

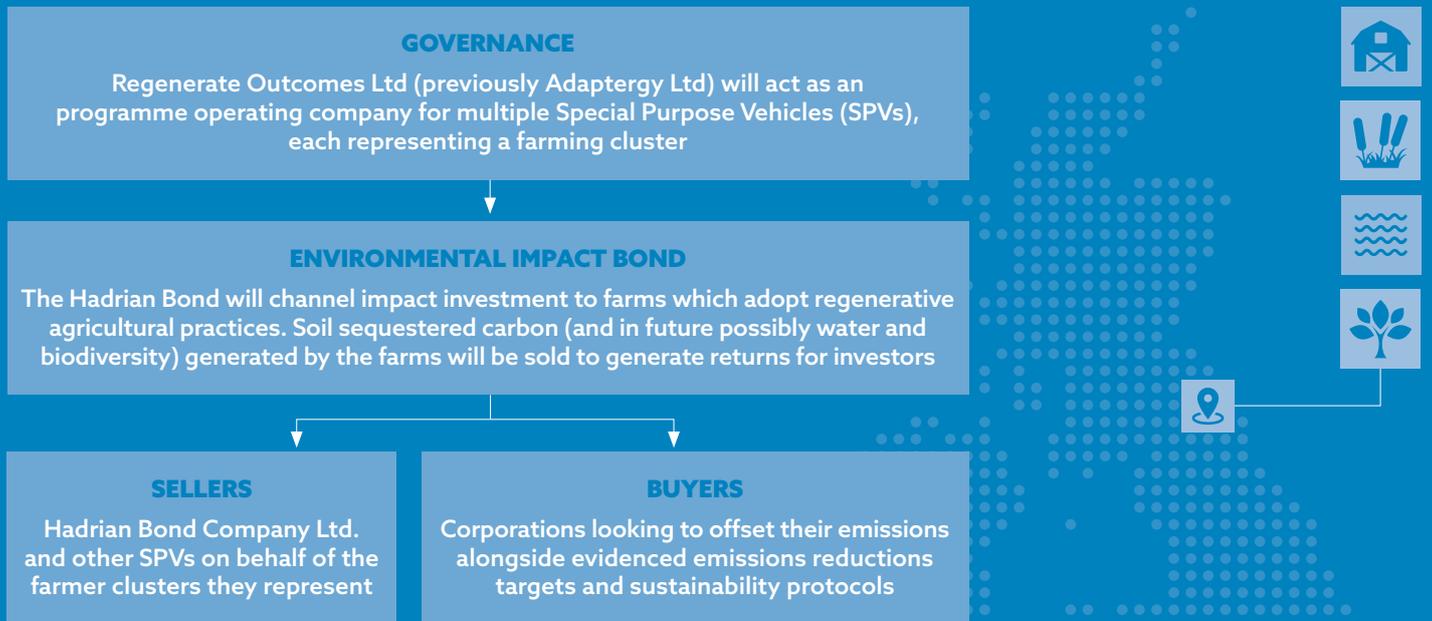
This is one of a suite of case studies of NEIRF funded projects, to highlight efforts to protect and enhance the natural environment, while generating revenue from ecosystem services.



Hadrian's Wall, Northumberland

HADRIAN BOND

HIGH LEVEL SUMMARY OF PROJECT



Habitats and geographical location





 Enclosed farmland, mountain, moor and heathland, freshwater and wetlands, woodland


 Northumberland (pilot)

PROJECT OVERVIEW

Hadrian Bond was originally conceived as the UK's first Environmental Impact Bond (EIB) focused on regenerative agriculture. Its aim is to channel impact investment to farms which seek to adopt regenerative principles and practices and restore the effectiveness of carbon, water, and mineral cycling in soils and wider ecosystems.

The NEIRF grant was used to support Hadrian Bond's work with multiple project partners in order to:

- fund capacity building and access legal support around structuring outcomes-based transactions with stakeholders;
- understand best practices for the ongoing measurement, verification and sale of ecological outcomes in the form of practical targets and monetisable credits from regenerative farms;
- design the Hadrian Bond project to align with existing and future Countryside Stewardship and Environmental Land Management (ELM) schemes.

Initially, a pilot was conducted involving 16 farms covering 3,200ha in the Tyne catchment of Northumberland. Farmers were connected to professional agricultural consultants in order to plan for specific regenerative interventions and learn about how to employ a continuously adaptive decision-making system. Farms will maintain a logbook of activities track the observed ecological changes using the Soil Mentor app.

A Special Purpose Vehicle (SPV), Hadrian Bond Company Ltd. (HBC), was set up to operate the Northumberland pilot project. Regenerate Outcomes is a related entity to HBC, providing key services to the local project on behalf of HBC. Regenerate Outcomes will manage the sale of environmental outcomes from the SPVs and regulatory compliance, including some outcome verification services. HBC will sell soil sequestered carbon units to corporates seeking to offset their emissions. The soil sequestered carbon will be baselined, monitored, and validated using Verra Carbon Standard protocols (VCS). Over time, about 70% of revenues will go directly to farmers (subject to minimum sequestration performance) and the rest will be used to run the project and repay investors.

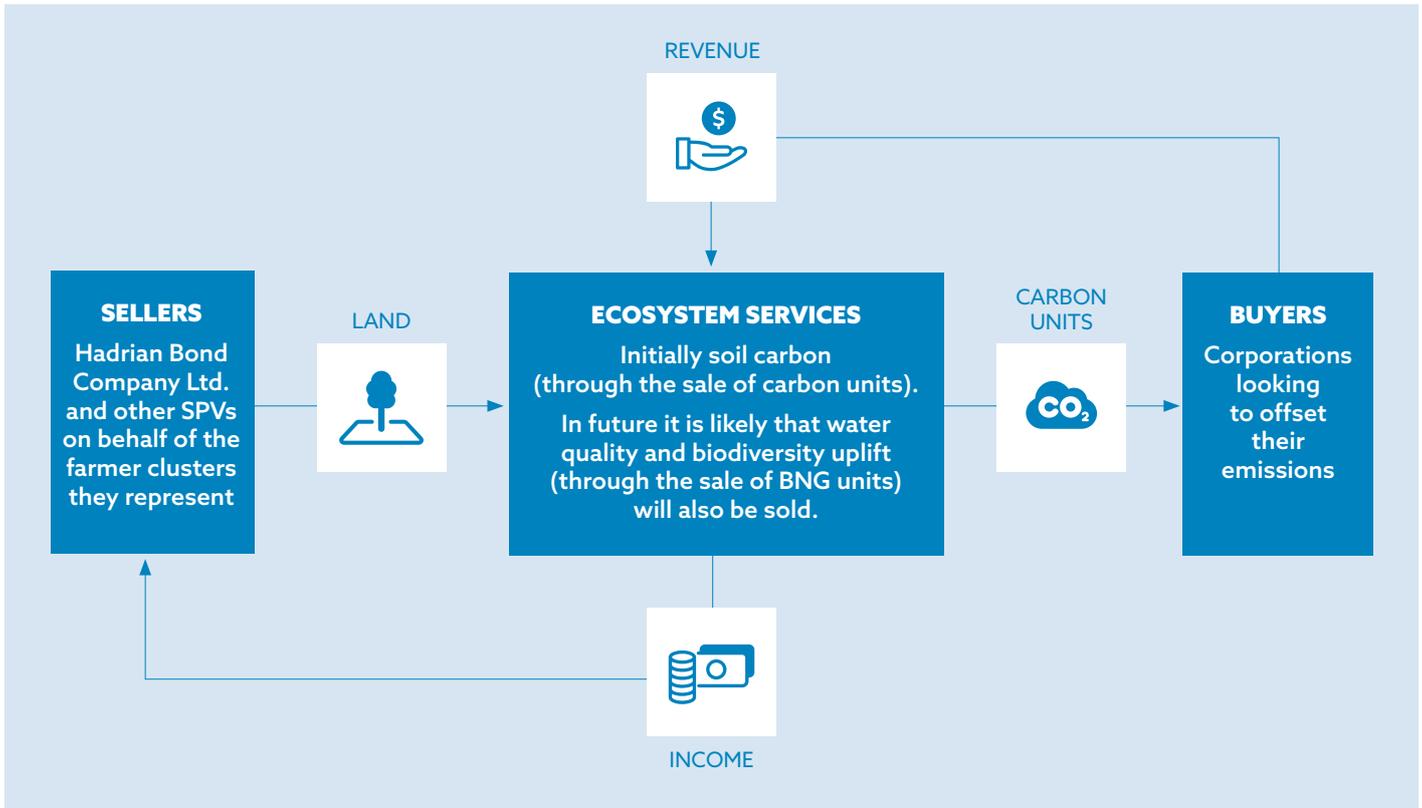
As the governing body of the overall project and a developer, Regenerate Outcomes envisages long term involvement to increase the scale of regenerative agriculture in the UK and raise further finance to support farm conversion. Following the pilot, Hadrian Bond aims to expand to three further farming clusters in the Midlands, English Borders, and Wiltshire, each of around 10,000ha at full capacity.



GOVERNMENT ENVIRONMENTAL GOALS

 <p>Clean air</p>	<p>Regenerative farms replicate functioning natural ecosystems. This will include maximising the vegetative cover, which will lead to pollutants being more efficiently filtered from the air.</p>
 <p>Clean and plentiful water</p>	<p>Regenerative agriculture will improve water cycling in the soil and wider ecosystem. Increased plant cover and soil aggregate stability and biological activity will lead to improved water infiltration and retention rates. Additionally, regenerative agriculture will reduce farm dependency on inorganic fertilisers and 'cides', thus improving water quality within the catchment area.</p>
 <p>Thriving plants and wildlife</p>	<p>Increasing biodiversity is at the core of regenerative agriculture, which supports wildlife while maintaining and improving farming on the land. The generation of biodiversity above ground creates biodiversity below ground, where complex fungi and microbes in biodiverse soil better supports plants, wildlife and grazing animals.</p>
 <p>Reducing the risks of harm from environmental hazards</p>	<p>Multiple studies have shown much higher water infiltration rates on regenerative farms. Higher infiltration rates result in less water run-off, reducing the risk of flash floods downstream and improving farm resilience in times of drought. The protection of natural ecosystems also means that farms will become more resilient to weather extremes.</p>
 <p>Enhancing beauty, heritage, and engagement with the natural environment</p>	<p>Hadrian's Wall offers a high visibility World Heritage Monument to create a patchwork mosaic of regenerative farms. The hope is that this will serve to reconnect farmers and visitors to nature and nature stewardship practices.</p>
 <p>Mitigating and adapting to climate change</p>	<p>Regenerative agriculture protects organic soil carbon from decomposition by erosion, through improved biological activity and soil crumb structure.</p>

REVENUE MODEL



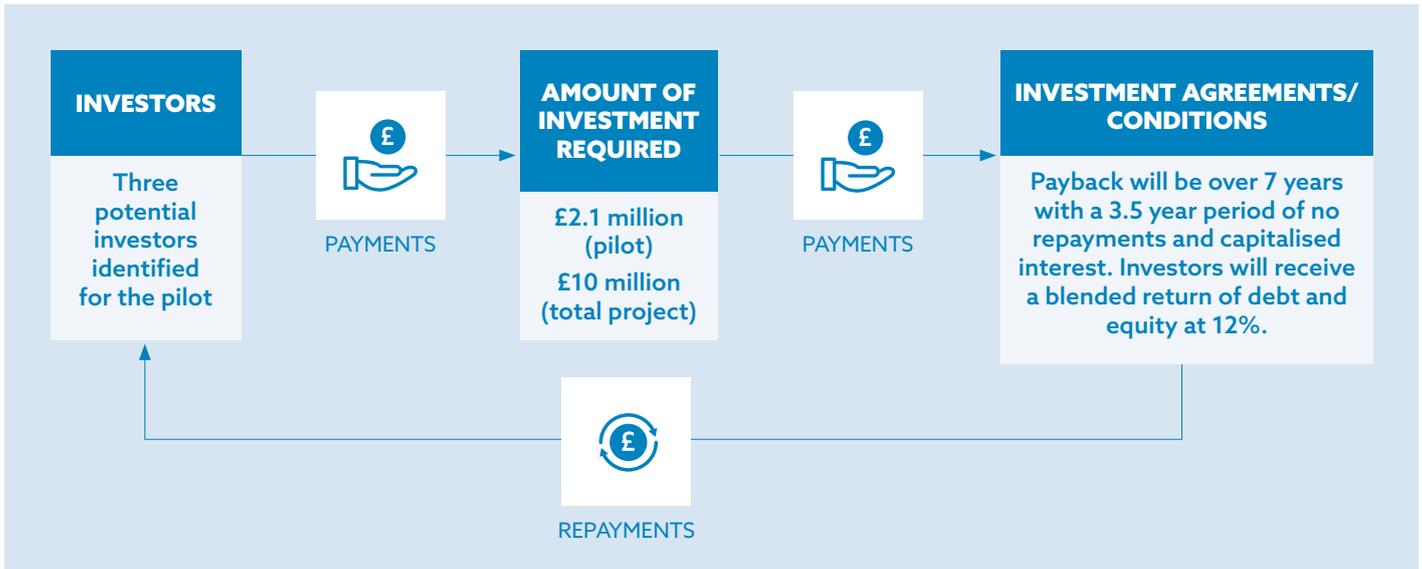
The revenue model of the Hadrian Bond project is based on farm clusters adopting regenerative agricultural practices and the subsequent sale of the environmental benefits generated by those clusters.

HBC, as the SPV for the Northumberland farming cluster (and other SPVs once the project grows), will sell aggregated environmental outcomes to corporates seeking to offset their emissions. The project's revenue model is based on the sale of VCS-validated soil sequestered carbon units in voluntary markets. Water quality and biodiversity net gain (BNG) are also likely to be sold in the future, however carbon is expected to remain the primary product in the short term. Buyers will also have the opportunity to buy low-carbon food produced on the farms, thus reducing their polluting activities.

Farms will generate revenue through normal farming activities. Though farms may experience reduction in their yields while converting to regenerative agriculture, the long term additional benefits from valuable regenerative branding of their produce and product diversification, as well as from the sale of environmental outcomes will offset much of the initial yield reduction. The SPV for each farm cluster is charged with managing project data which, upon being verified, can facilitate the sale of the relevant environmental credits.

HBC will sponsor the education of participating farms in the form of mentoring and knowledge sharing around tools and techniques to improve soil health, which will be tailored to the needs of the specific farm. Participating farms will also be provided with education and support to measure the outcomes targeted, for example soil health.

INVESTMENT MODEL



The HBC pilot in Northumberland requires £2.1m of finance, of which £1.2m is made up of third party revenues, split between £220k of equity and £960k of shareholder loans.

Once the project is rolled out to three additional farm clusters, it is expected that £10m in investment will be required (£2m from equity and £8m from shareholder loans).

Payback will be 7 years with a 3.5 year period with no repayments and capitalised interest. The investors will receive a blended return of debt and equity at 12%, including interest and principle repayments on the shareholder debt and dividends payable on the equity.

A cornerstone institutional investor has committed to supporting the first four cluster programmes in the UK. The project previously discussed agreements with three potential investors:

- an institutional investor based in the UK and active in natural capital market, who would be purely a financial investor in the scheme;
- a private equity investor with strong sustainability targets to meet. They would be likely to want to structure their returns from the project in carbon units;
- a major consumer of foodstuffs who was interested in low-carbon food supplies to help them meet their Science Based Targets initiative (SBTi) Tier 3 targets. They would be interested in buying carbon units and regenerative agriculture produce.

Investors can be offered both shareholder loan and equity style returns, whether those returns are paid in cash or in specie (i.e. in the form of carbon units or food products). The model appeals particularly to investors who are interested in regenerative farming and the long-term benefits to local farms that the project will bring about. Regenerate Outcomes will own a majority of the equity within the SPVs and will invest into them alongside other investors. Regenerate Outcomes works with long-term investors and offers a 10+ year involvement in the scheme.

INNOVATION

Innovative features of the project are:

- **Governance structure** with Regenerate Outcomes operating as the holding company for different SPVs, each representing a farming cluster. Each SPV will manage the regulatory compliance of projects. Regenerate Outcomes will own a minority of the equity within the SPVs and will invest into them alongside other investors.
- **Use of Farm Plans:** regenerative interventions on farms will be dictated by Farm Plans created by farmers in collaboration with regenerative agriculture consultants led by Understanding Ag, a regenerative agriculture advisory firm. Intervention examples include adoption of cover or companion crops and integration of livestock into arable systems. Participating farmers will be supported to make decisions about which activities to deliver based on their current circumstances and capabilities.

- **Environmental Impact Bond:** Hadrian Bond did not materialise to be an EIB since debt investments require a greater degree of data relating to future outcomes. However, it was the first institutional investment into an education-focussed regenerative agriculture programme in the UK and is a more systems-based approach than the natural capital EIBs developed in the USA to date.

Outcome measurement

- The pilot will create a data stream evidencing the link between specific farm practices and carbon soil storage, as well develop standards and certification requirements to bulk sell credits from a pool of regenerative farms.
- The Soil Mentor app will be used by the project and farmers to track ecological indicators.
- SPVs and farm clusters will sign a 30-year Mentoring and Outcomes Agreement to manage project data, outcome remuneration for farms and performance monitoring.
- An adaptive decision-making system will ensure that farmers reflect on and adapt their farming practices throughout the project.

SCALABILITY AND REPLICABILITY

The business model is fully replicable and scalable to any farm type. The pilot project includes different farm types and social circumstances, which challenged and refined the assumptions of the project team, creating a more resilient operating model.

The methods of training and education in regenerative agriculture are highly adaptive to the conditions of individual farms.

The project's contractual documentation has been designed to be adaptable to any changes in Verra protocols and to work alongside any subsidy reform, providing an exit option to farms should the ELM preclude their projects.



LEARNING POINTS

- **Listen to farmers and land managers first,** they should be at the heart of the design process.
- **Clearly communicate the risks and rewards** of participation in the project for farmers and landowners, for example compared to remote carbon incentive programmes that aren't as tailored to individual farms.
- **Avoid prescription** and aim for adaptable project design and related contracts.
- **Source foundation funding** to complement grant funding. Sourcing private investment can be slow and labour intensive in the sector and, as such, concessionary capital is critical to the project design.
- **Build strong relationships with trusted partners** who truly understand the interventions to land management generated by the project. Working with experienced partners to deliver direct interventions with farms such as mentoring – who are knowledgeable and sensitive to farming processes, costs and production margins – is also key in building relationships.

WOULD YOU LIKE TO KNOW MORE?

If you would like to learn more about the Hadrian Bond project, please get in touch with Tom Dillon, Regenerate Outcomes Director at tom.dillon@regenerateam.com. For questions regarding NEIRF, please contact NEIRF@environment-agency.gov.uk.

This case study was produced by Ecorys.