A GREENER, MORE PLEASANT LAND

A new market-based commissioning scheme for rural payments

Ben Caldecott, Sam Hall, and Eamonn Ives

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Executive Summary

As a result of the UK leaving the EU, the UK Government has a unique opportunity to enhance this country's natural environment.

Much of the UK's natural environment is managed by farmers, land owners, and land managers. But, currently, rural activity and natural environment policies are funded and administered disparately by the UK Government.

Brexit will bring an end to the UK's involvement in the Common Agricultural Policy (CAP), the principal source of rural payments for farmers, land owners, and land managers in this country. This means policies and funding for rural activity and the natural environment can now be brought together into a consistent framework delivered efficiently and effectively. This report outlines what this post-Brexit system for rural payments should be.

Chapter One shows that reforming rural payments could bring significant benefits to everyone, including better air, water, and soil quality, stronger natural flood defences, greater biodiversity, a more sustainable farming industry, increased carbon sequestration, enhanced natural beauty and landscapes, improved access to nature and tourism, and better physical and mental health.

Long-term commitments of public funds are necessary to help those working in the rural economy to adapt, plan, and invest for the long term. Realistically, any new arrangements to UK rural payments will also

need several years to bed in. It is therefore essential that the Government ensures that the approximately £3.1 billion per year currently spent on rural payments via CAP continues to be available for the foreseeable future, albeit in a significantly more efficient and effective way. This is a level of public spending that is incredibly good value for money. The idea that the Government could significantly reduce or eliminate this level of funding is a mirage that would cause needless harm to families and workers, as well as the natural environment.

This report proposes that the UK introduces, after Brexit, a new market-based commissioning scheme for rural payments. The report describes in detail how it would work and how it should be implemented. This report is structured as follows: it examines the current policy framework for rural payments (Chapter Two); it outlines the main features of our proposed market-based commissioning scheme (Chapter Three); and it describes the phases of the implementation and the key principles of this scheme (Chapter Four).

The existing policy framework for rural payments

As Chapter Two outlines, there are currently three funding sources for rural payments that impact the natural environment: production and land management support (under CAP), natural flood management, and payments for ecosystem services.

The government should outline specifically what the budgets are for each of these and then create a single budget for rural payments. Merging these current expenditures into a single natural environment budget would result in at least approximately £3.1 billion being made available per year.

A new post-Brexit vision for rural payments

We are proposing a new market-based commissioning scheme for rural payments. Chapter Three explains that we envisage 'suppliers' bidding together or individually to supply ecosystem services to

paying 'beneficiaries' in specific catchments on online market-places. Suppliers would include farmers, land owners, and land managers. Beneficiaries would include the general public (represented by central, devolved, and local government), private interests (such as water companies, other land managers, and insurers), and other groups (such as conservation NGOs, civil society groups, land trusts, philanthropists, local communities via town and village halls, or crowd funders).

The types of ecosystem services provided by suppliers to beneficiaries would be classified and defined independently by the Natural Capital Committee. It would be comprehensive and would include a wide variety of measures, services, and outcomes, including but not limited to: reduced fertiliser and pesticide use; crop rotation; woodland creation and management; creation of field strips next to arable land; maintaining features like hedges, stone walls or ponds; planting rare or indigenous crops; creating footpaths through fields; creating attenuation ponds in the uplands; building woody debris dams; restoration of peatlands and naturalised river pathways; planting of vegetation as a buffer by the side of waterways; construction of dykes or ditches; and the reintroduction of native species, such as the beaver or lynx.

We envisage this market-based commissioning scheme would be administered, coordinated, and regulated by an arms-length body such as the Environment Agency. Contracts would pay quarterly based on results, potentially with incentives to encourage performance.

Our new market-based commissioning scheme for rural payments would have several distinct key features:

- **Adopt a catchment-based approach.** The scale at which commissioning markets would take place (sub-catchment all the way to national) would depend on the type of services beneficiaries were seeking to commission, though we feel that a catchment-based approach is generally the most appropriate

scale to successfully mobilise beneficiaries and suppliers, organise online market-places, and manage the production of appropriate ecosystem services. While water catchments are clearly defined geographically, they can vary massively in terms of the land areas they cover – from thousands of miles squared, to less than one mile squared. Accordingly, a catchment could be either split up into a number of sub-catchment areas (in the case of large water catchments), or multiple catchment areas could be amalgamated together to create larger catchment districts (in the case of smaller catchments).

- **Seek to crowd in non-public funds.** Beneficiaries would club together in our catchment-based online markets to commission ecosystem services by using the public funding from the single rural payments budget to leverage and 'crowd in' private funding. Groups that have a strong interest in commissioning more ecosystem services, but who currently do not or do but could do more, would have a clear way to fund or co-fund services with or without public funding. These include water companies, insurers, property developers, conservation NGOs, civil society groups, land trusts, philanthropists, local communities via town and village halls, and crowd funders. The levels of public versus non-public funds would depend on the type and location of ecosystem services supplied. A market-based approach, grounded in catchments, would be inherently adaptable to local conditions and local priorities. In the long term, however, the aspiration would be to reduce public funding in the single rural payment budget and increase non-public funding.
- **Ensure a strong role for markets.** There are significant benefits of a market-based approach to commissioning. Not only can competition improve value for money, it can improve the quality of ecosystem services and introduce new non-public sources of funding into rural activity. The approach outlined here is adaptable

and can be modified in response to changing priorities, needs, and budgets. The structure and operations of a market-based approach to commissioning to rural payments is independent of whether or not barriers to agricultural imports change as part of any future post-Brexit Free Trade Agreements (FTAs).

- **Expand access to finance.** Contracts for supplying services would also be designed to be readily financeable by low-cost and low-risk capital. Some of this low-cost finance should be provided through a new government-backed Natural Environment Finance Facility (NEFF) providing guarantees and concessional finance to suppliers, particularly for smaller farmers, land owners, and land managers in less developed parts of the country.
- **Reduce information asymmetries.** Farmers, land owners, and land managers are often better placed to identify opportunities within their own catchments or sub-catchment areas to generate ecosystem services efficiently. The market-based commissioning scheme could allow land managers to propose projects that generate ecosystem services to potential funders (beneficiaries). Different types of beneficiary could also reveal their preferences to fund specific ecosystem services in specific parts of the country and this could be a way to enable collaboration and clubbing together of funding from different sources. Projects being identified 'bottom up' (by suppliers) as well as 'top down' (by beneficiaries) online is potentially very attractive and could encourage entrepreneurship, innovative business models, and collaboration among both suppliers and beneficiaries. It could make it easier to identify beneficial projects and reduce the time it takes to get these projects funded and up and running.

Overall, in the future, farmers would have three forms of income available to them. The first from the new market-based commissioning scheme, the second from a form of means-tested livelihood support,

and the third from agricultural produce or other monetisable services sold at market prices without any production subsidies. These sources of income are not mutually exclusive: farmers could have income from all three sources. A key point is that production subsidies would be eliminated under this framework.

The Government has rightly committed to maintaining the current level of rural payments originally deriving from CAP of approximately £3.1 billion per year until 2022. As current CAP subsidies are phased out, the market-based commissioning scheme and means tested livelihood support should be phased in pound for pound. The market-based commissioning scheme would have a much larger total contribution to the rural economy than means-tested livelihood support, which should necessarily be targeted through the existing tax and benefits system.

Phases and principles

Reaching the point where this market-based commissioning scheme for rural payments is successfully delivering for both suppliers and beneficiaries will take several years. It will need to be phased in over many years and support will need to be provided to both suppliers and beneficiaries. As Chapter Four illustrates, it is a major undertaking that will require: coordination between different parts of local, devolved, and central governments; dynamic learning, as experience in implementation is secured through pilots and early phases of operationalisation; and new types of collaboration and partnership between different organisations and people often unaccustomed to working together.

A phased approach with a clear long-term commitment of central government funding of at least £3.1 billion a year initially is essential for suppliers to adapt and deliver enhanced natural environment outcomes. Only after new arrangements have been established and are working effectively should levels of public funding be reviewed.

Phase one would operate in parallel with existing arrangements

and would last for four years (2018-19 to 2021-22). It would entail the direct commissioning of suppliers by the UK government or devolved governments to provide services through a comprehensive rolling programme of pilots in different regions of the UK.

Phase one would also entail:

i) Identifying the types of ecosystem services to be provided and the appropriate measures to enable results-based payments
ii) Developing consistent contracts that enable low-cost, low-risk financing, and determining the appropriate public entity that would act as the counter-party to these contracts
iii) Developing a government-backed Natural Environment Finance Facility, to provide low-cost finance, particularly to smaller farmers, land owners, and land managers in less developed parts of the country
iv) Building capacity within central government and shifting roles and responsibilities to an appropriate delivery agency, for example, the Environment Agency
v) Developing and testing an intuitive online system that can generate customisable market-places for a range of different scales
vi) Establishing and testing assurance processes and systems to enable results-based payments
vii) Building capacity in local government and building awareness among all potential suppliers (particularly smaller farmers), as well as potential beneficiaries that could co-fund contracts with central, devolved, and local governments
viii) Establishing an ombudsman to arbitrate between suppliers and beneficiaries when there is a dispute
ix) Establishing help and support infrastructure, including a cadre of specialists that can assist suppliers and beneficiaries throughout the country in situ

Phase two would last for two years (2022-23 to 2023-24) and be the first operational phase for a national scheme. It would be tender-based. In other words, suppliers – either together or individually – would respond to tenders for specific services issued by the administering agency (which could be the Environment Agency).

Tenders in phase two would be funded by the UK government and devolved governments, together with local authorities. Funding from the existing rural payment schemes would begin to be shifted to the new arrangements. The proposed government-backed Natural Environment Finance Facility would become operational along with the ombudsman. The Environment Agency could be responsible for administering the new scheme and delivering support to ensure its effective implementation.

Phase three would last for three years (2024-25 to 2026-27) and be the second operational phase. It would move the scheme towards a market-based model, where a range of suppliers (not just central, devolved, and local government) bid through a transparent reverse auction to provide services to beneficiaries. This would be done through online market places organised by catchment.

At least £3.1 billion funding from the single rural payments budget provided from central government will be available for this period: in other words, the UK Government should actually commit to existing funding levels of rural payments that originally derived from the CAP until 2026-27.

In this third phase, beneficiaries would club together in our catchment-based online commissioning markets to pay for services and public funding would be used to leverage private funding. Groups that have clear interests to commission more ecosystem services, but who currently do not or do but could do more, would have a clear way to co-fund services with or without public funding. Depending on who benefits, some contracts would be funded entirely by government, while others might be funded wholly by the private sector or an NGO.

Many contracts would be funded by a combination, with public funds used to 'crowd in' other sources of funding.

Phase four would be the third and final operational phase. This phase, like subsequent phases, would now last for five years (2027-28 to 2031-32). This is where the scheme is approaching maturity. Lessons from the previous phase would be implemented. In the third year of each five-year phase, evaluations and consultations would be undertaken. In the fourth year, changes would be proposed and consulted upon, before being implemented for the start of the next five-year phase

The implementation process should be guided by the following principles:

- **Over that nine-year period (until 2026-27) public funding levels for rural payments should be sustained at the same level to those seen today.** Only in phase four, where the market-based commissioning scheme for rural payments is firmly established, do we envisage there being sufficient familiarity with the scheme and sufficient additional new sources of funding from non-government sources to begin changing levels of government financial support.
- **The Government should encourage experimentation through the implementation process.** Our market-based commissioning scheme for rural payments allows catchment-based markets to be created at multiple scales from the smallest sub-catchment all the way to the UK as a whole. For some ecosystem services, for example carbon sequestration, a UK-wide market might make sense. For others, such as addressing flood risk in a specific part of the UK, markets could be incredibly local. Markets will pop-up based on demand from beneficiaries and potentially also when suppliers have appropriate projects that need funding. Our scheme will create, manage, and regulate all these different markets. Given the difference in scale, some markets will have lots of buyers and sellers, others will not. Only through experimentation will

we see what scales are the most appropriate for market-based commissioning of different ecosystem services.

- **The scheme should be open to dynamism and new ways of doing things**. Brokers could emerge, for example, securing contracts for suppliers across the UK in exchange for a fee. New forms of supplier may even develop, such as co-operatives. Beneficiaries could operate together in ways we cannot foresee. Much of this will be good, but some might try to use the market inappropriately. Management and regulation of these markets by the proposed administrating body is therefore important.
- **Our proposed scheme must sit alongside a properly enforced system of environmental regulations.** It is in no way a substitute for well-designed regulation and is entirely complementary and mutually reinforcing to it. High environmental and animal welfare standards across all rural activity are needed.

A market-based commissioning scheme for rural payments combined with a properly enforced system of environmental regulations, targeted livelihood support (particularly for smaller farmers), and consumer demand for high-quality UK produce will together drive higher environmental standards across the UK. Farmers being more responsive to market demand from consumers for both agricultural produce and ecosystem services, combined with appropriate regulatory and livelihood backstops, will deliver a vibrant rural economy for all.

Chapter 1: **Introduction**

As a result of the UK leaving the EU, the UK Government has a unique opportunity to enhance this country's natural environment.

The UK's natural environment is a breath-taking and extraordinary asset. It includes ancient woodland rich in wildlife, verdant hillside pastures, and clear rivers that run through its towns and cities. It provides substantial economic, social, and health benefits including a sustainable and resilient farming industry, beautiful landscapes for people to enjoy, and a space for physical activity.

Much of the UK's natural environment is managed by farmers, land owners, and land managers. This includes ecosystems such as forestry, waterways, and hedgerows. Across the whole of the UK, 71% of the land (17.4 million hectares) is dedicated to agricultural use that is mainly farming crops and animal husbandry.[1] The broad spectrum of work undertaken by farmers, land owners, and land managers, for the purposes of this paper, is defined as 'rural activity'. Done properly, farmers, land owners, and land managers can be crucial actors in the management of much of the UK's natural environment. Yet conversely, intensive and unsustainable agriculture can be damaging for local ecosystems and wildlife.

This rural activity contributes to the UK's strong and important 'rural

1. Department for Environment, Food and Rural Affairs, "Agriculture in the United Kingdom, 2016", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/629226/AUK-2016-17jul17.pdf (2017), 13.

economy'. The rural economy also includes tourism, leisure, and timber production. Areas classified as 'Predominantly Rural' contributed an estimated 16.6% of Britain's Gross Value Added (GVA) in 2015.[2] In England and Scotland, rural businesses account for 25% to 30% of all registered businesses respectively, and collectively employ nearly four million people.[3]

Currently, rural activity and natural environment policies are administered and funded disparately by government. The overall effect is a complex, and sometimes contradictory, set of policies and funding pots that sends mixed signals to farmers, land owners, and land managers.

Most of the funding for rural activity from government – defined, for the purposes of this paper, as 'rural payments' – derives from the EU's Common Agriculture Policy (CAP). After undergoing several stages of reform since its introduction, CAP now primarily subsidises food production, rural development, and environmental sustainability. The UK's annual share of the CAP budget is around £3.1 billion.[4] While Member States are given some discretion over some aspects of its implementation, most of CAP's principles and rules are decided collectively at the EU level. This limits the UK's ability to coordinate the large pot of CAP funding with its own domestic priorities for rural activity and the natural environment.

Brexit will bring to an end the UK's involvement in EU schemes, such as CAP, enabling funding and policies for rural activity to be coordinated and improved. This will give the UK a unique opportunity

2. Ed Cox, Chris Murray and Anna Round, "Forgotten opportunities: the dynamic role of the rural economy in post-Brexit Britain", https://www.ippr.org/files/publications/pdf/forgotten-opportunities-feb2017.pdf (2017), 8.
3. Department for Environment, Food and Rural Affairs, "Rural businesses", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/641459/Businesses_August_2017_Digest.pdf (2017), 1; Sarah Skerratt et al., "Rural Scotland in focus, 2016", https://www.scottishruralparliament.org.uk/wp-content/uploads/2016/12/RSiF-2016-full-report.pdf (2016), 133.
4. Department for Environment, Food and Rural Affairs, "Total income from farming in the United Kingdom", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/615850/agriaccounts-tiffstatsnotice-25may17.pdf (2017), 4.

to support farmers, land owners, and land managers to deliver better natural environment outcomes.

Potential benefits from reforming rural payments

The new policy framework that is devised by the UK Government for rural payments should seek in our opinions to prioritise delivering several important benefits for the natural environment and wider society, which are as follows:

- **A more sustainable farming industry.** Parts of the UK's farming industry are currently financially and environmentally unsustainable. Some farms rely on very small incomes that need government top-ups and engage in certain practices that harm water and soil quality upon which the long-term future of agriculture depends. Reformed rural payments should continue to provide a valuable source of supplementary income to farmers, as well as promote more environmentally-friendly farming practices that improve soil and water quality, such as incentivising no-till practices and constructing biofilters to collect pesticide run-off.[5]
- **Enhanced natural beauty and landscapes.** The preservation of beautiful landscapes, upon which the tourism sector relies, is essential and requires active land management. Domestic and international tourism associated with Britain's natural environment is forecast to generate in excess of £30 billion a year.[6] Reformed rural payments should deliver more beautiful natural features, such as new woodland or nature trails on private land, that will encourage and sustain demand for rural tourism in the future.
- **Greater biodiversity.** There has been a marked fall in biodiversity

5. David Tilman et al., "Agricultural sustainability and intensive production practices", *Nature* (2002), 671-672; Philip J. White et al., "Soil management for sustainable agriculture", *Applied and Environmental Soil Science* (2012), 1-3.
6. Ian Bateman, "UK national ecosystem assessment: economic value from ecosystems", http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx (2011), 1138.

in recent years, with one estimate suggesting that, since the 1970s, 56% of species have been in decline.[7] Biodiversity creates a wide pool of genetic diversity, which is crucial to ensure populations of various plant and animal species can develop resistance to diseases, and steadily adapt to changing environmental conditions. Biodiversity is also important in the way that it keeps ecosystems in balance, as all species have a unique role to play, whether as prey, a predator, or an environment builder.[8] Reformed rural payments should halt and ultimately reverse the decline in biodiversity by maintaining and creating habitats for wildlife, such as encouraging the planting of buffer strips next to arable fields.

- **Increased carbon sequestration.** Natural carbon sinks such as peatlands and woodland play an important role in capturing carbon dioxide and mitigating climate change. Yet, tree planting statistics for England over the past two years suggest more trees were removed than were planted.[9] Although in England some 300 million tonnes of carbon are believed to be stored in peatlands, largely across the northern uplands, peatlands in poor condition sequester less carbon or even release it back into the atmosphere.[10] Better rural payments should encourage the restoration, and an increase in the number, of carbon sinks that absorb and sequester carbon dioxide from the atmosphere.[11]
- **Improved natural flood defences.** Flooding is an increasing problem in the UK, with government estimating that potential annual damage from flooding could rise to £6.8 billion by 2050

7. RSPB, "State of nature 2016", https://www.rspb.org.uk/Images/State%20of%20Nature%20UK%20report_%2020%20Sept_tcm9-424984.pdf (2016), 6.
8. Karen Hornigold, "What is biodiversity and why is it important?", https://www.woodlandtrust.org.uk/blog/2017/04/the-importance-of-biodiversity/ (2017).
9. Jerome Starkey, "Forestry crisis as uprooted trees are not replaced", *The Times*, 6 November, 2017.
10. Natural England, "Climate regulation through carbon storage and sequestration", http://publications.naturalengland.org.uk/publication/47001 (2011), 2.
11. Mark Broadmeadow and Robert Matthews, "Forests, carbon and climate change: the UK contribution", https://www.forestry.gov.uk/pdf/fcin048.pdf/$file/fcin048.pdf (2003).

as a result of climate change.[12] Flooding can be better managed through certain natural measures, such as tree planting, dykes, or ponds, which help to slow the flow of water down from the uplands into towns and cities.[13] Research has found that the plantation of a small catchment of trees (around 10 km^2) can reduce flood peaks by an average of 50% for small floods, and 36% for larger floods.[14] Reforms to rural payments should encourage more farmers, land owners, and land managers to reduce flood risk on their land using these natural measures.

- **Better water quality.** Many of the UK's watercourses experience pollution, as a result either of sewage from water companies or of certain farming practices.[15] Natural measures, together with changed farming practices, can improve water quality. Planting trees, for instance, increases the soil's ability to absorb and retain water, thus minimising run-off which can lead to eutrophication and acidification in water bodies, as well as having direct toxicological impacts upon aquatic life.[16] Improved rural payments should reduce fertiliser use and incentivise tree planting, both of which would improve water quality.[17]
- **Better mental and physical health.** There is a strong link between

12. Bob Ward, "The economic impacts of flooding in the UK", http://www.lse.ac.uk/GranthamInstitute/news/economic-impacts-of-flooding-in-the-uk/ (2016).
13. Heather Forbes, Kathryn Ball and Fiona McLay, "Natural flood management handbook", https://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf (2015), 7.
14. Jonathan Wentworth, "Parliamentary Office of Science and Technology: POSTnote: Natural flood management", http://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-396 (2011), 3.
15. Andrew Wasley et al., "Dirty business: the livestock farms polluting the UK", *The Bureau of Investigative Journalism,* 21 August, 2017.
16. Food and Agricultural Organization of the United Nations, "Forests, trees, and food", http://www.fao.org/docrep/006/u5620e/U5620E05.htm (1992).
17. Mike Townsend and Sian Atkinson, "Planting trees to protect water: the role of trees and woods on farms in managing water quality and quantity", https://www.woodlandtrust.org.uk/mediafile/100083903/Planting-trees-to-protect-water-RBC-Bluewater-farming-report-evidence.pdf (2012),

access to green spaces and improved physical and mental health.[18] Levels of physical activity are positively correlated with quantity of green space in an area.[19] Studies have also found that green spaces are linked to lower levels of depression, and can play an effective role in stress reduction.[20] Reformed rural payments should provide more accessible green space that would improve people's mental and physical health.

- **Better air quality.** Research suggests that aerosols created by the use of fertilisers and animal husbandry associated with agriculture render it the biggest single cause of air pollution in Europe, and impacts not only rural populations but urban ones too.[21] Trees and hedges are effective at absorbing harmful pollution from the air, reducing adverse health effects from toxic fumes. Vegetation can block and remove particulate matter, as well as cooling the air by creating areas of shade.[22] Better rural payments could therefore enable the creation of new woodland and hedgerows, together with reduced fertiliser use.

Beyond Brexit

The UK Government is currently considering what policy framework for rural payments will be put in place once it has left CAP. The Conservative Party's manifesto for the 2017 General Election pledged

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18. Anne Ellaway, Sally Macintyre and Xavier Bonnefoy, "Graffiti, greenery, and obesity in adults: secondary analysis of European cross sectional survey", *British Medical Journal* (2005), 611-612; Janice Bell, Jeffrey Wilson and Gilbert Lui, "Neighbourhood greenness and 2-year changes in body mass index of children and youth", *American Journal of Preventative Medicine* (2008), 547-553.
19. Jonathan Wentworth and Charlotte Clarke, "Parliamentary Office of Science and Technology note: green space and health", http://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-0538 (2016), 2.
20. World Health Organisation Regional Office for Europe, "Urban green spaces and health", http://www.euro.who.int/__data/assets/pdf_file/0005/321971/Urban-green-spaces-and-health-review-evidence.pdf?ua=1 (2016), 9-10.
21. Susanne E. Bauer, Kostas Tsigaridis and Ron Miller, "Significant atmospheric aerosol pollution caused by world food cultivation", *Geographical Research Letters* (2015), 5394-5400.
22. Rob McDonald, Timm Kroeger, Tim Boucher, Wang Longzhu and Rolla Salem, "Planting healthy air: a global analysis of the role of urban trees in addressing particulate matter pollution and extreme heat", https://thought-leadership-production.s3.amazonaws.com/2016/10/28/17/17/50/0615788b-8eaf-4b4f-a02a-8819c68278ef/20160825_PHA_Report_FINAL.pdf (2016), 24, 28.

to introduce a new agri-environment scheme during the current parliament.[23] This was followed in the post-election Queen's Speech by a commitment to introduce a new Agriculture Bill, one of several bills that would put in place new legal arrangements for when the UK has left the institutions and policies of the EU.[24]

In addition, the Government intends to publish soon a 25-year plan for the environment, which will be based on advice provided by the Natural Capital Committee,[25] an independent body made up of seven expert enviro-economists which advises the government on the sustainable use of natural capital, such as forests, rivers, and land.[26]

Now is a critical time, therefore, to shape Government's thinking on the future of rural payments after Brexit.

In the aftermath of the 2016 EU referendum, the Government rightly announced it would maintain the planned direct payments to farmers that originally derive from CAP until 2020.[27] This was subsequently extended until 2022.[28] Long-term commitments of public funds are necessary to help farmers, land owners, and land managers to adapt, plan, and invest for the long term. Realistically, new arrangements also need several years to bed in.

The idea that the Government could significantly reduce or eliminate the approximately £3.1 billion per year of CAP funding after the UK

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23. The Conservative and Unionist Party, "Forward, together: our plan for a stronger Britain and a prosperous future", https://s3.eu-west-2.amazonaws.com/manifesto2017/Manifesto2017.pdf (2017), 26.
24. The Cabinet Office, "Queen's Speech 2017: background briefing notes", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/620838/Queens_speech_2017_background_notes.pdf (2017), 23.
25. Department for Environment, Food and Rural Affairs, "Protecting our environment through the 25 Year Environment Plan", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/631124/ncc-michael-gove-dieter-helm-letter-170714.pdf (2017).
26. For their most recent annual report, see Natural Capital Committee, "Improving natural capital: an assessment of progress", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/585429/ncc-annual-report-2017.pdf (2017).
27. HM Treasury, "Chancellor Philip Hammond guarantees EU funding beyond date UK leaves the EU", https://www.gov.uk/government/news/chancellor-philip-hammond-guarantees-eu-funding-beyond-date-uk-leaves-the-eu (2016).
28. Michael Gove, *The unfrozen moment: delivering a green Brexit*, 21 July, 2017, https://www.gov.uk/government/speeches/the-unfrozen-moment-delivering-a-green-brexit.

has left the EU is a mirage that would cause needless harm to families and workers, as well as the natural environment. This level of funding is a major source of income for rural activity and a valuable source of funds to commission a large variety of ecosystem services with several benefits.[29] Given the scale of benefits and in the context of the size of other forms of wealth distribution, this is a level of public spending that is incredibly good value for money.

Reducing the level of funding for rural payments could also result in a significant and entirely avoidable electoral backlash against a Conservative Government, which draws much of its support from rural areas.

It is therefore essential that the Government ensures that the approximately £3.1 billion per year currently spent on rural payments continues to be available, albeit in a significantly more efficient and effective way. Indeed, the Secretary of State for the Environment, the Rt Hon Michael Gove MP, has stated that rural payments after 2022 would become increasingly contingent upon the principle of public money only being allocated to where public goods are provided.[30] The reforms needed to achieve an improved policy framework for rural payments are the focus of this report.

Focus of the report

This report proposes a new market-based commissioning scheme for rural payments and describes in detail how it should be implemented.

This proposed new scheme should sit alongside a properly enforced set of regulations that mandate high environmental and animal welfare standards for rural activity. It is in no way a substitute for well-designed regulation, but is entirely complementary and mutually reinforcing to it. It is, however, outside the scope of this report to describe in detail

29. Full Fact, "Do farmers make more from subsidies than agriculture?", https://fullfact.org/economy/farming-subsidies-uk/ (2016).
30. Michael Gove, *The unfrozen moment: delivering a green Brexit*, 21 July, 2017, https://www.gov.uk/government/speeches/the-unfrozen-moment-delivering-a-green-brexit.

what this regulatory framework should be.

This report is structured as follows:

- **Chapter Two** provides the details and complexity of the current policy framework for rural payments.
- **Chapter Three** describes the overarching vision for and features of a new post-Brexit market-based commissioning scheme for rural payments.
- **Chapter Four** outlines the suggested phases and principles of this new market-based commissioning scheme for rural payments.

Chapter 2: The existing policy framework for rural payments

As outlined in the previous chapter, the UK Government has a major opportunity, after it leaves the EU, to reform rural payments in order to better protect and enhance this country's natural environment. This chapter will describe the features and complexity of the existing policy framework for rural payments.

There are currently three rural payments streams that impact the natural environment, which are described in detail below:

- Production and land management support under CAP
- Natural flood management
- Payments for ecosystem services

Production and land management support under CAP

The prime source of rural payments derives from CAP. CAP was created in 1962. Its annual budget across all 28 EU Member States is £52.6 billion, making up around 40% of the total EU budget.[31] As its share, the UK receives approximately £3.1 billion a year.

Under CAP, UK farmers, land owners, and land managers receive

31. European Commission, "Agriculture and rural development: CAP at a glance", https://ec.europa.eu/agriculture/cap-overview_en (2017); Emma Downing, "House of Commons Library briefing paper: EU referendum: impact on UK agriculture policy", http://researchbriefings.files.parliament.uk/documents/CBP-7602/CBP-7602.pdf (2016), 3.

payments, via the UK government and devolved governments, for production and land management over seven-year cycles, known as rounds. The current round began in 2014 and runs until 2020. The total CAP budget is bifurcated into 'Pillars'. Pillar I funding refers to direct payments which are designed to support farmers' incomes (the Basic Payment Scheme). Pillar II funding refers to Rural Development Programmes. Over the course of the current cycle, the UK is expected to receive £22.2 billion in Pillar I payments, and a further £2.3 billion in Pillar II payments.[32]

Gradual reform of CAP has meant that even Pillar I payments are now linked to some environmental protection and enhancement, since 30% of Pillar I payments are contingent on farmers, land owners, and land managers adhering to certain 'cross compliance' measures. These are essential greening measures, and include crop diversification, animal welfare standards, and establishing 'ecological focus areas' (areas of land which are dedicated to improving biodiversity, through practices such as creating buffer strips and planting nitrogen-fixing crops).

Nonetheless, this funding from CAP can be contradictory to other UK government policies. For instance, dense woodland and ponds are counted as ineligible features for subsidy under CAP's Basic Payments Scheme in the UK, while other UK government policies actively seek to incentivise them, such as the Woodland Carbon Fund.[33] This is because CAP Pillar I funding primarily rewards the size of land that is farmed, rather than specific natural environment outcomes.

Unlike Pillar I funding, Pillar II funding, which is allotted under the Rural Development Programme, is money granted to farmers, land owners, and land managers with a particular emphasis on improving

32. Department for Environment, Food and Rural Affairs, "UK CAP allocations announced", https://www.gov.uk/government/news/uk-cap-allocations-announced (2013).
33. Rural Payments Agency, "Basic Payment Scheme: rules for 2017", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/607708/BPS_2017_scheme_rules.pdf (2016), 24-27; Forestry Commission, "Woodland Carbon Fund", https://www.forestry.gov.uk/england-wcf (2017).

the natural environment, as well as productivity, innovation, and skills.[34] Each constituent country of the UK has its own Rural Development Programme budget through CAP payments. Over the course of the 2014-20 round, England will receive £3.1 billion, Scotland £0.7 billion, Wales £0.6 billion, and Northern Ireland £0.2 billion.[35]

Each country in the UK has EU-designated 'priorities'. These priorities determine how the Rural Development Programme funding will be allocated. In England, for instance, public money for 2014-20 is targeted towards six priority areas:

i) Knowledge transfer and innovation in agriculture, forestry and rural areas
ii) Enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and the sustainable management of forests
iii) Promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture
iv) Restoring, preserving and enhancing ecosystems related to agriculture and forestry
v) Promoting resource efficiency and supporting the shift towards a

34. European Parliament, "First pillar of the Common Agricultural Policy (CAP): II – direct payments to farmers", http://www.europarl.europa.eu/atyourservice/en/displayFtu.html%3FftuId%3DFTU_5.2.5.html (2017); European Parliament, "Second pillar of the Common Agricultural Policy (CAP): rural development policy", http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_5.2.6.html (2017).
35. European Commission, "Factsheet on 2014-2020 Rural Development Programme of England (United Kingdom)", https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/uk/factsheet-england_en.pdf (2017), 1; European Commission, "Factsheet on 2014-2020 Rural Development Programme for Scotland (UK), https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/uk/factsheet-scotland_en.pdf (2017), 1; European Commission, "Factsheet on 2014-2020 Rural Development Programme for Wales (United Kingdom)", https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/uk/factsheet-wales_en.pdf (2015), 1; European Commission, "Factsheet on 2014-2020 Rural Development Programme for Northern Ireland", https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/uk/factsheet-northern-ireland_en.pdf (2017), 1.

low carbon and climate resilient economy in agriculture, food and forestry sectors

vi) Promoting social inclusion, poverty reduction and economic development in rural areas[36]

Natural flood management

The Department for Environment, Food and Rural Affairs (Defra) has its own flood defence and coastal erosion capital budget for England, part of which is used for natural flood management. From 2015-16 to 2020-21, the total flood defence and coastal erosion budget in England is £2.5 billion, for instance.[37]

Natural flood management refers to the process of adopting techniques or certain measures which help to manage the pathways of flood waters to reduce the likelihood of flooding. There are a number of ways in which natural flood management may be carried out, including:

- Maintaining the capacity of ponds, ditches, and reservoirs
- Dredging riverways and water channels where appropriate
- Restoring riverbanks
- Slowing water flows through maintaining floodplains
- Constructing natural dams to slow water flows
- Planting riparian woodlands
- Maintaining the water carrying capacity of soils
- Using agricultural machinery appropriately to reduce soil compaction

36. 'Public money' refers to all funding streams which make up a country's gross Rural Development Programme funding, including payments from the EU budget, payments transferred from the UK envelope for CAP direct payments, national co-funding, and national funding top-ups; European Commission, "Factsheet on 2014-2020 Rural Development Programme of England (United Kingdom)", https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/uk/factsheet-england_en.pdf (2017), 5-6.

37. Sarah Priestly and Tom Rutherford, "Flood risk management and funding", http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7514 (2017), 44; Environment Agency, "Flood and coastal erosion risk management in England: investment programme 2015 to 2021", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/594716/DocumentsRefresh_Infographic__002_.pdf (2015), 1.

- Planting cover crops which reduce soil erosion
- Interrupting water flow connectivity through planting vegetation such as trees or buffer strips

The Government notes that only a component of the schemes supported by these capital budgets is spent on natural flood management methods and does not provide a precise amount.[38] But the portion of this flood defence and coastal erosion capital budget for natural flood management should be calculated and integrated into a single rural payments budget, which we are proposing in the next chapter.

Earlier this year, the Floods Minister, Thérèse Coffey MP, announced an additional £15 million of funding specifically for natural flood management schemes in England, of which £1 million was awarded as part of a competition for innovative ideas relating to natural flood management.[39] This was in addition to the aforementioned flood defence and coastal erosion capital budget. The Government has already awarded nearly £5.4 million of this natural flood management budget across 34 individual projects.[40]

Payments for ecosystem services

There are also budgets in Defra which are used to support payments for ecosystem services, such as crop rotation, woodland creation, and field strips next to arable land (see Figure 3.2 for a longer list of ecosystem services). One such scheme is the Woodland Carbon Fund, which offers grants to encourage tree planting in order to meet future carbon

38. Environment, Food and Rural Affairs Select Committee, "Future flood prevention: Government's response to the committee's second report of session 2016-17, https://publications.parliament.uk/pa/cm201617/cmselect/cmenvfru/926/926.pdf (2017), 6.
39. Department for Environment, Food and Rural Affairs, "Schemes across the country to receive £15 million of natural flood management funding", https://www.gov.uk/government/news/schemes-across-the-country-to-receive-15-million-of-natural-flood-management-funding (2017); Department for Environment, Food and Rural Affairs, "New £1 million flood competition to protect more communities", https://www.gov.uk/government/news/new-1-million-flood-competition-to-protect-more-communities (2017).
40. Environment Agency, "Natural flood management – community projects programme", https://www.catchmentbasedapproach.org/images/PDFS/NFM/CommunityProjectsV1.pdf (2017), 1-3.

budgets. It opened for applications in November 2016, is administered by the Forestry Commission, and has a total budget of £19.2 million.[41] Other examples of commissioned ecosystem services, which have been supported at least in part by Defra, are detailed in Box 2.1 below. These examples provide important learning for our proposed new market-based commissioning scheme for rural payments, which is outlined in the next chapter.

To date, these funds have been limited in time and scale, and so are of negligible size. But these budgets will expand and should count towards our single budget for rural payments, which is the focus of the next chapter.

Box 2.1 Two case studies of existing schemes that have commissioned ecosystem services

First, a natural flood risk management project across the Belford Burn catchment area in Northumberland.[42] The village of Belford has long been subject to flood events and was severely afflicted by flooding in the summer of 2007. Due to the high cost-per-property ratio of installing traditional flood defences, as well as the lack of space for conventional flood walls and banks, the Environment Agency commissioned, on a trial basis between 2007 and 2008, a series of natural flood management measures to mitigate flooding in the area.

Specifically, farmers, land owners, and land managers (the suppliers) were collectively paid £200,000 by the Environment Agency (the beneficiary) to install numerous 'run-off attenuation features'. These are measures which attempt to reduce the rate of run-off by decelerating hydrological flows or actively storing water, and include wetlands, beaver dams, willow riparian features, and

41. Forestry Commission, "Woodland Carbon Fund", https://www.forestry.gov.uk/england-wcf (2017).
42. Heather Forbes, Kathryn Ball, and Fiona McLay, "Natural flood management handbook", https://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf (2015), 120.

storage ponds.

Analysis of the project has shown that the features did extend the overall travel time of the flood peak in the catchment from 20 minutes to 35 minutes, which was significant enough to mitigate potentially flood-inducing rainfall.[43] The installed measures brought other benefits, such as improved biodiversity, less sediment ending up in waterways (which itself lowers flood risk), and reductions in diffuse phosphorus and nitrate pollution (which improves water quality). The planting of riparian trees has had further natural environment benefits, such as carbon sequestration.[44]

Second, a comprehensive, multi-year payments for ecosystem services project in Pumlumon in Mid-Wales.[45] Crossing five catchments, the project – which began in 2007 under the leadership of the Montgomeryshire Wildlife Trust – endeavours to preserve, restore, and enhance various aspects of the surrounding environment.[46] Some of the explicitly stated ambitions were improving water quality, increasing biodiversity, restoring and preserving peatlands, sequestering more carbon, strengthening natural flood defences, bolstering biosecurity, and increasing public accessibility for recreation and tourism purposes.[47]

Several different ecosystem services were delivered as part of the project, which attracted £2.3 million of funding from a range of sources, such as the Environment Agency, Defra, various charitable trusts, and private interests. These included creating dams, blocking ditches, planting trees and hedgerows, species management, installing 'access' features and recreational facilities,

43. Mark Wilkinson, Paul Quinn and Phil Welton, "Runoff management during the September 2008 floods in the Belford catchment, Northumberland", *Journal of Flood Risk Management* (2010), 285-295.
44. Ibid.
45. Allison Millward Associates, "Defra PES Pilot Evaluation of the Pumlumon Project", http://randd.defra.gov.uk/Document.aspx?Document=12298_DefraPESpilotEvaluationReportFINAL.PDF (2014).
46. Ibid., 3.
47. Ibid., 49.

and meadow management.[48]

The project has enjoyed considerable success financially, generating a total cumulative value of nearly £900,000 within its first six years of operation. For the year 2012, the pilot had expenditure of £80,000 (constituting staff and materials costs) and delivered ecosystem services worth nearly £270,000 – equating to a return on investment ratio of well over 1:3.[49] The project has also been very environmentally successful – improving environmental indicators across all habitats within the catchment. In terms of carbon, for example, the project has sequestered 1,600 tonnes of CO_2 equivalent, and reduced carbon emissions in the area by nearly 2,200 tonnes of CO_2 equivalent.[50]

Conclusion

This report has identified and detailed three types of UK government expenditure on rural payments. The exact budgets of some these payments can be accurately identified, but others cannot be. Government should outline what these exact budgets are. Then, a single budget for rural payments can be identified and established. We do know, however, that this single budget should be at least approximately £3.1 billion a year, which is the amount the UK currently receives from CAP, and has promised to continue to spend until 2022. How this single budget for rural payments from 2022 can be used to deliver improved natural environment outcomes and other public benefits is the focus of the next chapter.

48. Ibid., 27.
49. Ibid., 51.
50. Ibid., 28.

Chapter 3: A new post-Brexit vision for rural payments

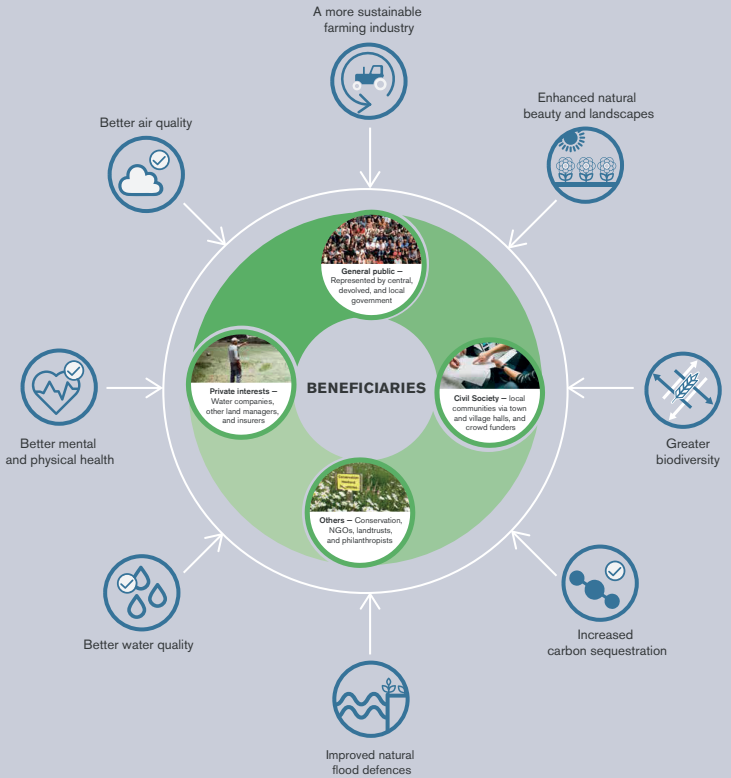
Having identified the existing budgets from the UK government for rural payments in the previous chapter, this chapter proposes and details a single budget from 2022 onwards that can adapt flexibly to commission a vast array of different services according to need under a new market-based commissioning scheme for rural payments. Merging these current expenditures into a single budget for rural payments would result in at least £3.1 billion being made available per year after 2022. This chapter explains in detail how this new market-based commissioning scheme for rural payments would work.

How a new market-based commissioning scheme for rural payments would work

We envisage 'suppliers' bidding together or individually to supply ecosystem services to paying 'beneficiaries' in specific catchments on online market-places.

Suppliers would include farmers, land owners, and land managers. Beneficiaries would include the general public (represented by central, devolved, and local government), private interests (such as water companies, other land managers, and insurers), and other groups (such as conservation NGOs, civil society groups, land trusts, philanthropists, local communities via town and village halls, or crowd funders), as illustrated in Figure 3.1.

Figure 3.1. The different outcomes that beneficiaries could commission

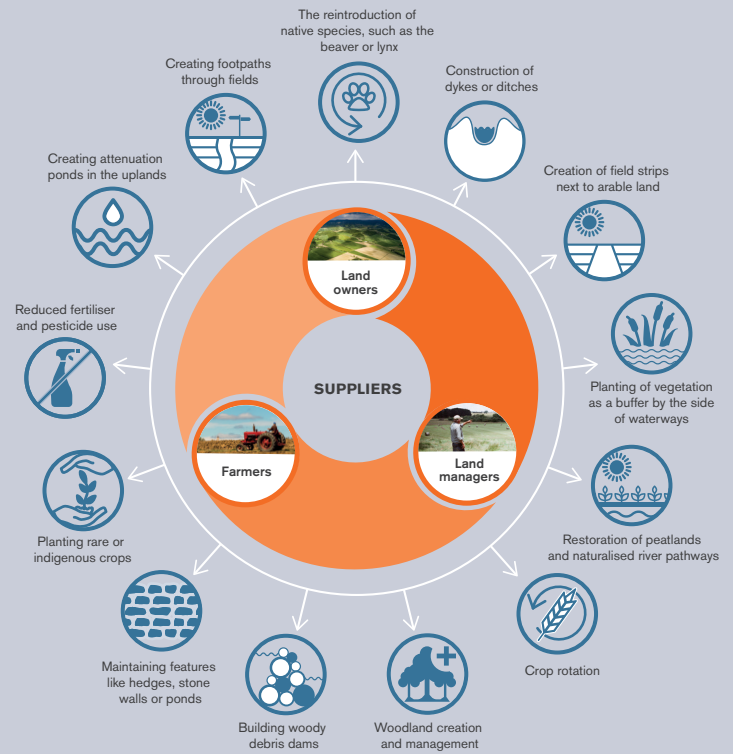


We envisage this market-based commissioning scheme would be administered, coordinated, and regulated by an arms-length body such as the Environment Agency. The amount of funding available from public sources would be at least the £3.1 billion a year through the new single rural payments budget. This would be blended with non-public sources of funding, with these outlined later in this chapter.

The types of ecosystem services provided by suppliers to beneficiaries would be classified and defined independently by the Natural Capital

Committee. A comprehensive list of ecosystem services that could be potentially commissioned by beneficiaries from suppliers is detailed in Figure 3.2. But we envisage that they should help to contribute in particular to the benefits for the natural environment and wider society listed in Chapter One.

Figure 3.2. The different ecosystem services that suppliers could deliver



As Figure 3.3 demonstrates, suppliers would bid to provide services to beneficiaries in well-designed, fair, and competitive online market-places, tailored to specific catchments. Contracts would pay quarterly

based on results, potentially with incentives to encourage performance.

Figure 3.3. How the market-based commissioning scheme for rural payments would work

Box 3.1. Involving devolved governments

Presently, CAP funding is distributed to recipients by the devolved governments of the UK (Scotland, Wales, and Northern Ireland). The logic behind this is that they are better placed to tailor how payments are allotted, relative to a centralised body in Whitehall. Currently, agriculture, forestry, and the environment are devolved issues, so devolved governments reasonably expect to gain new powers and funding in these areas as a result of Brexit.

We foresee our market-based commissioning scheme for rural payments continuing in this light – allowing the devolved governments even greater freedom to tailor funding for ecosystem

services as they see fit. Due to the nature of our proposals, whereby there are a range of different beneficiaries and suppliers, devolved governments could decide to be part of the process as much or as little as they wish.

We believe that allowing the devolved governments to be prominent figures in determining how rural payments are awarded ensures not only the best possible outcomes for environmental sustainability, but also that the political concerns of devolved governments are met.[51]

A fair formula would have to be devised to ensure that the devolved governments get an appropriate amount of the at least £3.1 billion a year from the new single rural payments budget after 2022.

Our new market-based commissioning scheme for rural payments would have several distinct key features:

- Adopt a catchment-based approach
- Seek to crowd in non-public funds
- Ensure a strong role for markets
- Expand access to finance
- Reduce information asymmetries

Adopt a catchment-based approach

Our market-based commissioning model for rural payments will follow a catchment-based approach, which various government departments and agencies have been developing and championing in recent years.

A catchment is an area of land through which water from precipitation drains, through tributaries or under the ground into a body of water

51. Emma Downing, "EU referendum: impact on UK agriculture policy", http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7602 (2016), 16.

– whether that be a river, lake, reservoir, or sea. Catchments are also sometimes referred to interchangeably as drainage basins or watersheds. There are 100 principal water catchments across England and Wales and 14 'priority catchments' in Scotland, as defined by environment agencies.[52]

While water catchments are clearly defined geographically, they can vary massively in terms of the land areas they cover – from thousands of miles squared, to less than one mile squared.[53] Accordingly, a catchment could be either split up into a number of sub-catchment areas (in the case of large water catchments), or multiple catchment areas could be amalgamated together to create larger catchment districts (in the case of smaller catchments). In the case of the latter, catchments could extend to single or multiple local authorities, regions, or even nationally. The scale at which commissioning markets would take place (sub-catchment all the way to national) would depend on the type of services beneficiaries were seeking to commission, though we feel that a catchment-based approach is generally the most appropriate scale to successfully mobilise beneficiaries and suppliers, organise online market-places, and manage the production of appropriate ecosystem services.

There are substantial benefits to a catchment-based approach. Water companies are required to ensure that water quality meets the necessary standard for human consumption and use. Conventionally, this is done by passing water through treatment plants. However, these plants and the chemicals they use can be expensive and damaging for the environment. The National Audit Office estimated that water pollution

52. Environment Agency, "Map of water management catchments", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296967/LIT_8391_3f3d89.pdf (2013), 1; Samantha Broadmeadow, Huw Thomas, Nadeem Shah and Tom Nisbet, "Opportunity mapping for woodland creation to improve water quality and reduce flood risk in the River Tay catchment - a pilot for Scotland", http://scotland.forestry.gov.uk/images/corporate/pdf/Tay_OM_Report_June13.pdf (2013), 3.

53. Eleanor Starkey and Geoff Parkin, "Community involvement in UK catchment management", http://www.fwr.org/Catchment/frr0021.pdf (2015), 6.

in England and Wales alone costs £1.3 billion per annum through both damage to the environment and the expenses associated with cleaning it up.[54]

A catchment-based approach to commissioning ecosystem services looks holistically at water use in a catchment, and any activities which may affect its overall quality. It involves water companies working together with farmers, land owners, and land managers to undertake measures which improve water quality more naturally. This can be done through a number of ways, such as the planting of buffer strips between croplands and waterways, or putting down hardstanding at livestock access points to bodies of water.[55]

At the essence of a catchment-based approach is the idea that measures taken 'higher up' in the water catchment are cost-effective, in the way that they reduce the amount, and hence cost, of treatment which is eventually needed to bring water up to a suitable standard. As a result, there is scope for, say, water companies, who have an interest in minimising the costs of treatment, to work in partnership with those whose activities potentially degrade the quality of water flowing through a catchment.[56]

A catchment-based approach can also facilitate natural flood management approaches to reduce flood risk. Tree planting in the upland part of a river catchment, for instance, helps to slow water flow after heavy rainfall and can act as natural water storage, minimising the risk of dangerous flooding downstream in the catchment.[57] Other natural measures that can be implemented in the uplands to reduce flood risk include restoring peatland by blocking moorland ditches

54. National Audit Office, "Tackling diffuse water pollution in England", https://www.nao.org.uk/wp-content/uploads/2010/07/1011188es.pdf (2010), 4.
55. Water UK, "CAP reform: a future for farming and water", http://www.water.org.uk/sites/default/files/documents/Policy-Reports/cap-reform---a-future-for-farming-and-water.pdf (2013), 3.
56. Natural Capital Committee, "The state of natural capital: restoring our natural assets: second report for the Economics Affairs Committee", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516698/ncc-state-natural-capital-second-report.pdf (2014), 57.
57. Simon Dixon et al., "The effects of river restoration on catchment scale flood risk and flood hydrology", *Earth's Surface Processes and Landforms* (2016), 997–1008.

to stop water draining off bogs and creating leaky woody dams in waterways. A catchment-based approach can help beneficiaries better understand and value the impact of these upstream measures on settlements downstream.

The benefits of catchment-based approaches extend far beyond water quality management and flood risk management. Planting trees in riparian areas, for instance, will not only prevent soil erosion and filter impurities from entering waterways, but also increase biodiversity through providing habitats for wildlife, and help in sequestering carbon dioxide and other atmospheric pollutants from the air. Working with farmers to ensure they have the facilities to use pesticides responsibly will not only reduce the amount of chemical residue entering the watercourse, but also mitigate animals' potential exposure to toxic substances.[58] Indeed, these natural measures to improve water quality could also deliver other important and beneficial natural environment outcomes, such as increased forest cover or bolstering food chain resilience.[59]

Seek to crowd in non-public funds

Beneficiaries could club together in our catchment-based online markets to commission ecosystem services by using the public funding from the single rural payments budget to leverage and 'crowd in' private funding. Groups that have a strong interest in commissioning more ecosystem services, but who currently do not or do but could do more, would have a clear way to fund or co-fund services with or without public funding. These include water companies, insurers, property developers, conservation NGOs, civil society groups, land trusts, philanthropists, local communities via town and village halls,

58. Ofwat, "From catchment to customer: can upstream catchment management deliver a better deal for water customers and the environment?", http://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs_inf_catchment.pdf (2011), 10.
59. Department for Environment, Food and Rural Affairs, "Creating a great place for living: Defra's strategy to 2020", https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/501709/defra-strategy-160219.pdf (2016), 10-11.

and crowd funders.

The levels of public versus non-public funds would depend on the type and location of ecosystem services supplied. A market-based approach, grounded in catchments, would be inherently adaptable to local conditions and local priorities. In the long term, however, the aspiration would be to reduce public funding in the single rural payment budget and increase non-public funding.

Ensure a strong role for markets

There are significant benefits of this market-based approach to commissioning. Not only can competition improve value for money, it can improve the quality of ecosystem services and introduce new non-public sources of funding into rural activity. The approach outlined here is adaptable and can be modified in response to changing priorities, needs, and budgets.

It is important to note that the structure and operations of a market-based approach to commissioning to rural payments is independent of whether or not barriers to agricultural imports change as part of any future post-Brexit Free Trade Agreements (FTAs). While the World Trade Organisation (WTO) does have a number of stringent rules on government support for domestic agricultural sectors, there are certain exemptions – including funding for pest and disease control measures, research made in connection with environmental programmes, the provision of infrastructure services, and "clearly-defined government environmental or conservation" programmes.[60] Accordingly, our market-based commissioning scheme for rural payments, administered by an arms-length body such as the Environment Agency, would not conflict with WTO rules when negotiating post-Brexit FTAs.

60. World Trade Organisation, "Agreement on agriculture", https://www.wto.org/english/docs_e/legal_e/14-ag.pdf (1994), 63.

Expand access to finance

Delivery of some ecosystem services necessarily involve significant capital investment, such as the restoration of peatlands and constructing dykes. Some farmers, land owners, and land managers, particularly smaller ones, will likely lack the upfront capital required to be able to deliver contracts. This is why contracts for supplying ecosystem services should be designed to be readily financeable by low-cost and low-risk capital. Some of this low-cost finance should be provided through a new, government-backed Natural Environment Finance Facility (NEFF) providing guarantees and concessional finance to suppliers, particularly for smaller farmers, land owners, and land managers in less developed parts of the country.

The NEFF should be government–backed and so will have access to cheap government borrowing rates, enabling it to provide concessional finance to suppliers. Under current arrangements, the NEFF's operations would be significantly constrained because of the need to comply with EU state aid rules. However, following Britain's withdrawal from the EU, these rules would no longer apply.

Reduce information asymmetries

The market-based commissioning scheme for rural payments, through its online market-places, could allow suppliers to propose projects that generate ecosystem services to potential beneficiaries. In many cases farmers, land owners, and land managers are better placed than others to identify opportunities within their own catchments or sub-catchment areas to generate ecosystem services efficiently. They could offer these on the online market-place and attract funding.

Different types of beneficiary could also reveal their preferences to fund specific ecosystem services in specific parts of the country and this could be a way to enable collaboration and clubbing together of funding from different sources. For example, a local community could find out that there is an alignment of interests on a particular

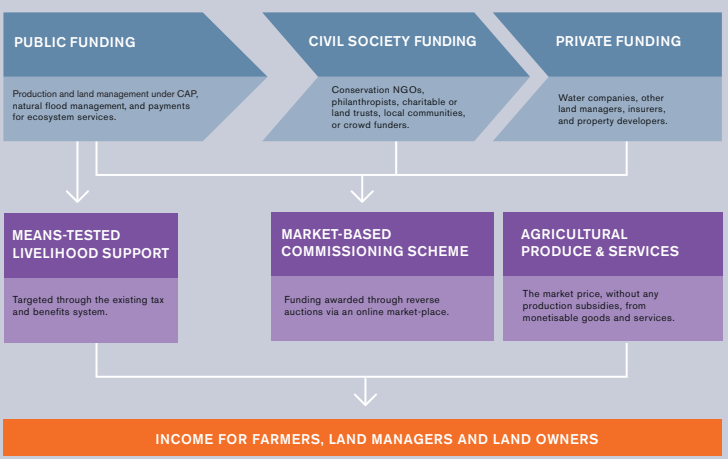
type of project between them and a national conservation NGO, a philanthropic foundation, and water company. These four beneficiaries could then club together to fund the project.

Projects being identified 'bottom up' (by suppliers) as well as 'top down' (by beneficiaries) online is potentially very attractive and could encourage entrepreneurship, innovative business models, and collaboration among both suppliers and beneficiaries. It could make it easier to identify beneficial projects and reduce the time it takes to get these projects funded and up and running.

Income sources for rural activity

After 2022, we are proposing there are three forms of income available for rural activity, which are illustrated in Figure 3.4. These sources of income are not mutually exclusive.

Figure 3.4. The different income sources for rural activity after Brexit



The first is our market-based commissioning scheme for rural payments. This will be the most significant pot of public funding, and

should be allotted the overwhelming majority of the rural payments budget of £3.1 billion per year.

The second could be a new form of means-tested livelihood support. This should necessarily be targeted through the existing tax and benefits system and should seek to end the current situation where public subsidies are paid to owners of very large estates without any public good being received in return. Overall, however, the market-based commissioning scheme for rural payments should have a much larger share of the rural payments budget than means-tested livelihood support.

The third income stream would come from agricultural produce or other monetisable services sold at market prices without any production subsidies. A key point is that production subsidies, which currently claim the majority of public CAP funding, would be eliminated under this framework. In essence, public subsidies should be restricted where the market already provides a price for farmers' goods and services (the sale of food), and expanded where the market fails to deliver public goods (the commissioning of ecosystem services). The reasons why this is important are outlined in Box 3.2.

Box 3.2. The problem with subsidies for food production

Production subsidies distort the market, and bring about an inefficient allocation of capital. Through the way they increase supply, they also push down the prices of the agricultural produce they are applied to, which creates further demand for more subsidies on the part of the producers.[61]

The WTO has been keen to limit production subsidies ever since its inception in the mid-1990s. When established, a commitment

61. Brian Riedl, "How farm subsidies harm taxpayers, consumers, and farmers, too", http://www.heritage.org/agriculture/report/how-farm-subsidies-harm-taxpayers-consumers-and-farmers-too (2007), 1.

was made to steadily reduce the level of support which WTO members offered to their domestic agricultural sectors. Developed countries in particular were challenged to cut back by 20% in real cash terms on measures which had a direct effect on production and trade in favoured goods.[62] Doing so, it was argued, would limit overproduction and stem low-priced 'dumping' on world markets.

Production subsidies isolate domestic industries from price signals generated by local and global markets. With respect to agriculture, they nudge farmers to provide not what consumers necessarily demand, but what the government incentivises them to produce. Consequently, innovation and entrepreneurship stall, because they become redundant aspects to a farmer's business model.

Production subsidies can also have negative implications for the quality of a country's natural environment. Subsidies of this kind have been shown to encourage the intensification of farming activities, and are correlated with higher fertiliser and pesticide use, causing water pollution, land degradation, and biodiversity loss.[63] All of these have major economic costs, further adding to the expenses incurred by consumers and taxpayers of protectionist agricultural subsidies.

Conclusion

This chapter has proposed a new market-based commissioning model for rural payments that would better support the government's natural environment policies than the current, disparate streams of funding. Instead of different bodies paying farmers, land owners, and land

62. World Trade Organisation, "Agriculture: fairer markets for farmers", https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm3_e.htm (2017).
63. Karel Mayrand, Stéphanie Dionne, Marc Paquin and Isaak Pageot-LeBel, "The economic and environmental impacts of agricultural subsidies: an assessment of the 2002 US Farm Bill and Doha Round", http://www3.cec.org/islandora/en/item/1909-economic-and-environmental-impacts-agricultural-subsidies-en.pdf (2003), 28.

managers for different things using different systems and overlapping approaches, we would have a single rural payments budget from central government, blended with non-public sources of funding, that would be used to efficiently commission services that will support local, national, and even global environmental priorities. The next chapter outlines the suggested phases and principles for the implementation of this new scheme.

Chapter 4: **Phases and principles**

The previous chapter set out in detail a vision for a new market-based commissioning scheme for rural payments. This chapter outlines how this new market-based commissioning scheme could be phased in successfully, the principles that could be applied when doing so, and sets out issues that government will need to consider during implementation.

Reaching the point where this market-based commissioning scheme for rural payments is successfully delivering for both suppliers and beneficiaries will take several years. It will need to be phased in and support will need to be provided to both suppliers and beneficiaries. It is a major undertaking that will require: coordination between different parts of local, devolved, and central governments; dynamic learning, as experience in implementation is secured through pilots and early phases of operationalisation; and new types of collaboration and partnership between different organisations and people often unaccustomed to working together.

A phased approach with a clear long-term commitment of central government funding of at least £3.1 billion a year initially is essential for suppliers to adapt and deliver enhanced natural environment outcomes. Only after new arrangements have been established and are working effectively should levels of public funding be reviewed.

Phases of implementation

We set out four phases of implementation starting in 2018-19. Phases one to three last nine years and we believe this is proportionate to the complexity of the introduction of new arrangements. It gives sufficient time for all actors to understand the new arrangements and for them to bed in.

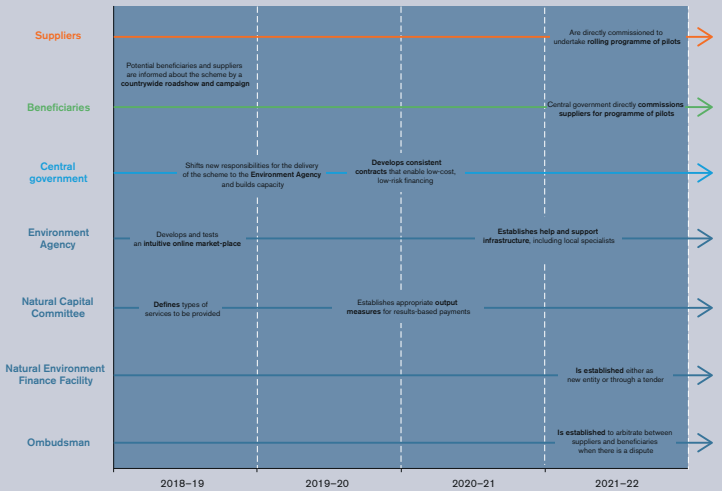
Over this nine-year period public funding levels should be sustained at a similar level to those seen today. This implies that the Government's current commitment to maintain levels of CAP funding until 2022-23 should be extended by four years to 2026-27. Only in phase four, where the market-based commissioning scheme for rural payments is firmly established, do we envisage there being sufficient familiarity with the scheme and sufficient additional new sources of funding from non-government sources to begin changing levels of government financial support.

The phases are as follows and indicate the early implementation priorities and the order in which Government could proceed.

Phase one: Start-up, pre-market phase 2018-19 to 2021-22

Phase one would operate in parallel with existing arrangements and would last for four years. It would entail the direct commissioning of suppliers by the UK government or devolved governments to provide services through a comprehensive rolling programme of pilots in different regions of the UK, as Figure 4.1 depicts. Evidently, this would require a small amount of new funding above and beyond what is currently promised by government under CAP until 2022.

Figure 4.1. The implementation timeline for phase one of the scheme



Phase one would entail:

i) Identifying the types of ecosystem services to be provided, as listed in Figure 3.2, and the appropriate measures to enable results-based payments. This work should be completed by the Natural Capital Committee.

ii) Developing consistent contracts that enable low-cost, low-risk financing, and determining the appropriate public entity that would act as the counter-party to these contracts. This would be done by the UK Government, who could transfer much of the learning from the Contracts for Difference (CfDs) system already in existence in the UK.

iii) Developing a government-backed Natural Environment Finance Facility, as described in Chapter Three, to provide low-cost finance, particularly to smaller farmers, land owners, and land managers in less developed parts of the country. A new entity

could be created or the operation of NEFF could be tendered for and operated by existing fund(s) or bank(s) with strong existing relations with farmers.

iv) Building capacity within central government and shifting roles and responsibilities to an appropriate delivery agency, for example, the Environment Agency. We think it is important to minimise the creation of new entities, and existing agencies and delivery bodies should be used wherever possible.

v) Developing and testing an intuitive online system that can generate customisable market-places for a range of different scales. Online market-places are incredibly well-established, and many people are familiar with them through regular use in other contexts, such as eBay, Amazon, TaskRabbit, and Airbnb. The government already has various online platforms to tender for contracts. It is important that this market is designed for users by users. The ability of transactions to be secured and documented transparently using distributed ledger technology should also be explored. We recommend that this new market-place is created using British fintech talent and is linked to green fintech recommendations being considered by the new UK Green Finance Taskforce.[64]

vi) Establishing and testing assurance processes and systems to enable results-based payments. Extensive work on this has been done in the context of Big Society Capital and social impact bonds, as well as other areas specifically related to paying for environmental outcomes. This work can be used and built on. It will be important, nonetheless, to strike the right balance between accurately measuring services, de-risking contracts, and minimising assurance costs. New technological developments in remote sensing and big data can help to monitor outcomes

64. HM Treasury, "UK government launches plan to accelerate growth of green finance", https://www.gov.uk/government/news/uk-government-launches-plan-to-accelerate-growth-of-green-finance (2017).

cheaply and effectively.

vii) Building capacity in local government and building awareness among all potential suppliers (particularly smaller farmers), as well as potential beneficiaries that could co-fund contracts with central, devolved, and local governments. This will require significant outreach, engagement, and education. Roadshows around the country will be needed.

viii) Establishing an ombudsman to arbitrate between suppliers and beneficiaries when there is a dispute. This is important to provide confidence in the system between suppliers and beneficiaries. A dispute resolution model should be selected that is fair and effective.

ix) Establishing help and support infrastructure, including a cadre of specialists that can assist suppliers and beneficiaries throughout the country in situ. Help lines and technical support capabilities will also need to be commissioned.

Phase two: Initial operational phase 2022-23 to 2023-24

Phase two would last for two years and be the first operational phase for a national scheme. It would be tender-based.[65] In other words, suppliers – either together or individually – would respond to tenders for specific services issued by the administering agency (which could be the Environment Agency).

Tenders in phase two would be funded by the UK Government and devolved governments, together with local authorities. Funding from the existing rural payment schemes, outlined in Chapter Two, would begin to be shifted to the new arrangements described in Chapter Three. The proposed government-backed Natural Environment Finance

65. Developed in conjunction with devolved administrations across the UK or introduced in England or England and Wales (depending on post-Brexit repatriation of powers from Brussels to the UK Government and then to devolved governments). There is no reason why a market-based commissioning scheme for rural payments could not be coordinated across the UK or tailored to each country of the UK.

Facility would become operational along with the ombudsman. The Environment Agency could be responsible for administering the new scheme and delivering support to ensure its effective implementation.

Phase three: Scaling up
2024-25 to 2026-27

Phase three would last three years and be the second operational phase. It would move the scheme towards a market-based model, where a range of suppliers (not just central, devolved, and local government) bid through a transparent reverse auction to provide services to beneficiaries.[66] This would be done through online market places organised by catchment.

At least £3.1 billion of funding from the single rural payments budget provided from central government will be available for this period. Beneficiaries would club together in our catchment-based online commissioning markets to pay for services and public funding would be used to leverage private funding. Groups that have clear interests to commission more ecosystem services, but who currently do not or do but could do more, would have a clear way to co-fund services with or without public funding. Depending on who benefits, some contracts would be funded entirely by government, while others might be funded wholly by the private sector or an NGO. Many contracts would be funded by a combination, with public funds used to 'crowd in' other sources of funding.

Phase four: Fully operational
2027-28 to 2031-32

Phase four would be the third and final operational phase. This phase, like subsequent phases, would now last for five years. This is where the scheme is approaching maturity.

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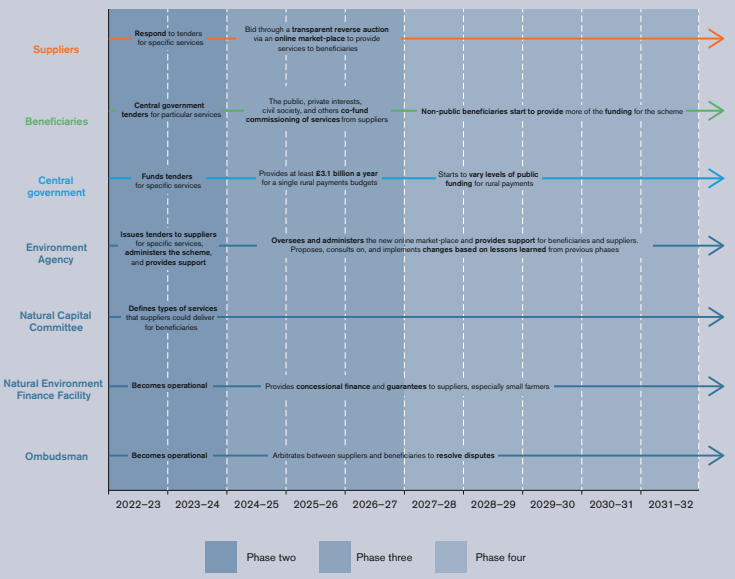
66. Unlike in 'forward auctions', reverse auctions see sellers compete to obtain a contract for a service from a buyer, and the price typically decreases as the auction goes on.

Lessons from the previous phase would be implemented. In the third year of each five-year phase, evaluations and consultations would be undertaken. In the fourth year, changes would be proposed and consulted upon, before being implemented for the start of the next five-year phase. Figure 4.2 illustrates the different actions required over the phases two to four.

Specifically, before this phase and each subsequent phase, the Government should review how much public funding it will commit from the at least £3.1 billion a year it spends on rural payments currently. We envisage that this will reduce over time.

Figure 4.2. The implementation timeline for phases two to four of the scheme



Principles to guide implementation

What is critically important is that the UK Government sets out the destination and then the broad implementation plan required to reach

it. The exact periods of each phase proposed above can of course be altered based on progress and to align with other commitments, comprehensive spending reviews, and Brexit outcomes.

In our view success is highly likely if the Government adheres to the following principles:

1. **Consistent and predictable levels of public funding.** Withdrawing funding for rural payments too quickly will undermine efforts to significantly reform and improve current arrangements. Sustaining current levels of public funding for rural payments until at least 2026-27 will help the market become sustainable, allowing more flexibility to reduce public expenditure in the long term.
2. **Avoiding the creation of new organisations.** Where possible existing organisations can be used, repurposed, or expanded as required to deliver our proposals. Creating new organisations could be a very significant and needless distraction.
3. **A flexible and patient government approach.** Some aspects of our proposals are relatively easy to implement, others less so. Trade-offs will need to be made in a pragmatic way.
4. **Prioritising the user experience.** Getting suppliers and beneficiaries to participate in the scheme and to collaborate in new ways will be the biggest challenge. Each market element will need to be designed with significant user input and the user experience throughout the process will need be as smooth as possible. The 'front-end' user web interface should be simple and accessible on every form of internet-enabled device.
5. **Experimentation.** Our market-based commissioning scheme for rural payments allows catchment-based markets to be created at multiple scales from the smallest sub-catchment all the way to the UK as a whole. For some ecosystem services, for example carbon sequestration, a UK-wide market might make sense. For

others, such as addressing flood risk in a specific part of the UK, markets could be incredibly local. Markets will pop-up based on demand from beneficiaries and potentially also when suppliers have appropriate projects that need funding. Our scheme will create, manage, and regulate all these different markets. Given the difference in scale, some markets will have lots of buyers and sellers, others will not. Only through experimentation will we see what scales are the most appropriate for market-based commissioning of different ecosystem services.

6. **Openness to innovation.** Our proposals will unlock dynamism and new ways of doing things. Brokers could emerge, for example, securing contracts for suppliers across the UK in exchange for a fee. New forms of supplier may even develop, such as co-operatives. Beneficiaries could operate together in ways we cannot foresee. Much of this will be good, but some might try to use the market inappropriately. Management and regulation of these markets by the proposed administrating body is therefore important.
7. **A complementary, properly enforced system of environmental regulations.** Our proposals are in no way a substitute for well-designed regulation and are entirely complementary and mutually reinforcing to it. High environmental and animal welfare standards across all rural activity are needed.

Conclusion

This chapter has set out how the new market-based commissioning scheme could be phased in successfully and the specific elements that would be needed to establish it. It also articulates the principles that should guide the Government's approach to implementation. The policies we advocate for rural payments after Brexit are summarised in Box 4.1 below.

Box 4.1. The main policy recommendations for rural payments after Brexit

- The creation of a single rural payments budget from central government that identifies exactly and merges existing government budgets for production and land management support (under CAP), natural flood management, and payments for ecosystem services. Merging these current expenditures into a single rural payments budget would result in at least £3.1 billion being made available per year between 2022-23 and 2026-27.
- The establishment of a new online market-based commissioning scheme for rural payments where farmers, land owners, and land managers ('suppliers') bid together or individually to supply ecosystem services to the general public (represented by central, devolved, and local government), private interests (such as water companies, other land managers, and insurers), and other groups (such as conservation NGOs, civil society groups, land trusts, philanthropists, local communities via town and village halls, or crowd funders) ('beneficiaries') in specific catchments. This would be administered and regulated by an arms-length body such as the Environment Agency
- The creation of a new typology or classification system of ecosystem service outputs that could be provided by suppliers to beneficiaries created independently by the Natural Capital Committee. It would include a wide variety of measures, services, and outcomes, including but not limited to: reduced fertiliser and pesticide use; crop rotation; woodland creation and management; creation of field strips next to arable land; maintaining features like hedges, stone walls or ponds; planting rare or indigenous crops; creating footpaths through fields; creating attenuation ponds in the uplands; building woody debris dams; restoration of peatlands and naturalised

river pathways; planting of vegetation as a buffer by the side of waterways; construction of dykes or ditches; and the reintroduction of native species, such as the beaver or lynx.

- Ensuring contracts for supplying ecosystem services would be designed to be readily financeable by low-cost and low-risk capital. Contracts would pay quarterly based on results, potentially with incentives to encourage performance.
- The establishment of a government-backed Natural Environment Finance Facility that would provide low-cost finance to suppliers, particularly for smaller farmers, land owners and land managers in less developed parts of the country.
- Encouraging a catchment-based approach to commissioning. While the scale at which commissioning would take place (sub-catchment all the way to national) would depend on the type of services, a catchment-based approach is generally the most appropriate scale to successfully mobilise beneficiaries and suppliers, organise online market-places, and manage the production of appropriate ecosystem services.
- Enabling and encouraging the crowding in of non-public funding from groups that have clear interests to commission more ecosystem services, but who currently do not or do but could do more. These include water companies, insurers, property developers, conservation NGOs, civil society groups, land trusts, philanthropists, local communities via town and village halls, or crowd funders. The groups would leverage the money made available from central, devolved, and local governments.
- The elimination of all production subsidies in agriculture, and ensuring instead that farmers have three forms of income available to them. The first from the new market-based commissioning scheme for rural payments, the second from

a form of means-tested livelihood support, and the third from agricultural produce or other monetisable services sold at market prices without production subsidies. These sources of income are not mutually exclusive

- Ensuring that as current CAP subsidies are phased out, the market-based commissioning scheme and means tested livelihood support should be phased in pound for pound. The market-based commissioning scheme would have a much larger total contribution to rural payments than means-tested livelihood support, which should necessarily be targeted through the existing tax and benefits system.
- A phased approach to implementation with a long-term commitment of central government funding of at least £3.1 billion a year on rural payments until 2026-27. Only after new arrangements have been established and are working effectively should levels of public funding be reviewed.

Reforms to rural payments could bring significant public benefits, including a more sustainable farming industry, enhanced natural beauty and landscapes, greater biodiversity, increased carbon sequestration, improved natural flood defences, better water quality, better mental and physical health, and better air quality.

Market-based commissioning of rural payments combined with a properly enforced system of environmental regulations, targeted livelihood support (particularly for smaller farmers), and consumer demand for high-quality UK produce will together drive higher environmental standards across the UK.

There is no shortcut to achieving this significant prize. As we set out in this report, it will require stamina from government. On top of the additional commitments for public funding and a proper system of regulation post-Brexit, the Government will need to successfully implement a new and exciting scheme to commission ecosystem

services efficiently and effectively using the dynamism of market-based approaches. This is a journey, but a necessary one, and one that will positively shape rural activity and the natural environment for many decades to come.

Brexit presents the UK with an historic opportunity to enhance its natural environment. Rural payments are currently determined predominantly by the EU through the Common Agricultural Policy, but after Brexit they could be reformed to deliver major benefits for the environment and wider society.

This report proposes a new online, market-based commissioning scheme for rural payments whereby a range of beneficiaries commission suppliers to provide certain ecosystem services.

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