Green Alliance policy insight
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Smarter flood risk management in England

Investing in resilient catchments

by Nicola Wheeler, Angela Francis and Anisha George

Executive summary

England's current approach to flood risk is contradictory and skewed towards reactive responses instead of flood prevention. This is illustrated by the pattern of flood related spending. It is particularly striking that:

- Nearly four times as much money is spent on land management that ignores or increases flood risk than on land management that helps to prevent flooding.
- Twice as much is spent on dealing with the after effects of a flood than is spent on hard flood defences.

Measures aimed at preventing floods would lead to a greater level of resilience for the same or lower cost than current approaches. This requires more investment in upstream preventative activities.

Our recommendations:

1 Use the replacement of the Common Agricultural Policy to reward land management that helps to prevent flooding.

2 Establish a dedicated fund for natural flood management.

3 Set up regional Catchment Management Boards.

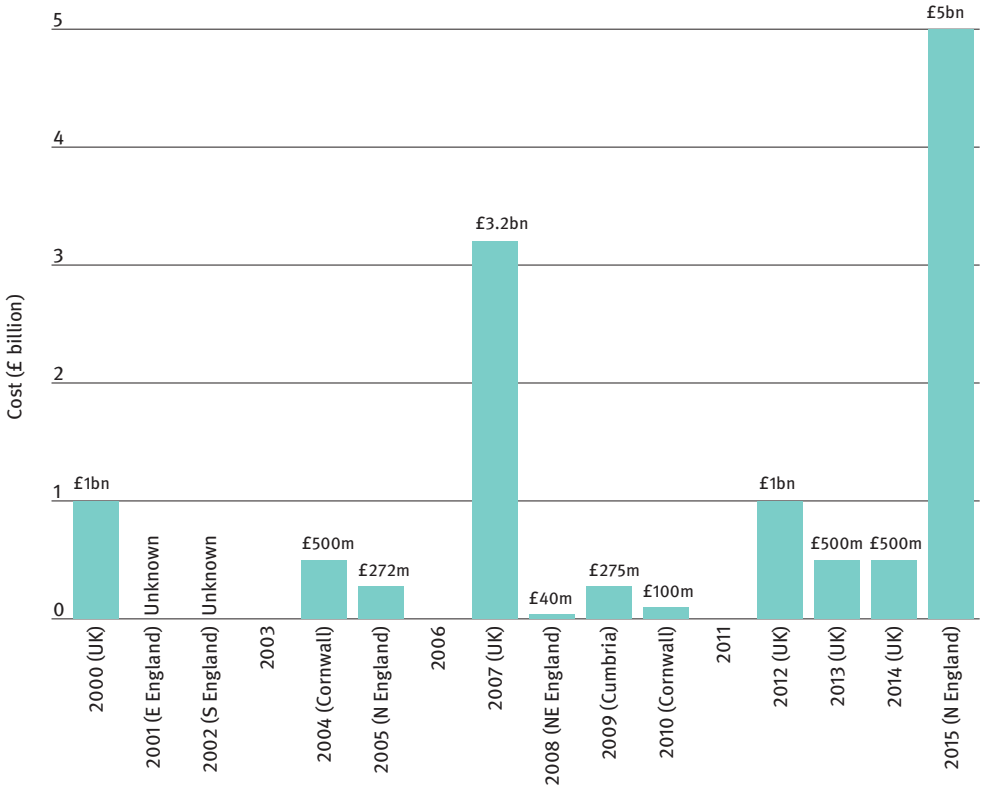
The three measures we propose have the potential to raise standards for agricultural subsidy, moving it from adverse or neutral practices to ones that help prevent flooding, achieve higher environmental benefit from farming, and reduce the escalating cost of flood defences and post-flood repairs through accelerating development of the evidence base and by improving catchment level governance.

How land management affects river flooding

1. The cost of flooding

Severe flooding has occurred in 13 of the 16 years since 2000. The worst has resulted in significant costs; for instance, floods in the north of England in 2015 cost the economy over £5 billion.[1]

Cost of Met Office recorded flood events in the UK since 2000



It has been calculated that an investment in flood and coastal erosion risk management of £750 to £800 million per year is required to maintain current levels of flood protection.[2] The 2015-16 budget was £695.3 million.[3] Additional funding has been provided following the severe winter floods of 2013-14, with a longer term committment of an extra £700 million by 2020 (from an increase in insurance premium tax), announced in the March 2016 Budget.

Yet, spending an ever increasing amount on hard flood defences is unlikely to be a viable long term strategy in the face of the increasing risks associated with climate change. If we continue to manage flooding as we currently do, associated damages could increase by as much as 150 per cent by the 2080s. And the number of people living in properties exposed to flooding could increase by 41-98 per cent if there are no additional measures to adapt to the increasing risk.[4]

As well as asking whether there is enough funding to respond to the growing frequency of floods, there is the question of whether we are spending money in the most effective way.

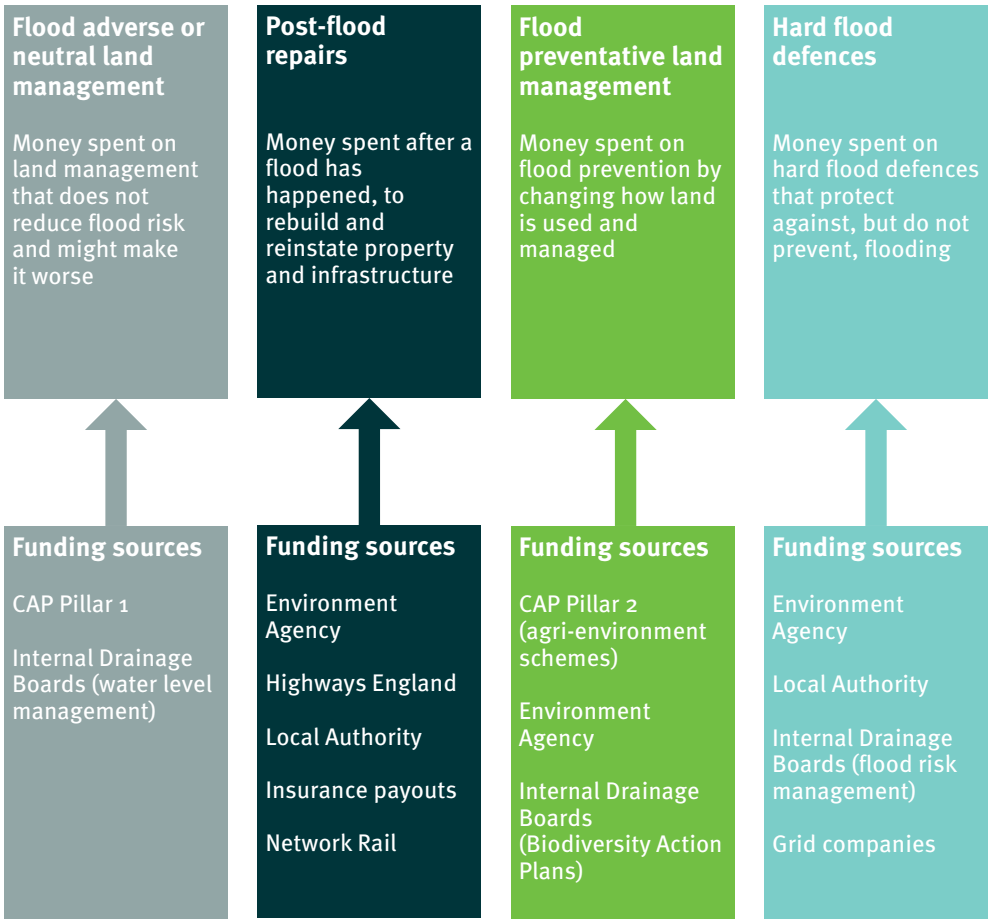
There are around 100 catchments in England. Man-made and natural features, and the way the land is used, all determine how water flows. Land management is, therefore, crucial to an effective strategy for minimising the risks and impacts of flooding. To understand the opportunities for improving the contribution of land management to reducing flood risk, we have analysed the spending related to river flooding in England.

Analysis of total costs

Huge sums of money are spent trying to protect against flooding and deal with its after effects. In the weeks and months that follow a major flood event, attention typically focuses on the costs of hard defences and repair works. However, there are other, often overlooked, funding streams that have a significant impact on flood risk.

To understand the expenditure associated with flooding and what the money is for, we have identified four categories of spending: post-flood repairs, flood adverse or neutral land management, hard flood defences and flood preventative land management.

Categories of flood spending and their associated funding sources



Clearly, a far greater proportion of this money should be spent in ways that actively reduce flood risk, such as hard flood defences and flood preventative land management. And the least money should be spent on post-flood repairs.

We have collated and analysed the funding sources in England related to river flooding and allocated them to our four categories:

Flood related spending in England

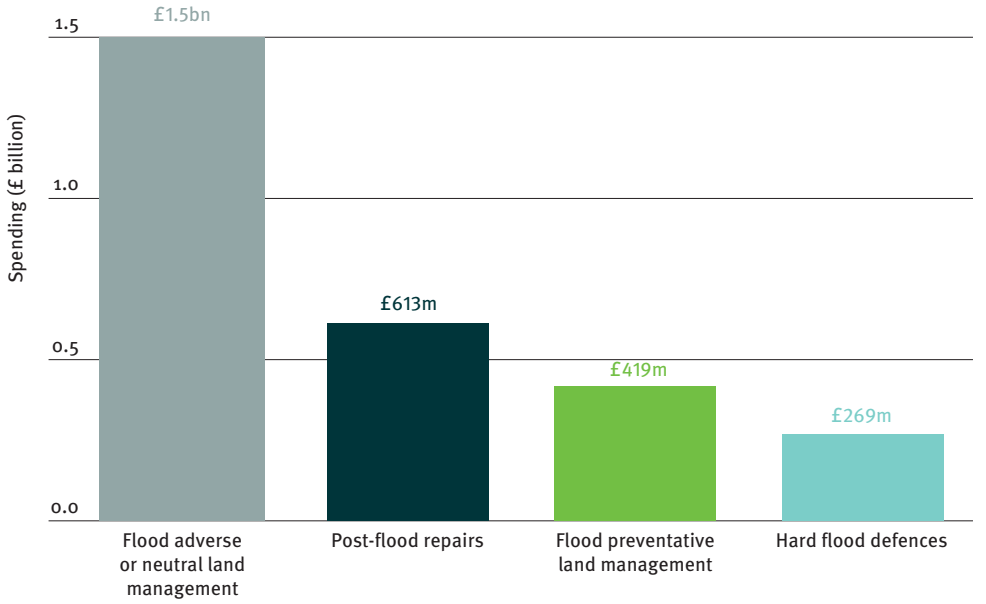
Funding source	Role in flooding	Category allocation
CAP Pillar 1	Currently, agricultural subsidies (the Basic Payment Scheme) are given to all landowners for keeping land in productive agricultural use. Some environmental considerations have been introduced through Greening Payments and Cross Compliance, but these do not include flood risk management. Some rules of compliance actively penalise measures that could be beneficial for reducing flood risk; for example, ponds and dense scrub are ineligible for payments. Different farming systems create different risk factors for flooding (see table on page 12).	Flood adverse or neutral land management
CAP Pillar 2	Currently CAP also supports farmers who carry out agri-environment schemes (AES) to improve the state of the environment on their farmland. These subsidies do not explicitly fund natural flood management projects, but AES are generally likely to have a positive impact in helping to prevent flooding, given the types of land management they support. We have therefore allocated AES to this category, although the specific breakdown of AES spending for flood risk reduction is unavailable.	Flood preventative land management
Environment Agency	The Environment Agency has a broad remit in terms of flood risk management. We identified three core activities: infrastructure repairs following flooding; constructing and maintaining flood defences, flood risk mapping and flood warnings; and the implementation of natural flood management projects.	Post-flood repairs Flood defences Flood preventative land management
Highways England	Highways England's infrastructure can be severely damaged by flooding. As such, its costs are associated with repairing infrastructure.	Post-flood repairs

Funding source	Role in flooding	Category allocation
Internal Drainage Boards	Internal Drainage Boards play a complex role in flood risk. Their three main roles are water level management; flood risk management; and managing Biodiversity Action Plans in low lying land. Their water level management activities are primarily aimed at draining low lying (usually agricultural) land. Drained water flows into rivers and so can increase river levels. Yet, they are also responsible for flood risk management and work closely with the Environment Agency. IDBs also produce Biodiversity Action Plans; which can have flood risk benefits.	Flood adverse or neutral land management Flood defences Flood preventative land management
Insurance payouts	Payouts by insurance companies provide a good indication of the replacement and repair cost of goods and property to the public (businesses and residents) following flood events.	Post-flood repairs
Local Authorities	Local Authorities have a range of responsibilities associated with flood management. We have focused on two principal ones: constructing and maintaining flood defences, and infrastructure repairs following flooding.	Post-flood repairs Flood defences

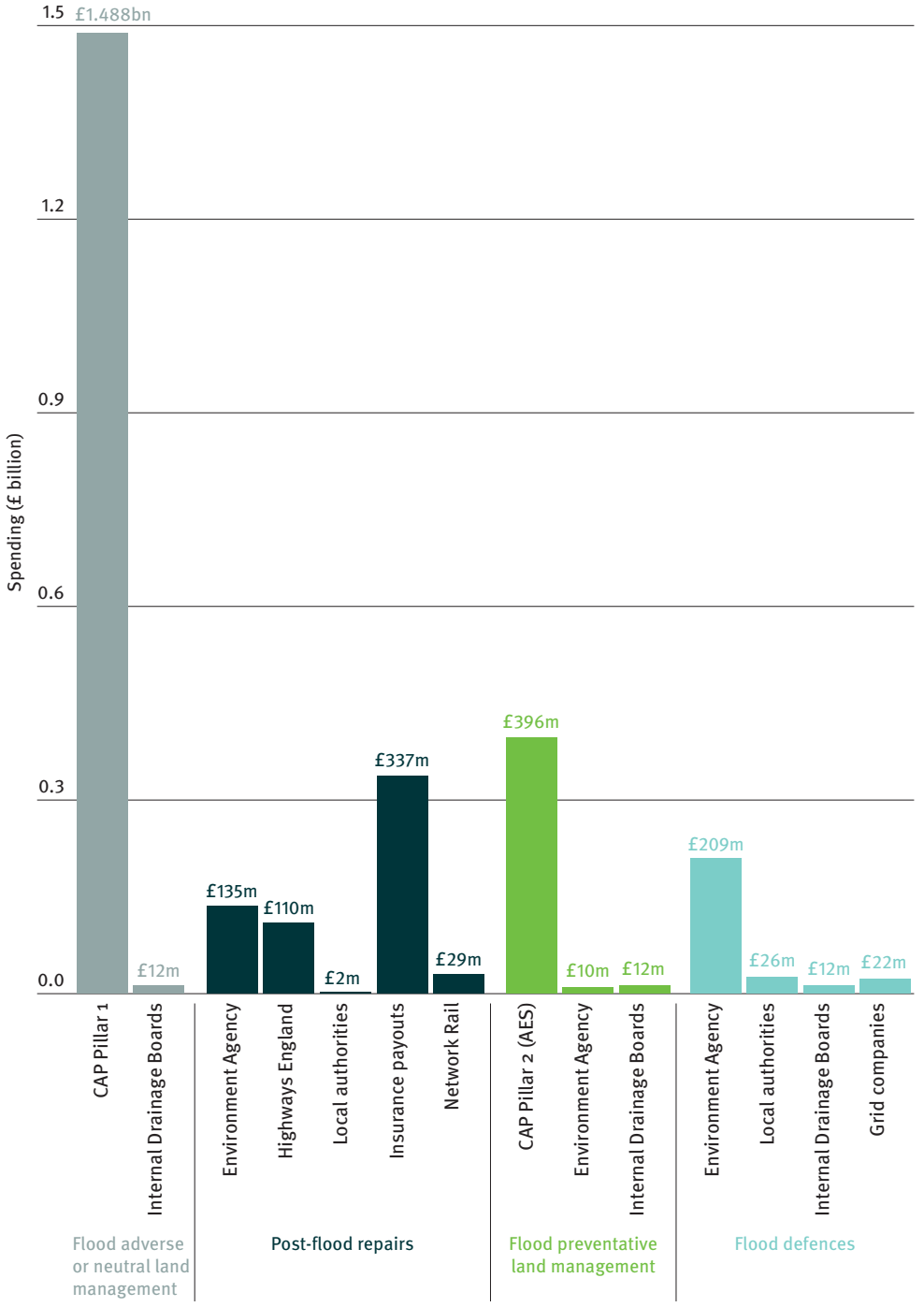
We have used data for 2013-14, or the most recent and comprehensive data available, to identify the funding streams related to river flooding. Although the precise pattern of spending varies each year, we have approximated a typical year's spending based on the available data.[5]

Our findings show that 54 per cent is spent on flood adverse or neutral land management (£1.5 billion); 22 per cent of funding is spent on post-flood repairs (£613 million); 15 per cent is spent on flood preventative land management (£419 million); and ten per cent is spent on hard flood defences (£269 million). A full breakdown of these figures is shown opposite and detailed in the appendix on page 22.

National spending on flooding



Funding breakdown by source



Analysis of this spending reveals that:

1 Nearly four times as much money is spent on land management that ignores or increases flood risk than on land management that helps to prevent flooding

As much as £419 million is spent each year on land management that helps to reduce flooding. This comprises agri-environment scheme (AES) funding under the EU's Common Agriculture Policy (CAP, £396 million), Environment Agency funding (£10.1 million) and Internal Drainage Board funding (£12.4 million). We have included the entire AES figure, as this spending has the potential to deliver benefits through land management improvements, even if that is not its primary objective. That is a generous interpretation and not all AES spending will support projects that reduce flood risk.

In contrast, £1.5 billion is being spent each year on land management activities that increase flood risk or at least do nothing to reduce the risk. This spending is dominated by CAP Pillar 1, totalling £1.488 billion. Although farmers have to meet environmental standards (through Greening Payments and Cross Compliance) to receive subsidies from CAP Pillar 1, these offer extremely limited environmental or flood benefits.

Given the huge costs associated with flood events, there is significant merit in rebalancing subsidies towards those which incentivise risk reduction. Reallocating a higher portion of existing budgets to environmentally sensitive land management would deliver increased flood protection.

2 Twice as much is spent on dealing with the after effects of a flood than on hard flood defences

Around £269 million is spent on flood defences each year, with £209 million of that invested by the Environment Agency. Yet more than £613 million, over a fifth of all spending, goes on post-flood repairs, £337 million on insurance payouts and £135 million is borne by the Environment Agency.

The public (residents and businesses) bear the highest costs of flooding in the form of insurance charges and premiums. To the extent that floods are exacerbated by certain land use practices, investments which maintain the status quo are costing individuals, businesses and public agencies affected by flooding substantial sums. More frequent intense weather events which are expected to result from climate change are likely to make the situation worse.

Traditional hard flood defences are often very expensive and unaffordable for smaller but highly vulnerable communities. Payments that promote healthy catchments with higher absorptive capacity and include greater use of natural flood management, are likely to be more cost effective. Therefore, increasing spending on flood risk management, either via natural or hard defences, could reduce the overall costs of flood damage.

2. What needs to change?

Assessing the effectiveness of spending on flooding requires an understanding of how spending affects land management upstream in a catchment. England is made up of around 100 catchments, defined by how rain runs from hillsides and collects into tributaries and rivers. Catchments are shaped by natural and man-made features, and the way the land is used plays a role in determining the speed at which water falling in the catchments reaches the river, and whether it runs off the surface or infiltrates the soil.

Many towns and cities are sited downstream in catchments. So it is unsurprising that building on a floodplain significantly increases the risk of flooding to people and property in these areas. Flooding is a natural occurrence and some flood events will be unavoidable. However, land management resulting in exposed soil surfaces, unbroken slopes and compacted or degraded soils, coupled with canalised and embanked watercourses, intensive drainage and dredging systems, increases flood risk. With topsoil on arable land eroding at a rate of 2.2 million tonnes every year and only a quarter of water bodies having 'good' or 'high' status under the EU's Water Framework Directive, most catchments in England have reduced resilience to extreme weather events.[6,7] The same management issues also lead to water quality problems, declining biodiversity and habitats, and degraded soils.[8,9,10]

There is considerable potential to improve flooding outcomes by changing how land is managed within catchments.[11] This has been proven in a number of local catchments in England. Land management changes in the Holnicote Estate (a 50km^2 catchment) helped to deliver a ten per cent reduction in flood peak during the December 2013 storms.[12] As a result, downstream villages were not flooded during extreme rainfall, despite the ground already being saturated and a history of regular flooding.

Flood risk factors associated with different farming systems

Farming system	Flood risk
Arable crops and bare fallow	
	Arable land management can result in degraded soils with reduced infiltration capacity. Large fields with unbroken slopes and heavy machinery causing soil compaction both increase run-off rates. Bare land associated with crops such as maize exposes soil to surface panning and increases run-off. Arable fields are also commonly drained, speeding water away from the field and into local watercourses. Arable farming practices that reduce flood risk include restoring soil structure, breaking up slope lengths and ploughing horizontally across slopes, avoiding tillage or bare soil on steep slopes, reintroducing rough vegetation and hedges, and reducing drainage intensity.
Temporary grass	
	Temporary grass is grass which has been ploughed and reseeded within a five year period, and is often intensively managed for silage or grazing. Such soils are routinely drained, reducing throughput times, and soils are at risk of compaction in intensive systems, leading to reduced infiltration and increased run-off. Practices such as restoring soil structure, avoiding compaction by livestock, reintroducing rough vegetation and hedges, and reducing drainage intensity can all help to reduce flood risk.
Permanent grass	
	Permanent grassland tends to have more established and deeper root systems and a greater variety of plants, resulting in higher surface roughness and healthier soil structures. This increases rainfall absorption rates and helps to reduce erosion and run-off. However, if inappropriately managed by overgrazing or compaction, run-off rates can increase, increasing flood risk.

Farming system	Flood risk
Rough grazing	
	Rough grazing is managed at lower stock densities and is less productive than improved grassland. Under good management land under this system acts like a sponge, providing good water infiltration and absorption. If overstocked, flood risk can rise due to soil compaction and vegetation removal by animals.
Woodland	
	Trees increase surface roughness, dissipate rainfall intensity at the soil surface, and increase infiltration rates. They are, therefore, beneficial in reducing flood risk. However, grazed or trampled woods which have lost their understory are more likely to have bare, compacted soil and reduced infiltration rates, losing many of the benefits.

Natural flood management

Natural flood management is the process of working with or mimicking natural functions, features and characteristics within catchments to store and slow down floodwaters, to reduce flood risk downstream.

Natural flood management techniques

Natural flood management measure	Benefits	Critical parts of the catchment
Bank restoration	Reduces erosion Stabilises banks	River channel
In-stream structures	Slows the flow Stores water	
Floodplain and riparian woodlands	Slows the flow Stores water	Riparian strips and floodplain
Floodplain restoration	Slows the flow Stores water	
Upland, gully and cross-slope woodlands	Slows the flow Stabilises soil Encourages infiltration	Farmland
Land and soil management	Reduces surface run-off Increases infiltration	
Agricultural and upland drainage	Slows the flow	
Overland flow barriers	Disconnects flow pathways Stores water	
Offline storage areas	Stores water	
Non-floodplain wetlands	Stores water	
Grip and drain blocking	Disconnects flow pathways	

Since the severe flooding across England in 2007 there has been a growing recognition that conventional flood risk management, and the budget available to support it, are no longer adequate, particularly when faced with the more extreme flooding associated with climate change. More resilience is needed. Increasingly, this is being sought using new upstream management practices and natural flood management. There is a developing body of evidence on the cost effectiveness of these techniques and pilot projects have been implemented using the natural capacity of a healthy catchment to absorb and retain water (see the following two examples.)

Natural flood management in action: Belford, Northumberland[13]

The village of Belford lies within a 5.7 km^2 catchment and has suffered regularly from flooding. In response to this, natural flood management (or Catchment Systems Engineering) was undertaken, as building hard defences was not cost effective. The project cost £200,000; whereas the proposed alternative hard defences would have cost £2.5 million.

Around 40 different measures were used to store and slow water, including bunds to disconnect flow pathways, diversion structures in ditches to spill and store high flows, large wood debris structures within the channel and riparian zone management.

The combined effect of these measures was found to reduce local peak flows by around 35 per cent.

Slowing the flow: Pickering, North Yorkshire[14,15]

The 'Slowing the Flow at Pickering' project aimed to demonstrate how the application of a range of land management interventions can help to reduce flood risk at the catchment scale and provide multiple benefits for local communities which had regularly experienced flooding.

A range of measures were implemented as part of the £1 million project, to help slow down the water flow within the catchment and prevent flooding.These measures included large woody debris dams, timber bunds, blocking moorland drains and controlling erosion, establishing no burn buffer zones along watercourses and planting riparian, floodplain and farmland woodland.

Peak flows were reduced by between 3.5 per cent and 7.5 per cent (by installing 100 large woody debris dams) and Pickering escaped flooding when the surrounding area was inundated in 2012.

The pilot projects implemented so far have been relatively small scale, but have demonstrated some notable benefits at the local level. As shown below, hydrological modelling of natural flood management has also shown the potential benefits of these measures, both as alternatives to, or in combination with, improvements to existing hard defences.

The benefits of natural flood management

- In small catchments (of around 10 km^2), trees can reduce flood peaks by between five and 29 per cent.[16]
- Tree planting across the whole of a small catchment could reduce flood peaks by as much as 50 per cent.[17]
- Riparian woodlands can reduce flood peaks by eight to ten per cent in an approximate 69 km^2 catchment.[18]

There is still limited empirical evidence as to how effective natural flood management measures are at scale. However, the Environment Agency's Working with Natural Processes project is gathering evidence from existing projects to create an evidence directory. There are also large scale trials in development. The overall aim of the project is to overcome the barriers to investment in natural flood management, as implementation is currently much lower than it should be, given its potential to contribute to cost effective flood mitigation.

Significantly, these methods deliver a range of additional environmental and economic benefits, including:

- improving water quality, reducing soil erosion, increasing carbon sequestration and biodiversity;[19]
- improving the effectiveness of existing hard flood defences by reducing peak flows and delaying floodwaters;[20]
- building new resilience to climate change, and improving existing resilience.[21]

5. Recommendations

We have shown that nearly four times as much money goes into flood neutral or adverse land management than towards land management that helps to prevent flooding, and twice as much is spent on dealing with the after effects of a flood than on hard flood defences. We propose that the funding we have identified should be rebalanced to provide incentives for natural flood management, helping to decrease the need for defensive and reactive spending over time.

Nevertheless, given the disproportionate cost of flooding and the likelihood that severe flood events will become more frequent as a result of climate change, there is a case for increased spending on flood defences. The recognition that existing flood defence arrangements are inadequate in the face of climate change, and a growing understanding of the relationship between land use and flood risk, means that conditions are ripe to refresh spending policy. Britain's exit from the EU will create opportunities to support natural flood management, as the government will need to establish a new agricultural subsidy regime to replace the CAP.

The government has also committed to developing a 25 year plan for improving the UK's natural environment, which can help to set a framework for the development of new land use policies. And it has conducted a review of the resilience of UK infrastructure to future flooding, which can help to direct where and how funding is spent to most effectively manage the risk.

Our recommendations:

1 use the replacement of the Common Agricultural Policy to reward land management that helps to prevent flooding;

2 establish a dedicated fund for natural flood management;

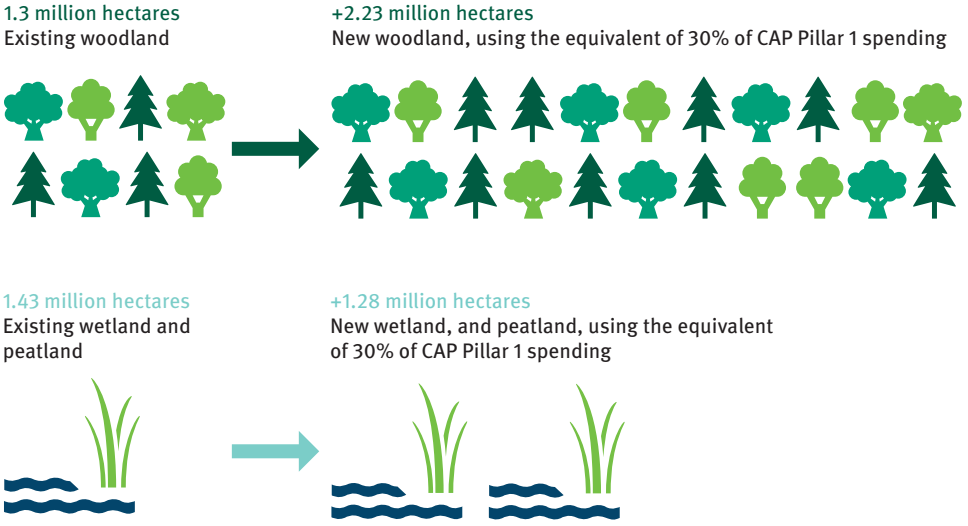
3 set up regional Catchment Management Boards.

Use the replacement of the Common Agricultural Policy to reward land management that helps to prevent flooding

Agricultural practices can contribute to effective managment of flood risks. Yet the current CAP rules do not encourage this and, in some instances, prohibit beneficial land management methods. The future of agricultural subsidies following Britain's exit from the EU is unknown but development of a successor scheme presents the opportunity to reward land management that reduces flood risk. Discussions around the subsidy regime to replace CAP should consider how public payments could enable improvements to the overall environmental health of land, increasing catchment resilience to extreme weather events whilst delivering improvements in a range of other ecosystem services.

Furthermore, there is a strong case for ring-fencing a proportion of subsidy payment to support land management practices that increase overall water holding capacity within a catchment. The scale of the environmental and economic benefits from using agricultural subsidies to promote natural flood management is potentially huge. For example, assuming an unchanged total CAP budget, the 30 per cent of the budget currently used for greening payments to support tree planting could fund a tripling of woodland or a doubling of wetlands in England.

Scaling up natural flood management with redirected agriculture subsidies



Establish a dedicated fund for natural flood management

The conditions that have to be met to obtain flood defence funding can be a substantial barrier to natural flood management. The Environment Agency requires proof that a project will deliver at least a 1:8 cost-benefit return for all the flood defence schemes it funds. The evidence of the effectiveness of natural flood management is not always available to support strong, well-evidenced proposals. The Environment Agency's Working with Natural Processes project is addressing this by collating existing evidence but, currently, the standard of protection offered at catchment scale by these measures cannot be quantified the same way it can be for hard engineering schemes. Similarly, projects using Flood Defence Grant in Aid (Environment Agency flood defence funding) must reduce flood risk to at least a one in 20 year event standard, whereas pilot projects have so far focused on reducing flood risk for smaller and more frequent flood events.

Creating a dedicated natural flood management fund outside conventional funding would support the development of the much needed evidence base at catchment scale, whilst improving flood protection for areas where further expenditure on hard defences cannot be justified. As part of this work, the known, yet largely unquantified, co-benefits of such projects should be also calculated to help improve the evidence base further. The economic tools exist to do this, as demonstrated in the UK National Ecosystem Assessment.[22] However, currently the quality of available data is poor.

The Office for National Statistics is already undertaking analysis into how to incorporate the value of environmental systems into national accounts by 2020. Linking greater implementation of natural flood management techniques to this process could help to improve central government understanding of its economic benefits. Demonstrating the advantages of investment in NFM should help to mainstream it as flood risk management technique, allow for more complete cost-benefit analyses and encourage investment from current land management and post-flood repair funding pots.

Set up regional Catchment Management Boards

The Environment Agency's Catchment Flood Management Plans and River Basin Management Plans are intended to deliver more holistic approaches to flood risk management. To date, this approach has been limited by conflicting incentives for land managers. Catchment based decision making could significantly boost the role of natural flood management.

We have highlighted a range of hidden costs associated with managing the risks and consequences of river flooding. Failure to account for the full costs means we are underusing interventions that reduce risks and improve resilience, such as natural flood management. A new approach is required which takes account of the water flows through the whole landscape within a catchment, rather than focusing on flood hotspots, and which improves risk management by consolidating decision making.

Regional joint bodies are already exploring approaches to increase resilience to flooding. For example, the Somerset Rivers Authority was established in 2015 in response to the severe flooding in the winter of 2013-14. The authority is run by a board, formed of regional partners who also provide local funding. It aims to deliver more joined up solutions to flood risk. Its projects have been implemented through five thematic working groups: river management, land management, urban water management, resilient infrastructure and building local resilience, which collaborate with each other to deliver a holistic management strategy.

The government's National Flood Resilience Review identified the need for stronger co-ordination of local partners, led by new catchment leaders, to improve flood risk management. We recommend this is done through regional Catchment Management Boards with responsibility for local co-ordination, strategic planning, land management incentives and regulatory enforcement. These boards should be formed of experts and stakeholders, who understand the issues associated with flooding locally and are best placed to address them. Each board should undertake a comprehensive regional flood spending review to quantify the full costs involved and identify how funding should be allocated.

The benefit of a facilitation fund

Natural England's Facilitation Fund is a good a model for environmental improvement support at landscape scale. It funds co-ordination across multi-landowner agri-environment projects, collectively delivering better environmental outcomes than could be achieved by participants acting in isolation. Although the fund is not solely for natural flood management, it co-ordinates delivery across multiple private enterprises, which could also be done by regional Catchment Management Boards.

Appendix Methodology

We identified the key costs associated with flooding in England, focused on official sources for the year 2013-14. Data was unfortunately not available to analyse flood related spending in Scotland, Ireland or Wales. Where national figures for 2013-14 were unavailable, and estimates have been used instead, this has been noted in the table below.

Funding stream	Category of spending	Sum	Methodology and assumptions	Sources
CAP Pillar 1	Flood adverse or neutral land management	£1.488 billion	Total sum of Single Payment Scheme spending for England. Allocated to regions in proportion to their agricultural land area	HM Government, *Agriculture in the UK 2014*, table 10.3, 'Direct payment to farmers by country 2014'
CAP Pillar 2	Flood preventative land management	£396 million	Total sum of agri-environment schemes spending for England	HM Government, 2014, *Agriculture in the UK 2014*, table 10.4, 'Direct payments made through key measures of the Rural Development Programmes'
Internal Drainage Boards	Flood adverse or neutral land management	£12.4 million	A third of flood related spending to account for their water level management activities	Internal Drainage Board spending attributed to flood risk management activity 2014-15 from: Association of Drainage Authorities, 2016, *IDB accounts*
	Hard flood defences	£12.4 million	A third of flood related spending to account for their flood risk management activities	
	Flood preventative land management	£12.4 million	A third of flood related spending to account for their Biodiversity Action Plans	
Environment Agency	Hard flood defences	£209 million	Capital expenditure associated with river flood defences (culverts and channel improvements, embankments, flood risk management strategies, flood mapping, piling, and restoration and refurbishment)	Environment Agency Accounts 2014-15 HM Government, *Country and regional analysis 2014*
	Post-flood repairs	£135 million	Environment Agency figures on the cost of repairs arising from the 2013-14 floods	Environment Agency response to National Information Request HM Government, 2012, *UK climate change risk assessment*
	Flood preventative land management	£10.1 million	Total project spending on in-river natural flood management	Environment Agency, 2014, Catchment Restoration Fund

Funding stream	Category of spending	Sum	Methodology and assumptions	Sources
Local authorities	Hard flood defences	£26 million	Local authorities' flood defences spending	Department for Communities and Local Government's general fund revenue account budget, 2015-16 data
	Post-flood repairs	£1.6 million	Estimates of local authorities' flood damage costs were based on the proportion of structural maintenance spend categorised as 'unforeseen costs', 0.31 per cent, as reported by ALARM	Department for Communities and Local Government's general fund revenue account budget, 2015-16 data ALARM, 2015, *Annual local authority road maintenance survey*
Highways England	Post-flood repairs	£110 million	Proportion of £180 million road transport damage costs in England attributed to fluvial and ground water flooding (61 per cent)	Environment Agency, 2016, *The costs and impacts of the winter 2013 to 2014 floods*
Insurance payouts	Post-flood repairs	£337 million	Proportion of £665 million insurance claims for residential and commercial property, temporary accommodation and vehicles in England attributed to fluvial and groundwater flooding (37-60 per cent)	Environment Agency, 2016, *The costs and impacts of the winter 2013 to 2014 floods*
Network Rail	Post-flood repairs	£29 million	Proportion of £110 million rail transport damage costs in England attributed to fluvial and ground water flooding (26 per cent)	Environment Agency, 2016, *The costs and impacts of the winter 2013 to 2014 floods*
Grid companies	Hard flood defences	£22 million	Distribution network operators annual average spend on flood resilience 2010-11 to 2014-15	DECC, 2015, *Delivering investment in networks*

Endnotes

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

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Note
This edition replaces the first edition issued in November 2016. In it, we have corrected an error in our reporting of the Environment Agency's costs of infrastructure damage due to river flooding which appeared on pages 8,9,10 and 21. We originally reported the figure as £135 million, which covers all costs due to flooding rather than just the part of the total attributable to river flooding, which is £34 million. This correction does not affect the overall conclusions of our analysis on the balance of spending on flooding in England.