate funding to projects and project developers, particularly to exploit potential economies of scale. It will contribute to the 25 Year
Environment Plan’s objective of creating a Nature Recovery Network with 500,000 hectares of additional wildlife habitat.

— **Place-based strategic investment**, where a charity or social enterprise manages a natural capital asset portfolio, such as urban parks, beaches or a woodland, under a mandate to balance eco-system services, including monetisable and non-monetisable (public health, amenity value, improvement of air quality) benefits. This model has considerable promise to improve the management of natural capital assets in a manner that engages communities and could potentially be applied very widely. It remains relatively untested in the UK and projects often incur high set-up costs, but it can provide a sustainable funding for natural capital assets where revenue-generating activities can be used to cross-subsidise the provision of other eco-system services.

— **Catchment services**, where there is an opportunity to improve coordination between providers of water quality, water resource, flood management services and other catchment services. A critical advantage of the model is its ability to augment the impact or improve the efficiency of existing private-sector investment by water companies. The precise nature of the model may vary significantly from place to place and its development will take account of the current economic and environmental regulation of the water sector and catchments; the development of a standard commercial framework and of third-party intermediation is envisaged.

— **Sustainable Urban Drainage Systems (SUDS)**, where water company and other spending on drainage and flood defence is diverted towards green infrastructure. There is evidence that SUDS can be a cheaper means of attaining these outcomes than traditional grey infrastructure and SUDS offers an array of additional eco-system services such as amenity space and biodiversity. The main advantage of this project model is that returns on investment are relatively high even if there is uncertainty over the long-term funding of maintenance costs.

In order to estimate these projects’ financing needs an assessment of their costs and benefits was undertaken. Given the complex nature of some of the benefits of these projects, the quantitative analyses provided further in this report only include benefits for which credible estimates were easily available. Table 1 provides details on the costs, quantified benefits and other benefits associated with the six priority investment areas identified above.
<table>
<thead>
<tr>
<th>Project type</th>
<th>Description</th>
<th>Quantified costs</th>
<th>Benefits quantified in money value (in this assessment)</th>
<th>Other benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland (rural, timber)</td>
<td>New woodland creation in rural areas and for timber production</td>
<td>Land acquisition costs</td>
<td>Timber</td>
<td>Increase in biodiversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planting and establishment costs</td>
<td>Carbon sequestration</td>
<td>Improvement in water and air quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance costs</td>
<td></td>
<td>Flood risk reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financing costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodland (urban and peri-urban)</td>
<td>New woodland creation in urban and peri-urban areas for recreation purposes</td>
<td>Land acquisition costs</td>
<td>Carbon sequestration</td>
<td>Increase in biodiversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planting and establishment costs</td>
<td>Recreation</td>
<td>Improvement in water and air quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance costs</td>
<td>Health and well-being</td>
<td></td>
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<td></td>
<td></td>
<td>Financing costs</td>
<td></td>
<td>Flood risk reduction</td>
</tr>
<tr>
<td>Peatland (actively eroding and drained)</td>
<td>New peatland restoration</td>
<td>Capital costs</td>
<td>Carbon sequestration</td>
<td>Increase in biodiversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance costs</td>
<td></td>
<td>Flood risk reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financing costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodiversity and natural capital net gain</td>
<td>Number of hectares converted to habitat conservation</td>
<td>Land acquisition costs in some cases</td>
<td>Carbon sequestration</td>
<td>Recreation/amenity value/health and wellbeing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Habitat restoration and maintenance costs</td>
<td></td>
<td>Increase in habitat and biodiversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financing costs</td>
<td></td>
<td>Improvement in water and air quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Greater certainty and less complex approval process for developers</td>
</tr>
<tr>
<td>Place-based strategic investments</td>
<td>Additional number of Parks-type schemes</td>
<td>Cost of setting up the Charitable Trust, Trust staff costs</td>
<td>Maintenance costs savings</td>
<td>Additional recreation / health and wellbeing opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Investment to increase commercial income</td>
<td>Additional commercial income</td>
<td></td>
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<td></td>
<td></td>
<td>Investment backlog</td>
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<td></td>
<td></td>
<td>Financing costs</td>
<td></td>
<td></td>
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<tr>
<td>Catchment services</td>
<td>New integrated catchment services schemes</td>
<td>Infrastructure costs</td>
<td>Cost savings (flood risk, water quality)</td>
<td>Amenity value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance costs</td>
<td></td>
<td>Increase in biodiversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foregone agricultural income</td>
<td>Recreation opportunities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financing costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUDS</td>
<td>New SUDS schemes in schools or freehold NHS sites</td>
<td>Investment costs</td>
<td>Cost savings on bills</td>
<td>Mental health and wellbeing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance costs</td>
<td>Additional benefits</td>
<td>Educational benefits</td>
</tr>
</tbody>
</table>
1.2.2 Objectives of the 25 Year Environment Plan

The 25 Year Environment Plan provides detailed objectives for four of these six sectors:

— Woodland: to plant 180,000 hectares of woodland across England by the end of 2042 and 1 million trees in urban areas;
— Peatland: to deliver a new ambitious framework for peat restoration in England cutting carbon emissions from degraded peatland;
— Nature Recovery Network: to develop a Nature Recovery Network providing 500,000 hectares of additional wildlife habitat. A ‘biodiversity net gain’ principle for developments, including housing and infrastructure, will contribute to meeting part of this objective;
— Catchment services: to investigate putting in place up to 25 new catchment or landscape-scale nature recovery areas.

1.2.3 Societal returns on investment

Even under conservative assumptions, the societal benefits associated with this investment programme are considerable. Table 2 below presents the expected societal benefits associated with the 25 Year Plan objectives for the four sectors listed above. As can be seen in the last column, the total societal (discounted) benefits expected from the achievement of the 25 Year Environment Plan targets for these four sectors are estimated at £19bn.

An important caveat is attached to these results. As mentioned previously, there is no question that most natural capital assets provide a range of benefits, which include the improvement of air, water and soil quality, health benefits, biodiversity support, climate regulation, flood risk reduction, and recreation opportunities, as well as non-use values such as existence and bequest values. However, as mentioned in Section 1.2.1, quantitative estimates of these benefits are often not available. For instance, given the uncertainty regarding the location of new woodland creation in rural areas, the quantified benefits only include timber production and carbon sequestration, and exclude other significant benefits to humans and ecosystems. Similarly, biodiversity benefits are not included for biodiversity net gain projects due to the lack of agreed methods for valuing, in monetary terms, the biodiversity which can be found, for example on a hectare of restored meadow or grassland. There is a metric under development which will express the benefits in biological terms. For these reasons, the estimates presented below should be considered as an extremely conservative lower-bound of the societal benefits associated with the realisation of the 25 Year Environment Plan objectives, for these four sectors.
### Table 2. 25 Year Environment Plan benefits estimates for selected sectors

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Target</th>
<th>Quantified benefits</th>
<th>Discounted benefits (£/ha)</th>
<th>Total target-achieving discounted benefits (£m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland (in rural areas and for timber production)</td>
<td>180,000 hectares</td>
<td>Timber, carbon sequestration</td>
<td>£31,418/ha</td>
<td>£5,655m</td>
</tr>
<tr>
<td>Woodland (urban and peri-urban)</td>
<td>16,364 hectares</td>
<td>Carbon sequestration, recreation, health and well-being</td>
<td>£57,015/ha</td>
<td>£933m</td>
</tr>
<tr>
<td>Peatland (actively eroding and drained)</td>
<td>1m hectares</td>
<td>Carbon sequestration</td>
<td>£9,047/ha</td>
<td>£9,076m</td>
</tr>
<tr>
<td>Nature Recovery Network</td>
<td>500,000 hectares</td>
<td>Carbon sequestration</td>
<td>£6,278/ha</td>
<td>£3,139m</td>
</tr>
<tr>
<td>Catchment services</td>
<td>25 projects</td>
<td>Costs savings compared to BAU (flood risk, water quality)</td>
<td>£86,227/ha</td>
<td>£216m</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>£19,019m</strong></td>
</tr>
</tbody>
</table>

**Note:**
The objective for woodland in urban and peri-urban areas is based on a density estimate of 61 trees per hectare. The objective for peatland restoration is based on the assumption that 70% of England’s peatlands are degraded. Benefits from peatland restoration are based on the assumption that 1/3 of degraded peatlands are actively eroding and 2/3 are drained.

**Source:** Vivid Economics, Environmental Finance

#### 1.2.4 Risk

In the current conditions, the risks associated with the six short-listed project models are relatively high. As mentioned in the previous paragraphs, there is little uncertainty about the fact that each of these projects will bring significant benefits to society. However, there is uncertainty about projects’ ability to generate stable revenue streams, which is essential in attracting sustainable investments from the private sector.

It appears that most of the revenue risk arises from policy risk. Indeed, both the level and the stability of these revenue streams are tightly linked to the regulatory and policy environment. As a matter of fact, the 25 Year Environment Plan includes a few policy announcements which could greatly improve the revenue profile of these projects. These include, for instance, the setting-up of a stronger domestic carbon offset mechanism and of a carbon guarantee scheme, as well as the embedding of an environmental ‘net gain’ principle for all housing and infrastructure developments.

#### 1.3 Rationale for intervention

As can be seen from their location on the ‘J-curve’, which indicates project models’ current level of maturity, the six priority project models remain at an early stage. Figure 2 below illustrates the financing
cycle and investor type by stage for these natural capital projects in a UK context. The curves are headline estimates based on interviews held with key stakeholders and market knowledge.

**This characterisation is specific to the UK.** This work focuses on operational models that support institutional investment at scale in natural capital assets for the UK, or for England. In some other countries, the market is more mature: for instance, wetlands mitigation banks in the US are fully investible with a US mitigation banking market capitalisation of around US$3bn (Ecosystem Marketplace, 2017).

![Figure 2. Public financing cycle and investor type for selected natural capital project types in the UK](source: Vivid Economics, Environmental Finance)

Public and philanthropic capital therefore remains critical to facilitate project preparation and development in these areas in the UK. Such funding can support up-front capital expenditure or capacity building, or de-risk opportunities. As project models mature and generate more attractive risk-adjusted rates of return, they begin to attract venture capital investors with more flexible capital to seed fund project opportunities, as well as (more risk-averse) institutional investors with the ability to deploy investment at scale. There is a role for blending finance to provide flexible funds to facilitate project development and reduce the risk of investments, thereby encouraging capital and knowledge to flow to more risk-averse investors, helping to develop a deeper and more mature finance market.

Public support can surmount three specific barriers to growing the UK’s investment market in natural capital. These are:
1. Development: moving from idiosyncratic and disaggregated pilots to an approach that brings together financing, conservation, and technical know-how and provides the necessary infrastructure and engagement to rapidly archetype and test encouraging ideas with scale up potential.

2. Scale: moving from small demonstration projects to scale up those with promise and some track record, and utilising risk mitigation instruments to accelerate market development.

3. Normalisation: moving from well tested project implementation models to scaled, standardised and established products that are attractive to the institutional investment market.

The specific roles that can be played by Government to achieve these market transformations will be examined in more detail in Section 2.2.1.
2 Function

2.1 Market failures

There are four main market failures in the natural capital area.

The first one stems from the externalities and public goods usually associated with natural capital assets: these arise when the costs of using or consuming a resource are greater for society than for the individual (or company) which is using the resource, or when the assets supply services which are public in nature\(^1\). For instance, the benefits to society of carbon sequestration in woodland and peatland are greater than the private benefits enjoyed by the individual managing or owning the resource. These positive externalities (positive because the consequences of an individual preserving the resource are positive to society but are usually not reflected in its value) result in an under-provisioning of the goods and services provided by natural capital assets. Positive externalities and public goods can be paid for by creating revenue streams (such as carbon credits) or by intermediating with beneficiaries who are willing to pay. These arrangements are complements to the finance arrangements which are the focus of this work.

A second market failure comes from the fact that there are insufficient incentives for first movers and innovators. Indeed, there are no or few established business models for natural capital assets (at least in the UK) and it is likely that first movers will bear higher costs than those which will follow suit. The fact that incentives for first movers are low is one of the reasons why the market for natural capital assets is currently under-developed.

A third market failure is related to the fact that investors have imperfect information. In the context of natural capital projects, this imperfect information comes about because: there is a lack of a proven track record for most projects regarding their revenue-generating capacity; and, an uncertain regulatory or policy environment, with the most salient being the absence of a strong signal on the level of future carbon prices. Moreover, these sectors are new to investors, who tend to be cautious and over-estimate risk simply out of lack of knowledge and experience.

Finally, the specifics of natural capital projects may discourage investors. First, the cashflow profiles often feature high up-front costs and long payback periods, making them ill-suited to current financial markets, which favour short investment horizons. Second, many projects (apart from woodland) have little recoverable value which could serve as collateral.

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\(^1\) In economic terms, this means that the marginal social cost of consuming the resource is higher than the marginal private cost.
2.2 Remedies

2.2.1 Role of Government

There are a number of roles that Government could take in structuring the fund to stimulate increased investment, which require varying degrees of financial and non-financial participation, acting as follows:

— **An enabler**, which involves connecting investors (representing the supply side of the market) and project developers (representing the demand side of the market) and providing a more supportive policy environment. External stakeholder interviews have provided clear feedback that Government’s role, at a minimum, should be to provide a policy environment which supports and encourages private investments in natural capital assets through sector-specific policies (for instance, strengthening the domestic carbon market or implementing a biodiversity net gain requirement for all new housing developments). This is the ‘do minimum’ option with a low level of financial commitment, but it may require a relatively high level of internal capacity.

— **An investor**, through direct investment in the fund, concessionary capital or revenue support. A commitment of capital into the fund, as a direct investor, provides confidence to project developers that the Government is following-up on the commitments laid out in the 25 Year Environment Plan, and sends a strong signal to investors that these are key priority policy areas.

— **A guarantor**, in which government writes first-loss guarantees, insurance or minimum floor investment returns, would improve the risk-return profile to potential investors, stimulating more finance.

— **A delivery partner**, whereby government could have direct involvement with project developers to provide technical assistance, intermediation and contract structuring. These support services could be contracted out to external providers or be delivered within government.

Government may participate as an investor and enabler to stimulate increased investment and provide the necessary support to enable market growth.

2.2.2 Delivery options

A range of services are required to deliver the fund successfully, summarised as follows:

— **Corporate finance advisory services** to structure the fund and raise investment;

— **Fund management services** to identify investment opportunities, carry out investment due diligence, day-to-day administration of investments and monitor and evaluate performance;

— **Technical assistance management and provision**, to carry out assessments to identify project needs and provide the necessary technical assistance to prepare projects for investment.

These services could be delivered either using an in-house provider, or by setting up a new structure, or by procurement from service organisations.

If adequate resources already exist within Government, delivering the services in-house would not require procurement processes, which might enable the fund to be deployed more rapidly into the market, while maintaining government control of fund operations. However, a careful assessment of the costs of delivering these services in-house compared to those of contracting them to the private sector would be required to establish which is the most cost effective option. The required skills and capacity to deliver the range of services may not be present within government, but this capacity could be bolstered by...
contracting out some services to external providers. Alternatively, government skills could be employed on the Project Board to ensure effective management of the fund.

Establishing a new structure with an entirely new team could provide a potential solution to the lack of required skills within a single organisation to carry out all the services required within a single structure. The level of complexity and cost of set-up are likely to be too high for a relatively small-scale pilot fund, but this could be a viable option if the fund were to be scaled up in the future.

A consortium of organisations providing the range of required services appears to be the most suitable delivery option, as it provides the breadth of required skills with a collaborative strategy. Using a single organisation to carry out the range of required services could provide a simpler procurement and project management process, but it is unlikely that the variety of skills to carry out the range of required services exists in a single organisation within the market. Procurement of multiple providers would lead to significant internal capacity time, procurement costs and management complexity. Contracting services out externally provides the additional benefit for government of risk sharing the fund performance with the external contractor.

The options for technical assistance (TA) management are for the TA funds to be managed in house, by the fund manager or using a third party manager. Ideally, TA management would be carried out by the fund manager to ensure that funds are only provided to projects that are likely to receive investment. This may be slower to implement than an in-house or third-party provider, as the fund manager must be in place before the TA support can be provided. A potential solution is to deploy part of the TA fund in advance of the natural capital fund being in place, to start ‘pump-priming’ projects to stimulate a pipeline of projects for investment once the fund is raised. Third party management of advanced TA support would require strong governance to ensure that the TA manager is aligned with the objectives of the fund.

### 2.3 Judging performance by outcomes

Because the purpose of this fund is to remedy existing market failures in the natural capital assets area, its performance should be judged on a set of outcomes. These could include the following:

- Demonstrating near-commercial performance from projects and building a track record;
- Building capacity for the development and financing of projects that have environmental impact and generate revenue;
- Advancing the standardisation of tools, metrics and processes (including commercial templates and contractual forms);
- Shifting the perceived attractiveness of natural capital assets to investors;
- Increasing private investor participation in projects based on natural capital assets.
3 Form

3.1.1 Three main structural delivery options
Many fund delivery solutions are possible, but three structural options best meet the needs identified in the SOC. These three have been assessed in more detail:
— A central funding structure, which blends equity, grants and debt contributions provided by investors in a single vehicle;
— A pooled funding structure, which allocates grants, debt and equity capital provided by investors into dedicated funds for each form of capital;
— A funding syndicate, which brings together a group of existing investors within a syndicate to make individual investment decisions, which are then led, coordinated, negotiated and administered by an agent.

3.1.2 Central funding
A central fund blends equity, grants and debt contributions provided by investors within one fund. The grants portion can be used to de-risk other forms of finance within the fund, encouraging private sector repayable finance participation. A manager, alongside an investment committee, is responsible for making decisions over the appropriate combination of capital to provide to investee projects, which enables equity, grants and debt capital to be blended to de-risk investment into underlying projects. A key benefit of this structure is that it allows blending of capital at both the fund- and project-level to reduce investor risk to a level with which investors are comfortable contributing to the fund. Figure 3 illustrates how this financial structure could be set up.
A central funding structure is a well-understood framework that provides a simple and transparent level of risk cover for investors. There is a good track record of blended fund structures operating in the market, with a global market size of c. US$50bn. In the UK, this fund structure has been implemented across the social investment market to attract private investment alongside concessionary capital, for example within the Access Foundation and Arts Impact Fund. The use of this structure, being a proven approach, would make it easier to attract investors to the fund.

Some capital providers may be reluctant to place their capital within one blended fund structure, particularly where grant capital is being used to de-risk investment from other investors. It may be difficult to define clear fund objectives that align with varied investor requirements regarding impact and financial returns. However, given that this is the fastest growing and most traditional structure in the market, it has the greatest potential to build a large-scale fund.

3.1.3 Pooled funding

In a pooled funding structure, allocations of equity, grants and debt capital provided by investors are ringfenced in separate facilities. A single manager takes responsible for centrally managing these pools and makes investment decisions alongside an investment committee. The manager draws down several types of capital and allocates a suitable combination to each project. There is an option for government to take a risk-capital position at the fund level; it is unclear whether other grant funders would also be prepared to contribute risk capital. Figure 4 illustrates the financial structure.
The main benefit of this model is that there is clear definition of where investors’ sources of capital are allocated. This structure may be preferred by investors that specialise in providing specific types of capital and want to control the way their capital contribution is used in the fund. The structure also provides a long-term management solution for investments, whereby a single manager supplies a blend of capital to a project, depending on the assessed project risk, to de-risk the fund for investors.

A key issue with the model is that there is no defined risk cover for investors when capital is raised, which might make it more difficult to attract private investors into the fund. Investors rely on decisions made by the manager to blend funding for each project, to minimise investment risk. Due to the bespoke blend of funding for each project, there is no clear allocation of investor risk or certainty to what level their capital is protected. There is limited track record of this more complex structure operating in the market, which may make it less attractive to private investors.

3.1.4 Funding Syndicate

A funding syndicate brings together existing organisations in the market place to make investment decisions on projects presented to them by a single gatekeeper or syndicate lead. For example, government may support a group of existing providers of capital, such as trusts and foundations, social investors and private investors, to encourage them to allocate a pool of capital to natural capital projects. The gatekeeper, manager or syndicate lead is responsible for sourcing deals and providing screening and
due diligence services for the projects, before proposing them to potential investors. Figure 5 illustrates the financial structure.

Figure 5. **Funding syndicate**

The funding syndicate does not require the creation of a new structure and makes use of in-house capabilities of existing organisations, so could be set up at lower cost and deployed more quickly than other structures. Government would not have as much direct involvement in the fund in comparison with other models. Instead, government would provide capital, guarantees or non-financial assistance to de-risk investments, with the gatekeeper acting as the single point of contact for investors and investees. There is a track record of funding syndicates, for example the Private Angel Network facilitates venture capital investments by providing a forum in which investors receive business proposals from companies seeking funding.

The responsibility of making the investment lies with existing investors, which means the underlying investees have no certainty they will receive any investment. If investment is provided, it may not be flexibly allocated to support the various stages of project requirements in their lifecycles. Investors within the syndicate may lack in-house expertise to make their own investment decisions, and without a coordinated management model, this may prevent the momentum required to stimulate the natural capital investment market.
3.1.5 Reasons for the preferred option

Central funding is the preferred delivery option to maximise the potential for attracting private capital co-funding due to its well understood framework and strong track record in use globally. The clarity of risk cover provided to investors and the clear responsibility of a single manager and investment committee to make investment decisions increases the potential to attract investment from the private sector at sufficient scale to support the development of the natural capital investment market.

A blended vehicle is structured to raise investment from a range of investors, who take on equity-style risk. The vehicle invests a combination of equity, grants and debt capital into investees depending on specific project requirements, based on the manager’s assessment. This blended fund structure provides flexibility to support projects at various stages of their funding as they move towards a commercially investible stage.

The next step would be for the Government to test this preferred option with investors. If the market testing of a central fund shows a lower level of private capital contribution than expected, the pooled funding option could be explored: it could be structured within the same framework as the central funding option, and it may provide more reassurance to investors as to the use of their proceeds (contributions).

The Strategic Outline Case (SOC) concluded that the near-term ambition for a natural capital finance facility would best be achieved by developing a £50 million impact fund with a broad approach. This fund would invest across the most promising sectors identified, covering new woodland creation, peatland restoration, biodiversity net gain, place-based, integrated catchment services and SUDS. It was also noted that there are other potentially investible project models that could be piloted and should not be overlooked. The £50 million fund could act as a near-term pilot to demonstrate a proof of concept across a broad spectrum of project models before implementing a larger scale fund (around £500m-£1bn of principal investment) to advance the sector to a level of maturity which attracts mainstream investors.

Candidate projects will be those at or close to revenue generating stage, requiring flexible capital to support them at the various stages of their investment lifecycle. These investments would be structured within a blended vehicle, where investors would provide equity-style investment of high risk exposure and, in many cases, uncertain timing to repayment of principal. Potential investees are broad and complex, requiring a combination of equity, grants and debt depending on specific project requirements, with the aim being to move the market for each of these natural capital assets to a commercially investible stage.

3.1.6 Governance

Given the highly specific nature of a natural capital investment fund, its governance arrangements would need to take account of the following considerations:

— The public nature of the assets at stake, which links back to the fact that one of the purposes of the fund is to tackle market failures causing the under-provision of public goods;
— The role taken up by Government, which determines Government’s role in the investment strategy, fund policies and fund governance;
— Governance roles and responsibilities that balance financial, social and sector-specific experience;
Given the unproven business models of these projects, special care should be taken to design key performance targets and indicators to assess the level of outcomes achieved by the fund.
4 Scale and focus

4.1 Scaling the fund for market development

The market development impact of the fund will depend on two factors:
— First, the scale of the fund; a £10m, £50m or £500m principal investment will achieve different levels of leverage (see section 4.2 below) from the private sector and have different investment profiles. This is because some project models (for instance place-based models or catchment services projects) require large initial investments (in the realm of £1m-£5m);
— Second, the decision whether to narrowly advance one sub-sector much further along towards mainstream investment, or broadly move several sectors forward together.

This matrix of choices is represented in Figure 6 below.

Figure 6. Potential fund impact

<table>
<thead>
<tr>
<th>Project range</th>
<th>Market development impact</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>Low: £50m A</td>
<td>High: £500m B</td>
</tr>
<tr>
<td>Narrow</td>
<td>Low: £10m C</td>
<td>High: £50m D</td>
</tr>
</tbody>
</table>

Source: Vivid Economics, Environmental Finance

The cost of the cornerstone investment/intervention to move the market forward across a broad range of investible models is sized at c. £50m for a moderate change and c. £500m for a substantial change in the chosen project sectors examined over a five to seven year period. For a £50m facility, the expected spend profile would be to deploy £10m of technical assistance over the first 18 months of the fund’s operating period, and deploy the £40m balance of fund over a three year period, with an estimated £5m, £15m and £20m invested in years one, two and three respectively. The cost of the intervention to move one sector of the market a moderate distance would be c. £10m, versus c. £50m to move the sector a large distance. We have sized this requirement by both the feedback received from interviews and by comparison with the social investment sector, examining the growth of the social investment market, which is now estimated to be worth nearly £2 billion and is growing at a rate of c.30% per annum (Big Society Capital, 2016).
If a single subsector were chosen, woodland would be the strongest candidate. It suits a wide range of fund structures due to its more established business model.

4.2 Crowding-in private investment

4.2.1 Expected leverage from private investors

As mentioned previously, there are several reasons why investors are currently reluctant to invest in natural capital sectors: these include the risk/return profiles of these types of projects, the absence of a proven track record, lack of knowledge and information on the investors’ part, regulatory uncertainty and absence of sufficient revenue.

Based on discussions held with potential investors and lessons from similar fund initiatives undertaken in the social investment sector, such as funds seeded by the Access Foundation and Big Society Capital, the expected level of leverage of public capital, which is defined as the amount of private funding that can be obtained per pound of public capital, is as follows:

— Leverage for technical assistance funding at the facility level: 1, regardless of the fund size, based on interviews held with existing sector grant funders, such as Trusts and Foundations;
— Leverage for project funding at the facility level: 1, for a small to medium-scale fund (£10m-£50m of principal investment); and 2, for a large-scale fund (£500m of principal investment), based on comparing the fund structures of £50m funds, such as Community Owned Renewable Energy, with large Private Equity funds greater than £250m in size. Potential funders at the facility level could include Lottery funds, Trusts and Foundations, social investors and institutional investors.
— Leverage at the project level: 2, regardless of the fund size, based on examples provided by project developers through stakeholder research. Potential funders at the project level could include Non-Governmental Organisations, corporates and community/retail investors.

4.3 Scale and focus

4.3.1 Scale of the different options

The considerations developed in the previous sub-sections lead to four fund options. A broad approach bringing all sectors to maturity would deploy around £500m of public funding, while a narrow approach focused on one sector would require around £50m, although the amount required depends on the sectors and form of fund. To achieve a more limited impact, demonstrating a proof of concept through a moderate number of projects, requires £50m across all sectors or £10m for a single sector, with a range of possible intermediate options. These four options are labelled A, B, C and D in the remainder of the report.

— Option A: a £10m principal investment, with a narrow sectoral focus (1 or 2 sectors);
— Option B: a £50m principal investment, with a narrow sectoral focus;
— Option C: a £50m principal investment, with a broad sectoral focus;
— Option D: a £500m principal investment with a broad sectoral focus.

Table 3 below lists the expected leverage and total fund size of these four options.
### Table 3. Scale and expected leverage of the different options

<table>
<thead>
<tr>
<th>Sources and uses of funding</th>
<th>Option A: £10m, narrow range</th>
<th>Option B: £50m, narrow range</th>
<th>Option C: £50m, broad range</th>
<th>Option D: £500m, broad range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leverage at the facility level</td>
<td>x1</td>
<td>x1</td>
<td>x1</td>
<td>x2</td>
</tr>
<tr>
<td>Leverage at the project level</td>
<td>x2</td>
<td>x2</td>
<td>x2</td>
<td>x2</td>
</tr>
<tr>
<td>TA leverage</td>
<td>x1</td>
<td>x1</td>
<td>x1</td>
<td>x1</td>
</tr>
<tr>
<td>Principal investment (£m)</td>
<td>£10m</td>
<td>£50m</td>
<td>£50m</td>
<td>£500m</td>
</tr>
<tr>
<td>Principal investment in projects (£m)</td>
<td>£8m</td>
<td>£40m</td>
<td>£40m</td>
<td>£450m</td>
</tr>
<tr>
<td>Principal investment in TA (£m)</td>
<td>£2m</td>
<td>£10m</td>
<td>£10m</td>
<td>£50m</td>
</tr>
<tr>
<td>Total expected leverage (£m)</td>
<td>£26m</td>
<td>£130m</td>
<td>£130m</td>
<td>£1,850m</td>
</tr>
<tr>
<td>Leverage at the facility level (£m)</td>
<td>£8m</td>
<td>£40m</td>
<td>£40m</td>
<td>£900m</td>
</tr>
<tr>
<td>Leverage at the project level (£m)</td>
<td>£16m</td>
<td>£80m</td>
<td>£80m</td>
<td>£900m</td>
</tr>
<tr>
<td>TA leverage (£m)</td>
<td>£2m</td>
<td>£10m</td>
<td>£10m</td>
<td>£50m</td>
</tr>
<tr>
<td>Total expected funding size (£m)</td>
<td>£36m</td>
<td>£180m</td>
<td>£180m</td>
<td>£2,350m</td>
</tr>
<tr>
<td>Total amount to be invested in projects (£m)</td>
<td>£32m</td>
<td>£160m</td>
<td>£160m</td>
<td>£2,250m</td>
</tr>
<tr>
<td>Total expected fund size (£m)</td>
<td>£16m</td>
<td>£80m</td>
<td>£80m</td>
<td>£1,350m</td>
</tr>
<tr>
<td>Total TA (£m)</td>
<td>£4m</td>
<td>£20m</td>
<td>£20m</td>
<td>£100m</td>
</tr>
</tbody>
</table>

Source: *Vivid Economics, Environmental Finance*

### 4.3.2 Focus

The allocation of funding across project types varies depending on the size and the scope (narrow vs broad) of the fund. Table 4 sets out three possible capital allocation rules across sectors, for illustrative purposes:

- the first allocation applies to the £10m and £50m options with narrow scopes (Options A and B, respectively);
- the second allocation is for the £50m option with a broad scope (Option C);
- the third allocation fits the £500m option (Option D).
The allocation rules were chosen as follows. For the narrow allocation, the focus has been set on new woodland creation for recreation, placed in urban and peri-urban areas, and on peatland restoration. Woodland is an investment priority because it has an established business model and peatland restoration is a policy priority in order to prevent further carbon emissions from degrading peat. The broad allocation rule aims at a balanced allocation across sectors, but it differs slightly based on fund size, to account for the expected pipeline of near-term projects in each category.

Table 4 below presents these three allocation rules.

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Proposed allocation rule (narrow scope)</th>
<th>Proposed allocation rule (broad scope, £50m)</th>
<th>Proposed allocation rule (broad scope, £500m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland (in rural areas and for timber production)</td>
<td>-</td>
<td>-</td>
<td>15%</td>
</tr>
<tr>
<td>Woodland (urban and peri-urban)</td>
<td>40%</td>
<td>25%</td>
<td>5%</td>
</tr>
<tr>
<td>Peatland (actively eroding)</td>
<td>20%</td>
<td>19%</td>
<td>16%</td>
</tr>
<tr>
<td>Peatland (drained)</td>
<td>40%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Biodiversity net gain</td>
<td>-</td>
<td>10%</td>
<td>14%</td>
</tr>
<tr>
<td>Place-based models</td>
<td>-</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Catchment services</td>
<td>-</td>
<td>1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>SUDS</td>
<td>-</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Vivid Economics, Environmental Finance

4.3.3 Instruments

The instruments used by the fund to invest in projects will mainly be equity investments. Investors would provide capital to the fund entirely ‘at risk’, with repayment of the capital and any return fully conditional on the performance of underlying investments, with an unpredictable timing. Given the long term investment horizons for some natural capital projects, traditional fund terms of 7-10 years may need to be extended to take full benefit of natural capital investment project cashflow profiles. Fifty million pounds could be invested into the vehicle to mobilise further capital through providing a repayable grant, which could then be recycled as project returns are generated. The vehicle could be scaled up in future as the market develops to achieve more impact.

Debt finance will only be feasible for natural capital projects which generate stable cash flows to cover interest and loan repayments. Concessionary debt could be offered alongside capacity building grants.
Diversification of investments across projects could also help ‘smooth’ cash flows to the fund from which to pay regular investor returns, however given the small number of projects likely to be held within the fund initially, the fund will not benefit from this portfolio effect for a number of years. Hence, the focus of the fund will be on equity-like instruments rather than debt. As markets become mature, more debt-like instruments may become possible.

4.4 Value for money of the model

4.4.1 Value for money of the four options

For each option, the net present value (NPV), calculated as the discounted sum of societal benefits minus costs, indicates the value creation by the fund. The estimates in Table 5 represent the whole portfolio of projects invested through each option. In addition to the assumptions on leverage and allocation described previously, these calculations rely on the following assumptions:

— technical assistance (TA) is expended over the first three years of the life of the fund;
— transaction costs and learning benefits: the model assumes that, for each vehicle option, transaction costs amount to 10% of the project costs financed by the fund and fall to 5% when the number of projects of the same type exceeds ten;
— management costs are 2% p.a. of the fund during the first three years and 0.10% p.a. thereafter;
— financing costs cover TA, project capital costs and the first three years of operating costs. The weighted average cost of capital (WACC) is assumed to be at 8.0% in nominal terms (5.5% in real terms) for the first 7 years, falling to 4.5% in nominal terms (2.0% in real terms) thereafter;
— optimism bias: the model includes an optimism bias which increases costs and reduces benefits by 15%.

Table 5. Net present value (NPV) for each vehicle option

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Option A: £10m, narrow range</th>
<th>Option B: £50m, narrow range</th>
<th>Option C: £50m, broad range</th>
<th>Option D: £500m, broad range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal investment (£m)</td>
<td>£10m</td>
<td>£50m</td>
<td>£50m</td>
<td>£500m</td>
</tr>
<tr>
<td>Total fund size (£m)</td>
<td>£36m</td>
<td>£180m</td>
<td>£180m</td>
<td>£2,350m</td>
</tr>
<tr>
<td>Total invested in projects (£m)</td>
<td>£32m</td>
<td>£160m</td>
<td>£160m</td>
<td>£2,250m</td>
</tr>
<tr>
<td>Total TA (£m)</td>
<td>£4m</td>
<td>£20m</td>
<td>£20m</td>
<td>£100m</td>
</tr>
<tr>
<td>NPV (3.5%, £m)</td>
<td>£117m</td>
<td>£587m</td>
<td>£703m</td>
<td>£8,946m</td>
</tr>
<tr>
<td>NPV per £ of principal investment (£)</td>
<td>£12</td>
<td>£12</td>
<td>£14</td>
<td>£18</td>
</tr>
</tbody>
</table>

Source: Vivid Economics, Environmental Finance
The societal NPV per pound of principal investment is in the range of £12–£18 for the four options. The similarity of the results for Options A and B comes from identical leverage assumptions and allocation rules, the only difference being scale. The difference between Options C and D comes from the fact that a higher level of leverage at the facility level is assumed for Option D (x2 instead of x1 for Option C) and slightly different allocation rules.

A quick sensitivity analysis shows that results are sensitive to some assumptions, namely:

- results are more sensitive to project cost assumptions than project benefits assumption, mainly because of costs fall earlier in time and so are less heavily discounted;
- results are sensitive to assumptions regarding private investment leverage: assuming that project-level leverage would be x1 (instead of x2 as is currently assumed) and that the facility level leverage would x0.5 (instead of x1 for principal investments of £10–50m and x2 for £500m investment) would reduce the range of societal NPV per pound of investment from £12–18 to £7–11;
- results are highly sensitive to assumptions regarding the share of costs which are financed by the fund; the results presented in this report assume that the fund only covers projects’ capital costs and the first three years of maintenance costs. Changing this assumption to 10 years would reduce the range of societal NPV per pound of principal investment to £7–9 for across the four options.

4.4.2 Market transformation benefits: attainment of the 25 Year Environment Plan targets

The 25 Year Environment Plan mentions quantified goals for some sectors:

- new woodland creation for timber production: 180,000 hectares;
- new woodland creation in peri-urban areas: one million trees (equivalent to 16,300 hectares);
- restoration of England’s peatlands which are drained or in poor condition: 1,433,069 hectares;
- Nature Recovery Network: developing a Nature Recovery Network providing 500,000 hectares of additional wildlife habitat;
- catchment services: putting in place up to 25 new catchment or landscape scale nature recovery areas to significantly expand wildlife habitat;
- there is no quantified goal for place-based models or SUDS projects.

The contribution towards the goal for each Option is shown in Table 6. The contribution is higher for the ‘narrow’ £50m vehicle than for the ‘broad’ £50m vehicle, because the allocation rule for the ‘narrow option’ focuses on woodland and peatland, whereas the lack of precise targets for SUDS and place-based models excludes these sectors from the calculation.

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2 Peatlands make up 11% of England’s total land area, of which 70% are drained or in poor condition.
### Table 6. 25 Year Environment Plan target achievements

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Option A: £10m, narrow range</th>
<th>Option B: £50m, narrow range</th>
<th>Option C: £50m, broad range</th>
<th>Option D: £500m, broad range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland (timber)</td>
<td>-</td>
<td>-</td>
<td>9.6%</td>
<td></td>
</tr>
<tr>
<td>Woodland (peri-urban)</td>
<td>4.0%</td>
<td>20.0%</td>
<td>12.5%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Peatland</td>
<td>1.7%</td>
<td>8.5%</td>
<td>4.1%</td>
<td>51.6%</td>
</tr>
<tr>
<td>Nature Recovery Network</td>
<td>-</td>
<td>-</td>
<td>0.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Place-based models</td>
<td>-</td>
<td>-</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Catchment services</td>
<td>-</td>
<td>-</td>
<td>1.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>SUDS</td>
<td>-</td>
<td>-</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Average</td>
<td>1.1%</td>
<td>5.7%</td>
<td>3.7%*</td>
<td>20.7%*</td>
</tr>
</tbody>
</table>

Note: *Results for Options C and D are biased downwards because there are no quantified objectives in the 25 Year Environment Plan for place-based models and SUDS schemes.

The objective for woodland in urban and peri-urban areas is based on a density estimate of 61 trees per hectare.

The objective for peatland restoration is based on the assumption that 70% of England’s peatlands are degraded.

Source: Vivid Economics, Environmental Finance

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### 4.5 Limitations

The small and medium sized fund Options, of £10m to £50m contribute up to 5% of the goals overall. However, if a £50m fund was relatively focused, it could contribute up to 20% of the goal in chosen areas such as peri-urban woodland and peatland restoration. Given the limited impact of even a medium sized fund across the whole 25 Year Environment Plan, the authors recommend that the fund is eventually expanded to £500 – £1,000 million scale, if it proves to perform well, and that projects in some sectors, such as biodiversity net gain, are funded separately by existing facilities, such as the Housing Infrastructure Fund, to allow the NEIF to be more tightly focused. It may also be possible to scale up some sectors within the fund, such as woodland, more quickly than others, and even to spin them off into a separate sector-specific fund, if there is investor appetite and a sufficient deal pipeline.

### 4.6 Risk management

There are two risk management issues which would justify launching a pilot fund at a moderate scale before raising the ambition further:

— First, the immature business models and the uncertainty around the level and timing of revenue streams from these assets;
Second, linked to the first, relates to policy risk. The goals in the 25 Year Environment Plan are ambitious but require further policy commitments to be made, such as the introduction of a carbon credits system and a biodiversity net gain planning policy, in order to create the revenue streams against which investments can be made.

Therefore, the option of a near-term £50m pilot initiative to demonstrate a proof of concept across the project models and learn lessons is preferred, and precedes further commitments of funding at a larger scale. In the medium- or longer-term, an order of magnitude more funding, such as £500m to £1,000m, still playing a market-transforming role, would mirror the ambition of the 25 Year Environment Plan.
5 Conclusions

The government’s 25 Year Environment Plan commits to exploring means of raising private sector investment in natural capital and this report summarises work for Defra identifying the most promising options: their functions, form and financial instruments.

An equity fund model which blends grant and equity finance and which can, if it wishes, write debt, seems best placed to crowd in private investment to natural capital sectors. This solution relies on the use of public funding, grants and grant-equivalent tools to reduce transaction costs, reduce project risk and mitigate private investor risk. It lowers the cost of capital and changes the risk profile to match investor appetite. Initially, private investors are likely to be impact-oriented, because of high impact, low returns and small fund size, but mainstream investors could play a significant role in the medium and long term.

As regards to the fund structure, a central fund is preferred because it is familiar and offers the greatest leverage of private capital. The range of capabilities needed to deliver the fund suggests a consortium of existing market providers combining their skills and expertise. It is better for TA management to be carried out by the fund manager to ensure that funds are only provided to projects that are likely to receive investment. In terms of scheduling, it makes sense to procure a TA provider in advance of the fund being set up, to prepare projects for investment.

The role of Government could be two-fold. First, participating as a subordinated investor, technical assistance grant provider and market enabler to stimulate increased investment. Second, legislating, putting the commitments laid out in the 25 Year Environment Plan on a statutory footing, supported by clear policy targets and Plan governance and administration arrangements, preferably with cross-party support, statutory force and day-to-day control out-with the executive control of ministers. This would reduce the uncertainty around the policy and regulatory environment and would strengthen the confidence of investors. Some of these policies, such as a stable carbon price, or a biodiversity net gain requirement on all housing and infrastructure developments, would provide considerable support to the revenue-generating capacity of natural capital projects.

The overall market development impact of the fund will depend largely on its scale. A £10m, £50m or £500m principal investment will achieve different levels of leverage from the private sector and very different outcomes. The estimates in this report show that the expected total funding size would reach £36m with a £10m principal investment, £180m with a £50m principal investment and £2,350m with a £500m principal investment. Moreover, due to differences in investment sizes for across project models, the scale of the fund will have an impact on the funding allocation. The fund will have to decide its asset allocation strategy.

The fund may adopt a narrow, or a broad-based strategy. The facility may either attempt to advance a single sector to the point of maturity or to build momentum across a broader portfolio of models. Over a seven to ten year period, an injection of approximately £50m of principal investment into an equity fund
could develop a market for private investment in a single sector, whereas £500m of principal investment could develop the market for all six sectors, with a range of intermediate investment options available.

The societal cost-benefit analysis shows that the NPV per pound of principal investment is substantial, in the range of £13 to £18. However, given the limitations of scale in this initially risky phase, a £50m principal investment might help achieve around 5% of the goals laid out in the 25 Year Environment Plan for the following sectors: woodland, peatland, biodiversity and catchment services. Target achievement would be closer to 20% for a £500m principal investment fund. The government could increase impact by allocating some of the Housing Infrastructure Fund to increase biodiversity net gains, further increasing the certainty and process savings of the approach for development, and allowing the impact fund to focus on other sectors.

Although a £500m contribution would better match the ambition of the 25 Year Plan, risk management considerations indicate that a £50m would be a better option in the short to medium term. The structure should be designed to allow for the possibility of raising the scale of the fund to £500m in the medium term, four to five years, once initial projects have proven revenue generation and key supporting policies are in place. Even if a £50m is expected to provide significant benefits to society and to pump-prime a market for natural capital assets, given the size of the challenge set out by the 25 Year Environment Plan, only a large-scale fund will be able to completely transform the market and fulfil policy ambitions.
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