



Natural investment

Futureproofing food production in the UK



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Green Alliance

Green Alliance is a charity and independent think tank focused on ambitious leadership for the environment. We have a track record of 35 years, working with the most influential leaders from the NGO, business, and political communities. Our work generates new thinking and dialogue, and has increased political action and support for environmental solutions in the UK.

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Executive summary

Food production and agriculture are vital to the UK economy. Food is the UK's biggest manufacturing sector. The agri-food sector contributes £109 billion to the economy every year, supported by an agriculture and fishing base worth around £11 billion.

The strength of this sector has benefited UK households as well as the broader economy, with food prices falling by nearly a quarter since 1980. Yet cheap food has come at the expense of the people and natural systems that produce it. The share of the food price received by farmers has fallen steeply over 30 years, matched by declines in average farming incomes, while levels of farm debt have risen sharply. This period has also seen prolonged and severe declines in the environmental health of farmland, characterised by soil degradation, compaction and erosion, and the chronic decline of important species.

By sweating the environmental assets that underpin our food system, we have created unacknowledged costs and risks for food businesses. Soil degradation is costing farmers in the region of £246 million every year, principally through lower yields and higher fertiliser costs. Over the long term, failure to deal with this problem effectively not only increases costs for the food sector, it also risks permanently locking in lower productivity for UK agriculture.

In this report, we propose a new model for policy makers, based on the concept of environmental efficiency, enabling food businesses to maintain the natural assets they depend on, and protect themselves from increased costs. Improving environmental efficiency will bolster the long term economic resilience of the UK food sector, and is likely to reduce overall costs, compared to dealing with the consequences of continued environmental decline.

There is a strong economic case for the food sector as a whole to take action on environmental restoration. However, the mismatch between control over how land is managed, which lies with farmers, and the financial resources within the sector for environmental restoration, which sit with their customers and other downstream businesses, is a major barrier to investment.

Leaving the EU is an opportunity to address the problem. Brexit will result in profound changes to the UK food sector's

operating environment, through changes to agricultural subsidies and the terms of trade with the EU and other international markets for UK based businesses. A well structured Brexit could introduce new land use policies to restore the environmental health and productive capacity of UK land.

Alongside public subsidy, we suggest that new land use policy should significantly increase incentives to private investment in environmental restoration. The costs should be affordable. As an illustration, we calculate that a one-off investment of £240 million, which is the same amount as the estimated annual losses to the farming sector from soil degradation, could restore soils on just over three million hectares of farmland, nearly a fifth of the UK's agricultural land.

We recommend two new approaches: facilitating collaboration across the food sector to secure shared natural assets, and stimulating private investment in environmental restoration.

First, the government should broker and support a new Sustainable Food Pact. This would be a structured precompetitive collaboration between food sector companies, focused on restoring and maintaining natural systems needed for agricultural productivity. To be successful, it should learn the lessons of collaborative ventures in other sectors, including impartial facilitation, clearly defined objectives and stable, long term funding, as well as a regulatory driver.

Second, the government should introduce new Natural Capital Allowances, as an extension of the existing capital allowance tax relief scheme, to support investment by the food sector in environmental restoration. This would supplement, not replace, public payments to farmers. It would use public funding to leverage the private sector investment required to restore natural assets at the scale needed. We estimate that this government contribution could result in a fivefold increase in private investment from food manufacturers and retailers, leading to significant public and private benefits.

1 Environmental decline and the economics of food production



“The Office for National Statistics describes the overall condition of UK farmland as ‘in decline’.”

Food production is one of the most vital uses of UK land, with over 70 per cent of the country’s land managed for agriculture. Profitable farming and a thriving natural environment co-exist in places. However, in many areas, agriculture is failing to protect the environmental systems on which it depends. Consequently, species are being lost, habitats broken up and degraded, and waterways are being polluted.¹ The consequences of these impacts are not confined to farms. Cultivation practices, such as removing vegetation from uplands and planting maize on slopes next to waterways, have directly contributed to major flooding.

What is happening to soil illustrates the interrelation between the environmental and economic functions of land. Soil health is a major determinant of the overall health of the natural environment; most of the functions of terrestrial ecosystems, which include valuable services such as water filtration and carbon capture, depend on healthy soils.² While many farmers are effective stewards of their land, practices which degrade soils are widespread. Up to 2.2 million tonnes of topsoil are being lost each year.³ Over half of English farms have problems with compacted topsoil, which impairs important soil functions.⁴ And the scale of organic carbon loss, an important measure of soil health, is huge. According to the Office for National Statistics the carbon content of topsoil on UK farmland declined by 8.4 per cent from 1998-2007, accompanied by a similar decline in biodiversity; it describes the overall condition of UK farmland as “in decline”.⁵ Annually, gross carbon emissions from UK soils are 50 per cent higher than from the petroleum refining industry.⁶

Poor soil management has been calculated to cost farmers an additional £246 million per year (see the table opposite).⁷ For a sector in which many are struggling to break even, this is a cost it can ill afford. When the additional costs of managing other environmental issues such as pollinator decline and water related challenges (including flood and drought) are considered, the financial impacts on farmers of existing land management practices are even starker.

From a short term perspective, these unnecessary costs can be seen as inefficient. But the long term consequences could be even worse, with the risk of permanently lower yields resulting in lower productivity for UK agriculture and a permanent loss of agricultural capacity.

Problem	How it creates costs for farmers	Annual cost
Soil erosion	Decline in yields caused by the reduction in soil depth	£5,358 million
	Increased fertiliser costs from replacing nitrogen, phosphorus and potassium lost	£34,366 million
Soil compaction	Decline in yields caused by impaired rooting medium and reduced water holding capacity, and the extra draught power associated with ploughing and cultivation	£161,670 million
	Cost of losing applied nitrogen, phosphorus and potassium fertilisers because of extra runoff	£24,274 million
	Cost of additional diesel	£17,477 million
Loss of organic soil carbon	Cost of replacing lost organic carbon with manure to improve workability of the soil, crop germination, water holding capacity, resistance to compaction and crop productivity	£3,507 million
Total		£246,652 million

The solutions to these challenges are well understood. These include adoption of more extensive farming practices, changes to cropping patterns and removing badly depleted farmland from production, permanently or temporarily. Many are low cost, such as planting perennial crops, returning crop residues to the soil and applying organic manures.⁸ And many will increase the long term productivity of the land, with clear benefits for food production.

Dysfunctional food economics

There are a number of reasons why uptake of these solutions has not been more widespread. Largely, it is because of concerted pressure to drive down costs and increase production, resulting in intensification of agriculture at the expense of the long term productive health of the land.

In spite of significant price spikes around 2007, the overall price of food in the UK fell by 23 per cent in real terms between 1980 and 2015.⁹ Farmers have contributed to these price reductions through increased efficiencies but, on the whole, they have not benefited from them. The farmers' share of the price paid for food by consumers has declined by 15 per cent over the past 30 years.¹⁰ Although this period has seen huge fluctuations in net farm incomes, they have fallen overall, while farm debt has skyrocketed.^{11,12}

Cheap food has come at the expense of the people and the natural systems that produce it

Food prices	↓	Down 23 per cent Real terms reduction 1980-2015
Share of food prices paid to farmers	↓	Down 15 per cent 1988-2015
Average farm incomes	↓	Down £600 Reduction in net farm income 1987-2015
Average farm debt	↑	Up 34 per cent Increase in total farm liabilities 2009-14
Soil carbon	↓	Down 8.4 per cent Reduction in soil carbon on farmland 1998-2007

“Economic turbulence and pressure on household incomes is squeezing prices and profit margins at every level of food supply chains.”

These trends look set to continue. Economic turbulence and pressure on household incomes is squeezing prices and profit margins at every level of food supply chains. Many small suppliers are struggling for survival; a 2015 survey found that the number of food sector SMEs in significant financial distress had increased by 120 per cent in one year.¹³ Furthermore, there is little scope to pass on the higher cost of more environmentally sensitive food production to consumers. Only a small minority of consumers are willing to pay more for ethical or sustainable food, such as organic, fairtrade or MSC certified products.¹⁴

Government subsidies for agriculture have done little to address the environmental consequences of this system, and have arguably exacerbated them. The Common Agricultural Policy (CAP) has been one of the most important determinants of how our land has been farmed. CAP, which disbursed payments of £3.1 billion to UK farmers and land managers in 2015, stipulates a range of conditions that agricultural land management must meet to qualify for payments. A small proportion (nine per cent) of the CAP budget provides rural development support to farmers, including for activities that are environmentally beneficial and mitigate climate change. While efforts have been made to green the CAP, this has not been effective at preserving the health of environmental assets.

Restoring natural assets for future prosperity

Food is the UK's biggest manufacturing sector, and the vote to leave the EU will have a significant impact. It will not only result to changes in subsidy payments to UK farmers, it will also open up new questions about the conservation standards that shape how land is managed. It is likely to constrain the availability of seasonal agricultural labour, and will change the terms of trade with Europe and other major export markets.

Brexit has created an unprecedented opportunity for new UK land and agriculture policies which properly reflect the importance of environmental resilience to the long term performance of the food sector. Much of what is considered to be environmental best practice in UK farming is the result of EU legislative and regulatory standards, and has been funded by the CAP. Developing a successor to the CAP regime, which the government has confirmed will continue to operate until 2020, will be a major part of this new approach.¹⁵

Yet public subsidy for agriculture is only part of the picture. Even if existing CAP expenditure was maintained and directed towards restoring soil health and associated ecosystems (in the spirit of public payments for public goods), it would not be sufficient to fund environmental improvements at landscape scale.

The productive health of the land is fundamental to the long term prosperity of farms, and the UK based food businesses they sell to. Rebuilding the environmental health and resilience of UK farmland will require new interventions by government to implement high environmental standards, already set out in current legislation, and to marshal market forces to stimulate increased levels of private investment in environmental restoration, which will complement public subsidies.

Summary

The UK food sector has been sweating the UK's natural assets, resulting in degraded soils and natural systems. Restoring the environmental health of UK farmland will build resilience and bolster the long term productivity and prosperity of food and farming businesses. Brexit has created an opportunity for new land and agriculture policies which utilise the power and resources of the whole food supply chain to invest in the restoration of the UK's natural environment.

2

New policy for a
new approach



To date, government policies have attempted to balance food production and environmental health through land designation, regulation and funding. This approach has created important safeguards, but it has failed to reverse overall environmental decline. The structure of agricultural subsidies has been a major contributor. This is partly because the environmental standards farmers must meet to qualify for payments are low. However, it is mostly because public payments to take land out of production cannot compete with the higher profits from more intensive farming.

In our 2016 report *Natural Partners* we showed that aligning the strengths of both conservation policy and natural capital thinking would lead to a more effective approach to environmental protection. It would allow the market to price in the value of natural assets and improve the business rationale for greater investment in conserving natural resources. Alongside this, conservation policy would protect, maintain and restore natural systems where no investment case exists for private sector led environmental improvements.

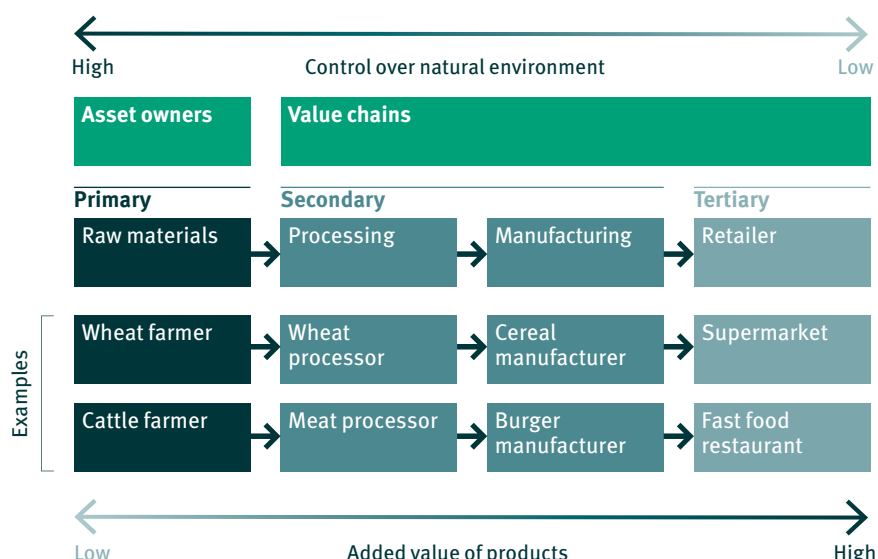
The business case for protecting and improving the environment

The relationship of food sector businesses with the environment can be characterised in two ways:

Primary users (asset owners) ie farming, forestry and fishing. This group directly controls and manages the natural capital, but captures a relatively small proportion of the market value of the goods and services produced.

Secondary and tertiary users (the value chain) ie processors, distributors, manufacturers and retailers. This group benefits from a significant amount of added value from the use of natural resources, but has little if any direct control over how they are managed.

Control vs value in food production



“The burden of environmental protection has fallen on land managers, while the economic benefits have accrued across the food sector as a whole.”

Asset owners have most control over natural systems, while value chain businesses derive the greatest financial return from them. More than 90 per cent of the UK food sector’s annual turnover of over £100 billion accrues to businesses that do not own or manage natural capital, including food manufacturers, caterers and retailers.¹⁶

To date, the focus of environmental protection policies has been on asset owners. This has resulted in a policy framework that is well populated with direct conservation instruments, such as agri-environment grants and land management regulations. By contrast, there are relatively few policy instruments focused on the role of value chain businesses in determining overall environmental impacts.

The consequence of this is that the burden of environmental protection has fallen on land managers, with most activity funded through CAP subsidies, while the economic benefits have accrued across the food sector as a whole.

Most environmental protection measures apply only to asset owners

Regulations and standards	<div>Network of protected sites eg National Parks, SSSIs</div> <div>Water status regulations, management plans for inland waterways, abstraction licensing</div> <div>Protections for priority species</div> <div>Air quality standards</div> <div>Cross-compliance standards for CAP basic payments</div> <div>Regulatory restrictions on emissions to air and water, waste etc</div>	
Voluntary programmes and public funding	<div>Agri-environmental schemes to improve environmental footprint of farming. £3.5 billion of funding to 2020, covering over three million hectares of land in higher level or targeted agreements</div> <div>Campaign for the Farmed Environment</div> <div>Greenhouse Gas Action Plan</div> <div>Payments for Ecosystem Services pilots</div> <div>Biodiversity offsetting trials</div> <div>Natural capital accounting</div>	
	Asset owners: land owners and managers	Value chains: processors, manufacturers, retailers

Summary

Current environmental protection policies focus primarily on land managers, with relatively few aimed at activity further up the value chain. Aligning the creation of financial value from nature with the restoration of underlying natural capital stocks needs new government policies, to ensure food sector businesses actively protect the natural assets which sustain them.

3

How to fund the environmental restoration of farmland



Agriculture will always have some unavoidable environmental impacts. Environmental restoration of farmland, therefore, does not mean returning agricultural land to a pristine state. It means ensuring that agricultural practices contribute to the maintenance and renewal of important environmental systems, rather than degrading them.

Using soil health as a proxy for wider ecosystem health, this would require, for example, more use of practices that protect soil structure and increase soil organic matter. This might involve a change of land use in some areas, such as rewetting peatland that has been drained for use as farmland. Other changes could include altered cropping patterns, moving to mixed models of farming or the adoption of cultivation methods to minimise soil compaction.

Peatland restoration

Peat accumulates where the rate of input of organic material from the surface exceeds the rate of decomposition and turnover of new material. Under UK climate conditions, this happens under seasonal or year round waterlogging and is exacerbated by cold temperatures.¹⁷ However, some of the UK's most productive arable soils are drained peatlands, a consequence of which is oxidation and the loss of stored carbon to the atmosphere. Intensive food production has degraded much of the UK's lowland peatland. Only 16 per cent of the peat stock recorded in 1850 in the East Anglian Fens now remains, and it has been estimated that some Fens may only be able to support arable farming for another 25 years.¹⁸ Restoring peatland through techniques such as rewetting would have substantial environmental benefits, including carbon sequestration and water filtration.



“The cost of soil degradation in England and Wales is around £1.2 billion per year.”

Understanding the cost

The costs of environmental restoration are considerable, but they are not unaffordable.

Cranfield University has calculated that the cost of soil degradation in England and Wales is around £1.2 billion per year, due to erosion, compaction and organic matter loss.¹⁹ Around £240 million per year (20 per cent of the total) is a direct cost to the food and farming sector, as it is associated with reduced soil productivity and increased cultivation costs. The remaining 80 per cent is associated with the loss of regulating services such as water purification and climate regulation, and is a cost to society at large.

As an illustration, we have calculated that a one-off investment of £236.5 million, slightly less than the annual losses incurred by the farming sector from soil degradation, could restore soils on just over three million hectares of farmland. This could be through, for example, a combination of three measures: restoring peatland, planting cover crops after harvest to maintain nutrients and protect against soil erosion, and reversing and preventing soil compaction. To put this in context, this level of expenditure is less than half of the £488 million in CAP support handed out every year by the government to fund agri-environment projects.²⁰

Measure	Scale of restoration	Cost per hectare ²¹	Total cost
Peatland restoration	46,000 hectares Equivalent to all of England's deep fen peatlands and raised bog currently used to grow crops or as temporary grassland. ²²	£575	£26.5 million
Planting cover crops	1,500,000 hectares Equivalent to nearly half the total area farmed for cereals in the UK. ²³	£115	£172.5 million
Reversing soil compaction	1,500,000 hectares Equivalent to one quarter of the UK's total croppable area.	£25	£37.5 million
Total	3,046,000 hectares		£236.5 million

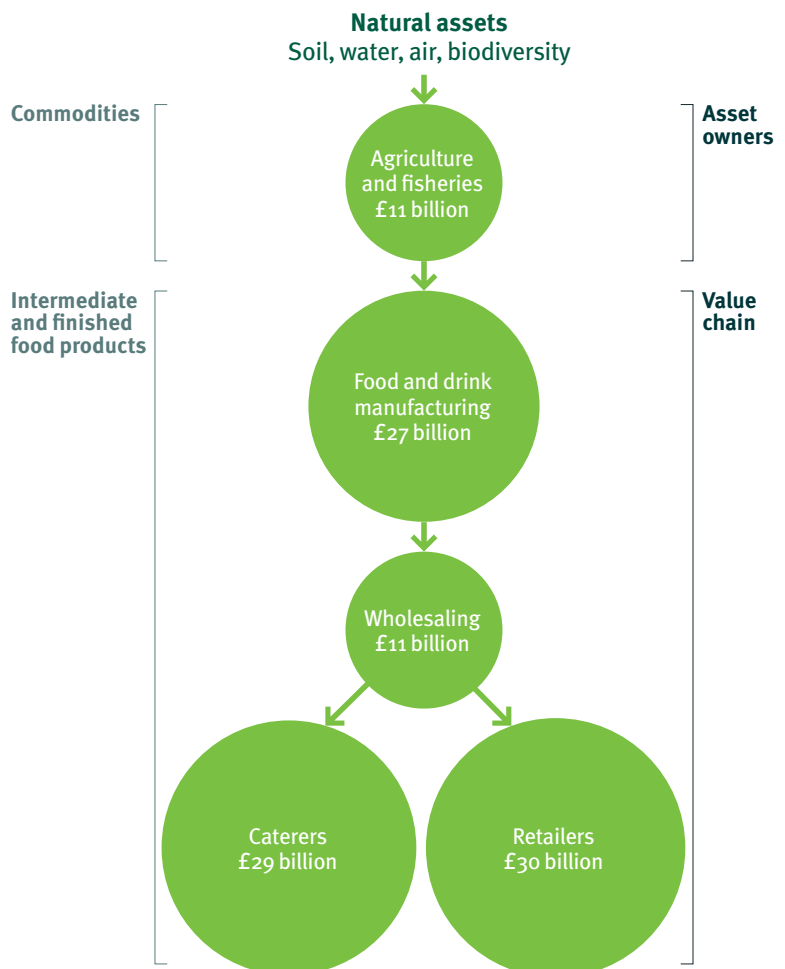
Who should fund environmental restoration?

The environmental restoration of farmland clearly makes economic sense. The issue is who should fund it.

The natural asset base of the UK (soil, water, air and biodiversity) generates primary commodities which support agriculture and fisheries industries with a gross value of around £11 billion annually. These commodities form a substantial part of the raw material inputs to the UK's food and drink sector, generating economic value nearly ten times greater. In total, the UK's agri-food sector generates £109 billion a year for the UK economy.²⁴

There is sufficient money within the UK's food sector to support the long term restoration of the natural asset base that sustains it, if ways can be found to recycle a greater proportion of private profits to maintain and enhance underlying natural systems.

Gross value added in the agri-food sector



“The food sector is currently environmentally inefficient, because farming methods are degrading its natural asset base.”

Environmental efficiency

We propose a new model for policy makers based on the concept of environmental efficiency. Recognising natural capital as the provider of goods and services which form the basis of production, we suggest that business models which maintain natural capital and protect themselves from increased costs are environmentally efficient. Business models which degrade natural capital, at a cost to the production system which it sustains, are, therefore, environmentally inefficient.

The food sector is currently environmentally inefficient, because farming methods are degrading its natural asset base and increasing the cost of agricultural operations. Environmental inefficiency raises costs in the short term, and has negative implications for the long term productivity, competitiveness and profitability of the food sector. The sector could increase its overall efficiency by addressing the environmental problems which cause increased production costs.

Agricultural productivity is typically measured in terms of output from a given area of land. Achieving higher yields is, therefore, held to increase productivity, even if done in ways that incur increased costs as a result of unsustainable use of the land. Introducing the idea of environmental efficiency reveals the hidden costs of environmental degradation to food production, and establishes a case for investment to drive these costs down.

Increasing environmental efficiency may present a challenge for individual businesses, but it becomes exponentially more practical and affordable when the value at risk for the sector as a whole is considered. In the following chapters we consider how policy can enable value chain responses which reduce the loss of vital environmental assets.

Summary

The UK food and drink sector is worth over £100 billion a year. But its natural asset base is deteriorating, undermining the sector's productivity and prosperity, and creating a strong economic case for environmental restoration. Improving environmental efficiency would improve the long term economic resilience of the sector and is likely to result in lower overall costs compared to dealing with the consequences of continued environmental decline.

4 Barriers to business investment



The government has asserted that it expects the private sector to play a substantial role in funding the long term maintenance of the UK's natural assets.²⁵ But a range of factors currently inhibit this, including:

Short term competitive disadvantage

Restoration of the natural environment would disrupt current practices and transform how some natural assets are managed, requiring individual enterprises to accept short term competitive disadvantage to secure long term gains.

Low perception of risk

In the absence of immediate environmental shocks, and with a low risk of regulatory intervention, many companies will see no commercial case for action to improve the condition of the natural systems on which they depend.

Knowledge gaps

There are knowledge gaps relating to the status of natural assets such as soil, hindering effective decision making about how they should best be managed. Even where data exists it is not always in a form useful to businesses.²⁶

To overcome these barriers, in recent years the government has encouraged business action using a range of non-regulatory approaches, which we explore below. These include:

1. Reporting, valuation and accounting
2. Assurance schemes
3. Industry-led voluntary initiatives

Reporting, valuation and accounting

To date, valuation and accounting approaches have been most widely applied in the area of greenhouse gases. Since 2013, UK listed companies have been required to state their direct greenhouse gas emissions as part of their annual reporting.

There is considerable interest among both government and business in applying these approaches to natural asset impacts. Substantial progress has been made in developing corporate natural capital accounting tools, as well as the Natural Capital Protocol, which enables any company in any sector to incorporate natural capital risks into their decision making.

Nevertheless, the government's bullishness that natural capital accounting can deliver large scale private investment in maintaining the natural environment seems unjustified.²⁷ One of the lessons from carbon pricing (see page 18) is that, unless the price allocated by businesses to their environmental impacts reflects the full costs incurred by society, there will be no case for them to invest collectively in environmental protection at the level society needs. Furthermore, the feedback from businesses involved in

the development and application of natural capital accounting is that its value lies in improving business management and strategy, which could be lost if it were approached primarily as a balance sheet exercise.²⁸

Setting the right value for natural capital: lessons from carbon pricing

Natural capital accounting enables companies to understand the value they derive from natural assets and systems and, hence, the value at risk from degraded natural systems. Many companies now allocate a shadow price (an internal accounting mechanism) as a decision making tool to help manage their environmental impacts. This is most commonly applied to carbon. The price can be set in several ways:

Social cost, ie the cost to society of the total damage from now into the indefinite future of emitting an extra unit of greenhouse gases now. This was estimated at £70 per tonne by the Stern Review to keep climate change below two degrees centigrade.²⁹ More recent estimates are considerably higher.

Market price, ie the cost of a tonne of CO₂ in carbon markets, currently around £5 per tonne.³⁰

Abatement cost, ie the marginal cost of avoiding greenhouse gas emissions. Analysis by McKinsey identified the range of costs to reduce CO₂ from minus €150 per tonne through to €40 per tonne.³¹

While many abatement actions will be cost effective for business, many will be too expensive to support a business case based on market price alone, although other factors may justify individual companies investing in actions above this level. Under these circumstances, government intervention is necessary to raise the market price to a level closer to the social cost.

Assurance schemes

Assurance schemes are proliferating to reflect the growing demand for better environmental standards in production, alongside the development of supply chain guidance at scales from global to national.^{32,33} Some commodities, for example coffee, have a high proportion of assured product on the market and others, such as wheat, have very little. However, assurance schemes vary to a significant extent in criteria and standards, and tend to weaken when applied to mainstream commodities.³⁴ Many struggle to improve the underlying sustainability of agricultural production from land significantly. As such, they are more likely to contribute to a reduction in environmental losses, than to provide the sole means to ratchet up value chain performance to the degree necessary to achieve significant improvements in the environmental health of farmed land.

Industry led voluntary initiatives

Self regulation has become increasingly favoured by the UK government as an alternative to regulation in delivering policy goals. A number of initiatives have been introduced for food and agriculture in recent years, including the Campaign for the Farmed Environment, the Courtauld Commitment and the Greenhouse Gas Action Plan.

A recent review of voluntary agreements concluded that their effectiveness depends on strong regulatory drivers, clear targets, monitoring and reporting. Most voluntary agreements were found to be ineffective as a result of the lack of one or more of these factors.³⁵ This is reflected in the performance of the Greenhouse Gas Action Plan, the means through which the government is aiming to meet its target for reducing non-CO₂ emissions from agriculture. This voluntary industry led platform aims to promote cost effective good practice to farmers in areas such as livestock feed and soil management. But overall emissions from agriculture have actually increased during the period in which the scheme has been in operation, and the government's statutory climate change advisers have called for a stronger framework to address the scheme's failures.³⁶

Summary

There is a strong economic case for the food sector as a whole to take action on environmental restoration. However, the barriers to action by individual farmers and value chain businesses are currently too high. Existing non-regulatory schemes supported by the government have delivered some benefits but fall short of protecting and improving the environment at a meaningful scale. Stronger government intervention is necessary to mobilise effective collective action by food sector businesses.

5 Harnessing the power of business



The natural environment will be restored more effectively, and at a greater scale, if the government works with businesses to set shared goals and remove barriers to private investment. Making this approach integral to the implementation of the government's 25 year plans for the environment and farming will lead to a higher likelihood of success than a continuation of existing policy approaches. And, in spite of the mixed results of many approaches, there are examples of the government and industry working together where market forces have not worked in the public interest.

Two areas in particular merit further investigation: the use of collaboration to secure shared natural assets, and stimulating private investment in environmental restoration via incentives.

Collaboration to secure shared natural assets

Structured collaboration to address complex challenges is becoming an increasingly important corporate strategy in some sectors. It is most strongly evident in the pharmaceutical and biotechnology sectors, where the scale and costs of medical research are increasingly motivating major pharmaceutical companies to collaborate on issues which benefit everyone, for example by sharing data on properties of molecules at the research stage to make the process of drug discovery more efficient.³⁷

But there has not been much collaboration focused principally on environmental issues. Examples that do exist include the Sustainable Apparel Coalition, an initiative involving over 30 US clothing brands to develop an index and design tools to increase the sustainability of their products.³⁸ There is also the Supply Chain Sustainability School for the construction and facilities management sector; and Refrigerants Naturally, an alliance between competitors Coca-Cola, PepsiCo, Red Bull and Unilever, and also Greenpeace and UNEP, to develop sustainable refrigerants. In the food sector, there is the Sustainable Agriculture Initiative, a global platform promoting the uptake of sustainable agricultural practices among its members.

While competition is as important in the food and drink sector as in any other, there is a clear common benefit to be gained from collaborating to overcome cost and complexity issues and increase environmental efficiency. This could include the co-development of metrics, problem solving techniques and the adoption of environmental targets, in pursuit of shared goals.

How the government can broker precompetitive collaboration: the example of the pharmaceutical industry

Government regulation, brokering or funding has been necessary to promote action on issues of public significance. It has been used to accelerate the pharmaceutical industry's progress in bringing forward new products, for example in anti-microbial resistance (AMR). This is resistance by bacteria to drugs such as antibiotics and is a significant and growing public health threat.

Globally, 700,000 people die per year from AMR infections. This is forecast to increase to ten million a year by 2050, at a cost of US\$100 trillion to the global economy. Development of new vaccines and antibiotics, an essential step in tackling the AMR problem, is seen as commercially unattractive by the pharmaceutical industry.

In July 2014, the prime minister established the Review on Antimicrobial Resistance to identify the societal implications of AMR and propose concrete actions to tackle it. Led by the economist Jim O'Neill, it delivered its final report in May 2016. One of the principles underpinning the review's final recommendations was that the pharmaceutical industry should be a substantial funder of the work necessary to develop new medicines.

In January 2016, in advance of the review's final recommendations, and in collaboration with the review team, the pharmaceutical industry issued a joint declaration committing to action in three areas: reducing the development of drug resistance; increasing investment in R&D to meet public health needs; and improving access to high quality antibiotics. As of April 2016 this declaration had been signed by 98 companies and 11 industry associations in 21 countries.⁴⁰

The UK government has also committed £50 million to a new Global Innovation Fund to fill gaps in traditional funding schemes for R&D focused on diseases affected by AMR.

Stimulating private investment

Currently, environmental restoration is funded principally by the government through payments to land managers. But, in other policy areas, government funding is contingent upon co-investment by the beneficiaries. For example, to benefit from feed-in tariffs for renewable energy generation, businesses or households must cover the capital cost of installing the technology.

Using a different model, businesses can claim an enhanced level of tax relief on asset purchases that have particular environmental benefits. Companies can claim enhanced capital allowances (see page 23), which permit the purchase cost of approved energy and water saving technologies to be offset against taxable profits.

Enhanced Capital Allowances

Enhanced Capital Allowances (ECA) are available for certain approved energy and water saving technologies, which allow businesses to set 100 per cent of the cost of technology purchases against taxable profits in a single tax year. This means a company can write off the cost of new plant or machinery against its taxable profits in the financial year the purchase was made. An ECA is claimed through income or the corporation tax return. Loss making companies are also able to benefit from this type of ECA. Lifetime CO₂ savings from assets bought in the first year of the scheme are estimated at 9.5 kilotons.³⁹

There should be scope to make greater use of alternative types of public funding mechanisms, to encourage a greater level of private investment in the natural environment, alongside the existing direct payments model.

Summary

Despite making progress, in particular around benchmarking and raising minimum standards, existing value chain initiatives have not changed behaviour or released investment at the scale needed for environmental restoration. The government could increase the scope and impact of the food sector's efforts to protect the environmental assets upon which it depends by exploring opportunities in two areas: facilitating collaboration to secure shared natural assets, and creating new incentives for private investment in environmental restoration.

6

Our recommendations



Recommendation one:

Facilitate collaboration in the food sector

Precompetitive collaboration focuses on developing the tools and knowledge which benefit all participants, rather than on the development of products, although companies may use the outcomes to develop competing products and services at later stages.

The complexity of food value chains, and the diversity and number of businesses that operate within them, make collective action to deliver environmental improvement extremely challenging. There is a clear rationale for government to intervene to facilitate structured collaboration within the sector.

The scope of precompetitive collaboration

We argued in our report *Natural Partners* that, where there is a business case for protecting the environment, policy should evolve to enable private interests to play a role. But, where the public is the primary beneficiary, the traditional policy tools of regulation and incentives should be used.

The case exists for the food sector to restore the natural systems associated with agricultural productivity to good condition, for example soils, water cycles, genetic diversity and pollinators. This would provide a suitable focus for a government-brokered collaboration. It would support food sector businesses to overcome the complexities of managing challenges in which they have a collective interest, and provide both private and public benefits.

A Sustainable Food Pact

To stimulate precompetitive collaboration the government should consider brokering a shared responsibility agreement for food sector businesses. This would be an agreement to increase the environmental health of the UK's natural environment by restoring the ecosystems which underpin agriculture.

Specifically, businesses would commit to a number of actions: to work together towards an overarching goal to improve the natural assets that support agricultural production; to develop measurable environmental targets and delivery plans; and to participate in an implementation programme, either on an individual company basis or through enhanced collaboration, over the duration of the agreement.

Using existing approaches to define environmental goals

The complexity of natural systems means it is difficult to set the simple targets businesses need. Restricting the scope of the Sustainable Food Pact to restoring environmental systems which underpin agricultural production would go some way towards reducing this complexity, but would still require the adoption of specific measurable goals. This could be based on existing approaches, such as:

Natural capital accounting: the Office for National Statistics has developed an experimental set of ecosystem accounts for UK farmland, but they cover only a small number of services delivered by the land.⁴² It is anticipated that a fuller set of accounts will be developed for 2020, to be integrated into the existing national environmental accounts.

An aggregate indicator: this comprises soil, water, biodiversity and carbon measures, along the lines of the Environmental Health Indicators developed by the Scottish Wildlife Trust.

Value-based metrics: an example of this is the discontinued environmental account for agriculture developed for the Department for Environment, Food and Rural Affairs.

Existing policy targets: for example, the fifth carbon budget target for reduction in greenhouse gas emissions from agriculture, the COP21 commitment to increase soil carbon content by 0.4 per cent per year, or the Aichi target to manage 17 per cent of land as high ecological quality protected areas.

To be effective, the pact would need to reflect lessons from previous initiatives in fields such as pharmaceuticals. Experience in these areas has shown that structured and impartial facilitation, clearly defined objectives and stable, long term funding are the preconditions for success.^{42,43} It would also need to have teeth; voluntary initiatives in the farming sector have frequently underperformed without a regulatory driver, adequate monitoring and clear objectives. Precompetitive collaborations of this kind have been good at identifying what needs to change and how; but they have been patchy at best when it comes to delivery.

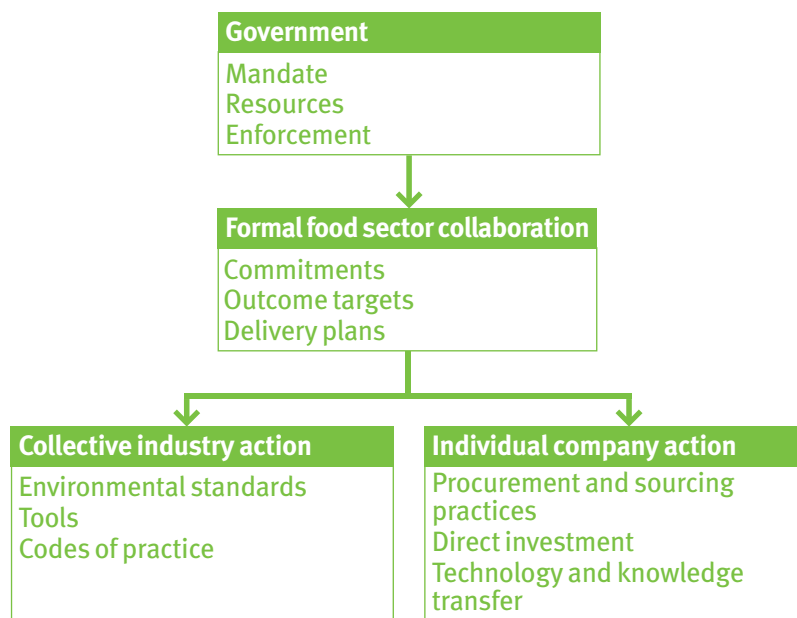
Avoiding these pitfalls would require a strong role for government. It should set expectations for what the collaboration should deliver, ensure appropriate levels of participation and outline consequences for non-delivery, including regulation.

In return, participants would benefit from the guarantee of a long term partnership with government to manage important challenges. They would also have the commitment of public sector time and resources, and freedom to define priorities and plans based on objective expert advice.

Specific support could be provided by the Natural Capital Committee (NCC), for example to determine the priority actions that would lead to

cost effective environmental gains. The NCC could also advise on the role of government, for example how this area would interact with other policies such as post-CAP agricultural subsidies and water resource planning.

Roles for government and business in the Sustainable Food Pact



Recommendation two: Introduce Natural Capital Allowances

The government should introduce a new mechanism providing incentives for investment by the private sector in environmental restoration. Fiscal incentives are already used to facilitate private investments that deliver both public and private benefits. The existing capital allowances system, which supports business purchases of technology and other assets, could be extended to cover environmental restoration. There is a strong rationale for using capital allowances in this way. Land is a physical asset essential to the ongoing trade of farmers and land managers and, therefore, also to the value chain above them in the UK food sector. The asset value of much of the UK's agricultural land is in long term decline, measured in terms of its productive potential and indicators such as soil carbon and ecosystem health. Increased private investment in land management is necessary to maintain the productivity of land over the long term, for the benefit of both private businesses and the public interest more broadly.

We propose the creation of a new Natural Capital Allowance scheme, enabling businesses to claim tax relief from income or corporation tax, based on expenditure that enhances environmental efficiency by delivering measurable improvements to environmental systems on farmland.

This approach would have three distinctive characteristics:

Value chain participation

Extending capital allowances beyond asset owners, to include the businesses they sell to, will increase by an order of magnitude the resources available to support environmental restoration.

Defined investment priorities

These would be set by the sectoral collaboration to identify the most effective route to environmental restoration.

Quantified assessment of value for money

This would be based on sectoral reporting of what has been invested and the environmental gains it has delivered. As a link to verifiable outcomes it would address a common criticism of tax relief schemes.⁴⁴

How it would work

Natural Capital Allowances would need to support investment by both asset owners and value chain enterprises.

Asset owners

Land owners and managers would receive tax relief on the capital cost of, for example:

- purchases of technology that improve the environmental management of land, such as minimum tillage equipment; this could be done by increasing the Annual Investment Allowance, currently capped at £200,000 per year, or by extending Enhanced Capital Allowances to qualifying technologies; in both instances, qualifying technologies could be identified on a central list, as is currently the case for energy and water saving technologies;
- land use change, which could include changes in management, drainage modifications, installing fencing or seeding and planting.

Value chains

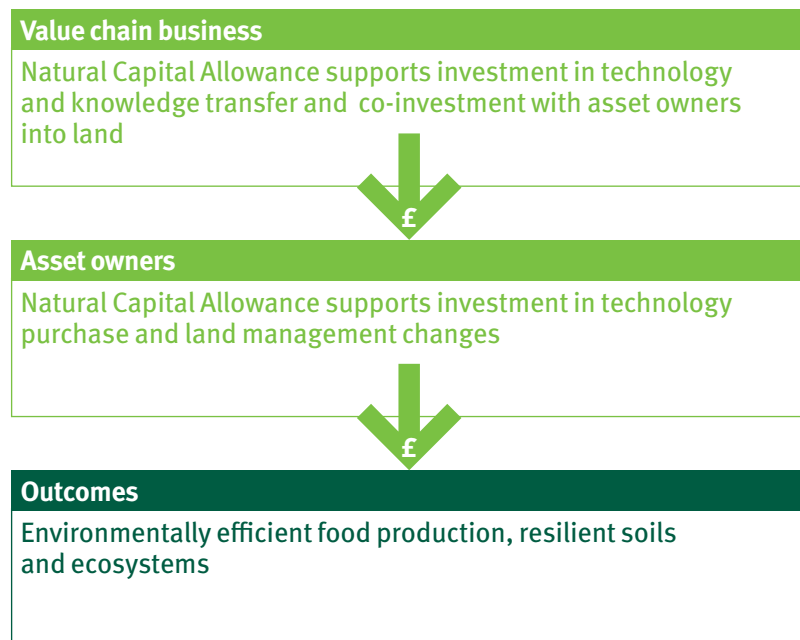
Businesses would receive tax relief on certain capital costs related to support for asset owners, potentially including:

- technology and knowledge transfer to support farmers in the adoption of environmentally efficient agricultural practices;
- co-investment (for example loans or grants) with suppliers to support technology purchases or land use change.

This approach would be based on the principle that businesses may receive tax relief for investments into an asset that they do not own but which is

essential for their ongoing trade. The existing capital allowances regime offers a parallel with respect to dredging: companies may claim capital allowances for expenditure on dredging waterways, provided the dredging is for the benefit of vessels using a dock or other premises occupied by the person making the investment.

How Natural Capital Allowances would support investment



What it might cost

For illustrative purposes, we have examined how Natural Capital Allowances might apply to the £240 million investment into soil restoration outlined in chapter three. Of this money, just over £100 million would be spent as a capital cost, covering fencing and other infrastructure, planting and seed costs. The remainder would be spent on labour and other costs.⁴⁵

Assuming that this money would otherwise be subject to income tax of 40 per cent, the cost to government of making the whole of this capital cost eligible for capital allowances would be just over £40 million.⁴⁶ This is likely to be an upper estimate, as it assumes that the full cost would be deducted from profits, ie that all parties making investments are profitable, which many agricultural enterprises are not. It may also double count tax relief already being claimed.

This is a simplified approach aimed at revealing approximate values. It suggests that a relatively modest contribution from the government, particularly in the context of a tax system that offers reliefs worth £100 billion annually to achieve specific policy goals, could potentially leverage five times more private investment.⁴⁷

Benefits of collaboration

Increasing the private sector's participation in, and funding for, restoring the UK's natural environment will offer considerable benefits for both the public and the UK's food sector.

Brexit has opened up opportunities for the UK government to facilitate this process. By introducing the right policies and incentives in the short term, the government could help shift UK food and farming towards genuinely sustainable production, bolstering long term agricultural productivity and providing a genuine point of difference for UK food businesses outside the EU.

	First 12 months	2-5 years	5 years +
Actions by food sector	Joint commitment to action to improve environmental efficiency Agreeing sustainable food pact with common objectives and priorities Pooling knowledge	Introduction and uptake of 'green' sourcing and procurement standards developed through the pact Co-investment programme to fund environmental restoration Development of analytical and decision making tools	Changed market norms and agricultural practices
Support from government	Resources to broker and support precompetitive collaboration, eg facilitation Natural Capital Committee support	Natural Capital Allowances Investment incentives New agricultural subsidy regime Renewal of conservation standards	Other supporting measures, eg market access regulations, public procurement standards
Benefits for the food sector	Strategic alignment Branding and reputation Creating a common platform for action	Improved value chain alignment, efficiency and integration Cost reduction via tax relief	Improved agricultural productivity Improved sector resilience

Endnotes

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- ²⁰ Defra, 2016, *Agriculture in the UK 2015*, table 10.2, 'Direct payments to farmers'
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Technique	Capital cost (£ per hectare)	Labour or other cost (£ per hectare)	Scale of coverage (hectares)	Capital cost eligible for tax relief (£)
Peatland restoration			46,000	
Minor land forming and drainage modifications		300		N/A
Fencing / infrastructure	200			9,200,000
Seeding / plantings	75			3,450,000
Cover crops			1,500,000	
Seed costs	60			90,000,000
Cultivation costs		25		N/A
Termination costs		30		N/A
Soil compaction		25	1,500,000	N/A
Total				102,650,000

⁴⁶ We have assumed that the money would be subject to income tax not corporation tax on the grounds that 97 per cent of farm holdings are held by one or more private individuals, while three per cent are held by limited companies or institutions. Source: Defra, 2015, *Farm structure survey 2013: focus on agricultural labour in England and the United Kingdom*. We have assumed that the income tax would be paid at the higher rate of 40 per cent, on the basis that the average income for a cereal farmer, a sector that would benefit from lowland peatland restoration and the planting of cover crops, is £45,000. Source: Defra, 2015, *Farm business survey (FBS): farm business income time series by farm type*, England

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