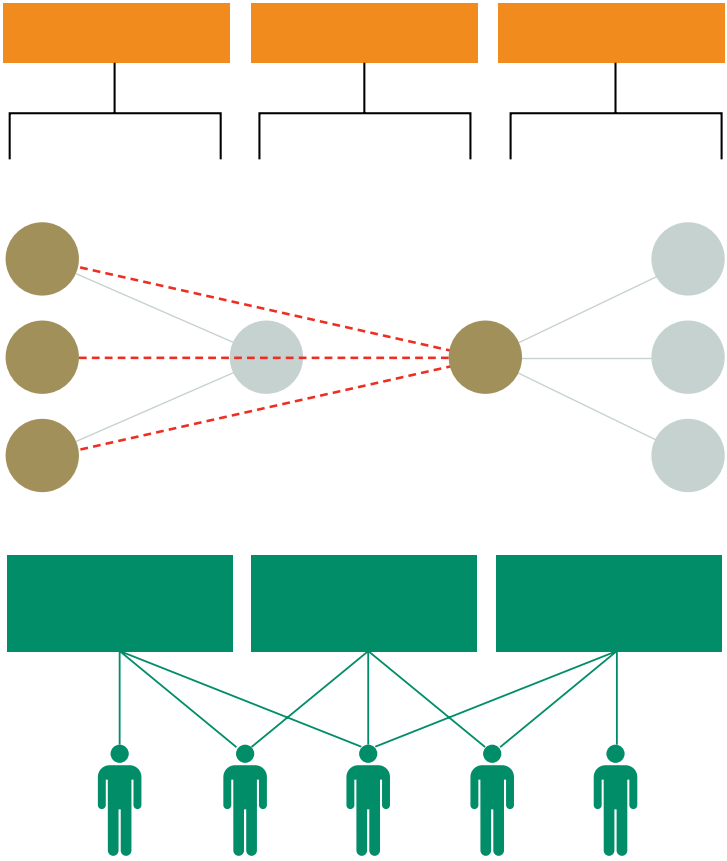
Building local markets for sustainable land management with the Eden Model

A toolkit for practitioners

green alliance...



3keel

National Trust

Contents

The case for private funding of sustainable land management

This toolkit has been designed to assist those setting up collaborative private payments schemes for outcomes from UK land. It provides guidance on the steps necessary to initiate and complete successful transactions with multiple beneficiaries and suppliers, using insights from participants in our trial scheme in the Eden river catchment in Cumbria.

The Eden Model, outlined in this toolkit, builds on previous work by the project partners, including the Landscape Enterprise Networks (LENs) approach developed by 3Keel, and the Natural Infrastructure Scheme (NIS) concept, co-created by National Trust and Green Alliance (see pages 45-47 for more information).

The Eden Model was developed in response to precipitous declines in many environmental indicators globally, including in the UK. As highlighted by the Treasury's Dasgupta Review on the economics of biodiversity, published in February 2021, declines in natural capital threaten future human prosperity. The review made clear that a fundamental transformation of the economy is needed to protect and restore natural capital stocks, so they can continue to deliver the goods and services required to underpin wellbeing and progress in the UK.

Markets for nature-based solutions to environmental problems should play an important role in this transformation, offering a clear route for businesses to fund the protection and enhancement of the natural assets they use or otherwise rely on. Nature-based solutions have clear advantages for businesses, as well as wider environmental benefits for society. Examples include the healthy soils and biodiversity needed to support the UK's £105 billion food industry, natural flood management methods protecting

homes and businesses from the effects of climate change and wider catchment management measures to improve water quality and reduce drought risk.

The argument that healthy natural assets underpin the success of many private enterprises is widely understood and accepted. And the potential advantages of these markets are huge. Previous work by Green Alliance and the National Trust estimated that flood and water quality issues alone cost businesses and the government at least £1.2 billion a year in England. Avoiding even a fraction of these costs using nature-based solutions is a significant market opportunity (see pages 4-5). Further services, such as ensuring good soil health, carbon sequestration and biodiversity net gain, could also benefit local economies.

Payment for ecosystem services is not a new concept. The Department for Food and Rural Affairs (Defra) ran a series of pilots from 2012-15 (see pages 45-47) but a number of financial and non-financial barriers prevented these progressing to market at the time. Since then, various trials have continued or been initiated around the country, either focusing on gathering knowledge and evidence on the outcomes that can be achieved from different interventions, or on developing trading platforms, such as EnTrade and NatureBid (see page 46).

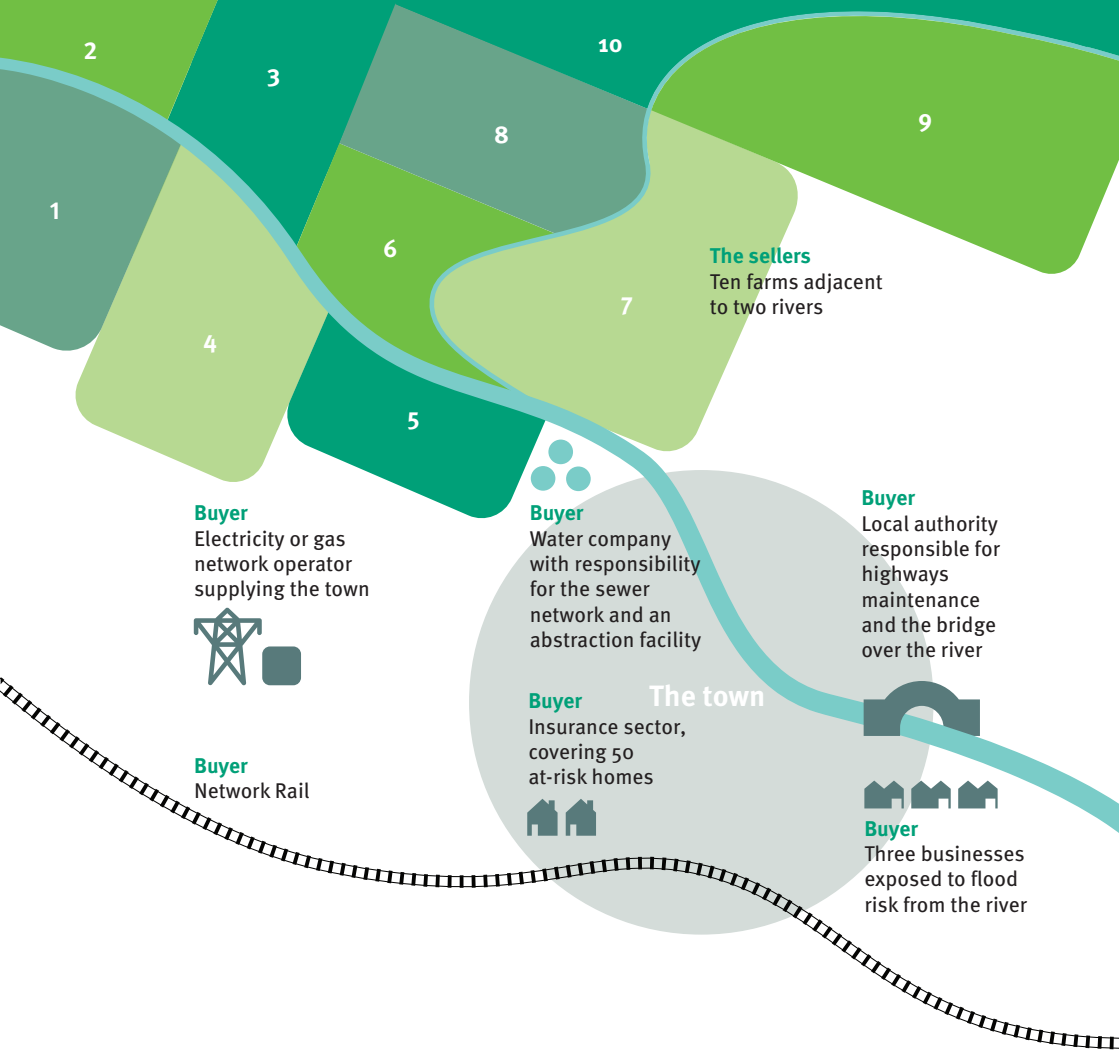
However, as yet, all the pieces of the puzzle that would enable beneficiaries, like businesses and public bodies, to fund schemes easily have not come together. With the exception of the nascent voluntary carbon market, funding for nature-based projects is still dominated by grants from public bodies and water companies.

We hope this toolkit will provide a flexible system that works for the private procurement of sustainable land management outcomes, which operate at catchment scale and can be replicated around the country.

A profitable transaction

Green Alliance and the National Trust have shown a theoretical proof of concept for private payment schemes. For example, the illustration opposite shows a hypothetical scenario where 100 hectares of upland agricultural land on ten farms in north west England are adapted to provide additional flood protection for local businesses and infrastructure for up to a one in 75 year flood event.

A scheme of this nature was estimated to cost the farmers involved £6.5 million over the 15 year lifetime of the contract, while saving downstream businesses £11.2 million. This provides a £4.7 million 'trading space' where a price could be negotiated between the two groups. Splitting the difference could earn an annual profit of £15,000 per farm. This is one and a half times the average net income of an upland grazing livestock farm in England.



An example scheme in north west England: creating holding capacity for 200,000m³ of water on ten upstream farms

This example is outlined in more detail in *Natural Infrastructure Schemes in practice: how to create new markets for ecosystem services from land*. A similar exercise, looking at the opportunities for water quality and soil management on lowland farms, is described in *Protecting our assets: using Natural Infrastructure Schemes to support sustainable agriculture* (see pages 45-47).

Toolkit purpose and audience

This toolkit is for those interested in setting up or being part of a scheme to buy and sell a range of outcomes from sustainable land management. For instance, this could include businesses and public bodies as the beneficiaries, with farmers and land managers delivering the outcomes, and NGOs, advisers or consultants acting as brokers in setting up projects.

The toolkit aims to:

1. Raise awareness of the opportunities for collaborative sustainable land management projects.

2. Provide a guide on the necessary steps to setting up projects, with tips and examples from our demonstration project in the Eden river catchment.

3. Provide guidance on how such projects could interact with the government's new Environmental Land Management scheme.

The toolkit begins by outlining the basis of our Eden Model approach. We then describe the main steps in implementing a private payments scheme using the model, starting with identifying opportunities, bringing together the beneficiaries and suppliers, negotiating agreements and carrying out initial transactions, then to growing a network of complementary projects.

Depending on the assets and needs within a landscape, and the organisations involved, projects will need to focus time and attention in different areas. Furthermore, the steps are not necessarily in chronological order. For example, some projects may be initiated by groups of farmers and land managers seeking additional income, others may be

initiated by beneficiaries looking for a particular set of outcomes, while others might be started by an NGO or community group acting as brokers.

Finally, we outline proposals for formalising the governance of trades using a 'delivery organisation', and how private payments schemes could consider integrating public Environmental Land Management funding to support a set of aims.

Our experience

The toolkit is based on our experience of setting up a working private payments demonstration in the Eden river catchment in Cumbria. This has involved a number of organisations, including United Utilities, Nestlé, National Trust, 3Keel, Green Alliance, First Milk, the Environment Agency, the Eden Rivers Trust and the Resilient Dairy Landscapes project.

The initial trade involved two paying beneficiaries: United Utilities and Nestlé, procuring outcomes from farm members of the First Milk dairy co-operative. It was based on the measurable environmental benefits to be derived from better soil management on the Petteril river within the Eden catchment. The principal outcomes sought were a reduction in phosphate pollution, and greater resilience and productivity of food production.

The initial trade is being expanded to include more beneficiaries and more outcomes, including natural flood management and climate mitigation.

We use examples from this practical demonstration throughout the toolkit to illustrate how the Eden Model can be implemented.

Basis of the Eden Model approach

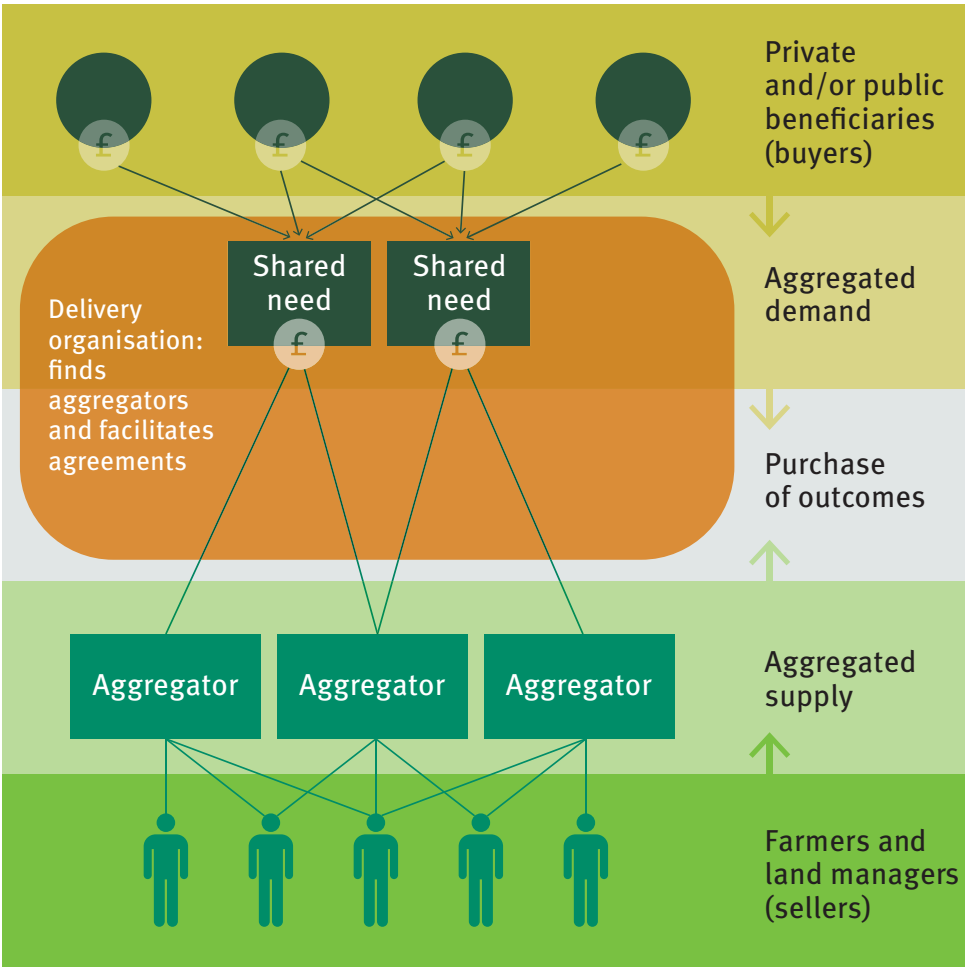
The illustration opposite shows how the Eden Model is intended to work.

At the top, potential beneficiaries of landscape interventions are brought together, where their interests overlap or complement each other. At the bottom, farmers and land managers come together via 'supply aggregators' to offer solutions to the potential buyers.

Based on these offers, agreements are reached between the buyers and sellers for the delivery of interventions and desired outcomes.

While the model has been developed with private beneficiaries, it is intended to also facilitate the flow of funding from public agencies and central government, as additional beneficiaries. On pages 40-44 we outline in more detail how the government's Environmental Land Management scheme funding could contribute to the Eden Model, alongside other beneficiaries.

We propose that the trades should be developed and facilitated by a locally owned and run delivery organisation, led by a board of representatives from both sides of the transaction, as well as statutory bodies. However, we have not yet tested this in practice.


Private and/or public beneficiaries (buyers)
Shared need
Shared need
Delivery organisation: finds aggregators and facilitates agreements
Aggregated demand
Purchase of outcomes
Aggregator
Aggregator
Aggregator
Aggregated supply
Farmers and land managers (sellers)

Five steps to implementation

1

Step one
Identifying opportunities for trading

Address the following questions: what business and public sector needs can be met by sustainable land management interventions? Where do their needs overlap? What is the capacity of the landscape and local land managers to meet these needs?

2

Step two
Aggregating supply and demand

Buyers enter a good faith agreement to jointly procure outcomes of interest. This may be followed by more formal arrangements to negotiate with suppliers and share costs. Farmers and land managers form consortia with the help of existing local facilitators, like producer organisations or NGOs. These need the capability to design effective suites of interventions and negotiate agreements with buyers.

3

Step three
Developing demand specifications and supply propositions

Demand specifications set out exactly what outcomes the buyers need. Supply propositions describe the services farmers and land managers are able to deliver from their land.

4

Step four
Negotiating agreements and trading

Buyers and suppliers negotiate a price at a level that saves buyers money, compared to other interventions, and is above the breakeven point for suppliers.

5

Step five
Growing a regional network

Using momentum begun by the first trade, new opportunities can be identified and developed to build up an overlapping and complementary network of trades across a landscape.

The steps in more detail

Step one
Identifying opportunities to trade

Any new scheme should begin by identifying the opportunity. This could be initiated from the supply side, for example if a group of farmers already working together is keen to access additional funding; or, from the demand side, if a business or group of businesses is looking for a particular solution or benefit.

To determine if an opportunity exists:

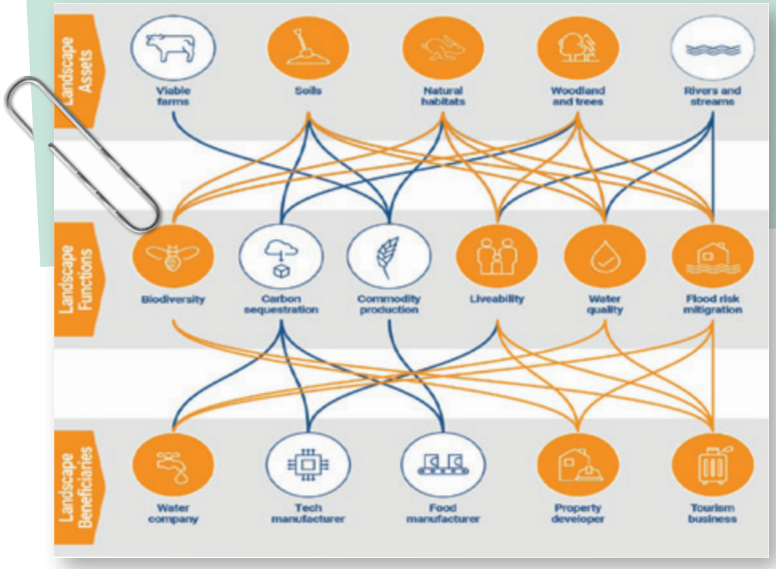
1. Assess which businesses or public services in a region are most affected by how a landscape performs, and which landscape assets are involved. Then, any overlap in interests for different businesses or sectors can be identified.

2. Assess what outcomes can be delivered by that landscape. This involves understanding its physical capacity, and the ability of farmers and land managers to enter into agreements and deliver interventions. For example, it should seek to understand the economics of local farms, whether there are existing farmer collaborations and what experience farmers and land managers already have of participating in environmental schemes.

The objective at this stage is not to build up a comprehensive plan, but to use existing data, intelligence and insight to identify the most promising place to start a trade.

Tip

The Landscape Enterprise Networks approach developed by 3Keel is a systematic process that can be used to understand which sectors in a region have the most at stake from landscape performance.
See: landscapeenterprisenetworks.com



Points to consider when assessing opportunities

What are the potential landscape outcomes that might provide benefits? This could include flood risk mitigation, water quality, carbon sequestration, biodiversity enhancement, recreation and liveability, and food and fibre production. Once there is a picture of the full range of potential benefits, it will be possible to narrow down the main opportunities.

Where are the real business needs in the local area? Businesses may be able to use the scheme, for instance, to avoid costs, reduce risk exposure, enhance assets they own, improve the health and welfare of employees or achieve corporate commitments to reduce climate impacts. This should be the focus, rather than abstract natural capital valuations.

What is already happening in the local area? There may be opportunities to join up and enhance existing initiatives.

What local resources and public data are available which may help answer these questions, such as local flood risk management strategies, or local catchment plans developed by NGOs like the Rivers Trust? (See annex pages 48-49) for an example of some of the considerations and publicly available data that might be used to assess opportunities on flood and water quality.

What introductory materials might be needed to help engage businesses and farmers and sell the opportunity to them? For many, this will be a new way of doing business and achieving their desired outcomes, so the benefits may not always be immediately obvious to them.

Eden demonstration project
The initial opportunity

In our demonstration project, our first trade was initiated from the demand side, with the food company Nestlé and water firm United Utilities. Both have a wide range of interests in outcomes from the land, including water quality and quantity, climate mitigation and adaptation, biodiversity and resilience of food supply.

Phosphorus reduction in the Petteril river for United Utilities and resilience of dairy supply for Nestlé are both outcomes that rely on good soil management (amongst other things). Furthermore, a number of farms which supply milk to Nestlé are located in the same area where United Utilities needs to reduce the phosphorus load in rivers.

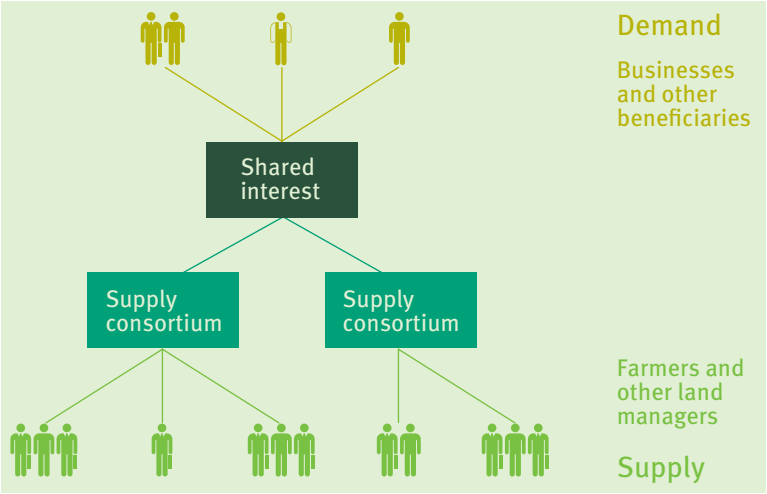
Finally, there were clear opportunities for farmers to work together, including through the dairy co-operative First Milk, and through the Eden Rivers Trust.

Step two
Aggregating supply and demand

Once an opportunity has been identified, the next step is to develop a local purchasing partnership and supply consortia able to provide the environmental outcomes that the buyers need.

Aggregating parties on both the supply and demand sides has many advantages and is a central selling point of the Eden Model. It helps to avoid 'free riders' and enables funding to reach a level that can unlock action at the landscape scale, which is what is necessary for many environmental outcomes.

It also allows more complex and environmentally beneficial interventions by providing funding for multiple outcomes from the same piece of land, or even from the same interventions. For buyers, this introduces considerable efficiencies which may be crucial in making the benefits outweigh the costs. For suppliers, it opens up opportunities to deliver services they could not provide at the individual farm level.



On the demand side, buyers that form a purchasing partnership could include a range of interests, such as regulated utilities, public authorities and agencies, insurers and local businesses.

On the supply side, in many cases there may be groups and organisations already in the local area which are able to take on the role of supply aggregators. Indeed, working through an individual or organisation with existing relationships of trust with farmers and land managers can save years of investment that would otherwise be needed to build up relationships. Examples of possible supply aggregators include:

- Producer co-operatives and organisations
- Countryside Stewardship Facilitation Fund groups
- NGOs
- Local Community Interest Companies (CICs)
- Self-organised farmer groups

Points to consider when aggregating demand

Buyers should enter into a good faith agreement to jointly procure outcomes of interest.

Do buyers need to establish a protocol for joint negotiation and contracting?

How will buyers share the costs of the scheme? Are new institutional arrangements needed to facilitate this? This may be needed to limit the potential of free riders discouraging buyers getting involved. The Fowey payment for ecosystems project found that an institution that enabled potential buyers to make binding commitments on their contributions was necessary to avoid participation being limited to a single purchaser (see page 46).

What will happen if a buyer wants to withdraw from the deal during an agreement period? Are specific arrangements needed to limit the likelihood of withdrawal and cope if this situation arises?

Tip

For the initial trade an independent broker can assist with demand aggregation. After multiple trades in an area, this role could be taken over by a local 'delivery organisation'. (see page 38)

Points to consider when aggregating supply

What are the existing organisations, groups or individuals who could play a supply aggregation role in the local area? Are they sufficient or is it necessary to set up new, bespoke farmer consortia?

Are the supply aggregators able to access the knowledge and expertise needed to design suites of interventions capable of delivering the needs of buyers?

Farm consortia should agree principles on how they will collectively implement the scheme and distribute the payments.

Farm consortia should agree how they will negotiate agreements with buyers, who will have responsibility for them and their mandate for negotiation. The role supply aggregators play in the consortium will depend on the specifics of the local area. For example, aggregators may negotiate and complete an agreement on behalf of a supply consortium, or simply act as a facilitator.

Tip

Supply aggregators could run a bidding process with farmers and land managers to determine what each member of the consortium is able to deliver and how income and funding should be split between participants.

Eden demonstration project
Our supply aggregators

For our first trade in the Eden river catchment, the dairy co-operative First Milk, and the NGO the Eden Rivers Trust were identified as potential supply aggregators.

The Eden Rivers Trust already works with a number of farmers to improve rivers in the region. As a farmer owned co-operative, First Milk is able to negotiate and complete agreements on behalf of member farmers.

In Ullswater, one of the areas under consideration for a future trade, there has been early engagement with farmers and a potential supply aggregator, the Ullswater Community Interest Company (CIC). The Ullswater CIC was set up in the wake of the devastating floods in 2015 and helps farmers to implement measures on their land to improve the local area, including alleviating flooding for the local community

Step three

Developing demand specifications and supply propositions

To reach an agreement, detailed demand specifications and supply propositions are needed. Demand specifications set out exactly what outcomes buyers need, and supply propositions describe the services farmers and land managers can deliver from their land.

A farmer led approach is vital, giving them the freedom to determine the best ways to achieve desired outcomes and complement their core businesses. Farms are extremely diverse, and the most effective schemes will have interventions that dovetail with farmers' own interests.

Precisely what is included in these specifications and propositions will depend on the organisations involved and their needs. Demand specifications should focus as much as possible on desired outcomes and, where possible, should avoid prescribing particular interventions.

In some circumstances, it may be necessary to include specific interventions in the demand specification, for example to meet regulatory requirements (see page 26). In this case, supply aggregators should be involved in the process of specification and there should be a choice of interventions, and clarity on the outcomes they are expected to deliver.

Points to consider when producing a demand specification

Buyers should have already reached a 'good faith' agreement or formal agreement to collaborate prior to this stage. This is important, as developing a joint demand specification could involve commercially sensitive negotiations between buyers.

Focus the specification on shared interests, which could be an interest in the same landscape assets, or the same outcomes. Individual beneficiaries should not expect to address all their interests in a single agreement.

Are there any regulatory requirements which may impact the transaction? For example, rules and guidance on catchment approaches to nutrient management, or flood protection requirements for infrastructure. In some circumstances this may involve negotiating special permissions or derogations with regulators to allow innovative approaches to be taken.

Include as much detail as possible about the outcomes required, possibly also outlining the interventions that could be used, for example to fulfil regulatory requirements (see page 26).

Buyers should agree how they will share the costs and benefits of the scheme, although this need not be included in the specification shared with suppliers.

Include monitoring and verification requirements to suit all parties in the demand specification.

Tip

Demand and supply aggregators should take advantage of mapping and modelling services to ensure they target the right interventions in the right places and deliver the desired outcomes efficiently. For example, the service offered by Viridian (viridianlogic.com).

Points to consider when producing supply propositions

How is the land currently used and managed, and how can this be enhanced to deliver the benefits required? Determine what can realistically be delivered collectively, based on what each farmer is willing and able to contribute.

How would existing farm business models be affected by different interventions? Are there any limitations? For example, existing agreements that preclude further interventions?

What are the specific interventions that participants are willing and able to implement, and what are the expected outcomes? Design should factor in the expectation of likely land use changes, climate and hydrology over the agreement period.

Are there a sufficient number of farmers and land managers in the consortium to deliver all or some of the outcomes required effectively? More farmers and land managers may need to be brought into the consortium to increase coverage in particular areas (see page 26).

What impacts might the planned interventions have on other environmental outcomes that are not the focus of the trade? The aim should be to prevent damage elsewhere and ideally enhance outcomes generally.

What specialist advice do supply aggregators need to assist them in designing supply propositions and implementing schemes? Farmers will need to understand the market for the environmental services they provide in the same way as they understand the markets for agricultural produce.

What monitoring and verification is needed to show the scheme is working? It may be necessary to have baseline data for comparison throughout the agreement period.

What will it cost participants to implement the proposals, including initial capital costs, plus ongoing maintenance and the opportunity cost of any land taken out of production for the agreement period? This provides a baseline for negotiating a price with buyers.

What provisions are needed to limit, and cope with, parties withdrawing during the agreement period?

Tip

Finding opportunities to design interventions that deliver multiple benefits, such as water quality improvement, carbon sequestration and biodiversity enhancement can enable suppliers to 'stack' funding from multiple sources. This increases the viability of more complex and environmentally beneficial suites of interventions. Green Alliance and National Trust have outlined this idea in more detail in *New routes to decarbonise land use with Natural Infrastructure Schemes* (see page 45).

Eden demonstration project
Our proposition and specification

In addition to the agreement between the co-beneficiaries, Nestlé and United Utilities, it was also necessary for United Utilities to gain agreement from the Environment Agency that they could purchase phosphorus reductions from farms rather than upgrade their chemical treatment facilities. Therefore, the demand specification contained an outcome (kg of phosphorus reduction), and an agreed set of interventions, specifying the expected phosphorus reduction from each intervention.

Nestlé and United Utilities then agreed to prioritise interventions that also addressed Nestle's farming resilience priorities, ie in relation to good soil management.

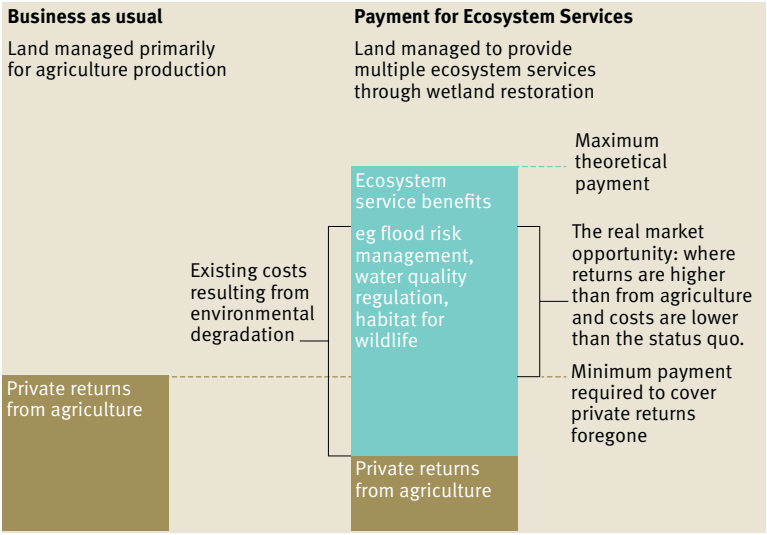
The dairy co-operative First Milk and the NGO the Eden Rivers Trust developed the supply propositions to meet both United Utilities' and Nestlé's needs. In the case of First Milk, an additional farmer joined the co-operative which increased its ability to deliver outcomes collectively.

Step four
Negotiating agreements and trading

Having a ‘one size fits all’ approach to private payments schemes is difficult, with different geographies, farm types and local economies. However, although standardised agreements may not be possible, a standardised process is desirable, for establishing relationships, developing shared outcomes and agreeing financial terms.

Price discovery

Supply propositions are used as the basis to start the negotiation of agreements between suppliers and buyers. Buyers can determine what it is worth to them, based on its ability to mitigate or avoid defined business costs. Suppliers (ie farmers and land managers) could work out what their breakeven point is, based on known agricultural outputs per hectare and costs. At the point where buyers save more than is needed by sellers to breakeven, there is space to trade.



Depending on the preferences and needs of each side, and the outcomes sought, a trading platform such as EnTrade or NatureBid could be used, with supply aggregators and individual farmers uploading their propositions to the platform. Using a platform like this may be useful for particularly large trades involving many suppliers, especially where spatial targeting is less important, for example for delivering climate mitigation outcomes. Alternatively, direct negotiations can be entered into between buyers and supply aggregators.

Buyers select the propositions which best meet their needs at the best price. There may be several rounds of negotiations to hammer out all the details of an agreement, including price, timescales, monitoring and verification and liability.

Agreements

The outcomes and interventions need to be specified in a way that meets the needs of the buyers, and can be independently verified by them. All beneficiaries should be satisfied about the robustness of the scheme proposed. An independent assessment may be necessary to calculate future savings, raise finance and demonstrate they have taken reasonable actions to exercise duty of care in respect of their assets, staff etc.

Tip

It may be helpful to build up legal arrangements over time rather than aiming for a comprehensive and long term rigid contract from the outset. Small, informal contracts for discrete interventions over shorter time periods may be the right starting point for some projects, enabling farmers and land managers to enter and exit the scheme. This can work provided the buyers have confidence that they will be able to renew contracts or find alternative suppliers to secure outcomes over longer time scales.

The type of relationships implied by the Eden Model should be long term, complex and may need to change over time. It is important that any legal structure is fit for the defined purpose. If the legal form or structure of the agreement undermines the shared purpose, it could do more harm than good. Legal structures that enshrine imbalances of power can create a conflictual rather than a collaborative relationship.

Agreements need to build in flexibility where possible. Landscape functions may change unexpectedly over time, for example, due to climate change, requiring variations in what is delivered. Priorities of the parties to agreements may change over time, and others may wish to enter or leave the scheme during the agreement period. Agreements need to conserve the sense of shared endeavour and avoid being overly specific over long time periods.

Eden demonstration project
Our agreement

In our first trade, the supply proposition from First Milk was chosen by United Utilities and Nestlé as the one most likely to fulfil their needs. In this case, First Milk entered into negotiation with the buyers, on behalf of their farmers in the area, to agree a fair price for phosphorus reductions which would apply to all the participating farms. This negotiation was carried out directly, without the use of a trading platform.

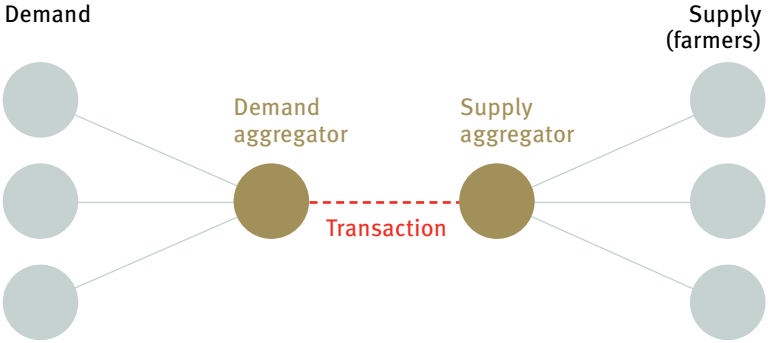
Trading

Depending on the specifics of the scheme and the needs of the partners, there are different routes that flows of money can take once an overall agreement is reached. Our workshops, carried out while developing the trades in Cumbria, indicated that transacting between the aggregators, rather than between individual participants, is more efficient. However, when setting up new trades, in some circumstances, it may be better for money to flow directly between buyers and suppliers rather than via aggregators. The different options for payments are outlined overleaf.

Four transaction options

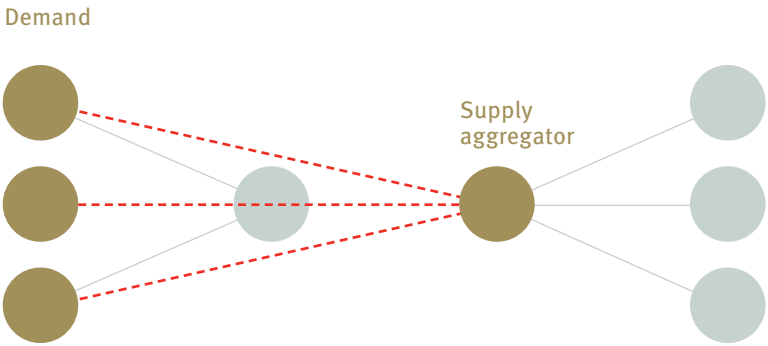
1. Aggregator-aggregator

This is an 'ideal' transaction, with an agreement and money flowing directly between demand and supply side aggregators.



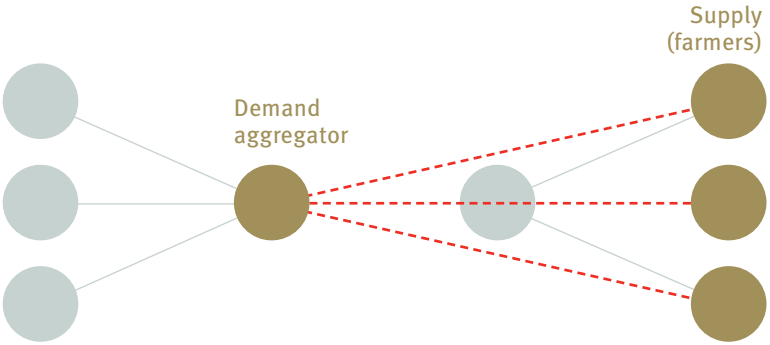
2. Buyer-aggregator

In this case, individual demand interests carry out a transaction directly with the supply aggregator. This may happen where there is a strong supply aggregator (or aggregators), but where it is difficult for buyers to pool their contributions in a single funding pot (see page 33).



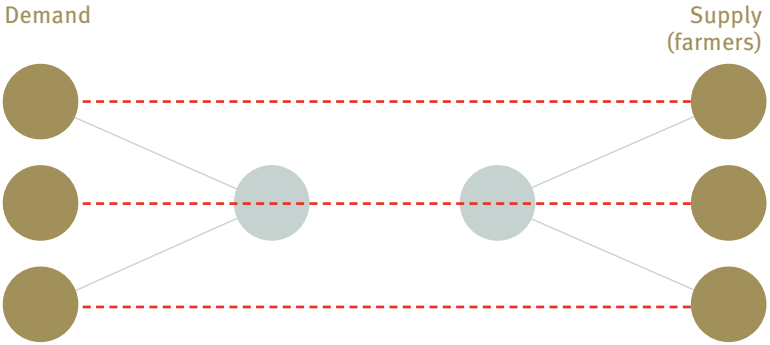
3. Aggregator-supplier

Here, the demand aggregator reaches agreement and carries out the transaction directly with individual farmers and land managers, rather than with a supply aggregator. This may happen if the supply aggregator is playing a facilitation role, for example an NGO and is therefore unable to hold and distribute payments.



4. Buyer-supplier

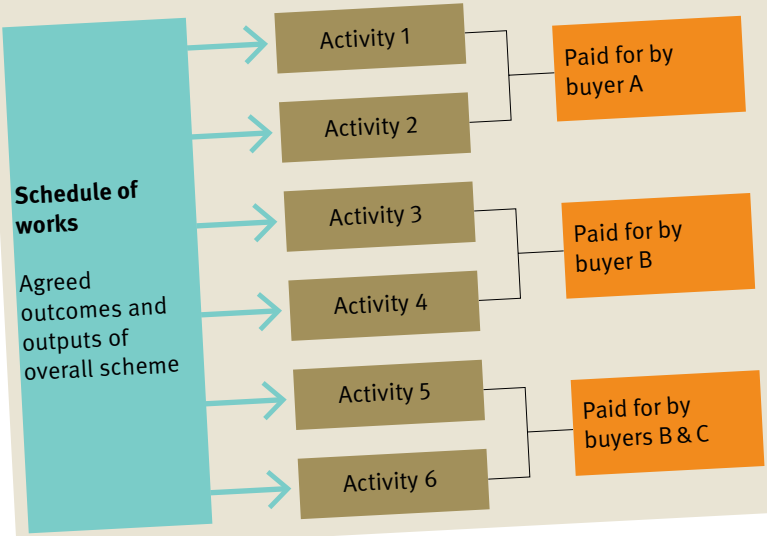
Under this scenario, transactions occur directly between individual buyers and suppliers. In this case, aggregators may still play a role in facilitating the trade and ensuring interventions deliver the needs of all the buyers.



Tip

It can be useful to break down the schedule of works in the main agreement into discrete activities and agree the proportions in which each beneficiary organisation will fund each activity. If pooling funding on the demand side is not possible, buyers can carry out separate transactions with suppliers, while still contributing to a joined up scheme of activities (as in transaction s 2 and 4 on page 31).

Process for allocating costs amongst buyers



Eden demonstration project
Our transaction style

Our first trade was carried out using a 'buyer-aggregator' transaction, with Nestlé and United Utilities reaching separate, but complementary, agreements with First Milk (the supply aggregator).

This was done for expediency, as Nestlé has an existing scheme with their farmers which made it difficult to divert funds to a shared pot in the short term, but which was adaptable to allow complementary procurement alongside United Utilities.

In the longer term, the ambition is to carry out co-procurement, with a joint buyers' agreement, along the lines of an 'aggregator-aggregator' transaction, as integration on the demand side will be more efficient and allow for more complex and environmentally beneficial interventions.

Points to consider for agreements and transactions

What is being bought and sold under the agreement? Will farmers be paid for implementing an agreed set of interventions, regardless of outcome, or for an agreed set of outputs, eg a set of attenuation features which store a defined amount of water, or for an outcome, eg a measured and verified improvement in water quality?

Who does risk and liability sit with in the agreement? The agreement should ensure that sellers are not exposed to risks they are unwilling or unable to manage, and that buyers are guaranteed a level of performance to deliver the outcome they want. In environmental contracting, risk is a zero sum game: in a payment for interventions scenario, the risk that the desired outcome will not be achieved sits primarily with the buyers; provided farmers have maintained the agreed measures on their land, they will be compliant. With payment for outcomes, liability would sit with the sellers. Payment for outputs provides more balance in the risk allocation.

What is the appropriate timescale of the scheme? This will depend on the desired outcomes and planned interventions, with some outcomes, such as flood mitigation, carbon sequestration and biodiversity offsetting, requiring agreements over decades rather than years.

The payment schedule and structure should address issues such as landlord-tenant split, and relationships to other funding. This may differ depending on the relative proportion of capital and ongoing maintenance required for the scheme.

Agreements should specify monitoring and verification requirements, and allocate responsibility for ensuring this is carried out.

Step five
Growing a regional network

An effective first trade creates momentum and interest. It leads naturally to an extension of the first value chain and new trades by attracting more customers and suppliers, through demonstrating how the scheme can work and benefit both sides.

Ultimately, our model would see a network of overlapping trades, delivering multiple environmental outcomes across a landscape (see page 37).

Points to consider in growing networks

Are there additional beneficiaries with an interest in the same assets employed in the first trade who could extend the interventions?

Are there additional benefits that could be delivered at lower cost as a result of the existing scheme, for example providing enhanced green space for recreation, or carbon sequestration?

What other benefits do the existing buyers need that are not delivered by the first trade, and are there new buyers with similar interests? Likewise, what additional outcomes can the existing farmer consortia deliver on top of the existing trade?

Return to the 'identifying opportunities' stage and assess what the next landscape opportunity of interest might be for a new trade.

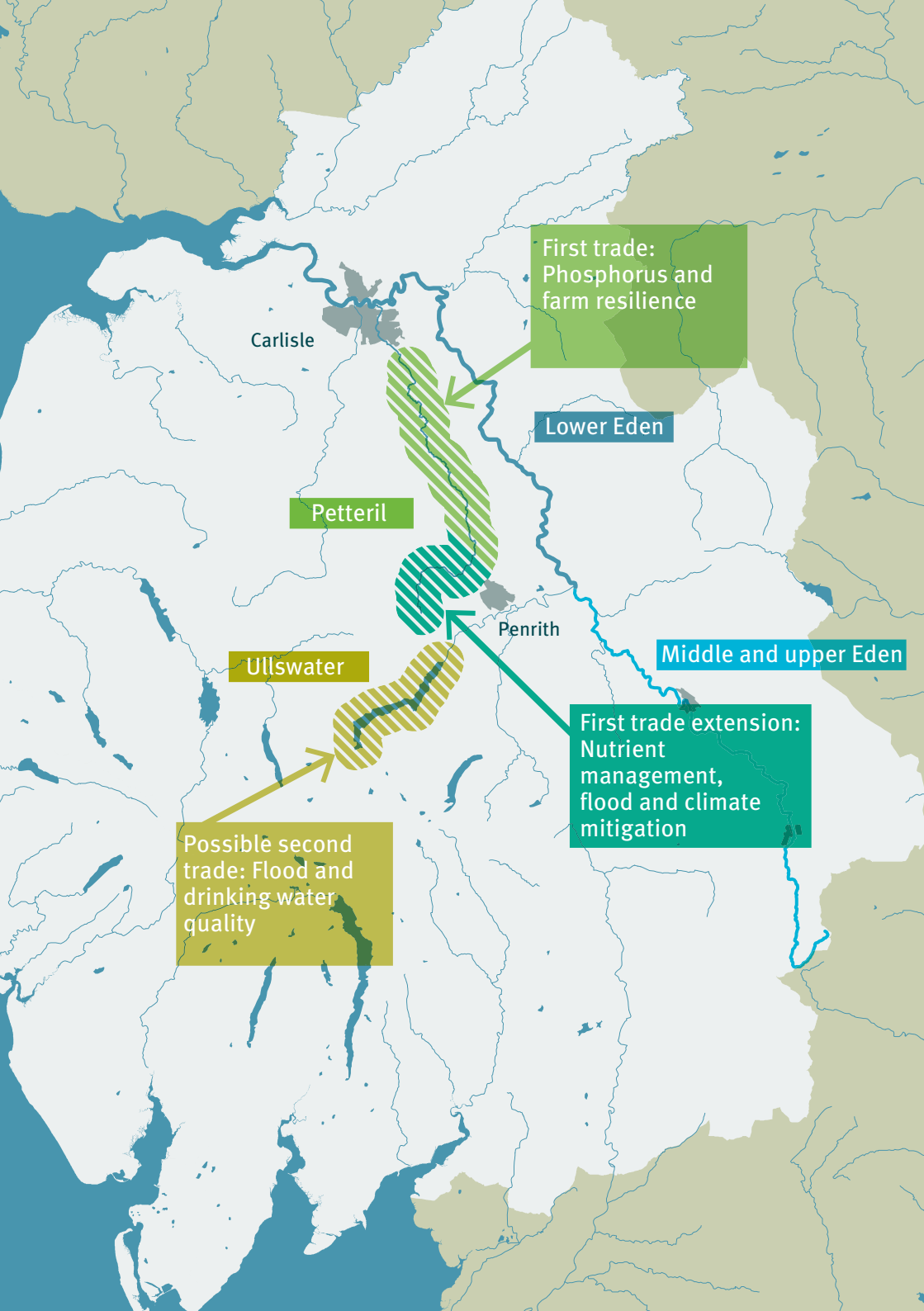
Tip

The first trade and plans to expand in the local area should be advertised. There may be potential buyers actively looking for nature-based solutions who do not realise there is already a scheme that could help them. Likewise, there may be more farmers and land managers looking for additional income who would want to become involved.

Eden demonstration project
Our first trade and future potential

Our first trade was with Nestlé, United Utilities and First Milk on the Petteril river in the Eden Valley. This 'anchor' trade has already triggered engagement with a wider set of potential beneficiaries and suppliers in the area, expanding the range of outcomes delivered to include flood risk mitigation and climate mitigation.

We are also looking for new value chains in the same region, such as in Ullswater, to build a wider network of trades. Ullswater has been identified as an area with high potential to deliver flood mitigation services and some drinking water quality benefits. A river re-meandering project is being carried out on Goldrill Beck using Countryside Stewardship funding. This is designed to protect the A159, which is regularly eroded by the current canalised watercourse. Farmers are also carrying out other natural flood management interventions, with support from the Ullswater CIC. The challenge now is to identify and engage potential beneficiaries of these additional measures.

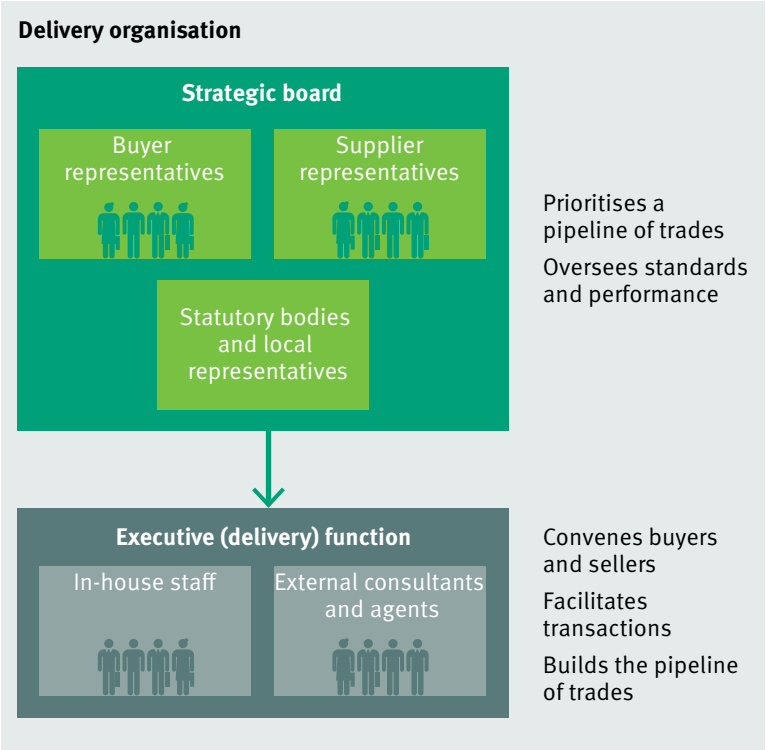

First trade: Phosphorus and farm resilience
Carlisle
Lower Eden
Petteril
Penrith
Middle and upper Eden
Ullswater
First trade extension: Nutrient management, flood and climate mitigation
Possible second trade: Flood and drinking water quality

Formalising governance: the delivery organisation

When trades begin to expand, some form of organisational infrastructure, and governance, is required to manage and broker them in an equitable, transparent and locally accountable manner. A local 'delivery organisation' would enable ongoing decisions over time, manage any tensions and could react to new knowledge and changing circumstances.

This organisation could be led by a small board representing three constituencies: buyers, suppliers, and statutory and local bodies. The board's main responsibilities would be to prioritise a pipeline of trades, and oversee standards and performance to ensure effective delivery.

Its core executive functions could be convening both the demand and supply sides, facilitating transactions and building the pipeline of trades. Additional functions, depending on the circumstances, could include managing contracts, handling funds, commissioning modelling and verification, and facilitating government grants. Depending on the scale of the transaction network, executive functions could be carried out by dedicated staff, or outsourced to appropriate individuals and organisations by the board.



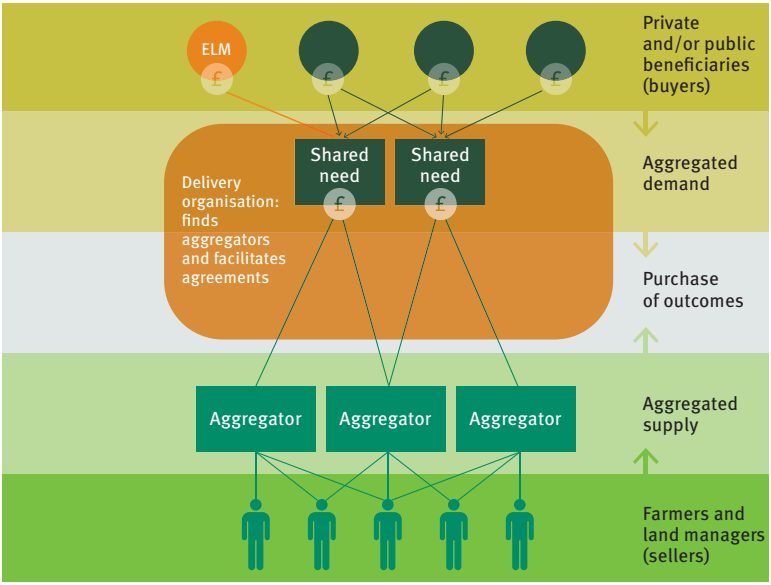
This organisation would have an explicitly narrow focus on developing and facilitating trades. It would not take on roles such as making plans and strategies for the local area, but could remain accountable to these plans through the representation of statutory bodies on its board. It should be independent, locally led, not for profit and low maintenance.

Integrating public and private funding

By using our Eden Model it should be possible to integrate Environmental Land Management scheme (ELM) funding and other public funding with private payments on the same land. The model allows different funding sources to be brought together at different points, depending on circumstances.

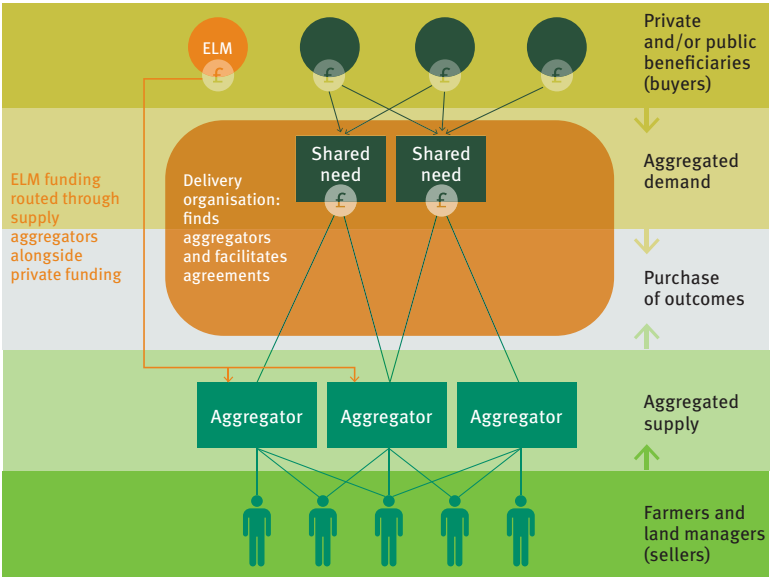
Demand aggregator level

In this case, private and ELM funds are directed in a joined-up way at the demand aggregation stage. This would involve developing joint demand specifications which reflect both public and private need. Schedules of works should provide clarity on which buyers can claim which benefits, so that value for money can be shown (see page 32).



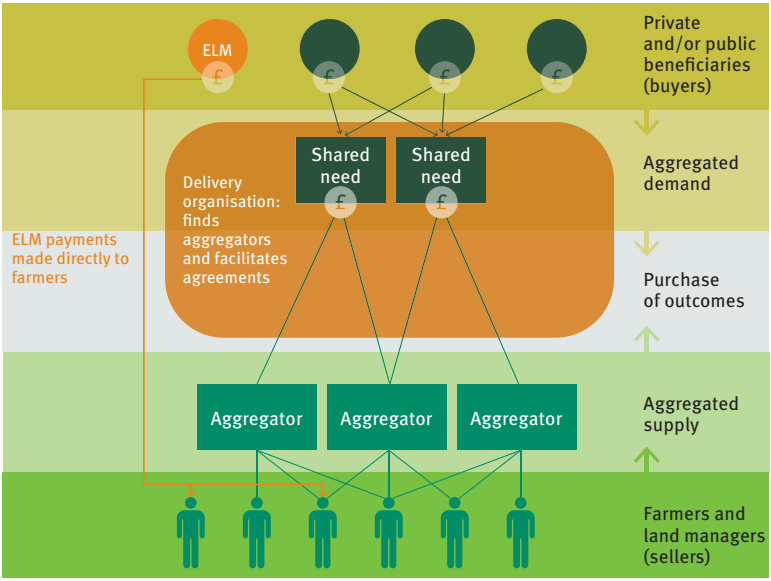
Supply aggregator level

Here, public and private funding sources come together at the level of the supply aggregator. Flows of money from private sector interests and ELM would be managed separately, but supply aggregators would design interventions on behalf of groups of farmers that enable them to access both funding pots.



Individual farm level

In this example, public and private funding sources come together at the individual farm level. Farmers apply to be part of both a private scheme and the ELM, where this is possible.



Opportunities for integrating ELMS funding

ELM is being developed with three components. The Sustainable Farming Incentive is intended to provide an incentive for environmentally sustainable farming and forestry, focusing on actions that are deliverable on most farms. Local Nature Recovery will support land managers in the delivery of locally targeted environmental outcomes, with collaboration between farmers and land managers. Landscape Recovery focuses on delivering landscape scale land use change projects. The best opportunities for bringing ELM funding into an Eden Model style scheme is from the Local Nature Recovery and Landscape Recovery components (see pages 45-46 for a link to more detailed proposals for integrating ELM and private funding):

Local Nature Recovery

The most likely scenario for linking up private funding with this component of ELM is for the funding to be linked by supply aggregators who design complementary suites of interventions to deliver against both public and private needs. This may also involve some co-ordination at the demand aggregator level to create complementary demand specifications. For private buyers, this may mean prioritising funding interventions that deliver 'public goods' in addition to the private benefits they need. For the ELM funding, it may mean using proposed spatial prioritisations to take account of the needs of the local economy.

Aggregators could join up the funding in a number of ways.

Here are three options:

1. Local Nature Recovery (LNR) funding pays for the initial implementation of measures, with private funding supporting enhancement or ongoing maintenance, eg LNR funding pays for reversion to permanent grassland, and private funding pays to support introduction of holistic grazing methods.

2. Private funding pays for the initial implementation of measures, with LNR funding paying for enhancement or ongoing maintenance, eg private funding pays to plant riparian woodland on-farm, with LNR funding used for ongoing management of the woodland for the benefit of biodiversity.

3. LNR funding pays for an intervention, and private funding pays for a complementary measure, or vice versa, ie one pays for riparian woodland and the other pays for woody debris dams.

Landscape Recovery

Landscape Recovery is the ELM funding component that Defra envisages will involve substantial private funding. This could include pooling funding at the demand aggregator level in our model, or keeping funding pots separate, but agreeing to procure a set of outcomes together. This would involve developing a shared demand specification which includes all the outcomes that both private businesses and central government need from the landscape

Via Landscape Recovery funding it should be possible to construct trades designed specifically for both public and private benefits, with commensurate contributions from each. This could be on the basis of funding additional outcomes of interest to the public but not private buyers, such as biodiversity, or it could be on the basis of enabling more environmentally beneficial activities than would otherwise be possible.

For example, there may be a private interest in funding water catchment management and carbon mitigation measures, but the private benefits to be gained do not justify paying for a landscape wide programme of peatland restoration, clough woodland planting, in-bye meadow restoration and stream re-naturalisation. In such a case, Defra could provide the top up funding necessary to enable the scheme to go ahead because it also contributes to meeting the government's biodiversity aims. Similarly, if a private scheme is interested in planting trees for carbon sequestration, Defra could provide additional funding to ensure the woodland planted is the most nature friendly.

Resources and further reading

Landscape Enterprise Networks These link management and investment in landscapes to the long term needs of business and society, and are being trialled around the country and in continental Europe.

For more information go to:
landscapeenterprisenetworks.com

Natural Infrastructure Schemes (NIS) These are a concept based on creating markets in avoided costs for businesses using sustainable land management.

For more information see the following publications, available at green-alliance.org.uk/Natural_infrastructure_schemes:

Natural infrastructure schemes explained. This provides an overview of the NIS concept.

Natural infrastructure schemes in practice and *Protecting our assets: using Natural Infrastructure Schemes to support sustainable agriculture*. These explain how a NIS could work in an upland and lowland context.

New routes to decarbonise land use. This explores the benefits of bringing together multiple funding sources for interventions that deliver multiple outcomes.

Integrating Environmental Land Management funding

The Eden Model demonstration project has explored how public and private funding sources can be integrated as part of Defra's Environmental Land Management tests and trials programme. We have produced briefings on the advantages of integrating private and public funding, lessons from two private payments demonstrations, and what the interface between ELM and Eden Model style

schemes should look like as part of this, see green-alliance.org.uk/The_Eden_Model_demonstration_project

Trading platforms

To facilitate trades in some circumstances it may be beneficial to use a trading platform. Two examples are EnTrade (entrade.co.uk) and NatureBid (naturebid.org.uk)

Examples and case studies

Fiver Fowey auction: UAE and Westcountry Rivers Trust, September 2013, *Payment for ecosystem services pilot project: the Fowey River improvement auction final report*

Hills to Levels: www.fwagsw.org.uk/hills-to-levels

Headwaters of the Exe: www.fwagsw.org.uk/headwaters-of-the-exe

SCaMP: ww2.rspb.org.uk/our-work/conservation/conservation-projects/details/218780-scamp-sustainable-catchment-management-programme

Reducing nitrate in the Solent: www.hiwwt.org.uk/reducing-nitrates-solent

Further resources and reading

Ecosystem Knowledge Network: ecosystemsknowledge.net

Defra, 2016, *Payments for ecosystem services pilot projects 2012-15: review of key findings*, assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/578005/pes-pilot-review-key-findings-2016.pdf

P Dasgupta, February 2021, *The economics of biodiversity: the Dasgupta Review*, HM Treasury, assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957291/Dasgupta_Review_-_Full_Report.pdf

MS Reed, et al, 2020, 'Integrating ecosystem markets to co-ordinate landscape-scale public benefits from nature', EarthArXiv, eartharxiv.org/repository/view/1929/

A Gosal, et al, 2020, *Exploring ecosystem markets for the delivery of public goods in the UK*, Yorkshire Integrated Catchment Solutions Programme (iCASP) and Resilient Dairy Landscapes, eprints.whiterose.ac.uk/164709/1/UK_ecosystem_markets_report_082020.pdf

M Reed, et al, March 2017, 'A place-based approach to payments for ecosystem services', in *Global environmental change,* volume 43, pp 92-106, www.sciencedirect.com/science/article/pii/S095937801630632X

ML Paracchini, PC Zingari and C Blasi, eds, 2018, *Reconnecting natural and cultural capital contributions from science and policy*, European Commission, ec.europa.eu/jrc/en/publication/re-connecting-natural-and-cultural-capital-contributions-science-and-policy

Annex

Flood and water quality opportunity mapping considerations

Criteria	Potential sources of data and information
Extent of local water issues: flood, drought, water quality etc	**Quality:** environment.data.gov.uk/catchment-planning/help#help-catchment-hierarchy **Flood:** flood-warning-information.service.gov.uk/long-term-flood-risk **Drought:** Water Resource Management Plans
Existing land use and quality in a catchment	Natural England regional agricultural classification maps publications.naturalengland.org.uk/category/5954148537204736
Flood risk profile for properties	flood-warning-information.service.gov.uk/long-term-flood-risk
Presence of significant infrastructure at risk from flooding	List of datasets used in climate change risk assessment: theccc.org.uk/wp-content/uploads/2015/10/Appendix-A-Supporting-datsets-Final-06Oct2015.pdf

Criteria	Potential sources of data and information
Land ownership and management structure: numbers of owners, size and location of holdings, prevalence of tenants, common rights holders etc	Local research
Area within the catchment subject to land use restrictions: participation in agri-environment schemes, covenants etc	naturalengland-defra.opendata.arcgis.com/datasets/dd63fbfeda8e48878eb19db84883147b_0?geometry=-16.025%2C50.519%2C11.726%2C55.159
Proximity and connectivity of land to infrastructure or local population centres	Local research
Scale of known planned flood resilience spending	www.carbonbrief.org/mapped-where-four-point-four-billion-being-spent-flood-protection?
Coverage of existing flood defences within the catchment	Environment Agency, 'Flood map for planning (rivers and sea) - areas benefiting from defences', data.gov.uk/dataset/eaa328e7-2eea-4cbf-bd6b-c66121981ba1/flood-map-for-planning-rivers-and-sea-areas-benefiting-from-defences Environment Agency, 'Flood map for planning (rivers and sea) - flood storage areas', data.gov.uk/dataset/cae4e24c-0342-48aa-8a93-d727ce582b3c/flood-map-for-planning-rivers-and-sea-flood-storage-areas
Catchment classification based on the catchment hierarchy	environment.data.gov.uk/catchment-planning/help#help-catchment-hierarchy

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Building local markets for sustainable land management with the Eden Model: a toolkit for practitioners

Author
James Elliott

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