This is an earlier version of the Environmental Improvement Plan

The 25 Year Environment Plan, published in 2018, was the first Environmental Improvement Plan. It was revised in 2023 and again in 2025. This is not the latest version.

This document remains available because it forms part of the history of the Environmental Improvement Plan.

See the Environmental Improvement Plan collection for the latest plan.

HM Government

A Green Future: Our 25 Year Plan to Improve the Environment



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Photo Page 15 - Brown Hare - Natural England/Allan Drewitt

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Foreword from the Prime Minister



10 DOWNING STREET
LONDON SW1A 2AA

Our natural environment is our most precious inheritance. The United Kingdom is blessed with a wonderful variety of natural landscapes and habitats and our 25 Year Environment Plan sets out our comprehensive and long-term approach to protecting and enhancing them in England for the next generation.

Its goals are simple: cleaner air and water; plants and animals which are thriving; and a cleaner, greener country for us all. We have already taken huge strides to improve environmental protections, from banning microbeads which harm our marine life to improving the quality of the air we breathe to improving standards of animal welfare. This plan sets out the further action we will take.

By using our land more sustainably and creating new habitats for wildlife, including by planting more trees, we can arrest the decline in native species and improve our biodiversity. By tackling the scourge of waste plastic we can make our oceans cleaner and healthier. Connecting more people with the environment will promote greater well-being. And by making the most of emerging technologies, we can build a cleaner, greener country and reap the economic rewards of the clean growth revolution.

The success of the 5p plastic bag charge in reducing the use of carrier bags by 83% shows the difference which government action can make, and demonstrates that protecting our environment is a job for each one of us.

This is a national plan of action, with international ambition. As well as setting an example for others to follow in our treatment of the countryside, rivers, coastlines and air, we will also bring the United Kingdom's international influence to bear in pursuit of a cleaner and safer world.

From reducing our carbon emissions and building resilience against the extreme weather associated with climate change, to leading international action to protect endangered species, the UK is an international champion for the protection of our planet and we will build on our record in the years ahead.

When the United Kingdom leaves the European Union, control of important areas of environmental policy will return to these shores. We will use this opportunity to strengthen and enhance the protections our countryside, rivers, coastline and wildlife habitats enjoy, and develop new methods of agricultural and fisheries support which put the environment first.

We hold our natural environment in trust for the next generation. By implementing the measures in this ambitious plan, ours can become the first generation to leave that environment in a better state than we found it and pass on to the next generation a natural environment protected and enhanced for the future.

The Prime Minister





Foreword from the Secretary of State

It is this Government's ambition to leave our environment in a better state than we found it. We have made significant progress but there is much more to be done. The 25 Year Environment Plan that we have published today outlines the steps we propose to take to achieve our ambition.

Environment is – at its roots – another word for nature, for the planet that sustains us, the life on earth that inspires wonder and reverence, the places dear to us we wish to protect and preserve. We value those landscapes and coastlines as goods in themselves, places of beauty which nurture and support all forms of wildlife.

Respecting nature's intrinsic value, and the value of all life, is critical to our mission. For this reason we safeguard cherished landscapes from economic exploitation, protect the welfare of sentient animals and strive to preserve endangered woodland and plant life, not to mention the greening of our urban environments.

But we also draw from the planet all the raw materials we need to live – food, water, air and energy for growth. So protecting and enhancing the environment, as this Plan lays out, is about more than respecting nature. It is critical if the next generation is to flourish, with abundant natural resources to draw on, that we look after our and their inheritance wisely.

We need to replenish depleted soil, plant trees, support wetlands and peatlands, rid seas and rivers of rubbish, reduce greenhouse gas emissions, cleanse the air of pollutants, develop cleaner, sustainable energy and protect threatened species and habitats.

Previous Governments, here and in other nations, have made welcome strides and driven environmental improvement. Yet as this 25 Year Plan makes clear, there is much more still to do. We must tread more lightly on our planet, using resources more wisely and radically reducing the waste we generate. Waste is choking our oceans and despoiling our landscapes as well as contributing to greenhouse gas emissions and scarring habitats. The success of the 5p plastic bag charge in reducing the use of carrier bags by 83% shows the difference which government action can make, and demonstrates that protecting our environment is a job for each one of us.

The Plan outlines ways to reduce the use of plastics that contribute to pollution, and broader steps to encourage recycling and the more thoughtful use of resources. Over the lifetime of this Plan, we want to eliminate all avoidable plastic waste.

The Government's Clean Growth Strategy – the sister document to this Environment Plan – sets out how we will deliver the clean, green growth needed to combat global warming.

We will do what is necessary to adapt to the effects of a changing climate, improving the resilience of our infrastructure, housing and natural environment.

Population growth and economic development will mean more demand for housing and this Government is committed to building many more homes. However, we will ensure that we support development and the environment by embedding the principle that new development should result in net environmental gain – with neglected or degraded land returned to health and habitats for wildlife restored or created.

Most of our land is used, however, for agriculture not housing. The new system of support that we will bring in for farmers – true friends of the earth, who recognise that a care for land is crucial to future rural prosperity – will have environmental enhancement at its heart.

We will support farmers to turn over fields to meadows rich in herbs and wildflowers, plant more trees, restore habitats for endangered species, recover soil fertility and attract wildlife back. We will ensure broader landscapes are transformed by connecting habitats into larger corridors for wildlife, as recommended by Sir John Lawton in his official review.

Our plan for a new Northern Forest, to which we are contributing more than £5 million, will be accompanied by a new review of National Parks and Areas of Outstanding Natural Beauty.

Planting more trees provides not just new habitats for wildlife – it also helps reduce carbon dioxide levels and can reduce flood risk.

We will work with nature to protect communities from flooding, slowing rivers and creating and sustaining more wetlands to reduce flood risk and offer valuable habitats.

Beyond our coastlines, we must do more to protect the seas around us and marine wildlife. Leaving the EU means taking back control of the waters around these islands. We will develop a fishing policy that ensures seas return to health and fish stocks are replenished. We will also extend the marine protected areas around our coasts so that these stretches of environmentally precious maritime heritage have the best possible protection.

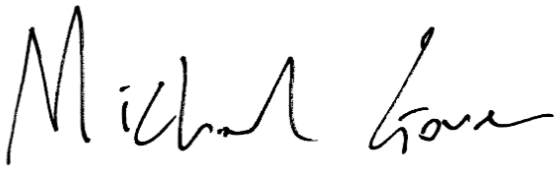
Internationally, we will lead the fight against climate change, invest to prevent wildlife crime, pursue a ban on sales of ivory, and strengthen partnerships to tackle illegal wildlife trade beyond borders, including investigating the feasibility of an anti-poaching taskforce.

We will underpin all this action with a comprehensive set of environmental principles. To ensure strong governance, we will consult on plans to set up a world-leading environmental watchdog, an independent, statutory body, to hold Government to account for upholding environmental standards. We will regularly update this Plan to reflect the changing nature of the environment.

While this 25 Year Environment Plan relates only to areas for which HMG is responsible, we will continue to work with the devolved administrations on our shared goal of protecting our natural heritage.

These actions will, we hope, ensure that this country is recognised as the leading global champion of a greener, healthier, more sustainable future for the next generation.

The Rt Hon Michael Gove MP



Secretary of State for Environment, Food and Rural Affairs



Executive summary

This 25 Year Environment Plan sets out government action to help the natural world regain and retain good health. It aims to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats. It calls for an approach to agriculture, forestry, land use and fishing that puts the environment first.

The Plan looks forward to delivering a Green Brexit – seizing this once-in-a-lifetime chance to reform our agriculture and fisheries management, how we restore nature, and how we care for our land, our rivers and our seas.

Our ambitious proposals will tackle the growing problems of waste and soil degradation – issues that affect our urban areas as well as our countryside. They seek to improve social justice by tackling the pollution suffered by those living in less favourable areas, and by opening up the mental and physical health benefits of the natural world to people from the widest possible range of ages and backgrounds.

We also set out how we will tackle the effects of climate change – still perhaps the most serious long-term risk to the environment given higher land and sea temperatures, rising sea levels, extreme weather patterns and ocean acidification, which harms marine species.

The UK Government has a role in protecting and improving the environment both at home and abroad. We will show leadership on conservation, climate change, land use, sustainable global food supplies and marine health.

We will champion sustainable development, lead in environmental science, innovate to achieve clean growth and increase resource efficiency to provide benefits to both our environment and economy, and keep our pledge to hand over our planet to the next generation in a better condition than when we inherited it.

We will also set gold standards in protecting and growing natural capital – leading the world in using this approach as a tool in decision-making. We will take into account the often hidden additional benefits in every aspect of the environment for national wellbeing, health and economic prosperity, with scientific and economic evidence to the fore.

Since the UK Government is responsible for a number of policies and programmes which affect sectors across the UK and internationally, some aspects of the Plan will apply to the UK as a whole. In other areas where environmental policy is devolved and responsibility rests with the Scottish Government, Welsh Government and Northern Ireland Executive, the proposals in this Plan apply to England only.

More broadly, we will work with the Devolved Administrations as we leave the EU to uphold environmental standards and go further to protect our shared natural heritage. We will continue to work with the Devolved Administrations on areas where common frameworks will need to be retained in the future. This Plan does not pre-empt these discussions.

Our 25-year goals

By adopting this Plan we will achieve:

1. Clean air.
2. Clean and plentiful water.
3. Thriving plants and wildlife.
4. A reduced risk of harm from environmental hazards such as flooding and drought.
5. Using resources from nature more sustainably and efficiently.
6. Enhanced beauty, heritage and engagement with the natural environment.

In addition, we will manage pressures on the environment by:

7. Mitigating and adapting to climate change.
8. Minimising waste.
9. Managing exposure to chemicals.
10. Enhancing biosecurity.

Our policies

We will take action on a number of fronts, looking to join up policies in a way that maximises benefits and value for money. We have identified six key areas around which action will be focused. These are:

- Using and managing land sustainably (chapter 1).
- Recovering nature and enhancing the beauty of landscapes (chapter 2).
- Connecting people with the environment to improve health and wellbeing (chapter 3).
- Increasing resource efficiency, and reducing pollution and waste (chapter 4).
- Securing clean, productive and biologically diverse seas and oceans (chapter 5).
- Protecting and improving the global environment (chapter 6).

Putting the Plan into practice

This Plan is a living blueprint for the environment covering the next quarter of a century. It is an ambitious project, made even more so by our use of a natural capital approach, a world first.

As recommended by the Natural Capital Committee, making the vision of a healthier environment a reality requires solid foundations: comprehensive, reliable data; strong governance and accountability; a robust delivery framework, and everyone to play a role.

Leaving the EU presents a unique opportunity to set in motion the behavioural and institutional changes necessary to build sustainable, enduring growth as well as an improvement in our wellbeing. Critical to delivering the outcomes we want to see is an effective governance structure underpinned by environmental principles – on which we will consult early in 2018. We will develop a set of metrics to assess progress towards our 25 year goals.

We will report on progress annually and refresh the Plan periodically to make sure that our actions continue to target the right improvements and make a real difference. Although the Plan is government-led, everyone in society can play their part in improving the natural world, recognising its full value to all.

The Plan sits alongside two other important government strategies. The Industrial Strategy sets out how we will boost productivity across the UK through five foundations – ideas, people, infrastructure, business, environment, and places. Clean Growth is one of the four Grand Challenges laid out in the strategy that will put the UK at the forefront of industries of the future, ensuring that it takes advantage of transformational global trends.

The Clean Growth Strategy sets out the UK's reaffirmed ambition to promote the ambitious economic and environmental policies to mitigate climate change and deliver clean, green growth.



Durdle Door, Dorset

A summary of our policies

Chapter 1: Using and managing land sustainably

1. **Embedding an 'environmental net gain' principle for development, including housing and infrastructure**
2. **Improving how we manage and incentivise land management**
   i. Designing and delivering a new environmental land management system
   ii. Introducing new farming rules for water
   iii. Working with farmers to use fertilisers efficiently
   iv. Protecting crops while reducing the environmental impact of pesticides
3. **Improving soil health and restoring and protecting our peatlands**
   i. Developing better information on soil health
   ii. Restoring vulnerable peatlands and ending peat use in horticultural products by 2030.
4. **Focusing on woodland to maximise its many benefits**
   i. Supporting the development of a new Northern Forest
   ii. Supporting larger scale woodland creation
   iii. Appointing a national Tree Champion
5. **Reducing risks from flooding and coastal erosion**
   i. Expanding the use of natural flood management solutions
   ii. Putting in place more sustainable drainage systems
   iii. Making 'at-risk' properties more resilient to flooding

Chapter 2: Recovering nature and enhancing the beauty of landscapes

1. **Protecting and recovering nature**
   i. Publishing a strategy for nature
   ii. Developing a Nature Recovery Network
   iii. Providing opportunities for the reintroduction of native species
   iv. Exploring how to give individuals the chance to deliver lasting conservation
   v. Improving biosecurity to protect and conserve nature
2. **Conserving and enhancing natural beauty**
   i. Reviewing National Parks and Areas of Outstanding Natural Beauty

3. **Respecting nature in how we use water**
    i. Reforming our approach to water abstraction
    ii. Increasing water supply and incentivising greater water efficiency and less personal use

Chapter 3: Connecting people with the environment to improve health and wellbeing

1. **Helping people improve their health and wellbeing by using green spaces**
    i. Considering how environmental therapies could be delivered through mental health services
    ii. Promoting health and wellbeing through the natural environment
2. **Encouraging children to be close to nature, in and out of school**
    i. Helping primary schools create nature-friendly grounds
    ii. Supporting more pupil contact with local natural spaces
3. **Greening our towns and cities**
    i. Creating more green infrastructure
    ii. Planting more trees in and around our towns and cities
4. **Making 2019 a Year of Action for the environment**
    i. Helping children and young people from all backgrounds to engage with nature and improve the environment.
    ii. Supporting the 2019 Year of Green Action

Chapter 4: Increasing resource efficiency and reducing pollution and waste

1. **Maximising resource efficiency and minimising environmental impacts at end of life.**
    i. Achieving zero avoidable plastic waste by the end of 2042
    ii. Reducing food supply chain emissions and waste
    iii. Reducing litter and littering
    iv. Improving management of residual waste
    v. Cracking down on fly-tippers and waste criminals
    vi. Reducing the impact of wastewater
2. **Reducing pollution**
    i. Publishing a Clean Air Strategy
    ii. Curbing emissions from combustion plants and generators
    iii. Publishing a Chemicals Strategy

iv. Minimising the risk of chemical contamination in our water

v. Ensuring we continue to maintain clean recreational waters and warning about temporary pollution

Chapter 5: Securing clean, healthy, productive and biologically diverse seas and oceans

1. **Introducing a sustainable fisheries policy as we leave the Common Fisheries Policy**
2. **Achieving good environmental status in our seas while allowing marine industries to thrive**

Chapter 6: Protecting and improving our global environment

1. **Providing international leadership and leading by example**
   i. Tackling climate change
   ii. Protecting and improving international biodiversity
2. **Helping developing nations protect and improve the environment**
   i. Providing assistance and supporting disaster planning
   ii. Supporting and protecting international forests and sustainable global agriculture
3. **Leaving a lighter footprint on the global environment**
   i. Enhancing sustainability
   ii. Protecting and managing risks from hazards
   iii. Supporting zero-deforestation supply chains

Putting the Plan into practice

- Consulting on setting up a new independent body to hold government to account and a new set of environmental principles to underpin policy-making.
- Developing a set of metrics to assess progress towards our 25-year goals.
- Refreshing the 25 Year Environment Plan regularly to ensure that collectively we are focusing on the right priorities, using the latest evidence, and delivering better value for money.
- Strengthening leadership and delivery through better local planning, more effective partnerships and learning from our four pioneer projects.
- Establishing a new green business council and exploring the potential for a natural environment impact fund.
- Work closely with a large range of stakeholders over the coming year to identify their contribution to the goals set out in this Plan.



Introduction: Our new approach to managing the environment

We are blessed with magnificent and diverse landscapes, coastlines and seas. The environment is one of our most valuable assets and helps define us as a nation.

The uplifting sights, sounds and smells of our natural and urban environments are integral to our daily lives. More fundamentally, the environment is life-giving. It nourishes and nurtures all life, human, animal or plant. We rely on our blue and green spaces for food, water and the air we breathe. Each vital element is a gift from a healthy, well-functioning planet. In turn, we are healthier and feel better the more time we spend out and about in the natural world.

Our environment underpins our wellbeing and prosperity…

This is not the whole story of what our environment gives us. The natural world also underpins our nation's prosperity and wellbeing. We often talk of being 'enriched' by our environment. In recent years we have come to realise that the environment does indeed deliver calculable economic benefits.

Initiatives to protect and improve our natural world and cultural heritage are acts of stewardship by which we discharge our debt to it, and so are moral imperatives in themselves, but they are also economically sensible. A healthy environment supports a healthy economy. That is why this 25 Year Environment Plan builds on our Industrial Strategy and Clean Growth Strategy, to transform productivity across the country and drive green innovation.

The UK is not alone in grappling with these challenges. By taking a leading role, and developing the technologies, skills and services needed to manage our relationship with the natural world more thoroughly, we can also grow our economy by exporting our expertise around the world.

The economic benefits that flow from the natural world and our natural heritage have begun to take a greater prominence in policy-making, thanks in part to the ground-breaking work of Professor Dieter Helm's Natural Capital Committee (NCC). We see these benefits in increased productivity from our natural resources and a lessening of the demands placed on them. We see them in the boost to our mental and physical wellbeing.

…and helps bring about a fairer society

A healthier environment also helps deliver social justice and a country that works for everyone. For example, pollution affects us all but it is the most disadvantaged in society who suffer more. The poorer you are, the more likely it is that your house, and your children's school and playground are close to highly-polluted roads, and the less likely you are to enjoy ready access to green spaces.[1]



We want everyone to benefit from getting close to nature (Photo: Forestry Commission / John McFarlane).

Through this Plan we want to ensure an equal distribution of environmental benefits, resources and opportunities. At present, children from minority ethnic backgrounds and lower income homes are the least likely to visit our countryside. This should change, so that everyone has the chance to benefit from getting close to nature and appreciating all it has to offer. In turn, they will want to protect and enhance the world around them.

[1] The term "green space" is used in a broad sense in this document, and includes a range of environments known as "green infrastructure", including parks, playing fields, woodland, street trees, rights of way, allotments, canal towpaths, green walls and roofs. Blue spaces include a broad set of blue infrastructure, including canals, rivers, streams, ponds, lakes and their borders as well as features of the coastline that provide people with access to the coast.

We face big challenges in conserving and improving our natural world…

Our landscapes – our hills, valleys and plains – were created by age-old geological processes but the way our rural and urban environment looks now owes as much to the work of people as nature. Down the centuries, we have shaped and adapted our rural and urban landscape to suit our purpose, not always aware of the lasting effects of our actions – for good or ill – on the appearance and health of the environment.

The scale of human impact on the planet has never been greater than it is now. At a global level, the 20th century brought many technological benefits and changes to our way of life, but we have also experienced unprecedented expansion in population, consumption, energy use, waste and pollution, and the conversion of land to agriculture.



Conversion of land to agriculture. Tea plantation, Malaysia.

The effects on wildlife and habitats are stark. We are in danger of presiding over massive human-induced extinctions when we should instead be recognising the intrinsic value of the wildlife and plants that are our fellow inhabitants of this planet. Furthermore, human-induced climate change threatens unpredictable and potentially irreversible damage to our planet.

It is in everyone's interest to be part of the solution. Over the next 25 years we must safeguard the environment for this generation and many more to come. We plant trees knowing that it will not be us, but our children and grandchildren, who get to enjoy their shade. In the same way, we should take a long view of how our stewardship today can lead to a healthier and culturally richer planet tomorrow. We have already set out our plans to better conserve our heritage assets[2].

We all have a stake in our environment. Everyone can play a part, because government and environmental organisations cannot achieve the necessary improvements on their own.

[2] The Heritage Statement 2017, Department for Digital, Culture Media and Sport, 2017

Industrial Strategy and the 25 Year Environment Plan

Our Industrial Strategy, published in November 2017, and our 25 Year Environment Plan set out our approach to safeguarding our environment and future-proofing our economy for generations to come. They are complementary approaches that reinforce one another given the relationship between the environment and the economy.

The Industrial Strategy sets out our approach to boosting productivity across the country, raising living standards and improving the quality of life for all our citizens, through strengthening the five foundations of productivity: innovation, people, infrastructure, places and the business environment.

It sets out Grand Challenges to put the United Kingdom at the forefront of the industries of the future, directing the focus of government and engaging the private sector to ensure we take advantage of major global trends, and improve people's lives and the country's productivity. The four Grand Challenges are:

- Artificial Intelligence and Data Economy – putting the UK at the forefront of the artificial intelligence and data revolution.
- Clean Growth – maximising the advantages of UK industry from the global shift to clean growth.
- Future of Mobility – becoming a world leader in the way people, goods and services move.
- Ageing Society – harnessing the power of innovation to help meet the needs of an ageing society.

Environmental protection is at the heart of the strategy, as our Clean Growth Grand Challenge shows, and is also evident in our investment in clean innovation, the support for zero-emission vehicles, and measures to tackle local air pollution.

Similarly, the 25 Year Environment Plan will help boost the productivity by enhancing our natural capital – the air, water, soil and ecosystems that support all forms of life – since this is an essential basis for economic growth and productivity over the long term.

Long-term action is needed, not just at home but abroad too. Pollution, whether in our oceans or airborne in our cities, does not respect national borders. This country has much to be proud of with a record of global environmental leadership. This Plan sends a message that the UK intends to take on an even more prominent international role in protecting the planet.

…and a natural capital approach will help us meet them

Long-term action requires us to take difficult choices, some with considerable economic consequences, about conservation. In the past, our failure to understand the full value of the benefits offered by the environment and cultural heritage has seen us make poor choices. We can change that by using a natural capital approach. When we give the environment its due regard as a natural asset – indeed a key contributor – to the overall economy, we will be more likely to give it the value it deserves to protect and enhance it. This is why, as signalled in our Industrial Strategy, over coming years the UK intends to use a 'natural capital' approach as a tool to help us make key choices and long-term decisions.

The value of natural capital is routinely understated. If we look at England's woods and forests, for example, as a national asset, using a natural capital approach, the value of the services they deliver is an estimated £2.3bn. Of this sizeable sum, according to a recent study, only a small proportion – 10% – is in timber values. The rest derives from other benefits provided to society, such as human recreation and carbon sequestration – the process by which trees lock-up and store carbon from the atmosphere.

What is natural capital?

Natural capital is the sum of our ecosystems, species, freshwater, land, soils, minerals, our air and our seas. These are all elements of nature that either directly or indirectly bring value to people and the country at large. They do this in many ways but chiefly by providing us with food, clean air and water, wildlife, energy, wood, recreation and protection from hazards.



Only 10% of the value of the services woods and forests provide is through timber.

This value is not captured by traditional accounting methods and is too often ignored in management and policy decisions.

But when we use a natural capital approach, we are more likely to take better and more efficient decisions that can support environmental enhancement and help deliver benefits such as reduced long-term flood risk, increases in wildlife, and a boost to long-term prosperity.

It is an approach that can improve our decisions at every level – from international agreements to everyday decisions by individuals. Individual small choices – which coffee to buy and in which kind of cup; whether to drive to work or take the train – add up to a big impact on the environment.



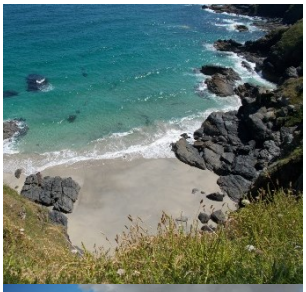
Small individual choices add up to a big impact on the environment (Image: WRAP).

A natural capital approach is equally relevant for those making decisions involving the use of significant public funds.

Over the next 25 years, our policy choices will be better-informed with a natural capital approach. Not all aspects of natural capital – the contribution of wildlife, for example – can be robustly valued at present and we do not always need to know a monetary value to know that something is worth protecting. For this reason we regard it as a tool, not an absolute arbiter. It is just one tool among many in the formation of policy but a very powerful one in ensuring that we think of our responsibility to future generations to hand on a country, and a planet, in a better state than we found it.

We have already made progress…

Measures we have taken over recent decades to bolster and protect our environment mean that:

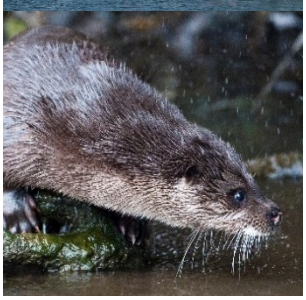












- Our rivers, beaches and air are cleaner than they were 50 years ago;
- Since 1970, emissions of potentially damaging sulphur dioxide and nitrogen oxides have fallen by 96% and 69% respectively and since 1980 ammonia emissions have fallen by 10%;
- The UK was at the forefront of international efforts that have phased out 98% of ozone depleting substances globally, under the UN Montreal Protocol. We also played a leading role in amending the Protocol in 2016 to deliver a phase down of hydrofluorocarbons (potent GHGs) by 85% globally by 2036;
- Since 1990, greenhouse gas emissions have been cut by 42%;
- Household recycling levels have almost quadrupled since the turn of the century;
- We have more stringent protection at national and international level for our most precious landscapes;
- Since 2010, our flood defence programme has been protecting more homes, with 250,000 homes better protected;
- 35% of England's seas are now within designated marine protected areas, safeguarding important and vulnerable habitats and species;
- Over 95% of our terrestrial and freshwater protected sites in England are now in good condition, or have management in place to ensure that they are recovered;
- Populations of animals have been successfully recovered or reintroduced: there are now over 2,000 breeding pairs of red kites in the UK; otters are now found in every English county and we are testing the waters with the Eurasian beaver in Devon and the Forest of Dean.

This progress is the result of many different policies, plans, Commissions, commitments and regulations and we are grateful to the vital players who have contributed; our farmers, fishers, businesses, and environmental and conservation groups among many others.

…but all of us have much more still to do…

This Plan sets out policies which will protect and enhance the environment but also urges all of us to think about how we can contribute.

Tiny changes in our daily decisions can make a tangible and immediate difference, such is the power of group action – whether it is the bags we use to carry groceries, the fuel we burn to keep warm, or the transport we use to get around.



Changes in our daily decisions can make a tangible and immediate difference

…so we will work across society to secure lasting change

Momentum for positive change is growing and in government as well as society as a whole we must harness this in coming months and years. Government will help bring about change in a variety of ways, using both incentives and regulation where necessary, to make sure that responsible attitudes towards the environment become the norm. Many businesses are also playing their part. Fast-food outlets are introducing segregated recycling bins with separate sections for paper cups, plastics and liquids. Other retailers are swapping plastic straws for paper ones, and replacing plastic coffee stirrers with wooden ones.

We will work with all parts of society and all sectors of the economy as we implement the 25 Year Environment Plan to leave the environment in a better state than we found it.

We will invite bodies and people to reduce the environmental impact of their actions, and do more to help communities and individuals to engage with nature and enhance what they find there.

The illustration below sets out the goals and main policy areas to work towards reducing pressures on the environment and increase the key benefits that it provides.

Our 25-year goals

We will achieve:

- Clean air
- Clean and plentiful water
- Thriving plants and wildlife
- Reduced risk of harm from environmental hazards such as flooding and drought
- Using resources from nature more sustainably and efficiently
- Enhanced beauty, heritage and engagement with the natural environment

We will manage pressures on the environment by:

- Mitigating and adapting to climate change
- Minimising waste
- Managing exposure to chemicals
- Enhancing biosecurity







Our policies will focus on:

- Using and managing land sustainably
- Recovering nature and enhancing the beauty of landscapes
- Connecting people with the environment to improve health and wellbeing
- Increasing resource efficiency, and reducing pollution and waste
- Securing clean, productive and biologically diverse seas and oceans
- Protecting and improving the global environment

What we want to achieve

Below, we set out goals and targets for each of the environmental benefits and pressures we have identified. We will refresh them regularly to make sure they are sufficiently ambitious and reflect the latest evidence.

We will work with leading scientists, economists and environmentalists, including the Natural Capital Committee (NCC), to develop, by the end of 2018, a set of metrics that will chart our progress towards a better environment, ensuring transparency and accountability.

Some of the targets derive from our membership of the EU while others go further than EU rules require. Some are already legally-binding while others are not.

We are committed to consulting on how the government should be held to account for environmental outcomes by a new independent, statutory body. This consultation, to be launched early in 2018, will consider the best way to ensure government fulfils its environmental obligations and responsibilities. Further information is provided in later sections.

Goals and targets

Increasing the benefits from the environment

Using the natural capital framework set out by the NCC, we have framed our goals for environmental improvement over the next 25 years around six primary goods and benefits offered by a healthy environment.

1. Clean air

We will achieve clean air by:

- Meeting legally binding targets to reduce emissions of five damaging air pollutants. This should halve the effects of air pollution on health by 2030.
- Ending the sale of new conventional petrol and diesel cars and vans by 2040.
- Maintaining the continuous improvement in industrial emissions by building on existing good practice and the successful regulatory framework.

2. Clean and plentiful water

We will achieve clean and plentiful water by:

- Improving at least three quarters of our waters[3] to be close to their natural state[4] as soon as is practicable by:
    - Reducing the damaging abstraction of water from rivers and groundwater, ensuring that by 2021 the proportion of water bodies with enough water to support environmental standards increases from 82% to 90% for surface water bodies and from 72% to 77% for groundwater bodies.
    - Reaching or exceeding objectives for rivers, lakes, coastal and ground waters that are specially protected, whether for biodiversity or drinking water as per our River Basin Management Plans.
    - Supporting OFWAT's ambitions on leakage, minimising the amount of water lost through leakage year on year, with water companies expected to reduce leakage by at least an average of 15% by 2025.
    - Minimising by 2030 the harmful bacteria in our designated bathing waters and continuing to improve the cleanliness of our waters. We will make sure that potential bathers are warned of any short-term pollution risks.



Minimising the amount of water lost through leakage (Photo: Severn Trent)

[3] 75% target reflects current River Basin Management Plans (RBMPs) analysis of where benefits outweigh costs; waters includes rivers, lakes, groundwater aquifers, estuaries and coastal waters

[4] As set out in international benchmarks and defined in statutory guidance to the Environment Agency provided for its work in developing RBMPs

3. Thriving plants and wildlife

We will achieve a growing and resilient network of land, water and sea that is richer in plants and wildlife.

At sea, we will do this by:

- Reversing the loss of marine biodiversity and, where practicable, restoring it.
- Increasing the proportion of protected and well-managed seas, and better managing existing protected sites.
- Making sure populations of key species are sustainable with appropriate age structures.
- Ensuring seafloor habitats are productive and sufficiently extensive to support healthy, sustainable ecosystems.

On land and in freshwaters, we will do this by:

- Restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term.
- Creating or restoring 500,000 hectares of wildlife-rich habitat outside the protected site network,[5] focusing on priority habitats as part of a wider set of land management changes providing extensive benefits.
- Taking action to recover threatened, iconic or economically important species of animals, plants and fungi[6], and where possible to prevent human-induced extinction or loss of known threatened species in England and the Overseas Territories.
- Increasing woodland in England in line with our aspiration of 12% cover by 2060: this would involve planting 180,000 hectares by end of 2042.

[5] We will develop more detailed targets as part of our post 2020 strategy for nature. We will focus restoration and creation on protected or priority habitats (habitats of principal importance under the Natural Environment and Rural Communities Act)

[6] For example bees and other pollinating insects

4. Reducing the risks of harm from environmental hazards

We will reduce the risk of harm to people, the environment and the economy from natural hazards including flooding, drought and coastal erosion by:

- Making sure everyone is able to access the information they need to assess any risks to their lives and livelihoods, health and prosperity posed by flooding and coastal erosion.
- Bringing the public, private and third sectors together to work with communities and individuals to reduce the risk of harm.
- Making sure that decisions on land use, including development, reflect the level of current and future flood risk.
- Ensuring interruptions to water supplies are minimised during prolonged dry weather and drought.
- Boosting the long-term resilience of our homes, businesses and infrastructure.

5. Using resources from nature more sustainably and efficiently

We will ensure that resources from nature, such as food, fish and timber, are used more sustainably and efficiently. We will do this by:

- Maximising the value and benefits we get from our resources, doubling resource productivity[7] by 2050.
- Improving our approach to soil management: by 2030 we want all of England's soils to be managed sustainably, and we will use natural capital thinking to develop appropriate soil metrics and management approaches.
- Increasing timber supplies.
- Ensuring that all fish stocks are recovered to and maintained at levels that can produce their maximum sustainable yield.
- Ensuring that food is produced sustainably and profitably.

[7] Simply put, resource productivity is a measure of the value (in terms of GDP) we generate per unit of raw materials we use in the economy

6. Enhancing beauty, heritage and engagement with the natural environment

We will conserve and enhance the beauty of our natural environment, and make sure it can be enjoyed, used by and cared for by everyone. We will do this by:

- Safeguarding and enhancing the beauty of our natural scenery and improving its environmental value while being sensitive to considerations of its heritage.
- Making sure that there are high quality, accessible, natural spaces close to where people live and work, particularly in urban areas, and encouraging more people to spend time in them to benefit their health and wellbeing.
- Focusing on increasing action to improve the environment from all sectors of society.

Managing environmental pressures

As well as maximising the benefits of a healthier environment we also need to manage the growing pressures on the environment that are the result of human actions.

7. Mitigating and adapting to climate change

We will take all possible action to mitigate climate change, while adapting to reduce its impact. We will do this by:

- Continuing to cut greenhouse gas emissions including from land use, land use change, the agriculture and waste sectors and the use of fluorinated gases. The UK Climate Change Act 2008 commits us to reducing total greenhouse gas emissions by at least 80 per cent by 2050 when compared to 1990 levels.
- Making sure that all policies, programmes and investment decisions take into account the possible extent of climate change this century.
- Implementing a sustainable and effective second National Adaptation Programme.

8. Minimising waste

We will minimise waste, reuse materials as much as we can and manage materials at the end of their life to minimise the impact on the environment. We will do this by:

- Working towards our ambition of zero avoidable waste by 2050
- Working to a target of eliminating avoidable plastic waste by end of 2042[8].
- Meeting all existing waste targets – including those on landfill, reuse and recycling – and developing ambitious new future targets and milestones.
- Seeking to eliminate waste crime and illegal waste sites over the lifetime of this Plan, prioritising those of highest risk. Delivering a substantial reduction in litter and littering behaviour.
- Significantly reducing and where possible preventing all kinds of marine plastic pollution – in particular material that came originally from land.

[8] Avoidable means what is Technically, Environmentally and Economically Practicable.

9. Managing exposure to chemicals

We will make sure that chemicals are safely used and managed, and that the levels of harmful chemicals entering the environment (including through agriculture) are significantly reduced. We will do this by:

- Seeking in particular to eliminate the use of Polychlorinated Biphenyls (PCBs) by 2025, in line with our commitments under the Stockholm Convention.
- Reducing land-based emissions of mercury to air and water by 50% by 2030.
- Substantially increasing the amount of Persistent Organic Pollutants (POPs) material being destroyed or irreversibly transformed by 2030, to make sure there are negligible emissions to the environment.
- Fulfilling our commitments under the Stockholm Convention as outlined in the UK's most recent National Implementation Plan.

10. Enhancing biosecurity

We will enhance biosecurity to protect our wildlife and livestock, and boost the resilience of plants and trees. We will do this by:

- Managing and reducing the impact of existing plant and animal diseases; lowering the risk of new ones and tackling invasive non-native species.
- Reaching the detailed goals to be set out in the Tree Health Resilience Plan of 2018.
- Ensuring strong biosecurity protection at our borders, drawing on the opportunities leaving the EU provides.
- Working with industry to reduce the impact of endemic disease.



Section 1 - The actions we will take

Through history we have taken too much from our natural world and put back too little, in part because the many benefits that the environment provides are not fully understood or measured.

In this section we set out the actions we will take to put that right and deliver the goals described above.

The lifespan of this Plan is a quarter of a century – a deliberate decision that extends it far beyond the five-year Parliamentary cycle and thus takes account of the longer-term needs of the environment. Not every proposal will – or needs to – take immediate effect, but in this Plan we lay the foundations for lasting future improvements to our natural world.

Chapter 1: Using and managing land sustainably

At a glance

We will:

- Embed an ‘environmental net gain’ principle for development, including housing and infrastructure.
- Improve the way we manage and incentivise land management, including designing and delivering a new environmental land management system.
- Improve soil health, and restore and protect peatlands – this will include developing a soil health index and ending the use of peat in horticulture.
- Expand woodland cover and make sure that existing woodlands are better managed to maximise the range of benefits they provide – this will include supporting the development of a new Northern Forest and appointment of a national Tree Champion to support our approach.
- Take action to reduce the risk of harm from flooding and coastal erosion including greater use of natural flood management solutions.

As we leave the EU, we have a once-in-a-generation chance to change our approach to managing our land so that we secure and enhance the benefits of the environment far into the future.

The new approach will recognise good practices that build up and bolster natural and heritage assets. It will also take account of the negative effects of a range of land uses and activities. It will require a balance of incentives and regulations – influencing decisions so that we use land in a way that supports cost-effective, sustainable growth.

1. Embedding an ‘environmental net gain’ principle for development including housing and infrastructure

This Plan recognises the government’s ambitions for a major increase in housebuilding (300k extra homes a year by the middle of the next decade) and infrastructure investment, and the importance that these have for people’s lives and economic growth. We want to put the environment at the heart of planning and development to create better places for people to live and work.

We will seek to embed a ‘net environmental gain’ principle for development to deliver environmental improvements locally and nationally. This will enable housing development without increasing overall burdens on developers.

We want to establish strategic, flexible and locally tailored approaches that recognise the relationship between the quality of the environment and development. That will enable us to achieve measurable improvements for the environment – ‘environmental net gains’ – while ensuring economic growth and reducing costs, complexity and delays for developers.

Current policy is that the planning system should provide biodiversity net gains where possible. We will explore strengthening this requirement for planning authorities to ensure environmental net gains across their areas, and will consult on making this mandatory – including any exemptions that may be necessary. This will enable those authorities to develop locally-led strategies to enhance the natural environment, creating greater certainty and consistency and avoiding increased burdens on developers, including those pursuing small-scale developments. We would expect this should have a net positive impact on overall development.

Some local authorities, major private developers and infrastructure companies have already implemented a net gain approach. Our immediate ambition is to work in partnership with other Government bodies, local planning authorities and developers to mainstream the use of existing biodiversity net gain approaches within the planning system, update the tools that underpin them and reduce process costs on developers. We have already implemented an innovative, strategic approach to great crested newt licensing in the planning and development process and will look to build on and further streamline protected species licensing.

In future, we want to expand the net gain approaches used for biodiversity to include wider natural capital benefits, such as flood protection, recreation and improved water and air quality. Those approaches will sit alongside existing regulations that protect our most threatened or valuable habitats and species. They will enable local planning authorities to target environmental enhancements that are needed most in their areas and give flexibility to developers in providing them. We will explore the ways in which new data, tools and strategies can support development that brings wider environmental improvement, including linking with fresh initiatives, such as the Nature Recovery Network into the planning system (see later sections).

Actions we will take include:

- Making sure that existing requirements for net gain for biodiversity in national planning policy are strengthened, including consulting on whether they should be mandated alongside any exemptions that may be necessary
- Working with interested parties to reduce costs to developers by expanding the net gain approaches used for wildlife to also include wider natural capital benefits such as flood protection, recreation and improved water and air quality - streamlining environmental process, whilst achieving net environmental gains.
- Working with interested parties to improve and expand the range of tools and guidance that support biodiversity net gain approaches, including through the future incorporation of natural capital measures.
- Working with MHCLG and development professionals to explore ways in which design can contribute to environmental improvements, leading to better places in which to live and work and a reduced environmental footprint.
- Producing stronger new standards for green infrastructure.
- Exploring ways in which national spatial data and strategies could support and improve the benefits achieved through environmental net gain.
- Exploring the potential for district protected species licensing to be expanded and include more species, delivering better outcomes for wildlife and a more streamlined process for development.
- Exploring, through ongoing MHCLG-led reforms of developer contributions, how tariffs could be used to steer development towards the least environmentally damaging areas and to secure investment in natural capital.
- Determining appropriate locations to pilot a revolving land bank for rural areas.

Housing and planning

Around 11% of land in England is developed. New building takes place on an average of 17,000 hectares of undeveloped land each year.

About 12% of land in the United Kingdom is designated as Green Belt land, and we remain committed to protecting it. The Green Belt plays an important role in preventing urban sprawl through the planning process

Used positively, the planning system can protect key natural and historic assets and encourage high-quality green infrastructure in urban areas.

Environmental protections already enshrined in national planning policy will be maintained and strengthened.

- **New development will happen in the right places,** delivering maximum economic benefit while taking into account the need to avoid environmental damage. We will protect ancient woodlands and grasslands, high flood risk areas and our best agricultural land.
- **High environmental standards for all new builds**. New homes will be built in a way that reduces demands for water, energy and material resources, improves flood resilience, minimises overheating and encourages walking and cycling. Resilient buildings and infrastructure will more readily adapt to a changing climate.
- **Enhancement of the Green Belt** to make this land ‘breathing space’ for our urban populations to enjoy, and our diverse wildlife to flourish, while delivering the homes this country needs.

Positive environmental outcomes can help reduce local opposition to development, shorten the planning process, cut operating costs for infrastructure and increase the desirability of new homes.

2. Improving how we manage and incentivise land management

The Common Agricultural Policy (CAP) has been one of the main drivers of land use and management over the last 45 years, and has caused significant environmental damage. As we deliver a Green Brexit that puts environmental policy at the heart of England's domestic and international priorities, farming and agricultural policy is a key area of focus.

£3.2bn is spent in the UK under the CAP. £2.59bn of this is spent under 'Pillar 1' – the 'basic payment scheme' (BPS). This pays farmers according to the amount of land they own, rather than the outcomes they achieve. It concentrates money in the hands of those who already have significant private wealth, without improving environmental outcomes. There have been efforts to improve this by 'greening' one third of BPS payments – but scholars have recently found these to be largely ineffective. Just £0.64bn – 20% of the total – is spent on environmental stewardship programmes under 'Pillar 2'.

One of the first challenges we face is how to optimise sustainable food production. We will seek to support truly sustainable productivity growth. For example, planting over-winter cover crops (grown between periods of regular crop production) can increase yield and also improve soil health. Other measures include reducing soil compaction through subsoiling or effective crop rotation. We also know that small copses, hedgerow trees and individual trees play an important role in breaking up monocultures of arable crops.

In calling for everyone to work together to improve the land for our environment we recognise that there is a complex picture of land ownership in England, with over 40% of farmland being tenanted. We will work with all of those who shape our land to design our future policy.

Research and innovation are part of the answer. Agri-tech developments can significantly improve farm performance, in terms of both profits and the environment. Properly implemented precision farming, resource efficiency, and better livestock and crop management can achieve more effective sustainable productivity growth. An example from the Agri-tech Catalyst programme is Saturn Bioponics' and ValeFresco's successful trial of a vertical hydroponic growth system for Pak Choi at a polytunnel operated by ValeFresco. This has demonstrated between a three- and four-fold increase in crop yield on the same land area, with reduced input requirements (water, fertiliser and pesticides) and improved crop quality. Saturn Bioponics has received a government productivity award for its work.

i. Designing and delivering a new environmental land management system

Leaving the CAP means we can do much more for our environment. After a period of stability to ensure a smooth transition, we will move to a system of paying farmers public money for public goods. The principal public good we want to invest in is environmental enhancement.

We will introduce a new environmental land management system to deliver this. It will incentivise and reward land managers to restore and improve our natural capital and rural heritage. It will also provide support for farmers and land managers as we move towards a more effective application of the 'polluter pays' principle (whereby for costs of pollution lie with those responsible for it).

A new environmental land management scheme will help us deliver more for the environment (including mitigation of and adaptation to the effects of climate change) and provide flexibility, putting more management decisions in the hands of farmers.

In the past, such schemes have supported the creation of nesting and food resources for nationally scarce farmland bird and pollinator species, increased breeding populations of cirl buntings, stone curlews and the marsh fritillary butterfly. They have also help to conserve important heritage assets.

For future schemes, we will aim to keep bureaucracy to a minimum, as well as design a more user-friendly application process. We will continue to invest in technical advice to support farmers and land managers in delivering the outcomes and to help them to work together to achieve benefits at landscape and catchment level. We will also explore where capital grants could support the adoption of long-term sustainable land management practices.

We will set out our proposals for a new system in a Command Paper later this spring and consult widely with farmers and other stakeholders. We will work closely with the devolved administrations on a framework that works for the whole of the UK and reflects the needs and individual circumstances of Scotland, Wales, Northern Ireland and England. As part of this, we will continue to engage regularly with all the devolved administrations to explore options on the design and appropriate extent of the forthcoming Agriculture Bill.

Actions we will take include:

- Working with land managers and others to consider the role of a new environmental land management scheme that encourages broad participation and secures environmental improvements.
- Retaining and further improving targeted support for more complex environmental improvements, backed up by specialist advice.
- Exploring new and innovative funding and delivery mechanisms as part of a new environmental land management system. These may include private payments for eco-system services, reverse auctions and conservation covenants (see later section).

As we implement the new environmental land management system, we will monitor and evaluate its effectiveness in delivering our ambition for a sustainable farming sector.

ii. Introducing new farming rules for water

Farming can be a powerful force for environmental enhancement but it currently generates too many externalities such as emissions from livestock and pollution from fertilisers and pesticides. Overall, farming is now the most significant source of water pollution and of ammonia emissions into the atmosphere in the UK. It accounts for 25% phosphate, 50% nitrate and 75% sediment loadings in the water environment, which harms ecosystems.[9]

Last year, we published new simplified rules for all land managers designed to reduce water pollution from agriculture. These new rules come into force on 2 April 2018.

The new rules will require every farmer to identify and manage risks to water on their land and start taking precautions to reduce ammonia emissions, thereby reducing pollution and soil erosion, and improving resource efficiency.

Actions we will take include:

- Enforcing regulations for new farming rules for water from April 2018.
- Reviewing the progress of the new rules after three years.



Farming can be a powerful force for environmental enhancement but currently generates pollution from fertilisers and pesticides

[9] The impact of agriculture on the water environment: summary of the evidence, Defra, 2014

iii. Working with farmers to use fertilisers efficiently

By ensuring fertilisers are used efficiently, we can cut the air and water pollution that harms public health and the environment, and reduce greenhouse gas emissions. Poor storage of manure and slurry can lead to the release of harmful chemicals and gases such as ammonia (in 2015, more than four-fifths of ammonia emissions in the UK stemmed from agriculture). This can cause acid rain, combine with pollution from traffic and industry to form smog, and harm soils and vegetation.

Ammonia is also disseminated through the poor storage of manure and slurry, deposit of manure, and the spreading of manures, slurries and mineral fertilisers. This pollution could be substantially reduced through consistent use of good nutrient management practices. We have already taken action.

Through the Farming Ammonia Reduction Grant Scheme, we have provided practical help for farmers by funding slurry store covers, which can reduce emissions during storage by up to 80%.

Actions we will take include:

- Putting in place a robust framework to limit inputs of nitrogen-rich fertilisers such as manures, slurries and chemicals to economically efficient levels, and make sure they are stored and applied safely.
- Introducing clear rules, advice and, if appropriate, financial support.
- Working with industry to encourage the use of low-emissions fertiliser, and reviewing the levels of take-up using data from the British Fertiliser Practice Survey.

iv. Protecting crops while reducing the environmental impact of pesticides

We must protect people and the environment from the risks that pesticides can pose. At the same time, farmers need to protect their crops. We should put Integrated Pest Management (IPM) at the heart of an in-the-round approach, using pesticides more judiciously and supplementing them with improved crop husbandry and the use of natural predators. More can be done in the way we breed our plants for traits beyond productivity, making better use of genetics and the resources held in gene banks to ensure their natural resilience to pests and diseases.

For too long, IPM has simply been viewed as good practice for farmers to do voluntarily. By making IPM central to our approach we will encourage wider investment in research and development. By reducing the use of pesticides in the round and deploying them in a more targeted way, it is possible to reduce the impact on the environment while keeping open a sufficient diversity of options to avoid the build-up of resistance and the need for higher doses.

We recently announced that the UK supports further restrictions on the use of neonicotinoid pesticides because of the growing weight of scientific evidence they are harmful to bees and other pollinators. Unless the scientific evidence changes, the Government will maintain these increased restrictions after we leave the EU.



Farmers need to protect their crops. Potato crop, Weaverthorpe, Yorkshire Wolds (Photo: Amanda Riley)

Independent research shows an overall decline in the UK's wild bee diversity over the last 50 years. Pesticides are recognised as one of the potential pressures in the Government's national pollinator strategy, first published in 2014, which sets out a collaborative plan to improve the state of bees and other pollinators.

We will develop our existing strong regulation of pesticides and work with others on different approaches to minimise the impacts of pesticide use in farming. The Government will review the UK National Action Plan for the Sustainable Use of Pesticides in 2018.

Actions we will take include:

- Ensuring that the regulation of pesticides continues to develop with scientific knowledge and is robust and fit for purpose, so as to protect people and the environment. We will maintain this direction after exiting the EU.
- Putting Integrated Pest Management (IPM) at the heart of a holistic approach, by developing and implementing policies that encourage and support sustainable crop protection with the minimum use of pesticides.
- Reviewing the UK National Action Plan for the Sustainable Use of Pesticides in 2018.
- Supporting further restrictions on neonicotinoid pesticides, in line with scientific evidence. Any continuing use should be limited and permitted only where the environmental risks are shown to be very low.

Farming

Our farms provide so much more than just food. They provide recreational activities to an estimated value of £200m for farms and nearly £300m a year for woods. Furthermore, the way farmland and woodland filter the air is valued at £182m and £794m per annum.[10]

But, agriculture is still a major source of water pollution. It is the primary cause of 30% of Sites of Special Scientific Interest (SSSIs) in England being in an unfavourable condition. Our traditional farmland birds have declined by more than half since 1970.

A natural capital approach will help us build a new environmental land management system which values the benefits of the environment and uses the most effective incentives. We can learn from current agri-environment schemes.

Broadly accessible schemes such as Entry Level Stewardship combine environmental protection with conservation objectives and can be applied throughout the country. They fit easily into a farm business.

Targeted schemes focus on environmentally sensitive sites. They generally require management for protected species or habitats and are supported with specialist advice. In England, land managers undertake this type of management through Higher Level Stewardship or Higher Tier Countryside Stewardship agreements.

These schemes have helped populations of marsh fritillary butterfly and the short haired bumblebee to recover, particularly on sites of special scientific interest; enabled improvements in water quality; and protected and restored landscape and heritage assets, including blanket bogs which are major carbon stores.

An example of a success story from Higher Level Stewardship comes from EJ Barker and Sons, a family-owned partnership based in North Suffolk. They demonstrate how high quality and high yielding crop production and farmland biodiversity can be successfully integrated. Their work has allowed species such as grey partridge, great crested newt, turtle dove, yellowhammer, linnet, skylark, brown hare and the barn owl to thrive. Species-rich grassland, wild bird seed mix and pollen and nectar mixes have been established on non-profitable 'marginal' areas of farmland. They manage 30 ponds and 43km of hedgerows for the benefit of bird and insect species.

[10] UK Natural Capital: ecosystem accounts for freshwater, farmland and woodland, ONS, 2017 Figures adjusted for 2017 prices

3. Improving soil health and restoring and protecting our peatlands

Healthy and fertile soil is the foundation for farming and forestry. The quality and type of the soil, in part determined by underpinning geology, also influences the distribution of plant species and provides a habitat for a wide range of organisms.

We need to ensure healthier soils by addressing factors in soil degradation such as erosion, compaction and the decline in organic matter.

The Common Agricultural Policy has encouraged the kind of farming that too often leads to poorer soil health. We see this in poorer productivity owing to nutrient depletion, declines in levels of humus, and erosion and compaction of soils. We currently lack sufficient data to know just how badly our soil has been affected and this Plan aims to correct that.

i. Developing better information on soil health

Farmers and land managers can struggle to monitor the quality of their soil, which in turn makes it difficult to improve. We will develop a soil health index (including indicators such as the level of humus and biological activity in the soil) that can be used on farms to check whether their actions are having the desired effect.

At the moment, data on soil health is held piecemeal by different institutions and businesses. It is not easy to access or use. Defra will invest at least £200,000 to help create meaningful metrics that will allow us to assess soil improvements, and to develop cost-effective and innovative ways to monitor soil at farm and national level.

Working with a range of academic and other partners we will build on the best available existing knowledge, such as the programme of soil monitoring in the Countryside Survey**.** We will seek out ways to work with farmers to achieve good soil management practices, including appropriate tillage choices, reintroducing grass leys into arable rotations and the use of cover crops.

Actions we will take include:

- Working with the industry to update the 2001 guidance on crop establishment and optimal tillage choice.
- Defra will invest at least £200,000 to help develop soil health metrics and test them on farms across the country.
- We will investigate the potential for research and monitoring to give us a clearer picture of how soil health supports our wider environment goals.

ii. Restoring our vulnerable peatlands and ending peat use in horticultural products by 2030.

Our peat bogs and fens are important habitats that provide food and shelter for wildlife, help with flood management, improve water quality and play a part in climate regulation. Most peat soils support ecosystems that are sensitive to human activities including drainage, grazing, liming and afforestation. This makes them susceptible to degradation if poorly managed.

Over the last 200 years, we have lost 84% of our fertile peat topsoil in East Anglia. The fens there could lose the remainder in just 30-60 years given current land management practices and a changing climate[11].

While peatlands are our largest terrestrial carbon store, drained peatlands release their carbon, adding greenhouse gases to the atmosphere. Organic or peat soils make up 11% of England's total land area, over 70% of which are drained or in poor condition. Although our drained lowland peatland makes up only a small proportion of the agricultural land in England, these are among our most fertile soils and play an important part in the nation's food supply. Conventional agricultural production using current techniques on drained peatland is, however, inherently unsustainable.

In view of this, we intend to create and deliver a new ambitious framework for peat restoration in England. Where it is not appropriate to restore lowland peat, we will develop new sustainable management measures to make sure that the topsoil is retained for as long as possible and greenhouse gas emissions are reduced.

[11] Managing the land in a changing climate, CCC, 2013

We will also pursue work already under way to restore peatlands. Funding for peatland projects over three years will become available in April 2018, the result of a £10m peatland grant scheme launched in July 2017.

The scheme will improve the condition of peatlands in England, cutting carbon emissions and delivering a slew of environmental benefits.

In 2011 we introduced a voluntary target for amateur gardeners to phase out the use of peat by 2020 and a final voluntary phase-out target of 2030 for professional growers of fruit, vegetables and plants. If by 2020 we have not seen sufficient movement to peat alternatives, we will look at introducing further measures.

Actions we will take include:

- Announcing successful bids for the peatland grant scheme in February 2018, with funding made available in April.
- Publishing an England Peat Strategy in late 2018.
- Continuing to jointly fund research with the industry to overcome the barriers to peat replacement in commercial horticulture. This will report in 2020.
- Continuing to support the industry as it puts the Responsible Sourcing Scheme for Growing Media into practice.



Hair's-tail Cottongrass, an important plant of peat bogs seen here on the Humberhead Peatlands NNR (Photo: Natural England/Peter Roworth).

Maintaining soil health in farming

Making appropriate tillage or rotation choices are just two of a range of beneficial practices that can improve soil health, maintain good soil structure and in turn increase crop yields and reduce the risk of environmental damage. This positive impact is, however, entirely dependent on understanding the suitability of each practice for particular locations, soil types and crops, and when and how they should be carried out.

Government is already helping farmers to select location-appropriate management practices, through outcome-based soils rules and through both the Farming Advice Service and the Catchment Sensitive Farming Service. Government has also worked with Research Councils to improve our understanding of soil condition and resilience, the results of which are feeding into advice to farmers.

Case study: G's Cambs Farms, Cambridgeshire

For the last 40 years, G's farms have followed an intensive farming model where crop managers were focused on the field for that one year, as part of the rotation. A strategy was pursued to crop the land for everything they could harvest so artificial fertiliser and pesticides were used. Yield remained flat for 30 years on high performing land.

Five years ago the farm began to explore a longer term approach to growing crops, setting ambitious targets to increase yields, reduce the need for artificial fertilisers and pesticides and work more closely with the local environment. They applied a consistent approach to cropping, reduced tillage, compost, cover cropping and focus on improving soil health.

As a result, the farms have seen increases in yield increase of as much as 10% in crops, with a very quick development in soil ability and health. The farm now grows around 750 hectares of cover crops, which are being grazed by sheep over winter, up from 50 hectares five years ago. The next step is for the farms to further develop their understanding of the link between soil health, plant health, animal health and ultimately human health.



G's Cambs Farms, Cambridgeshire

4. Focusing on woodland to maximise its many benefits

We will increase tree planting by creating new forests, and incentivising extra planting on private and the least productive agricultural land, where appropriate. This will support our ambition to plant 11m trees.

We will take the opportunities of other landscape scale interventions, including when scoping a Nature Recovery Network, to drive extensive woodland planting while enhancing our distinctive landscapes. We will also work with industry and support Grown in Britain to increase the amount of home grown timber used in England in construction, creating a conveyor belt of locked-in carbon in our homes and buildings. A wide range of economic and environmental benefits will flow from commercial afforestation to meet the growing demand for timber.

We will not focus solely on planting, however; we will also support increased protection of existing trees and forests. Pests and diseases threaten the wide range of benefits we derive from trees and plants. We want to make sure our trees can withstand future threats.

Beyond the economic benefits, the Government recognises the significant heritage value and irreplaceable character of ancient woodland and veteran trees. We are committed to ensuring stronger protection of our ancient woodlands, making sure they are sustainably managed to provide a wide range of social, environmental, societal and economic benefits.

i. Supporting the development of a new Northern Forest

We will support the planting of a forest that crosses the country in a belt of trees, using the M62 corridor as its spine. With £5.7 million of government funding, we will support the existing partnership of the Community Forests and the Woodland Trust to accelerate and further develop the Northern Forest. This will deliver accessible community woodland to a large swathe of England and at the same time help us to meet our statutory carbon budget requirements. This area has an increasing population, meaning that future generations will benefit from this new forest.



Looking up into the crown of an Ash tree (Photo Forestry Commission / Isobel Cameron)

We will make sure that landowners, farmers and key forestry stakeholders help lead the work, and that it balances the various environmental, social and economic benefits of forestry. We will explore the best use of innovative forms of private sector finance, including philanthropic, social and commercial investment.

Through new approaches to environmental land management we will support extra woodland creation, incentivising more landowners and farmers to plant trees on their land, including for agroforestry and bio-energy production purposes.

Actions we will take include:

- Working with landowners, farmers, key stakeholders and local people to identify and target areas most suitable for and likely to benefit most from woodland creation.
- Supporting Community Forests so that they can play a leading role in urban tree planting, both as part of the Northern Forest and in wider partnerships to bring trees and green infrastructure to towns and cities across England.
- Promoting the Northern Forest as a key contributor to the 'Northern Powerhouse' initiative.

ii. Supporting larger scale woodland creation

We want to increase the long-term supply of English-grown timber, given strong current and projected demand. We will maintain our Public Forest Estate, keeping it in trust for the nation, reflecting the value of the social and environmental benefits it provides so that future generations continue to enjoy them.

We will also increase the long-term supply of English grown timber, by enabling industry to plant sustainable, productive woodland and forestry that meets the highest standards of design and management.

We intend that this continued support of the Public Forest Estate will protect and enhance it. We want our continuing promotion of large scale woodland creation to give investors the confidence to renew and expand wood-processing capacity, thereby securing the supply of current wood products and stimulating further innovation with new products such as cross-laminated timber used in construction.

We will provide the policy framework to enable a long-term programme of forestry and woodland expansion, helping us move towards the pathway for carbon reduction set out in the Clean Growth Strategy. We will strengthen domestic carbon offset mechanisms to encourage private sector investment and develop markets for domestic carbon reduction. This will encourage more businesses to offset their emissions in a cost-effective way, through planting trees. We will also explore how we might extend this approach to other land activities.

As a start, we will introduce a reporting framework for businesses to drive demand for Domestic Offset Units or Credits. We will also introduce a Forest Carbon Guarantee scheme, using the existing Woodland Carbon Code. Given strengthening domestic demand for domestically grown timber, this risk-sharing mechanism will help to attract investors.

We will encourage larger-scale woodland and forest creation, and direct commercial investment in new productive planting towards Forestry Investment Zones, using an inclusive approach to their selection. This will help to create the conditions associated with increased carbon sequestration, greater confidence in domestic timber supply and associated economic benefits. A wide range of environmental benefits will flow from productive forestry planting: these will be maximised if investment zones are developed and planned at a landscape scale, consistent with catchment-based approaches to flood risk management.

As for forestry, while 58% of woodland in England is already in active management, the UK imports around 80% of the wood it consumes so there is a clear opportunity for UK wood - particularly in extracting hardwoods from our broad leafed woodlands. The availability of domestic softwood is set to decline owing to a lack of conifer planting over the last 20 years. Pests, diseases and overpopulations of deer and grey squirrels are a major threat to trees that prevent woodland from realising its full potential. Our commitment to increasing hardwood timber supplies, means we will focus particularly on increasing the proportion of broadleaf woodlands that are sustainably managed.

Actions we will take include:

- Designing a new woodland creation grant scheme, involving landowners, farmers and key forestry stakeholders in the process. We want landowners to plant trees on their marginal land, while encouraging agroforestry.

- Exploring how this new grant scheme could specifically incentivise larger scale afforestation to meet carbon goals and wider environmental benefits at a landscape scale.

- With BEIS and MHCLG, working with stakeholders and the Cumbria catchment pioneer, engaging with Local Enterprise Partnerships to identify suitable areas for large scale woodland creation, and promoting Forestry Investment Zones to attract community, commercial and landowner investors.

- Working with our partners to develop new public/private partnership models of investment for research into the healthy environment, including for research on plant and tree health.

- Working with industry and supporting Grown in Britain to increase home grown timber used in England in construction.

iii. Appointing a national Tree Champion

We will appoint a national Tree Champion to promote the unique blend of social, economic and environmental benefits offered by trees and forests and make sure that the right trees, in terms of biosecurity, value for money, air quality impact and biodiversity among other criteria, are planted in the right places, in line with the UK Forestry Standard.

By bringing together key players across national and local government and the sector, the Tree Champion will help to drive a step change in tree planting.

The role will also involve supporting our manifesto commitments and national targets, including the delivery of one million urban trees and a further eleven million trees.

The Tree Champion will encourage joined-up thinking on issues for trees and will support the mitigation and management of the impact of pests and diseases on the extent, connectivity and condition of the nation's tree-scape. He or she will also explore opportunities to further strengthen protection for ancient woodland.

Actions we will take include:

- Working with the Tree Champion and the Forestry Commission to design and develop a future grant scheme aimed at larger scale afforestation to meet carbon reduction goals and wider environmental benefits.

- Asking the Tree Champion to draw on the Mackinnon review of forestry in Scotland.



We will drive extensive woodland planting while enhancing our distinctive landscapes. (Photo: Michael Gibbs).

5. Reducing risks from flooding and coastal erosion

Flooding and coastal erosion cannot be eliminated but they can be managed, to protect lives, communities and economic growth – for example through town centre regeneration and tourism. Climate change is increasing the risk of flooding and coastal erosion, and population growth means more people are likely to live in affected areas. Ensuring the effective and safe economic use of land can unlock productivity improvements, a key aim of our Industrial Strategy.

In recent years we appear to be seeing greater incidents of flooding. Across Europe, the number of people affected by floods rose dramatically in the latter half of the 20th Century; in England, December 2015 was the wettest calendar month overall since records began in 1910.



Climate change is increasing the risk of flooding and coastal erosion – Waves break over Marine Drive, Scarborough.

Between 2010 and 2015, government invested more than £1.7bn on improving flood defences for more than 250,000 homes, more than 28,000 commercial properties and more than 800,000 acres of agricultural land.

Between 2015 and 2021 we are investing £2.6bn in more than 1,500 flood defence projects to make 300,000 homes more resilient. Since April 2015, this investment has already provided 350 new flood and coastal erosion schemes, providing better protection for 100,000 further homes.

The situation, however, is likely to intensify as temperatures continue to rise: a warmer atmosphere can hold more moisture, leading to heavier rainfall; oceans are likely to become more acid, polar ice reduce and sea-levels rise.

Without any further investment in flood defences, the number of properties at medium or high risk could rise from 0.75 million to 1.29 million in 50 years.

We will take further steps to reduce our vulnerability and exposure to the growing risks and potential impact of flooding.

In 2019, we will update the national flood and coastal erosion risk management strategy, looking to strengthen joint delivery across organisations. We will look at current partnership arrangements ahead of a review of funding needs beyond 2021, seeking to attract more non-public sector investment, and make sure all relevant agencies are able to respond quickly and effectively to support communities if and when flooding does occur.

The Environment Agency will use its role in statutory planning consultations to seek to make sure that new developments are flood resilient and do not increase flood risk. We will look to strengthen the relevant protections in the National Planning Policy Framework.

In addition, we will also focus on:

i) Using more natural flood management solutions where appropriate;

ii) Increasing the uptake of sustainable drainage systems, especially in new developments; and

iii) Improving the resilience of properties at risk of flooding and the time it takes them to recover should flooding occur.

i. Expanding the use of natural flood management solutions

By working with natural processes, we can better protect ourselves from hazards such as flooding. Natural Flood Management involves the use of a variety of measures including tree planting, river bank restoration, building small-scale woody dams, reconnecting rivers with their flood plains and storing water temporarily on open land.

We should not expect that such measures alone will offer protection in areas of greatest risk or in the face of the most significant flood events. Good integrated flood management will see these incorporated alongside more traditional defences.

We are investing £15m up to 2021 to further explore the use of Natural Flood Management, whose wider benefits include better wildlife habitats, recreation opportunities and water quality. These were set out in the Environment Agency's evidence directory, published in 2017, which included 65 case studies on working with natural processes from a flooding and coastal risk management perspective.[12]

Actions we will take include:

- Learning from the £15m Natural Flood Management funding to develop our knowledge, identifying and promoting practical solutions for local implementation.

[12] Working with natural processes to reduce flood risk, Environment Agency, 2017

Working with natural processes and natural flood management

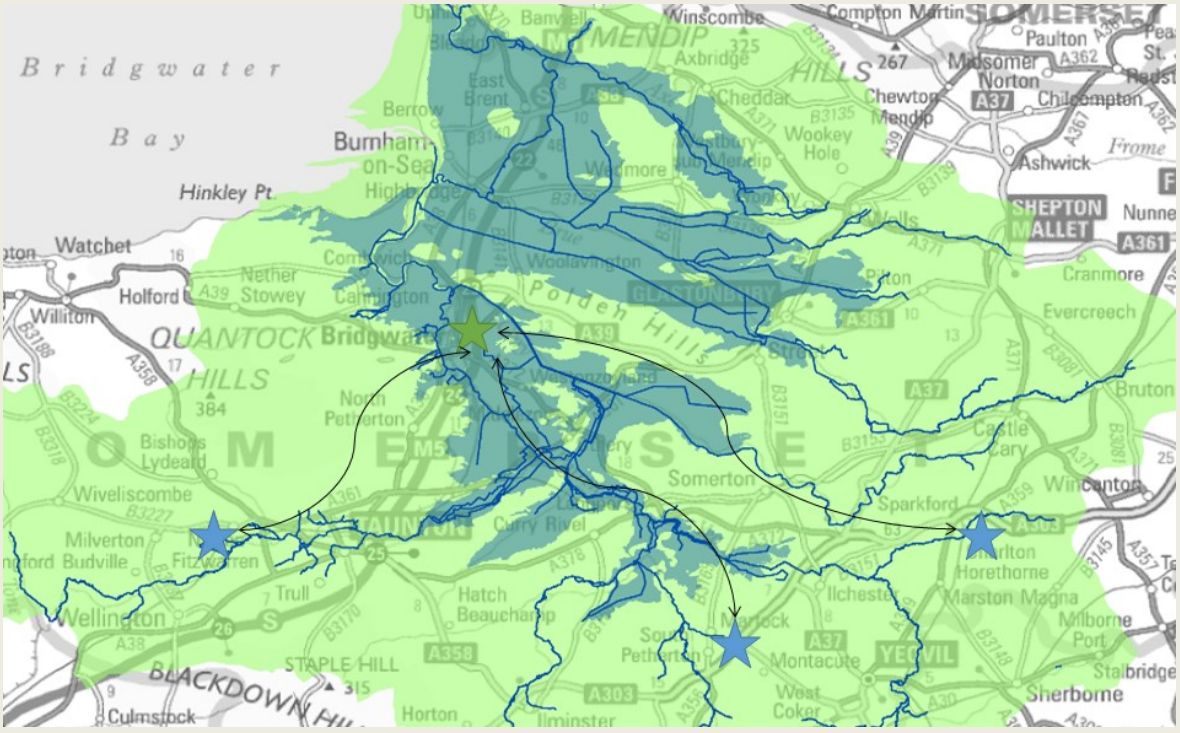
Natural flood management can play an important role in flood and coastal risk management. Techniques such as building leaky debris dams can reduce soil erosion and trap sediment, protect water courses and manage water flow.

Hills to Levels Project, Somerset

The drained, farmed landscape of the Somerset Levels provides a testing case for working with natural process, one which local partners have risen to address.

Work is underway to ‘slow the flow’ of water from the hills to the Levels, across a large catchment (2,871km^2). The project’s measures are working to improve infiltration of rainfall into soils, intercept runoff by diversion and attenuation, slow the flow in-stream and attenuate flood water on re-connected floodplains.

So far this has helped protect properties in the upper catchment that suffer from surface water flooding and 150 properties in and around the Somerset Levels. The project has provided approximately 15,000m^3 of floodwater storage in water attenuation features alone.



ii. Putting in place more sustainable drainage systems

Surface water flooding poses a significant and increasing risk, which can lead to sewer flooding and environmental pollution. We will look at improving how Lead Local Flood Authorities, water and sewerage companies, highways authorities and other risk management authorities work together to manage it.

Sustainable drainage systems (SuDS), such as permeable surfaces, storage tanks and ponds, reduce the risk of surface water flooding. People and wildlife enjoy improved surroundings in urban areas, and water quality is better. SuDS can also help communities adapt to climate change.

Water and sewerage companies can also help to improve surface water management. The Government's strategic priorities and objectives for Ofwat, the water industry regulator, set out how we expect companies to be challenged to develop a mix of solutions to meet current and future water management needs. This includes improved partnership working with local authorities to manage flood risk and adoption and maintenance of SuDS.

Actions we will take include:

- Amending Planning Practice Guidance to clarify construction and ongoing maintenance arrangements for SuDS in new developments, tightening links with planning guidance for water quality and biodiversity.
- Considering changes to the National Planning Policy Framework and Building Regulations in the longer term to encourage SuDS.
- Improving existing arrangements for managing surface water flooding, and the outcomes delivered by Lead Local Flood Authorities and other risk management authorities, including water companies.

iii. Making ‘at-risk’ properties more resilient to flooding

Not all flooding can be prevented. Properties at risk should be more resilient, and better equipped to prevent water coming in and to deal with it more quickly if it does. Effective measures include flood barriers, non-return valves on wastewater pipes, airbrick covers, and flood-resistant coatings on walls.

A government and industry action plan from 2016 showed that consumers lacked confidence in these measures. We will support the insurance and construction sector in developing a voluntary Code of Practice to encourage consumers and businesses to make properties more flood resilient by the end of 2018.

Actions we will take include:

- Supporting an industry-owned voluntary code of practice to promote consumer and business confidence in measures to reduce the impact of flooding on buildings, and on those who live and work in them.

Chapter 2: Recovering nature and enhancing the beauty of landscapes

At a glance

We will:

- Develop a Nature Recovery Network to protect and restore wildlife, and provide opportunities to re-introduce species that we have lost from our countryside.
- Conserve and enhance the natural beauty of our landscapes by reviewing National Parks and Areas of Outstanding Natural Beauty (AONBs) for the 21st century, including assessing whether more may be needed.
- Respect nature by using our water more sustainably.

We know how much the countryside and scenery mean to people: nearly 60% of adults surveyed in 2015 said these were what made them most proud of Britain.[13]

226 million visits were made to the public forest estate in 2016,[14] while the estimated 95 million people who visit National Parks and surrounding areas each year spend more than £4bn and support 68,000 jobs[15]. Our goal is to make sure that our policies balance the needs of a growing, vibrant society with the ability to access green space.

From the confirmation of the first National Park in the Peak District in 1951, to England's youngest National Park, the South Downs, in 2010, the creation of designated landscapes – which also include Areas of Outstanding Natural Beauty (AONBs) – has been among the outstanding environmental achievements of the past 100 years. They provide a patchwork of stunning, and protected, landscapes.

In England, a quarter of our landscape is designated in this way, around 10% as National Parks and 15% as AONBs. We will make sure they continue to be conserved and enhanced, while recognising that they are living landscapes that support rural communities.

[13] Taking part survey 2014/15, Department for Digital Culture Media and Sport, 2015

[14] Natural Capital Account 2016-17, Forest Enterprise England, 2017

[15] Valuing England's National Parks, National Parks England, 2013

As planning authorities, National Parks can shape the way development is used to contribute to their social, economic and environmental enhancement. While development is not prohibited in National Parks or AONBs, major development should take place only in exceptional circumstances.

Protected sites (including our National Nature Reserves, Special Areas of Conservation, Special Protection Areas and Sites of Special Scientific Interest) have safeguarded many of our best wildlife habitats, but the wider environment needs to be considered too. Extensive data on species and ecological communities across terrestrial, freshwater and coastal habitats in the UK shows significant losses over the last 50 years, driven in large part by historic land use change and pollution.

In order to help leave the environment in a better condition for the next generation, we need to restore and create areas of wetland, woodland, grassland and coastal habitat, to provide the greatest opportunity for wildlife to flourish and to promote the wider economic and social benefits that healthy habitats offer.

Taking this approach will help us improve the overall status of threatened species, such as hen harrier and curlew, and will help prevent extinction, as well as providing opportunities for reintroduction of species such as beavers. We will give priority to species in England that are threatened either globally or in the UK, or those that are internationally significant.

We will also improve the overall status of declining species groups, such as butterflies and other pollinating insects, birds, bats and wildflowers.

Pressures on nature are felt across the world. Our actions contribute to significant global efforts in line with UN Sustainable Development Goal 15[16], which calls on us to 'recover sustainable use of terrestrial ecosystems, halt and reverse land degradation and halt biodiversity loss.

1. Protecting and recovering nature

We will support nature's recovery and restore losses suffered over the past 50 years. We will develop a strategy for nature to tackle biodiversity loss, develop a Nature Recovery Network to complement and connect our best wildlife sites, and provide opportunities for species conservation and the reintroduction of native species. We will also explore introducing conservation covenants. These actions will help us create a healthier and richer natural environment.

[16] UN Sustainable Development Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss.

i. Publishing a Strategy for Nature

We place the utmost importance on our commitments to biodiversity and nature conservation under international agreements such as the Convention on Biological Diversity (CBD).

Biological diversity, or 'Biodiversity', is simply the variety of life on Earth – the variety of ecosystems or habitats, of species and of the genetic diversity they contain. We value wildlife in its own right but biodiversity also underpins much of the economic and social benefit we gain from nature.

To implement our international commitments at home we will publish a new strategy for nature, building on our current strategy, Biodiversity 2020. This will coordinate our action in England with that of external nature conservation and academic partners, as well as farmers and land managers. We will ensure the strategy joins up with other plans and strategies, including on the marine environment, pollinators and peatland. Where appropriate, we will continue to work with the devolved administrations to coordinate action across the UK.

The strategy will help us protect our most important wildlife sites and species and draw in new investment alongside government funding. It will demonstrate best practice at home and help us to deliver on our ambition to lead international action against the degradation of habitats and loss of species.

Actions we will take include:

- Working with our partners to learn lessons from the existing strategy, Biodiversity 2020, in developing our new strategy.

ii. Developing a Nature Recovery Network

Through changes in the way we manage our land, we will develop a Nature Recovery Network providing 500,000 hectares of additional wildlife habitat, more effectively linking existing protected sites and landscapes, as well as urban green and blue infrastructure.

Such a network will deliver on the recommendations from Professor Sir John Lawton[17]: recovering wildlife will require more habitat; in better condition; in bigger patches that are more closely connected.

As well as helping wildlife thrive, the Nature Recovery Network could be designed to bring a wide range of additional benefits: greater public enjoyment; pollination; carbon capture; water quality improvements and flood management.

[17] Sir John Lawton is author of Making Space for Nature, 2010

The network could contain a range of land cover types, including new woodland and coastal habitats. Other parts of the network covering peatland, grassland or scrub will lend themselves to environmentally sensitive farming and livestock management, within a wider patchwork of agricultural activity.

We will identify what a network could look like and the steps that are needed to make this happen. For example, we will investigate putting in place up to 25 new catchment or landscape scale nature recovery areas to significantly expand wildlife habitat. These would help build resilience to climate change, and provide opportunities for species and ecosystem recovery, and for the reintroduction of formerly native species, as well as for local community engagement and business development.

We will look initially at opportunities for nature recovery through peatland restoration, natural flood management and woodland planting. We will also look at establishing wildflower recovery areas. This would make it easier for people to visit flower-rich meadows, grasslands and heathland close to their homes. These could be linked to new and existing green infrastructure to extend wildlife corridors into towns and cities, and provide opportunities for conserving wildflowers and insect pollinators.

We want to see local communities and businesses more involved. Data and mapping tools under development will help us come up with proposals that offer the maximum wildlife, economic and social gain.

Voluntary partnerships and private sector sponsorship will help broaden the funding base for this exciting network. We will also continue to work with partners around our National Nature Reserves encouraging wildlife to brim over and colonise new sites.

Actions we will take include:

- Investigating how we roll out a Nature Recovery Network which will provide an additional 500,000 hectares of wildlife habitat building on other plans for landscape-scale recovery for peatland, woodlands and natural flood management.

- Considering how landscape-scale restoration of wildflower-rich grassland, meadows and heathlands could be part of the Nature Recovery Network to provide better access for people alongside improved habitat for pollinating insects.

- Considering delivery options for the Nature Recovery Network over the next two years, as we develop and pilot our new environmental land management system and investigate the use of other new and innovative funding mechanisms.

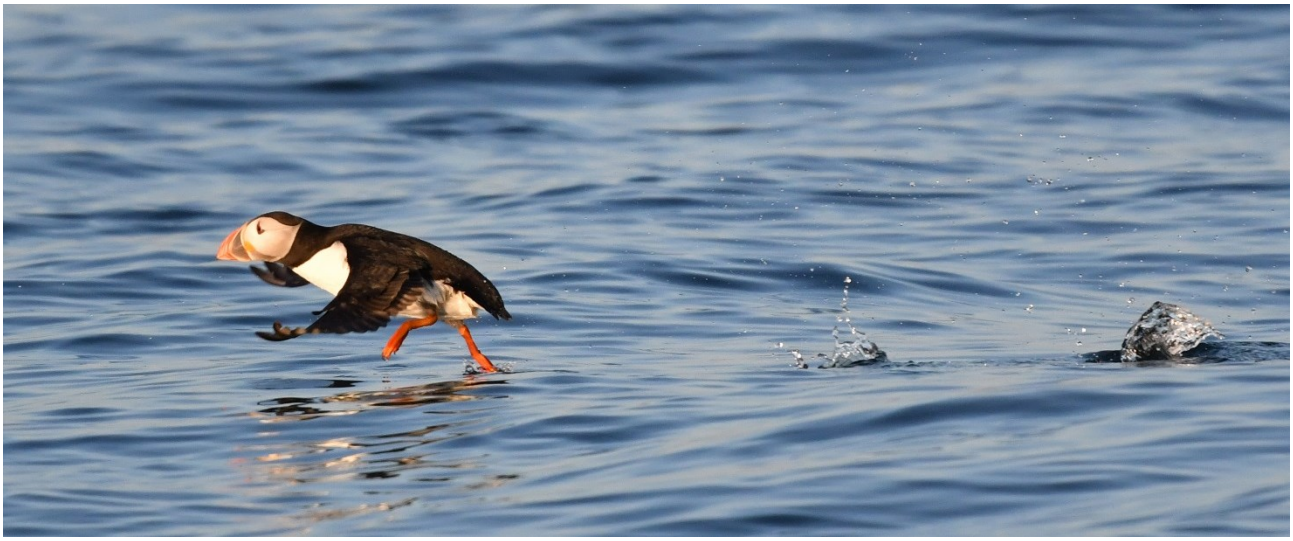
- Evaluating the wider economic and social benefits as we develop the network.

The role of landscape-scale restoration in recovering nature

A new Nature Recovery Network will require input from a range of stakeholders. Benefits will extend beyond wildlife to recreation, carbon capture and water management, attracting more support and securing a wider range of funding. We will develop maps and advice to show where actions to improve and restore habitats would be most effective.

We can learn from previous initiatives that have delivered landscape-scale change. Examples include Nature Improvement Areas; areas of up to 50,000 hectares which brought local groups together to improve both rural and urban environments, creating new habitat for wildlife to thrive and ensuring people will enjoy them for generations to come. Similar but smaller scale is the bottom-up farmer cluster concept, helping farmers collectively deliver greater benefits for soil, water and wildlife at a landscape scale, developed by the Game & Wildlife Conservation Trust with Natural England. Another interesting example is Sir Charles Burrell's Knepp Estate, where he has allowed free-roaming animals to shape the land into a mixture of habitats from grassland and scrub to open-grown trees and wood pasture. Turtle doves, rare bats, 2% of the UK's population of nightingales and a vast population of purple emperor butterflies now thrive there.

We will encourage dynamic management of nature to augment our network of protected sites. We will also build on opportunities for wildlife from peatland restoration or woodland planting, and continue to work with partners around our National Nature Reserves and other important sites, or on externally funded projects such as the 'Back from the Brink' species recovery programme, to allow wildlife to recover, brim over and colonise new sites. The result will be an expanding patchwork of high value habitats, as well as sympathetically-managed farmland, woodland and urban greenspace.



Puffin (Photo: Laurence Fitt-Savage).

iii. Providing opportunities for the reintroduction of native species

Conservation efforts to date have focused on safeguarding our most precious or threatened species. The condition of protected sites has started to improve over the last decade, and we have seen some of our threatened species start to recover.

However, we have still lost many formerly native species from England - such as the white-tailed eagle, the orange-spotted emerald dragonfly and the beaver.

As well as lost species, others, such as the pine martin, fen orchid or hen harrier, are found in only a few sites within their former range. Their reintroduction, when carefully planned and managed, can enrich our natural environment and provide wider benefits for people.

We will develop a code, building on International Union for Conservation of Nature guidelines[18], to make sure proposals provide clear economic or social benefit and are alive to any risk to public, the environment or to business.

We will also provide opportunities for species recovery and reintroduction as we develop our Nature Recovery Network. Natural England will continue to work with partners and local communities on species reintroduction and recovery projects that support nature conservation and help towards meeting economic and social goals.

Actions we will take include:

- Developing and consulting in 2018/19 on a code and best practice guidance for assessing the merits and risks of species reintroduction projects, taking account of their contribution to global and domestic conservation priorities, community engagement and wider social and economic impacts.

- Publishing the code and guidance to sit alongside existing international guidelines to inform future funding and consenting decisions on reintroduction projects.

[18] IUCN Guidelines for reintroductions and other conservation translocations, International Union for Conservation of Nature, 2013

iv. Exploring how to give individuals and organisations the chance to deliver lasting conservation

We will assess the potential role of conservation covenants to enable landowners to create a legally-binding obligation with respect to their land that delivers lasting, conservation benefits for future generations.

Covenants would be overseen by a responsible body to maintain standards, and could allow landowners to protect treasured features on their land such as trees or woodland for purely altruistic reasons. In some cases, they might also be used in a business context to secure the long-term maintenance of existing or newly created wildlife or heritage assets.

Actions we will take include:

- Following the Law Commission report into conservation covenants, assessing the demand and potential for these to secure long-term benefits from investment in nature conservation and other environmental outcomes, as well as the need for safeguards.

- Working with landowners, conservation groups and other stakeholders we will review and take forward the Law Commission's proposals for a statutory scheme of conservation covenants in England.

v. Improving biosecurity to protect and conserve nature

Ash trees are among more recent victims of biosecurity hazards, proof of the devastation that can be wreaked by disease that spreads swiftly from country to country. Ash dieback is a chronic fungal disease that has already ravaged ash trees across Europe, and could lead to the loss of over 90% of one of our most common broadleaved trees.



Ash dieback disease - leaf desiccation, wilting and blackening caused by infection, contrasted with healthy ash leaves (Photo: Forestry Commission / Ben Jones).

Disease outbreaks affect communities and our ability to trade with other countries, as well as harming animal welfare. By strengthening biosecurity we can better protect the nation's animals, cultivated crops, wild plants, trees and forests from pests and diseases.

Disease is not the only threat to native plant and animal species: invasive non-native species can also cause them to decline. This can lead to the threat of extinction, and costly and lasting damage to the character of rare natural habitats.

The proliferation of invasive non-native species can also prompt unwelcome changes in the wider ecosystem that climate change might further exacerbate.

Quagga mussels are an example of a supremely successful invader. These filter feeders multiply at such a rate that they strip phytoplankton and nutrients from freshwater systems, significantly altering the food web and habitat. They also block pipes and filters, causing problems that water companies must pay to resolve. The zebra mussel, a similarly invasive species, is now widespread across England.



Zebra mussel (Photo: Paul Beckwith BWW)

Where it is not feasible to eradicate these species because they are too widely established, we will seek to neutralise their threat by managing them effectively.

By adopting a policy of early and effective intervention, we can save time and money, and spare the environment from greater impacts from breaches in bio-security.The prompt eradication of the extremely invasive water primrose in Great Britain, for example, is estimated to provide a cost saving of approximately £240m compared to late stage eradication.

Strengthening biosecurity around livestock will mean healthier animals, and in turn more productive farming. This then leads to a reduction in both greenhouse gas emissions and the consumption of antimicrobials: helping tackle the effects of climate change and the risk of antimicrobial resistance.

In following the recommendations made by Lord O'Neill in the Independent Review of Anti-Microbial Resistance, we have already worked with industry to reduce the use of antibiotics in animals, achieving a 27% reduction in sales of antibiotics for use in livestock and fish farmed as food between 2014 and 2016.[19]

We already have in place strong protections, including stringent border measures. Our Plant Health Inspectors consistently make more interceptions of harmful organisms than in any other EU Member State. Even so, the threats to plants and animal health is increasing, driven by the movement of goods and people.

[19] Veterinary Antimicrobial Resistance and Sales Surveillance Report, Veterinary Medicines Directorate, 2016

In future we will continue to lead the way internationally on tighter biosecurity. The newly appointed Tree Champion will work closely with Defra's Chief Plant Health Officer to drive the protection of tree health across England. Our revised Plant Health Biosecurity Strategy in 2020 will set out the strategic framework to protect plant health and we will continue to deliver the GB Invasive Non-native Species Strategy (2015) in order to protect natural capital in England from invasive non-native species.

We will continue to take early, pre-emptive action based on evidence of a threat to stop pests and disease arriving here.

Actions we will take include:

- Developing plans to reduce the risk from all high priority pathways for invasive non-native species introduction into England.
- Working with partners to raise awareness of invasive non-native species and the need for strong biosecurity.
- Maintaining an alert system to detect high priority invasive non-native species and implement contingency plans to rapidly eradicate them where feasible.
- Engaging with industry as we develop proposals to drive improvements in animal health. We will work with the devolved administrations and stakeholders to develop policies.
- Publishing a Tree Health Resilience Plan later in 2018 to protect against tree pest and diseases and improve resilience of trees to withstand threats.
- Working with industry to place biosecurity at the centre of buying practices – including encouraging the development of a biosecure supply chain for woodland creation.

2. Conserving and enhancing natural beauty

Some of England's most beautiful landscapes and geodiversity are protected via a range of designations including National Parks and Areas of Outstanding Natural Beauty (AONBs). Some landscapes are also internationally recognised through UNESCO World Heritage Site and Global Geoparks status (for example the Lake District, the Cornwall and West Devon mining landscape and the North Pennines). Collectively, they comprise some of our unique, most cherished and valuable natural assets.

Over the next 25 years we want to make sure they are not only conserved but enhanced. Many of the policies set out in the rest of the Plan will contribute to making all areas more beautiful. In this section, we focus mainly on the designated areas.

i. Reviewing National Parks and Areas of Outstanding Natural Beauty

The UK's first National Parks were created by an Act of Parliament in 1949 following the government's 1947 Hobhouse Report, which remains the basis for most protected landscape designation in England today.



Sunset at Newlands Corner within the Surrey Hills AONB (Photo: Rich Lukey).

Now, 70 years on, the Government will commission a review for the 21st Century. This will consider coverage of designations, how designated areas deliver their responsibilities, how designated areas are financed, and whether there is scope for expansion. It will also consider opportunities to enhance the environment in existing designations, and expand on the existing eight-point plan for National Parks to connect more people with the natural environment.

Actions we will take include:

- Commissioning a 21st Century 'Hobhouse' Review of National Parks and AONBs.

- Working with National Park Authorities to continue to deliver the 8-Point Plan for National Parks 2016-2020. National Park Authorities have already met the target to engage directly with over 60,000 young people a year in schools' visits, and will double this figure.

- Working with National Park Authorities and AONB Partnerships and Conservation Boards to deliver environmental enhancement, including through demonstrator projects, and engaging with communities through their statutory management plans.

- Identifying opportunities for environmental enhancement in all of England's 159 National Character Areas and monitoring indicators of our landscape's character and quality to improve landscapes for people, places and nature.

Promoting landscape quality and natural beauty

Westmorland Dales Hidden Landscapes Project

The Westmorland Dales includes the largest area of limestone pavements in the UK and is within the area that was designated as a further part of the Yorkshire Dales National Park in 2016. Parts of the area are also designated as a Special Site of Scientific Interest (SSSI) and a National Nature Reserve. It contains a unique assemblage of cultural heritage including a remarkably intact pattern of historic settlements and associated earthworks, prehistoric stone circles, cairns, and burial mounds. The Coast to Coast path and the Pennine Bridleway also cross the Dales.

The Westmorland Dales Hidden Landscapes project, located within the Yorkshire Dales National Park, is an example of an approach which could be applied to the wider countryside or urban environments. It aims to engage the local community and develop skills, increasing understanding of the area's significant natural and cultural heritage.

Initial approval for a £3.5m grant to unlock and reveal the hidden heritage and landscape of the Westmorland Dales has been given by the Heritage Lottery Fund (HLF) through its Landscape Partnership programme. HLF funding is enabling Friends of the Lake District and the Yorkshire Dales National Park Authority to develop detailed plans with a wide range of partners. Initial ideas include grassland restoration and woodland projects, flood mitigation and the safeguarding of important archaeological heritage. The goal is to engage people in the natural beauty and unique heritage of their local landscape.



Walkers on the Orton Fells (looking south to the Howgills), Westmorland Dales HLF project

3. Respecting nature in how we use water

It is vital that we maintain sustainable supplies of water for future generations. We recognise that this will require both reducing demand and increasing supply.

i. Reforming our approach to water abstraction

Abstraction is the process of taking water from source, either temporarily or permanently, with most being used for irrigation or drinking water. Groundwater supplies and rivers are refilled naturally by rainfall and snow melt. If too much water is extracted too fast, supplies may become depleted: ‘over-abstracted’. Groundwater sources can, in some cases, take decades to recharge if they are emptied.

Our indicators suggest that as many as one-in-five of our surface waters are over-abstracted. This leads to physical changes that, along with other changes we make to watercourses, risk reducing the diverse range of plant and animal life. While we will support abstractors to access the water they need to operate efficiently, we will continue to amend licences in cases of unsustainable abstraction and support and encourage innovation. One way of improving access to water is to encourage water trading and storage where it is needed most, and we intend to reform our approach here. We aim to introduce more low flow controls to protect the environment and replace seasonal constraints to allow extra abstraction at high flows.



We will develop a stronger catchment focus that brings together the Environment Agency, abstractors and catchment partnerships to address unsustainable abstraction and to improve access to water. These local solutions will be captured in updated abstraction licensing strategies. To help abstractors make the best use of water and protect the environment we will modernise the abstraction service to provide real-time information on water availability. We will report to Parliament in 2019 on progress made on abstraction reform. This will include updates on these actions and the actions we have set out in our water abstraction plan[20]

Actions we will take include:

- Making sure that water companies take a leading role in addressing unsustainable abstraction as part of the Water Industry National Environment Programme, due in March 2018.
- Regulating all significant abstractions that have been historically exempt to make sure that they also play a part in protecting the water environment by 2022.
- Updating ten abstraction licensing strategies by 2021 and all remaining strategies by 2027 to capture agreed solutions to environmental pressures in catchments.

[20] Water abstraction plan 2017, Defra, 2017

ii. Increasing water supply and incentivising greater water efficiency and less personal use

Water companies must develop and implement robust long-term plans that develop new water resources where needed. New supplies will include large infrastructure, such as reservoirs and water transfers, which are needed to make sure the water industry can provide sufficient water for homes and businesses and reduce abstraction from some sources to protect the environment.

Two factors tend to affect demand on the public water supply: efficiency of use and leakage control. Water companies must take bold action to reduce water demands, both now and for the future.

We want to see water use in England fall - the average person currently consumes 140 litres per day. With the average bath using around 80 litres and each flush of an old-fashioned toilet using up to 13 litres, there is action we can take to ensure we are using our water supply most efficiently. We will work with the industry to set an ambitious personal consumption target and agree cost-effective measures to meet it.

We also want to see the amount of treated water lost through leakage continue to fall, year-on-year. All water companies will need to match the levels of leakage reduction achieved by the sector's top performers.

Actions we will take include:

- Consulting in 2018 on a National Policy Statement for water resources that will streamline the planning process for new large infrastructure schemes, leading to net environmental benefits, as set out in the Industrial Strategy.
- Working with the water industry and its five-year business planning cycles to make sure it puts in place long-term strategies to increase resilience, and manage supply and demand (for further details, please see our strategic steer to Ofwat).
- Working with the industry and the group led by the NGO Waterwise to improve water efficiency and customer involvement to explore the impact of introducing new water efficiency measures.
- Taking forward measures that will make significant water savings where practical and cost effective to do so.
- We will work with industry to determine appropriate targets for personal water consumption and the measures needed to achieve them.

Chapter 3: Connecting people with the environment to improve health and wellbeing.

At a glance

We will:

- Help people improve their health and wellbeing by using green spaces including through mental health services.
- Encourage children to be close to nature, in and out of school, with particular focus on disadvantaged areas.
- 'Green' our towns and cities by creating green infrastructure and planting one million urban trees.
- Make 2019 a year of action for the environment, working with Step Up To Serve and other partners to help children and young people from all backgrounds to engage with nature and improve the environment.

Spending time in the natural environment – as a resident or a visitor – improves our mental health and feelings of wellbeing. It can reduce stress, fatigue, anxiety and depression. It can help boost immune systems, encourage physical activity and may reduce the risk of chronic diseases such as asthma[21]. It can combat loneliness and bind communities together.

A wide range of activity is under way to help people experience these benefits. A number of outdoor sports and leisure organisations, green space managers, environmental organisations and schools encourage people to participate in activities in green spaces.

The forest school approach encourages children to explore nature and have a relationship with the outdoors. The new science and geography curriculum and qualifications encourage pupils to undertake fieldwork as part of their course of study.

[21] Evidence Statement on the links between natural environments and human health, University of Exeter and Defra, 2017; Urban green spaces and health, World Health Organisation Regional Office for Europe, 2016, 9-10.

Farms in both rural and urban locations host groups of school children and share their knowledge about the environment and where food comes from.

Some health professionals have adopted a practice known as ‘green prescribing’, a type of social prescribing where nature-based interventions are used to treat people with health conditions. Examples of interventions include gardening, conservation, care farms[22] and green gyms.

We are fortunate to have accessible natural spaces in every county, mostly free to enter, and a network of public rights of way.

One of the most ambitious ways we are opening up the natural world is through the England Coast Path. When it is complete (by 2020) it will be the longest such path in the world, giving hikers, walkers and joggers public access rights to foreshore, beaches, dunes and cliffs for a distance of 2,700 miles.

However, there is more to do. The number of people who spend little or no time in natural spaces is too high. Recent data from the Monitor of Engagement with the Natural Environment survey tells us that some 12% of children do not visit the natural environment each year.

In the most deprived areas of England, people tend to have the poorest health and significantly less green space than wealthier areas.

In healthcare and school settings, and despite some excellent examples of pioneering practice, the possible benefits of contact with nature to promote good mental health or support early interventions for mental health problems are often overlooked.

This Plan sets out ways in which we will make it easier for more people, from every background, to enjoy nature.

1. Helping people improve their health and wellbeing by using green spaces

Our aim is for more people, from all backgrounds, to engage with and spend time in green and blue spaces in their everyday lives. The Industrial Strategy Grand Challenge for an Ageing Society sets out our aim to help older citizens lead independent fulfilled lives, continuing to contribute to society. A thriving and healthy environment is a vital part of this, and a powerful tool for combatting isolation and loneliness.



Different generations enjoying the Peak District (Photo: Pippa Langford).

[22] Care farms are working farms that provide health, social or educational care services for individuals from one or a range of vulnerable groups.

Through existing commitments made in *Sporting Future – a New Strategy for an Active Nation*, and in line with our ambition to reduce childhood obesity, the Government supports programmes that encourage physical activity, including in outdoor settings.

We will scope out how we could connect people more systematically with green space to improve mental health, using the natural environment as a resource for preventative and therapeutic purposes. This will be in line with the Prevention Concordat for Better Mental Health and support the Government's new commitments on children's mental health.

Our ambition includes encouraging mental health service providers to explore the potential offered by environmental therapies and doing more to spread the word about the benefits of nature. The Government will promote collaboration between the health and environment sectors, at national and local level.

i. Considering how environmental therapies could be delivered through mental health services

We will consider how NHS mental health providers in England can establish new working arrangements with environmental voluntary sector organisations to offer appropriate therapies – such as gardening, outdoor exercise and care farming – in natural settings to people with mild to moderate mental health conditions and who may be struggling to overcome loneliness and isolation.

This work will build on the pioneering work of South West Yorkshire Trust and the Rotherham, Doncaster and South Humber NHS Trust, working in partnership with Voluntary Action Rotherham, who have developed social prescribing alongside traditional mental health services. The Rotherham project was recently shortlisted for a Health Service Journal award.

As part of a development of social prescribing across England, specialist social prescribing teams could help to connect patients with environmental support. In support of this work, the Personalised Care Group in NHS England will explore how its own universal model supports people who would benefit from community and environmental programmes.

Actions we will take include:

- Considering how NHS mental health providers in England could work with environmental voluntary sector organisations to offer mental health therapies.
- Sharing lessons learned from existing social prescribing programmes widely so others can adopt best practice.
- Developing standardised tools for service providers to support the roll-out of social prescribing across England. We will do this by seed-funding a project, led by The Conservation Volunteers and supported by NHS England.

ii. Promoting health and wellbeing through the natural environment

We will launch a three-year 'Natural Environment for Health and Wellbeing' programme, focused on supporting local authorities, health organisations, health professionals, teachers and planners in promoting the natural environment as a pathway to good health and wellbeing. Mental health problems and early interventions will be an initial area of interest, however the programme will be charged with considering other health issues, such as obesity, where children and adults would benefit from better access to nature. To make sure that it reaches as many people as possible, we would welcome the programme being replicated at local level. Ideally, we would like access to the natural environment put at the heart of all local Health and Wellbeing Board strategies.

Actions we will take include:

- Establishing a cross-government alliance on environment and health to design and oversee the 'Natural Environment for Health and Wellbeing' programme.
- Supporting the alliance to review evidence, develop tools and support local authorities, commissioners, and professionals.

2. Encouraging children to be close to nature, in and out of school

Playing and learning outside is a fundamental part of childhood, and helps children grow up healthy. Some children are lucky enough to have a family garden; others will not and it is important that we find other ways to give them better access to the great outdoors. We know that regular contact with green spaces, such as the local park, lake, or playground, can have a beneficial impact on children's physical and mental health.

The initiatives we outline below are designed to encourage and support outdoor activities, particularly where a child has no access to a family garden. Government will make available £10m of funding to support these initiatives.

i. Helping primary schools create nature-friendly grounds

We will launch a Nature Friendly Schools Programme to help more communities create the kind of school grounds that support learning about the natural world and also keep children happy and healthy.

The government will provide support for schools in our most disadvantaged areas that wish to create nature friendly grounds and to design and run activities that support pupil's health and wellbeing through contact with nature.

Actions we will take include:

- Developing a Nature Friendly Schools programme for schools in our most disadvantaged areas with input from stakeholders that can be opened to schools from autumn 2018.



Junior botanist - Castor Hanglands NNR near Peterborough (Photo: Justin Tilley).

ii. Supporting more pupil contact with local natural spaces

We want to make it easier for schools and Pupil Referral Units to take pupils on trips to natural spaces on a regular basis where they can combine learning with feeling healthier and happier. This might involve class visits to a city farm, a local nature reserve, woodland or National Park. In cases of individual need, a pupil might go to a care farm on a bespoke itinerary.

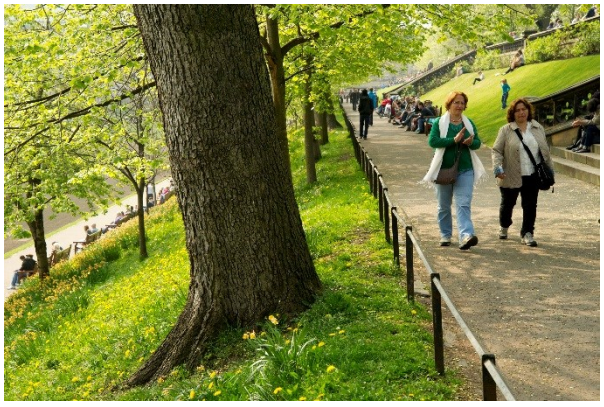
Actions we will take include:

- Developing a programme to support schools and Pupil Referral Units in our most disadvantaged areas in establishing progressive programmes of nature contact for their pupils, which can be opened to schools from autumn 2019.
- Supporting the expansion of school outreach activities delivered by community forests.
- Supporting a national expansion of care farming by 2022, trebling the number of places to 1.3m per year for children and adults in England.

3. Greening our towns and cities

Green and blue spaces in our built environment are essential to health and happiness. Yet urban greenspace is unequally distributed. The provision of more and better quality green infrastructure,[23] including urban trees, will make towns and cities attractive places to live and work, and bring about key long-term improvements in people's health. Better green infrastructure will promote local social interaction and help to develop strong community networks through participation and shared achievements.

We want to encourage more investment, in part by doing a better job of explaining what 'good' green infrastructure actually looks like. We will do this by defining a set of standards in close consultation with stakeholders, including the Parks Action Group.



Green and blue spaces in our built environment are essential to health and happiness (Photo: Forestry Commission / John McFarlane).

[23] This can include green infrastructure in new developments, upgrading of existing green infrastructure and retro-fitting of new green infrastructure in areas where provision is poor.

i. Creating more green infrastructure

Our aim is to improve existing green infrastructure by encouraging more investment while making sure there is a presumption for sustainable development. Initially, we will focus on areas where we know that there is not enough accessible green infrastructure, or that what is there is of poor quality.

We will draw up a national framework of green infrastructure standards, ensuring that new developments include accessible green spaces and that any area with little or no green space can be improved for the benefit of the community. This will involve finding out what local authorities, developers and other stakeholders think is most important, and where good practice is being demonstrated. There is likely to be some cross-over with the work of the Parks Action Group, whose members' knowledge will be captured and shared. Consistent with the Industrial Strategy we will make sure the important contribution made to economic growth by high-quality environmental assets and green infrastructure are taken into account when we make decisions.

Actions we will take include:

- Supporting the Parks Action Group in its work to help England's public parks and green spaces meet the needs of communities now and in the future.
- Continuing our ground-breaking work with Exeter University to update the world-leading Outdoor Recreation Valuation Tool (ORVal) in 2018.
- Establishing a cross-government project, led by Natural England, that reviews and updates existing standards for green infrastructure by summer 2019.
- Supporting Local Authorities to assess green infrastructure provision against these new standards.
- Working with the Ministry of Housing, Communities and Local Government to see how our commitments on green infrastructure can be incorporated into national planning guidance and policy.

ii. Planting more trees in and around our towns and cities

Having more trees in and around our town and cities, close to where people live and work, brings people closer to nature and improves air quality, with consequent positive health impacts.

In urban areas, we will work with stakeholders to plant one million new trees. This is in addition to the 11 million trees we will plant across the country and will help with a number of other environmental challenges.

In determining our approach to meeting the aspiration of 12% overall tree cover by 2060, we will consider how to bring woodland creation closer to where people live. We will review approaches such as the National Forest Company (NFC) in the East Midlands, in which local authorities work to increase tree and woodland cover and provide one-to-one advice to landowners. The NFC model has led to more than 8.5 million trees being planted and has attracted over £1bn of inward investment over the past 25 years.

One of the advantages of the NFC has been that by planting in urban fringes these woodlands have maximised the beneficial value of public access and enjoyment. We will also draw on the existing network of forests in and around our largest towns and cities under England's Community Forest programme, which was set up in 1990 as a series of partnerships between local authorities, the Forestry Commission and Natural England.

Actions we will take include:

- Continuing to work with stakeholders to develop and implement a programme to plant one million trees in England's towns and cities by 2022.
- Working with stakeholders to develop and implement a manual for local authorities and other urban tree-planting organisations to shape their procurement and maintenance practices for urban trees.
- Introduce new requirements to ensure councils properly consult if they are considering removing street trees.

Green infrastructure in urban areas

Urban residents prize the parks, playing fields, woods, street trees and footpaths that make their district an attractive place. People in greener surroundings have longer and healthier lives. Green infrastructure brings wider benefits, including sequestering carbon, absorbing noise, cleansing pollutants, absorbing surface water and reducing high temperatures. The number and condition of green spaces has declined and current investment is confined to specific projects. We risk losing more good quality green spaces.

As we build more homes, preserving and creating green spaces in towns is more important than ever. Local authorities and developers need to take account of all the benefits when deciding how much land to allocate as green space.

The Canal & River Trust, supported by the Esmee Fairbairn Foundation and People's Postcode Lottery, successfully implemented a three-year 'Community Roots' partnership project around the Huddersfield Narrow and Rochdale canals to encourage more visitors. Local people, many of whom do not normally visit the canals, took part in creating art trails, paddle boarding, healthy walks and angling tasters, as well as ecological surveys, canal clean-ups and dredging. Now the canals are cleaner and more attractive. The project attracted more than 1,200 new volunteers, many of which now have new conservation skills.



Out and about in the Mersey Forest (Photo: Ian Southern)

The Mersey Forest programme in the North West is creating green spaces. As England's largest Community Forest, the Mersey Forest partnership have planted more than nine million trees creating a 1,300km² network of woodlands, open spaces, urban gardens and street trees in some of the most disadvantaged areas of Merseyside and Cheshire. Its planting schemes deliver a wide range of benefits including increased flood resilience, enhanced biodiversity and improved health and wellbeing for local people. Its award winning 'Nature4Health' programme encourages local communities at risk of developing health problems such as diabetes, obesity or depression, to get out into the Forest through conservation activities, mindful walking and forest schools, significantly improving their physical and mental health.

4. Making 2019 a year of action for the environment

Our goal is to see more people from all backgrounds involved in projects to improve the natural world. We will make 2019 a year of action for the environment, putting children and young people at its heart. This year of green action will provide a focal-point for organisations that run environmental projects, and will encourage wider participation.

Evidence suggests that while many people are already keen to get out there and help the environment, we should aim for many more to do so. Among younger people alone, and across all kinds of social action, the government-funded National Youth Social Action survey of 2016, found that in a group of 10-20 year olds, 42% of young people participated in meaningful social action, whilst another 42% took no part in social action[24].

i. Helping children and young people from all backgrounds to engage with nature and improve the environment

Working with Step Up to Serve, #iwill campaign partners, and other youth and environmental partners, we will develop an environment theme for the #iwill campaign in 2019 (the 2018 theme is health, linked to the 70th anniversary of the NHS).



Drawing leaves (Photo: Forestry Commission / John McFarlane).

[24] Defined in the National Youth Social Action Survey 2016 as 'practical action in the service of others to create positive change' and covers a wide range of activities that help other people or the environment, such as fundraising, campaigning, tutoring/mentoring and giving time to charity.

The #iwill campaign is a movement led by all sectors that by 2020 aims to make involvement in meaningful social action a part of life for all 10-20 year olds. We will work with partners from the environmental and youth sectors to promote environmental opportunities that attract young people from all backgrounds. As part of this, we will work with the National Citizen Service (NCS) Trust, to enable more participants to have contact with and improve natural environments both during the NCS experience and afterwards.

We will engage young people in the design of this programme. Legacy partnerships will sustain opportunities for young people to engage with the environment into the future.

In 2019 a wide range of engagement activities will be planned to coincide with the 70th anniversary of National Parks and the centenary of the Forestry Commission.

Actions we will take include:

- In partnership with Step Up to Serve, supporting the 2019 #iwill environment-themed year, with design input from young people.
- Evaluating progress in increasing young people's environmental social action, including #iwill campaign activity in 2019, and sharing lessons to sustain good practice.
- At the same time, exploring with youth sector partners the potential for piloting a natural environment programme with youth groups that encourages use of natural environments through social action. This would aim to reach more young people from disadvantaged backgrounds.

ii. Supporting the 2019 year of green action

Government will build on the 70th anniversary of National Parks and the centenary of the Forestry Commission and #iwill campaign activities in 2019 to encourage adults and children to take positive steps to help the natural environment. We will focus on the simple things that people can do, and how these also support good health.

A series of public engagement activities for 2019 will link to initiatives on waste reduction, cleaner air or other aspects of pro-environmental behaviour. We will look to get the business community and voluntary sectors involved in these activities, and urge them, with the education sector, to develop their own initiatives throughout the year to engage communities and raise awareness.

We expect 2019 to be the foundation of a five-year programme that will help turn the commitments in this 25 Year Environment Plan into action.

Actions we will take include:

- Drawing together targeted activities to make it easier for people to get involved in improving the natural world and spread the word about environmental issues.
- Working with partners from the business and voluntary sectors to make these activities happen.
- Scoping out an evidence-based behaviour change strategy to enable further actions by individuals, communities, businesses and government beyond 2019.

Chapter 4: Increasing resource efficiency and reducing pollution and waste

At a glance

We will:

- Make sure that resources are used more efficiently and kept in use for longer to minimise waste and reduce its environmental impacts by promoting reuse, remanufacturing and recycling.
- Work towards eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2042[25].
- Reduce pollution by tackling air pollution in our Clean Air Strategy and reduce the impact of chemicals.

Dealing with waste and pollution costs businesses and householders millions of pounds each year and causes significant environmental and wildlife damage.

Pollution is a form of waste that pervades the environment: the atmosphere, water, land and oceans.

Over the next 25 years, we must significantly cut all forms of pollution and ease the pressure on the environment. We must ensure that noise and light pollution are managed effectively.

We need to stop producing so much waste in the first place. We can do this by being more 'resource efficient', which not only eases pressure on the environment and our stocks of natural resource but reduces costs too, boosting productivity.

Sustainable growth can go hand in hand with less waste and a smarter use of resources. We know that well-designed and delivered regulation, taxes and charges contribute to cleaner growth: the landfill tax has been instrumental in reducing the amount of waste dumped in the ground by 44% since 2000. The aggregates levy has hugely incentivised use of recycled aggregate.

[25] Avoidable means what is Technically, Environmentally and Economically Practicable.

We must also ensure that we are not simply exporting waste to other countries. Better intelligence about criminal activity and targeted inspections are estimated to have cut illegally-exported electrical and household waste from England by 17% between 2014 and 2016, saving the UK economy £2.75m over the two years.[26]

We will improve and develop our regulatory framework so that it provides strong environmental protection and standards while promoting economic growth: providing certainty for investment, stimulating markets and innovation, and setting a baseline for all.

1. Maximising resource efficiency and minimising environmental impacts at end of life.

We are committed to working towards our goal of zero avoidable waste by 2050 and doubling resource productivity over the lifetime of this Plan. In order to do this, and to maximise the value we get from our resources during their lifetime, we need to look at their whole life-cycle – from production, to usage and what we do with them at the end of their lives. We have committed to develop a new national Resources and Waste strategy to achieve this.

Our Industrial Strategy promotes the move towards a regenerative, circular economy. The economy exists within the natural world, and cannot be separated from it.

Energy and materials are essential contributions to the production of goods and services, and a healthy economy depends on a healthy environment. We want more efficient production processes and better designed products that reduce waste (cutting material costs) and use recycled/reused materials wherever possible.



We want products that reduce waste and use recycled/reused materials wherever possible.

We need to make data more available to support processes such as industrial symbiosis – i.e. where two or more industrial facilities or companies join up and the wastes or by-products of one become the raw materials of another. We must also develop business models that challenge inefficient production practice and on this we will work with industry to explore options for making waste tracking data universally digitised.

We are committed to supporting comprehensive and frequent waste and recycling collections which protect local amenity and ensure that products are recycled as much as possible, returning high quality materials back to the economy.

[26] Regulating for people, the environment and growth, Environment Agency, 2017

This will help stimulate internal UK markets and support strong secondary materials markets as well as exports abroad.

The government will shortly set out plans for a Bioeconomy Strategy which will build on the UK's strengths to ensure we can develop a world-class bio-based economy by removing our dependence on finite fossil resources. Bioscience and biotechnology has the potential to create new solutions that are economically and environmentally sustainable as well as resource-efficient.
This will not only increase productivity but will also enable clean growth across all our towns, cities and communities

As a package, these actions will see us manage resources more sustainably and divert more waste away from landfill, reducing the associated environmental impacts.

Actions we will take include:

- Publishing a new Resources and Waste strategy in 2018 aimed at making the UK a world leader in resource efficiency. It will set out our approach to reducing waste, promoting markets for secondary materials, incentivising producers to design better products and how we can better manage materials at the end of life by targeting environmental impacts.

i. Achieving zero avoidable plastic waste by end of 2042

Plastic is an incredibly versatile material that forms a key component of many products we use today. As a packaging material, it is safe, secure, hygienic and cheap. It is tough and long-lasting, which is why it is also a disaster for the environment. Production of most virgin plastics requires fossil fuels, and when we have finished with them, they are difficult to dispose of in a way that does not harm the natural world.

It is estimated that 8.3 billion tonnes of plastic have been produced since the 1950s [27]. Without urgent action to cut demand, this is likely to be 34 billion tonnes by 2050, the majority of which will end up in landfill or polluting the world's continents and oceans. In the UK alone, during its recent Great British Beach Clean Up the Marine Conservation Society found 718 pieces of litter for every 100m stretch of beach surveyed. Of this, rubbish from food and drink made up at least one fifth.

Urgent action to reduce plastic waste in the marine and open environment is needed and is vital for the future of our planet and a considerable economic opportunity, including for developing countries that stand to benefit from more productive land, healthier seas, and ecotourism.

Re-using and recycling plastics is critical, and also reduce our reliance on fossil fuels for the production of virgin plastics. These changes would also stem the damaging flow of plastics into the environment, where they devastate wildlife and the wider natural environment. Reducing the plastic flow into our seas would also reduce the risk of toxins being transferred up the food chain. To address this issue we will work to eliminate all avoidable plastic waste over the lifetime of this Plan through a four point plan taking action at each stage of the product lifecycle – production, consumption and end of life.

[27] Production, use, and fate of all plastics ever made, Geyer, et al. *Science Advances*. Vol 3, no.7, 2017

Actions we will take include:

- Looking across the whole lifecycle, launching a call for evidence in 2018 seeking views on how the tax system or charges could reduce the amount of single use plastics waste.

1. At the production stage, we will encourage producers to take more responsibility for the environmental impacts of their products and rationalise the number of different types of plastic in use by:

- Working with industry to rationalise packaging formats and materials formats to make sure that more plastics can be easily recycled and the quality of collected recycled plastics is improved.

- Reforming our Producer Responsibility systems (including packaging waste regulations) to incentivise producers to take greater responsibility for the environmental impacts of their products. This will include exploring extending producer responsibility requirements to plastic products not currently covered by our existing regimes to create a better market for recycled plastic.

- Building on our microbeads ban by exploring whether we can ban other problematic materials where suitable alternatives exist.

- Analysis by Innovate UK shows that we have invested approximately £54m of public research and development money on plastics innovation in the past seven years but we must accelerate the pace of research to ensure a higher proportion of plastic is re-usable, recyclable and recycled and that British companies are at the forefront in developing this technology – a key ambition of the Clean Growth Grand Challenge. We will therefore work with BEIS, Innovate UK, Research Councils and industry to bring forward a bid for the next round of Industrial Strategy Challenge Fund awards later in 2018 to help develop a pipeline of new, more sustainable materials that will have a lower environmental impact.

- Encouraging the development of bio-based, biodegradable and environmentally-friendly plastic through the Bioeconomy Strategy.

2. At the consumption stage, we will reduce the amount of plastic in circulation through reducing demand for single-use plastic by:

- Removing all consumer single use plastics from the central government estate offices.
- Extending uptake of the highly successful 5p plastic bag charge to small retailers, exploring whether compulsory options are needed if voluntary agreements prove ineffective.
- Supporting water companies, high street retailers, coffee shops and transport hubs to offer new refill points for people to top-up water bottles for free in every major city and town in England. The water industry plans to create a nationwide network of refill points, and an app to help people find the nearest place to refill their bottles with water free of charge.
- Working with retailers and the Waste and Resources Action Programme (WRAP) to explore introducing plastic-free supermarket aisles in which all the food is loose.

3. At the end of use stage, we will make it easier for people to recycle by:

- Continuing to support the industry led on-pack recycling labelling system and encourage all brands and retailers to use this systems to provide information to householders.
- Continuing to implement the Litter Strategy to reduce plastic litter and littering behaviour.
- Implementing voluntary and regulatory interventions that can cut the amount of commonly littered items, and improve recycling and packaging reuse. This includes considering advice from the Voluntary & Economic Incentives Working group (set up under the Litter Strategy), which is currently looking at measures to reduce littering and promote recycling of drinks containers.

4. At the end of life/waste management stage, we will improve the rate of recycling

- Through the Framework for Greater Consistency, WRAP is working with industry and local authorities to ensure that a consistent set of materials are collected by all local authorities. We want to accelerate this shift to consistency in the materials collected.
- Working with the waste management industry and re-processors to significantly increase the proportion of plastic packaging that is collected and recycled.

- We will work with the Research Councils to help develop a standard for biodegradable plastic bags as part of emerging work on a national Bioeconomy Strategy (while also recognising the need to avoid microplastics pollution).

Collaborative industry action:

- WRAP is working to develop a new cross-sector (business, government and NGOs) commitment to tackle plastic waste. This will align with the Ellen MacArthur Foundation's New Plastic Economy and have an initial focus on plastic packaging.

Demonstrating international leadership:

- We will do more to help developing nations tackle pollution and reduce plastic waste, including through UK aid.
- Work through the UN, G7 and G20 to tackle marine plastics pollution at an international level.
- Work with the International Maritime Organization to address the control and prevention of ship-source pollution.

ii. Reducing food supply chain emissions and waste

The Government is working to make the way we eat and drink in this country more sustainable. The aim is to cut by one fifth the greenhouse gas intensity of food and drink consumed in the UK, and also per capita UK food waste by 2025. This will set the UK on a path to meet an even more ambitious UN target – halving per capita global food waste at retail and consumer levels by 2030.

The work is being done through The Courtauld Commitment 2025, a bold voluntary agreement involving organisations along the agri-food supply chain from producer to consumer. The commitment addresses key issues, including reducing waste from consumers by for example rolling out guidance on applying 'Use By' dates only where there is a food safety reason to use it, and looking across supply chains to find efficiencies. Reductions achieved will be measured using global best practice methodology.[28]

Contracting parties – including food businesses and local authorities – are also guided by elements of the Plan for Public Procurement and Catering Services, including the 'balanced scorecard' which ranks a range of relevant criteria (sustainability in production, health and nutrition, resource efficiency, social-economic value and so on).

[28] Courtauld Commitment, 2025

These criteria will help to deliver real environmental improvements, including entrenching UK production standards, reducing food waste, encouraging the use of seasonal fresh produce and encouraging menus to identify and celebrate the provenance of the food on offer.

Recycling food waste is also a key priority. We will work towards no food waste entering landfill by 2030. Many local authorities have introduced separate collection of food waste and we will work to support an increase in numbers so that the amount of food waste sent to landfill continues to decline. We will also take action to support the redistribution of unsold edible and nutritious surplus stock from food businesses to individuals in need. As a starting point, WRAP announced at the end of last year a new £0.5m fund for charities who redistribute surplus food from food businesses to those in need.

Actions we will take include:

- Continuing to work closely with WRAP, food businesses, local authorities and other organisations to meet Courtauld 2025.
- Ensuring that as food and catering contracts come up for renewal, central government departments and their agencies adopt the balanced scorecard approach to deliver benefits to the environment, consumers and businesses alike.
- Funding for charities who redistribute surplus food from food businesses to those in need.



Recycling food waste is also a key priority (Illustration: WRAP).

iii. Reducing litter and littering

The Litter Strategy for England sets out our aim to clean up the country and cut both litter and littering behaviours by means of better education, enforcement and 'binfrastructure' (the design, number and location of public litter bins and so on).

The Litter Strategy also sets out a compelling economic case for all businesses to invest in anti-litter activities – perhaps by adopting voluntary measures that aim to increase recycling and reduce litter, or through product design, behavioural research and investment in campaigns. We will also work with relevant industries to tackle particular red flags such as discarded fast-food packaging, smoking-related litter and chewing gum.

We will deliver a new national anti-litter campaign and work on developing a culture that teaches young people not to litter.

We will take stronger action against those who litter. Subject to parliamentary approval, new regulations will give councils outside London the power to fine keepers of vehicles from which litter is thrown, and we have laid new regulations to increase fixed penalties for littering and related offences. We will provide improved guidance on the appropriate and proportionate use of these powers, and encourage councils to be transparent about enforcement activity.

Finally, we will seek to improve the infrastructure in place for people to dispose of litter. Working with Highways England we will tackle litter on the Strategic Road Network and update the Code of Practice on Litter and Refuse to clarify expected standards. We will produce new guidance on 'binfrastructure' to help local areas reduce levels of litter, as set out in our Litter Strategy for England. We are committed to encouraging the use of behavioural insights to develop and test new ways to reduce litter. We have also launched a new 'litter innovation fund' to pilot and evaluate small scale local research projects that have the potential for wider application.

Actions we will take include:

We will continue to implement the Government's Litter Strategy for England, including:

- Introducing new regulations to improve local authorities' enforcement powers, supported by new guidance on its proportionate use.
- Developing a national anti-littering campaign, led by the government and funded by the private sector.
- Distributing a £450,000 litter Innovation Fund to pilot, implement and evaluate small scale local research projects that could be replicated more widely.

Tackling marine litter

Turtles choke on plastic bags because they mistake them for a jellyfish. Dolphins drown, tangled up in discarded plastic packaging. Albatrosses somehow find floating rice bags in the furthest reaches of the South Atlantic, far from human populations, and unwittingly feed them to their hungry chicks on the island of South Georgia. Millions of single-use bottles jostle their way around the oceans, carried on the currents even to the remotest and most fragile Pacific atolls. Latest estimates suggest that around 12 million tonnes of plastics enter the oceans each year.[29] The annual cost of marine plastic pollution is estimated to be at least $4.7 billion to the consumer goods industry alone.[30]

The UK is committed to leading efforts to protect the marine environment. To tackle marine pollution, we will pursue a sustainable, international and transboundary approach that prioritises reducing global reliance on plastics, increases economically viable recycling processes, and promotes maritime practices that prevent harmful matter entering the seas.



An estimated 12 million tonnes of plastics enter the oceans each year (Photo: Surfers against sewage)

Tackling marine litter requires coordinated global and regional strategies. At present, more is needed to enforce existing programmes, regulations and standards at every level.

In many cases, better waste management on land will prevent waste reaching the sea – this is why we need a joint land/marine approach. We need more information on what works well in terms of preventative measures and what will fundamentally change human behaviour.

Better waste collection and management, together with a more sustainable plastics life cycle, are key to solving the issue. Since plastic marine litter presents significant risks to business, the private sector can play a major role in addressing it. It also presents opportunities: at present, $80-120 billion in annual economic value is lost to the global economy because single-use plastic packaging is not captured after use[31]/[32].

Solutions to the marine plastics problem range from industry innovations and government regulations to partnerships between stakeholders. Recent examples of government actions include the 5p plastic bag charge and the ban on the manufacture and sale of rinse-off personal care products containing microbeads. The challenge is how to scale up these efforts. We will work with waste management services and producers to support policies that deliver high quality and quantity recycling, minimise environmental impact and ensure well-functioning secondary material markets (the use of recycled material in preference to virgin raw materials). This will allow us to divert more waste from landfill, manage resources more sustainably and design products that promote a more resource efficient economy. More detail will be set out in the Resources and Waste Strategy.

We should be bold not only about plastics but also about other marine pollution and muster international support for action. We will promote the use of port reception facilities and champion laws which concern dumping wastes and other matter at sea.

Finally, we should prioritise, where feasible, a clean-up of the marine environment where litter poses a threat to human health, biodiversity, wildlife or sustainable use without harm to associated ecosystems, as agreed at the 2017 United Nations Environment Assembly – *Toward a pollution free planet*.

[29] Stemming the Tide: Land-based strategies for a plastic-free ocean, Ocean Conservancy & McKinsey Center for Business and Environment, 2015

[30] Plastics and Sustainability: A Valuation of Environmental Benefits, Costs and Opportunities for Continuous Improvement, Trucost, 2016

[31] The New Plastics Economy — Rethinking the future of plastics, World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, 2016

[32] The ocean economy's output is measured in terms of the ocean based industries' contribution to economic output and employment. Source: The trillion dollar ocean, OECD, 2016 Insights: Jolly, C. and Stevens, B

iv. Improving management of residual waste

Since 2000 we have diverted significant quantities of residual waste – i.e. waste that cannot be reused or recycled – from landfill through the development of energy from waste (EfW) facilities. These generally recover energy from the waste to produce electricity. In 2016/17, some 38% of waste collected by Local Authorities went to EfW compared with 16% that went to landfill. More can be done however. We want to make sure that materials ending up in the residual waste stream are managed so that their full value as a resource is maximised and the impact on the environment of treating them is minimised.

We will continue to encourage operators to maximise the amount of energy recovered from residual waste while minimising the environmental impact of managing it, for example by utilising the heat as well as electricity produced. The actions set out in this Plan will help us build on this to ensure that the value of residual waste as a resource is fully realised and that emissions of carbon dioxide during the energy recovery process are kept as low as possible. We must bear in mind that any infrastructure must be able to adapt to future changes in the volume and make-up of residual waste generated and developments in technology. That way, waste is not locked into residual waste treatment processes when it could be reused or recycled.

Actions we will take include:

- Exploring different infrastructure options for managing residual waste beyond electricity, including the production of biofuels for transport and emerging innovative technologies.

- Looking at ways to increase the use of heat produced at waste facilities through better connections to heat networks. The facilities will become more efficient and emit less carbon dioxide.

- Investigating ways to cut carbon dioxide emissions from EfW facilities by managing the amount of plastics in the residual waste stream. We will link this with any opportunities to recycle more plastics or reduce the amount used.

v. Cracking down on fly-tippers and waste criminals

Waste crimes have a long-term impact on the natural environment – they pollute air, water and land. Fly-tipping and poorly-run waste sites lead to problems with fumes, dust, vermin and insect infestations. Furthermore, waste fires can cause significant disruption to roads, railways and schools, making lives a misery.

The Environmental Services Association (ESA) estimated that waste crime cost the UK economy between £568m and £808m in 2013; in 2015, it cost the English economy at least £604m. It undermines legitimate businesses, evade taxes and run up clearing-up costs for the public sector running into millions of pounds. The cost to local authorities of clearing fly-tipped waste was £57.7m[33] in 2016/17; these figures do not take in the cost borne by other landowners forced to deal with illegal waste disposal.

Actions we will take include:

- Seeking to eliminate waste crime and illegal waste sites over the lifetime of this Plan, prioritising those of highest risk.
- Working with industry to explore options to introduce electronic tracking of waste.
- As part of our Resources and Waste Strategy, to be published in 2018, developing a new strategic approach to prevent, detect and deter waste crime.
- Taking a partnership approach to deal with the issue with industry, regulators and local authorities.

[33] Fly-tipping statistics for England, Defra, 2017

vi. Reducing the impact of wastewater

If it is not properly collected and treated, wastewater (i.e. water from residential premises, industrial wastewater and contaminated rainwater) causes harm to the water environment.

In its strategic policy statement to Ofwat, the government makes it clear that we expect the regulator to challenge water and sewerage companies to improve the way they manage wastewater to meet the needs of customers while protecting the environment. For example, the Thames Tideway Tunnel, a brand-new 15-mile long 'super-sewer' now being built, will help clean up the River Thames in London by capturing the large volumes of sewage pollution that currently overflow into it each year from the over-stretched sewer system.

We expect companies to provide robust and transparent plans for the 2019 price review using the available outputs from the Water UK-led 21st Century Drainage Programme and the emerging long-term planning methodology for drainage and wastewater management plans. These will provide a clear framework for engagement and consultation with key stakeholders and help deliver lasting resilient plans that provide clear benefits for customers and the environment.

Actions we will take include:

- Working with industry to create a more robust wastewater planning and investment process that will help provide better outcomes for both customers and the environment.
- Continue to support the Thames Tideway Tunnel project to achieve significant environmental benefits allowing the River Thames's biodiversity to flourish.

2. Reducing pollution

We know that people who live in city centres and near busy roads – often those on the lowest incomes in society – are most likely to be exposed to dangerous levels of air pollution. Epidemiological studies reveal that long-term exposure to this kind of pollution reduces life-expectancy, mainly through an increased risk of mortality from cardiovascular and respiratory conditions, and lung cancer.

We have long been at the forefront of global efforts to reduce pollution and improve air quality. The first Clean Air Act, in 1956, had a significant impact on pollution in our towns and cities, relegating 'peasouper' smogs to history. Our integrated approach to tackling pollution from industry – ensuring industry adopted the best practices available; involving industry in developing high standards – was truly innovative and has proved effective in reducing emissions. Our international partners have since adopted and built upon this approach.

The quality of our air has also significantly improved owing to our tough regulatory frameworks. Emissions of sulphur dioxide alone have fallen by nearly 95% since 1990. Stringent pollution limits have prompted industry to invest in cleaner processes and abatement technology. Fuels and products have been reformulated to reduce emissions at source. There has been a welcome shift in fuel use away from coal towards cleaner forms of energy.

The UK's determination to improve air quality is reinforced by our commitment to meeting ambitious, legally-binding targets to cut emissions of five pollutants – ammonia, nitrogen oxides, non-methane volatile organic compounds, fine particulate matter and sulphur dioxide – by 2020 initially, and by 2030 for a deeper cut. Our commitment to meeting these legally binding targets is not affected by the UK's departure from the EU.

Our goal is for everyone to tread more lightly on the natural environment. To achieve this we will need to expand on many of the initiatives set out in the Clean Growth Strategy.

To manage the risks of chemicals and promote their safe production, transport and use, the chemicals industry is subject to a number of regulations to address potential impacts on both human health and the environment. Despite the rapid growth in this industry these processes are recognised as providing effective controls and measures to prevent harmful substance release in the UK.

The UK is a signatory to four multilateral environmental agreements (MEAs) where we are active participants, working towards achieving our goals whilst also supporting developing nations. By maintaining comprehensive emissions inventories we can demonstrate significant declines since 1990 of many harmful substances, including mercury and all persistent organic pollutants banned under the Stockholm Convention.

We need to seek more ways to tackle the release of harmful substances in our air, water and land.

To tackle air pollution we are already taking action to target both businesses and individuals. We are bringing forward legislation to cut industrial emissions from medium combustion plants and

generators. At present, these are significant but largely unregulated sources of air pollution. We are also working with Local Authorities and others to advise householders about the impact of the domestic burning of wood and house coal – which together account for nearly 40%[34] of total emissions of harmful particulates that can cause heart and lung damage. In September 2017, the 'ready to burn' wood certification scheme was launched. This industry initiative supported by Defra persuades people to move away from wet, unseasoned wood to 'ready to burn' wood, which can halve emissions from this source.

We also announced that we will end the sale of new conventional petrol and diesel cars and vans by 2040. We published our plan to tackle roadside nitrogen dioxide concentrations, and have made £475m of new money available to support local authorities with the biggest pollution problems to tackle hotspots in their areas – part of a wider £3.5bn spending commitment to air quality and cleaner transport.

Future of Mobility Grand Challenge

The transport sector is responsible for around 40% of the UK's final energy use, and contributes to local air quality issues. Through our 'Future of Mobility' Grand Challenge, announced in the Industrial Strategy, we will become a world leader in shaping the future of mobility, including the low carbon transport of the future.

We have identified four early priorities:

- Establishing a flexible regulatory framework to encourage new modes of transport and new business models.
- Seizing opportunities and addressing the challenges of moving from hydrocarbon to zero emission vehicles.
- Preparing for a future of new mobility services, increased autonomy, journey-sharing and a blurring of the distinctions between private and public transport.
- Exploring ways to use data to accelerate the development of new mobility services and enable the more effective operation of our transport system.

[34] National Atmospheric Emission Inventory, Department for Business, Energy and Industrial Strategy, 2015

i. Publishing a Clean Air Strategy

We will publish a new Clean Air Strategy for consultation in 2018. This will set out how we will continue to seek improvements to public health, protect the environment, support clean growth, and work towards our legally-binding ceilings on UK emissions of air pollution. It will include looking at approaches to improve how farmers use fertilisers and reduce ammonia emissions to the air. It will set out how over the long term we will work towards a shift away from using solid fuels to heat people's homes, to reduce air quality pollution.

We will review the strategy regularly and report publicly on our progress in reducing national emissions of air pollution.

Actions we will take include:

- Publishing a Clean Air Strategy in 2018.
- Exploring options to address pollution from coal and wet wood.
- Applying sulphur standards to smokeless fuels.

ii. Curbing emissions from combustion plants and generators

Medium-sized combustion plants (MCPs), which are used to generate heat for large buildings and for power generation, are a largely unregulated source of emissions of air pollutants. It is important that we control their impact on the environment.

Similarly, the recent rapid growth of low-cost, small scale flexible power generators poses significant risks without appropriate controls. These generators are often fuelled by diesel and emit high levels of nitrogen oxides, posing a threat to both local and national air quality.

We are taking forward legislation to tackle emissions from medium-sized combustion plants and generators. This will provide an estimated 43% of the sulphur dioxide emissions reduction, 9% of the reduction for particulate matter, and 22% of the nitrogen oxides emissions reduction required to meet our targets for 2030. Additionally these controls will contribute to reducing urban nitrogen dioxide concentrations.

Actions we will take include:

- Legislating to set limits on the levels of air pollutants that MCPs and generators can emit.

iii. Publishing a Chemicals Strategy

Chemicals provide substantial benefits to society but their widespread use in industry, agriculture, food systems and homes has led in some cases to pollution of land, water, air and food. We will publish a new Chemicals Strategy to tackle chemicals of national concern that will build on existing approaches. This new strategy will set our priorities for action and detail how we will achieve our goals. It will support collaborative work on human biomonitoring, address combination effects of different chemicals and improve the way we track chemicals across supply chains.

Actions we will take include:

- Publishing an overarching Chemicals Strategy to set out our approach as we leave the EU.
- Exploring options to consolidate monitoring and horizon-scanning work to develop an early warning system for identifying emerging chemical issues.
- Considering how we will address tracking of chemicals in products to reduce barriers to recycling and reuse whilst preventing a risk from harmful chemicals.
- Working internationally to strengthen the standardisation of methods that assess chemical safety in support of the mutual acceptance of data to identify and share information on emerging concerns and new approaches to risk assessments.

iv. Minimising the risk of chemical contamination in our water

Chemicals get into our water via a wide range of sources, including water treatment plants, use of agricultural pesticides, abandoned infrastructure such as mines, atmospheric deposition and road runoff. We want to tackle risks from chemical contaminants in English waters, including groundwater, and make sure that levels of contaminants entering fresh water bodies (which may be transported to coasts and seas) neither increase nor give rise to pollution.

The way we have approached the problem of polybrominated diphenyl ethers (PBDEs), used as flame retardants in home products, is a case in point. These enter the aquatic environment through domestic wastewater treatment works. As a result of source control measures such as banning their use in certain products, PBDE emissions have notably declined, averting the need for more expensive water treatment. We plan to carry on enforcing source control restrictions on harmful products and requiring water companies to monitor trends in their treated effluents.

Greater transparency and a more systematic, cost-effective and common-sense approach, can yield impressive results in protecting human health and wildlife. As with the PBDEs example, stakeholders will be encouraged to take ownership of problems. They will also be expected to take an active role in seeking and adopting solutions to contamination by chemicals of emerging concern.

Decisions on managing risks will be proportionate and based on the weight of evidence, so that for example a high level of certainty will be needed before a decision is made to invest in expensive treatment technology to reduce chemicals from treated wastewater effluents.

As well as source control mechanisms (regulations on chemical management or changes in individuals' behaviour) actions to manage prioritised substances will range from environmental interventions around the pathway-to-the-water environment; point source (end-of-pipe) controls; and taking no further action where controls already exist that can address concerns and evidence shows they are effective.

We will look to the water industry and manufacturers of pesticides and other agri-sector industries to deliver these various approaches. They will be encouraged to develop good practices, and voluntary and catchment-based initiatives to protect drinking and/or groundwater resources. In addition, cleaning up pollution from abandoned metal mines will protect aquatic organisms and deliver economic and environmental benefits for local communities.

Actions we will take include:

- Implementing a strategy with a framework that prioritises current issues such as antimicrobial resistance, the presence of pharmaceuticals and micro-plastics. Our goal is to improve water quality, reverse the deterioration of groundwater, and reduce emissions of harmful substances.

- Working with stakeholders, including water companies and Blueprint For Water, to draw up a roadmap for individual (or groups of) chemicals that takes account of planning timelines for chemicals' regulation, river basin management and the water industry.

- Working with the agricultural sector on priority plant protection products, such as insecticides and herbicides of concern, to assess the progress that voluntary initiatives are making in dealing with them.

- Engaging with national and international academic specialists, industry, policy makers and regulators to bring together robust evidence and to identify emerging priorities that merit further investigation.

v. Ensuring we continue to maintain clean recreational waters and warning about temporary pollution

Swimmers and paddlers must be confident that the water they are entering is clean. We have identified ‘bathing waters’ to give the public peace of mind, focusing on areas where we expect the greatest number of people to be. Over the last couple of decades we have significantly cleaned up our bathing waters: in 2017, a full 98.3% of waters met our standards for clean water.

Posing a lesser risk to health is one immediate benefit of cleaner bathing waters. Also valuable is the longer-term boost to local economies through increased tourism.

Actions we will take include:

- Working with the Environment Agency and water companies to continue to maintain our high standards of clean bathing water.
- Making sure that all those with a role to play take action to improve water quality by, for example, removing misconnected plumbing, improving surface water drainage and land management, and maintaining private sewage systems to a high standard.
- Continuing to develop the Environment Agency’s forecasting and warning system so that bathers are warned of a possible short-term pollution problem, perhaps owing to spill from overloaded sewers during heavy rain, or the tide overlapping land used for grazing. This will bolster public confidence in bathing waters.

Chapter 5: Securing clean, healthy, productive and biologically diverse seas and oceans

At a glance

We will:

- Implement a sustainable fisheries policy as we leave the Common Fisheries Policy.
- Achieve good environmental status of our seas while allowing marine industries to thrive, and complete our ecologically coherent network of well-managed marine protected areas (MPAs).

Our seas and oceans are an integral part of our history, economy and way of life. Oceans supply nearly half of the oxygen we breathe, absorb over a quarter of the carbon dioxide we produce, play a vital role in the water cycle and climate system, and are critical for biodiversity and ecosystem services. Our marine environment supports our economy with crucial jobs, seafood and raw materials.

The UK has 17,820km of mainland coastline and the widest range of marine habitats of any coastal waters in Europe. They are home to a rich diversity of plankton, invertebrates, fish and higher predators, with around 8,500 species of animal and plants[35]. Left alone by people, many aspects of marine ecosystems continually renew themselves.

But too often human activity depletes stocks more rapidly than they can recover and renew.

Two of the major threats are ocean acidification (OA) and damage to coral reefs.

OA is a direct result of CO_2 emissions from human activities around the world and can effectively be tackled only at international level. The “Because The Ocean” declaration, signed by the UK, highlights the relevance of ocean protection in the implementation of the Paris Agreement and calls for all parties to include ocean protection in their Nationally Determined Contributions[36], both in mitigation and adaptation action, including the conservation or creation of marine habitats important for carbon

[35] State of Nature, RSPB, 2016

[36] The Paris Agreement requests each country to outline and communicate their post-2020 climate actions, known as their Nationally Determined Contributions (NDCs).

sequestration. As a consequence, consistent and widespread monitoring to support identification of OA trends at a global level is required. The UK will continue to support this, and work with others to drive innovation in monitoring and collecting data to support policy and the activities of vulnerable ocean states. This will help us to improve our understanding of OA conditions and the ecosystem response to them, optimising forecasts for OA and its impacts.

Coral reefs are under direct and sustained pressure. The UK's ambition is to champion and support their conservation and biodiversity in UK and Overseas Territories' (OTs') waters and around the world. We welcome the fact that 2018 has been made the International Year of the Reef by the International Coral Reef Initiative (ICRI), recognised by the UK as the key international body for the conservation of coral and related habitats. We will increase engagement with ICRI and work with OTs to encourage the adoption of best sustainable management practice of coral reefs, as well as their associated ecosystems. We want to provide sustainability for fisheries and ensure food security while upholding social and cultural wellbeing.

We are taking steps to secure international natural capital to deliver multiple benefits. Mangroves, for example, play an important role in healthy coastal ecosystems, sequestering carbon and supporting aquaculture as well as contributing to the wellbeing and prosperity of coastal communities. We have invested £10.1m to work with coastal communities to protect mangroves in Madagascar, Indonesia and wider South East Asia.

Seas and oceans do not respect regional or international boundaries. Given the transboundary nature of the marine environment it makes sense to work with others to achieve our objectives effectively and efficiently. We will look to work with all UK administrations and other countries that are neighbours of our seas through OSPAR[37] in delivering our ambitions for the marine environment. Using and managing our seas sustainably will require multilateral collaboration: this provides an opening to influence international diplomacy as we have done for many decades. Our commitments to deliver the Sustainable Development Goals (SDG) including the 14th: *"Conserve and sustainably use the oceans, seas and marine resources for sustainable development"*, will guide many of our priority work areas. We will work domestically and internationally to deliver our commitments under SDG14.

As part of our commitment to the oceans, the UK will continue to work with the Commonwealth Secretariat and our Commonwealth partners to draw up an ambitious plan for a Commonwealth Blue Charter. It will look to apply the principles and values of the Commonwealth Charter to oceans, to include maintaining sustainable marine environments, developing prosperous blue economies, delivering fair ocean governance and ensuring a safe and secure maritime environment.

[37] The OSPAR Convention (1992) is the mechanism by which 15 countries and the EU cooperate to protect the marine environment in the North East Atlantic.

We will build on the success of the Commonwealth Marine Economies programme where the UK is working with Small Island Commonwealth States to enable them to use their marine space sustainably.

Overall, some aspects of the UK marine environment are improving. About 30% of fish stocks are now at sustainable levels, for example, and since 2010 the proportion of large fish in the North Sea has climbed sharply to levels not seen since the 1980s. We must still seek to ease the impact of human activity, however, particularly on seabed habitats and fish populations.

We need to understand the full value of the marine environment and incorporate that into the decisions we take: this is key to the 'natural capital' approach that has informed this 25 Year Environment Plan. An understanding of marine economic, social, historical and environmental values can help incentivise behaviours and practices that support stewardship and sustainability. Using this approach will allow us to be explicit about the choices we make about how best to protect and manage the marine environment, looking at them in the context of the values associated with our seas and oceans.

The fishing industry is a good example of natural capital in action. This vital industry is dependent on a healthy marine environment. We need to make sure that we have healthy fish stocks free of persistent pollutants and heavy metals, and that fish stocks are exploited sustainably, in order to ensure the long-term viability of the fishing sector.

In turn, by fishing at sustainable levels we will help to protect the wider marine ecosystems that underpin the fish species we rely on.

To do this, we cannot look at fish stocks in isolation. We must also protect the marine environment that is their vital habitat, protecting and improving it by joining forces with local stakeholders to find the most appropriate ways of drawing down the riches of the sea in a sustainable way.

1. Introducing a sustainable fisheries policy as we leave the Common Fisheries Policy

The Government will take advantage of the opportunities offered by leaving the EU to bring in a world-class fisheries management system that is based on the principle of maximum sustainable yield and helps to restore and protect the marine ecosystem. We will work with the devolved administrations as well as the UK fishing industry and other stakeholders to end wasteful discarding, put in place the right incentives to ensure compliance, and collect data and use science in the policy decisions we make. We will implement science-based plans as part of our approach to managing fisheries sustainably and to recovering fish stocks to sustainable levels in the shortest time feasible. Once we have left the EU, the Government will publish an annual statement on the state of fish stocks of interest to the UK.

An ecosystem approach to fisheries management will account for, and seek to minimise, impacts on non-commercial species and the marine environment generally, including through technical conservation measures.

Actions we will take include:

- Publishing a Fisheries White Paper ahead of the new Fisheries Bill, setting out our future approach to sustainable management as we leave the EU.
- Pursuing this approach with action at all levels, including in fisheries negotiations with the EU and other countries.

2. Achieving good environmental status in our seas while allowing marine industries to thrive

Leaving the EU also gives us the opportunity to review how best to manage our seas. The UK Marine Strategy sets out our overall ambitions for the marine environment, the targets we want to achieve and how we achieve those targets.

Based on an improved understanding of the value of the marine environment, we will deliver effective management of our seas to make sure they are resilient to climate change while delivering the full range of goods and services. Realising the vision of the Plan will require us to manage a range of pressures, from marine pollution and eutrophication (adversely enriching a water body with nutrients) to fishing and other maritime development.

Recognising that species are mobile and marine environments are inter-connected, it will require us to work closely with other government departments and countries.

To help achieve this we will:

- Review all our marine targets and indicators to align them with the objectives set out in this Plan and develop a marine online assessment tool (MOAT) to look at the marine environment and the pressures affecting it.
- Deliver the marine spatial planning and licensing systems needed to support proportionate management of the marine environment whilst enabling growth and providing greater certainty for industry and investors.

We will complete the full series of England Marine Plans by 2021 and ensure they work cohesively with adjacent marine plans, whether they are developed within the UK or by neighbouring countries. We will continue to implement a marine licensing regulatory regime that supports sustainable development while protecting the natural capital and wellbeing of the marine environment and all local authorities with a coastal interest will be signed up to the Coastal Concordat by 2021

Building on current plans to complete our ecologically coherent network of well-managed MPAs, we will move to a whole-site approach to protect sites of greatest biodiversity interest. We will adapt our approach to respond to changing pressures on the marine environment, including climate change, and develop new and innovative techniques to help with their management. These might include remote sensing, earth observation satellites and the use of autonomous vehicles.

This will protect marine habitats and the species they support. It will increase their resilience so these marine assets are better able to respond to long-term pressures and damaging human activities, and recover more swiftly from individual events such as storms and pollution incidents.

Actions we will take include:

- Completing in 2018 a major assessment of how far our seas have moved towards good environmental status since 2012.

- Using that assessment to review our targets and put in place an updated strategy that will deliver the objectives in this Plan and associated international obligations for our seas. Regular review dates will ensure that we remain on track.

- Putting in place the remaining marine plans for England, and working with partners in the devolved administrations to support those for Northern Ireland, Scotland and Wales. The aim is to complete the series of UK marine plans by 2021.

- Consulting on the third tranche of Marine Conservation Zones in the first half of 2018, with designations within 12 months of that date. This will complete our contribution to the international ecologically-coherent network of MPAs in the North East Atlantic by including a representative range of the species and habitats found in our seas.

- Extending work to protect mangroves for local communities to Indonesia in 2019 and to more communities in South East Asia.

Sustainable fishing

Historically, we have fished unsustainably and this has vastly depleted fish stocks. Without effective regulation and management, fisheries can suffer from what is called the ‘tragedy of the commons’ where open access to a common valuable resource results in a tendency to over-exploit. Unsustainable fishing practices do not just deplete fish stocks; they threaten the environment and marine ecology and can also have an impact on coastal communities. While overfishing may provide immediate benefits in the form of increased income, it limits the availability of resources in the longer term and thereby jeopardises the livelihood of fishers. It also undermines the resilience of our marine ecosystem and its ability to support sustainable fisheries in the future.

An ecosystem approach to fisheries management aims for more sustainable management and accounts for, and seeks to minimise, impacts on non-commercial species and the marine environment generally. One such intervention is ‘achieving Maximum Sustainable Yield’ (MSY). To bring overfishing under control, from 2006 EU fisheries management began to adopt the concept of setting quotas to prevent further depletion of fish stocks. This was further strengthened in 2011, and MSY, with its aim of restoring stock populations and maintaining them at sustainable levels, was adopted as a central objective in 2013. MSY represents a reference point or range based on scientific advice that indicates the level at which a species can be fished without harming the stock in the long term. While this might mean in practice that fishermen cannot fish as much in the short-term, it allows fish stocks to rebuild over time and ensures that the resource is available to us for much longer.

Hake stocks in the North-East Atlantic are an example of how stocks can be rebuilt, and illustrate the potential effect of MSY on stock sizes. Between 1985 and 2004, these stocks were in continual decline owing to overfishing. At the lowest point in 2003, 2,500 tonnes were landed in the UK, at a value of £6m at current prices. From 2006, the EU moved towards setting Total Allowable Catches (the amounts fishermen are allowed to catch) in line with MSY. As a result, stocks are now around five times larger, allowing the UK to land 14,000 tonnes of Hake valued at £35m.

Chapter 6: Protecting and improving our global environment

At a glance

We will:

- Provide international leadership and lead by example in tackling climate change and protecting and improving international biodiversity.
- Help developing nations protect and improve the environment by providing assistance and supporting disaster planning.
- Support and protect international forests and sustainable agriculture.
- Leave a lighter footprint on the global environment by enhancing sustainability and supporting zero deforestation supply chains.

We all live on one planet. We cannot improve the UK's environment in isolation from the wider global environment – we must protect and enhance both. Systems that regulate life on earth – terrestrial ecosystems, the world's oceans, freshwater and the climate exist in feedback loops.

Damage we cause can be multiplied, creating conditions hostile to our existence. An effective response requires joint action on a global scale. We want to be sure that tropical rainforests, coral reefs, abundant wildlife and the astonishing beauty of the natural world survive to thrill and support the livelihoods of future generations.

Our Clean Growth Grand Challenge, announced in the Industrial Strategy, will ensure that we approach these challenges with economic opportunities and productivity enhancement in mind.

Environmental pressures are increasing everywhere. Major ecosystems (such as seas and oceans) that support billions of people are under threat. Natural disasters, climate change and catastrophic environmental degradation cause economic problems worldwide. Pollution observes no national borders. Emissions that affect land, air and water in one country can have a harmful impact on ecosystems and human health in others.

The poorest people and countries in the world are often the most vulnerable and likely to be hardest hit by the degradation of natural environments – the soil, water, seas, forests and wildlife. Climate change and the deterioration of natural environments are prime drivers of poverty, food insecurity and instability, and can trigger conflict and migration.

The illegal wildlife trade is the fourth most lucrative transboundary crime, with an estimated value of up to £17bn per year. It is not only animals that are poached and killed, but prized tropical hardwoods that are illegally felled and shipped around the world. The despoliation of forests destroys traditional sources of food for forest animals, clean water, medicines for indigenous people and building materials.

Achieving global change is not easy. But by showing international leadership, supporting developing countries and reducing our own environmental footprint, we can make a real difference. With much at stake, we need to work together to confront pressing challenges. The whole of the UK is fully committed to this most vital cause.



The illegal wildlife trade is worth an estimated £17bn per year.

From our proposals for some of the world's strictest measures on ivory sales to combating deforestation, cutting greenhouse gases while promoting clean economic growth, the UK has championed environmental protection. Among the most difficult challenges is securing binding pledges from multiple nations. In 2015, the UK helped to secure the Paris Agreement, the first truly global, comprehensive climate change agreement. And we continue to lead by taking action at a domestic level - since 1990 we have cut UK emissions by 42%[38] while our economy has grown by two-thirds.[39] The UK's Climate Change Act 2008 was the first in the world to introduce legally-binding emissions targets: it is hailed as having led the world in driving domestic action, both to reduce emissions and to identify and adapt to the pressures we face as our climate changes. It is an example of UK leadership above and beyond the requirements of EU membership.

The Clean Growth Strategy, published in October 2017, set out our plans to build on the successful decarbonisation of the power sector while looking further across the whole of the economy and natural environment. It includes ambitious proposals surrounding housing, business, transport, the natural environment and green finance. The Clean Growth Grand Challenge, announced in the Industrial Strategy, will ensure the UK reaps the economic rewards that this global transformation will create for those that lead the way.

The Government's most recent UK climate change risk assessment (CCRA), based on the independent evidence report of the Committee on Climate Change, highlights risks to a number of our natural assets – including soils, freshwater resources, natural carbon stores, marine ecosystems, farming, forestry, wildlife and habitats.

We will address these risks through the second National Adaptation Programme, to be published later in 2018. This will set out how we will adapt to a range of projected climate impacts.

Emissions from the natural resources sectors have halved since 1990 and further action to reduce them are set out in the Clean Growth Strategy.

[38] Provisional UK emissions statistics, BEIS, 2017

[39] Quarterly National Accounts Statistical bulletins, ONS, 2016

Climate change is far from the only global threat. Across the world, biodiversity and the habitats that support it are coming under unprecedented pressure. The UK as a party to the CBD and to numerous conventions that protect marine, migratory and endangered species will work to improve the global environment: indeed, we ourselves are custodians of globally significant biodiversity in the UK's OTs, which support unique ecosystems.

As such, we are committed to implementing these conventions domestically, and to supporting developing countries to meet their obligations. Our long-standing Darwin Initiative, established 25 years ago at the Earth Summit in Rio de Janeiro, has so far supported over a thousand projects in 159 countries. It helps nations rich in biodiversity but poor in financial resources to conserve, and sustainably use, their natural resources. So far, the Darwin Initiative has established 20,315 permanent field plots around the globe, provided 32,957 training weeks and produced 2,660 species or habitat management plans for overseas governments or agencies. Recent projects funded through this initiative have helped protect the snow leopard, protected and restored mangroves in the Philippines in the wake of Typhoon Haiyan in 2013, and supported commercially successful and sustainable coffee co-operatives in Ethiopia.

We are also committed to protected cultural and natural heritage around the world. The UK's heritage organisations deliver education, training, consultancy, conservation and renovation programmes to many parts of the globe. Many heritage professionals and practitioners from other countries come to the UK each year to develop their skills, learn about heritage protection and management in the UK, and benefit from the knowledge of our heritage sector.

Our OTs boast some of the world's most delicate and complex ecosystems and habitats. Working in partnership with the OTs, natural capital assessments are being undertaken to improve understanding of the full value of these unique environments, and through the Blue Belt programme 4 million km^2 of ocean around the OTs will be protected by 2020, further conserving vital habitats and species.

The timeline below illustrates some of our most important commitments.



In 2016, we also played a key part in securing a global deal to reduce the use of hydrofluorocarbon greenhouse gases under the Montreal Protocol, helping to avoid close to 0.5°C of global warming by the end of this century.

In line with our commitments under the Paris Agreement, the UK has committed at least £5.8bn through its International Climate Finance between 2016 and 2020 to help developing countries mitigate and adapt to the impacts of climate change, reduce deforestation and support cleaner economic growth. Our portfolio of projects has so far supported 34 million people in coping with the effects of climate change and avoided 9.2 million tonnes of CO_2 equivalent emissions[40]. We also work closely with Multilateral Development Banks to help direct their finance to support low carbon transition and encourage them to be innovative and ambitious.

The UK has also shown global leadership in tackling the illegal wildlife trade (IWT). In 2014, Defra, DFID, the Home Office and the Foreign and Commonwealth Office worked closely together to make the first international IWT conference – hosted in the UK – a success. The conference secured ambitious agreements from more than 40 governments to take urgent, coordinated action to combat IWT and was hailed as a turning point in global efforts to tackle these damaging activities.

The UK has consistently supported increased protection for vulnerable marine species across different environmental agreements. We continue to play a leading role championing the conservation and welfare of all whales, dolphins and porpoises both in the UK and internationally. We play an active role in the International Whaling Commission (IWC) where we strongly support the global moratorium on commercial whaling and will continue to lead calls for those countries that still engage in commercial whaling practices to stop.

We have announced measures to clamp down on the trade in ivory, which contributes to the slaughter of almost 20,000 elephants every year. We intend to introduce a total ban on UK sales, and the import and export of ivory for sale to and from the UK, that could contribute either directly or indirectly to the continued poaching of elephants, with only a limited number of narrowly-defined exemptions. These proposals will put the UK front and centre of global efforts to end this trade.

We have also been at the forefront of global action to halt deforestation, supporting ambitious action. This includes the REDD+ Framework under the UN Framework Convention on Climate Change (UNFCCC), covering countries' efforts to reduce emissions from deforestation and forest degradation, and the New York Declaration of Forests – a far-reaching set of commitments to halve (in 2020) and then halt (by 2030) the loss of natural forests, recover forests and croplands, and support private sector-led

[40] UK Climate Finance Results, Department for International Development, 2017

commitments to eliminate deforestation from the supply chains of key agricultural commodities.

So that we can keep this momentum going, we must intensify our efforts to protect and improve the global environment, with all relevant government departments and stakeholder groups working together to ramp up global environmental action.

We want to keep the average global temperature rise below 2°C above pre-industrial levels, and aim for a rise below 1.5°C. We want to reduce our carbon emissions by at least 80% from 1990 levels, and achieve this by 2050. We want to halt and then reverse the decline in global biodiversity, and increase the adoption of sustainable agriculture and fishing. Our goal is to help prevent the extinction of known threatened species, and improve and sustain their conservation status. As we move to tackle poaching and the illegal import/export of threatened goods, we will not overlook the illegal felling of rare tropical hardwoods.

Delivering the UN Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a universal call to action to end poverty, protect the planet and make sure that all people enjoy peace and prosperity. Delivering the relevant environmental aspects of UN Sustainable Development Goals (Agenda 2030) for the UK requires cross-government, cross-industry and individual participation.

There is a huge socio-economic and environmental dividend to be gained through SDG implementation. The Business & Sustainable Development Commission has estimated that the economic prize to business of implementing the SDGs could be up to US$12 trillion (£9 trillion) globally by 2030. The government now has the opportunity to create the right market conditions to harness the socio-economic and environmental opportunities presented by the relevant SDGs.

We are committed to delivering the SDGs across government and have set up a cross-Whitehall Sustainable Development Forum to co-ordinate and facilitate implementation of SDGs in the UK, with ongoing scrutiny from the Environmental Audit Committee who will hold us to account on SDG reporting and delivery. In addition, we aim to present our Voluntary National Review to the United Nations in 2019. A report published in March 2017 set out examples of the UK's work towards achieving these goals, both domestically and internationally.[41] On Sustainable Cities and Communities: Air Quality, for example, we have agreed legally-binding UK targets to reduce emissions of key air pollutants by 2020 and 2030. We are engaging at local, national, and international level and working closely across the UK

[41] Agenda 2030: The UK Government's approach to delivering the Global Goals for Sustainable Development - at home and around the world, Department for International Development, 2017

Government to create a healthier environment through a new programme of Clean Air Zones that will benefit people and the economy.

As a developed country, the UK should drive progress on certain SDGs where domestic consumption has an impact on other countries. These include SDGs 13 (climate change), 7 (energy), 14 (life below water), 15 (life on land) and 12 (sustainable consumption and production). We are already investing in projects that build the capability of developing countries to meet the SDG targets. We are using finance mechanisms that will attract more private finance into environmental projects and focus investment where it can provide the greatest benefit and bring real, meaningful results. We will continue to take coordinated and ambitious action, building on our existing achievements, to reduce the UK's impact on the environment at home and abroad, and help developing countries to meet their targets.

We cannot do any of this in isolation. Action will only succeed when we agree international standards that protect the environment while also facilitating fair practice in international trade which avoids improving our domestic environment at the expense of the environment globally.

The policies we will implement to protect and improve our global environment are set out below.

1. Providing international leadership and leading by example

The UK will be at the forefront of global efforts to protect and improve the natural world, driving the international community to adopt higher standards. Our leadership is respected in part because of our enduring commitment to high standards, domestically and internationally, and the depth and quality of our scientific expertise.

From working with developing nations, to chairing a working group protecting rhinos, and continuing to strongly support the prohibition of commercial mining in Antarctica, the UK remains an energetic and committed flag-bearer for environmental reform.

We have consistently used our membership of international fora to deliver high-level agreements on key environmental issues. The UK is party to more than 300 treaties and agreements related to marine and terrestrial environments, food and agriculture, chemicals and waste, genetic resources, and plant and animal health – each with an important role in protecting and improving the natural world.

We will continue to lead by example on the crucial environmental challenges, meeting the ambitious goals to which we are committed under these agreements.

As existing agreements progress, or become open for renewal, or new instruments are proposed, we will leverage all our influence to secure international commitment to global targets that are even more ambitious and stretching.

i. Tackling Climate Change

As set out above, the Climate Change Act we adopted in 2008 was a prime example of early leadership: it introduced five-year caps on greenhouse gases, known as 'carbon budgets', which have been used as a model for action across the world and are reflected in the Paris Agreement. We will continue to set an example, reducing our emissions from 1990 levels by at least 80% by 2050 and publishing our second sustainable and effective National Adaptation Programme in 2018. We will use our diplomacy on the international stage to encourage more ambitious global action.

The UK's recent Clean Growth Strategy is another example of domestic commitment to environmentally sustainable growth, a model to others as they develop their long-term emission reduction plans ahead of 2020. Again, we will also reflect this commitment in our international work.

The Clean Growth Grand Challenge within our Industrial Strategy will seek to maximise the advantages for UK industry from the global shift to clean growth – through leading the world in the development, manufacture and use of low carbon technologies, systems and services that cost less than high carbon alternatives.

A core part of the Clean Growth Strategy is our commitment to phase out unabated coal fired electricity by 2025.

The move away from coal towards cleaner sources of power is one of the most effective decisions governments can make to comply with the Paris Agreement. To this end, the UK, alongside Canada, forged the Powering Past Coal Alliance. Launched in November 2017 at COP23, the UN climate change talks in Bonn, the global group already includes more than thirty government and twenty businesses and aims to grow further and continue to engage the private sector, ahead of December 2018, building a groundswell for this vital transition.

Using our leading role in the UNFCCC, through which the Paris Agreement was established, we will urge the international community to meet the goals enshrined in the text – in particular, as a first step, through securing robust and integral rules and standards. This is vital for future environmental security: current global commitments under the Agreement are insufficient to limit average temperature rise to well below 2^{o}C.

Actions we will take include:

- Working to secure robust and integral rules and standards that underpin the goals of the Paris Agreement.
- Show global leadership by phasing out unabated coal-fired electricity by 2025.

ii. Protecting and improving international biodiversity

We will use the UK's influence to build support for an ambitious post-2020 international biodiversity strategy, rooted in a natural capital approach that emphasises the importance of nature's contribution to people, their health and prosperity, and the links with the SDGs and the Paris Agreement. We will work with partners internationally to make sure that a robust evidence base informs the adoption of ambitious, realistic and measurable post-2020 targets at the 15th Conference of the Parties of the CBD in 2020. These targets should help to strengthen a natural capital approach and transform the way in which decisions are made at all levels, to value, conserve and recover global biodiversity, thereby sustaining a healthy planet and delivering benefits essential for all people.

We will press ahead with activities inspired by the aims of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to ensure the sustainability of legal trade in wild flora and fauna, and to protect species such as lion, elephant and dugong, a marine mammal related to manatees. The UK chairs the CITES working group on proposals to combat illegal killing and trafficking of rhinos. Our aim overall is to make sure that international trade in specimens of wild animals and plants does not threaten their survival.

An important part of our commitment to protect wild animal and plant populations is our work on combatting illegal trade. We aim to reduce illegal trade in wildlife by working to eradicate the market for IWT products, ensuring effective legal frameworks, strengthening law enforcement and providing sustainable alternative livelihoods. To help secure this ambition we will bring global leaders back to London in 2018 for the international IWT conference – convening a global coalition against IWT and reaffirming political commitment at the highest level. We will tackle IWT as a serious organised crime that affects people as well as animals.

The UK's OTs are home to rich, globally important biodiversity, with many species found nowhere else in the world and a variety of spectacular marine and terrestrial ecosystems. Local people rely heavily on societal benefits from the environment in the form of tourism, disaster mitigation and the provision of food and clean water.

With their vast marine areas, the OTs offer an opportunity to lead the world in marine protection. The Blue Belt of marine protection around our OTs, conserves habitats and the species they support, increases resilience to long-term pressures such as climate change and damaging human activities in surrounding areas, and supports sustainable economic development for the long term.

Climatic changes in the Polar Regions are having dramatic consequences, and these consequences have global impacts. The UK has consistently been at the forefront of protecting the environment of the Arctic and the Antarctic and will continue to use its leading role in the Antarctic Treaty System and our sovereign interests in the South Atlantic to protect Antarctica and the Southern Ocean. We led the work to create the first ever Marine Protected Area in Antarctic waters in 2009, strongly supported the

designation of the world's largest Marine Protected Area in the Ross Sea region, and continue to work towards the development of a network of protected areas around the Southern Ocean. A UK-led initiative ensures that marine areas newly exposed from ice shelf collapse or retreat, such as occurred at the Larsen C ice shelf in 2017, are protected from commercial fishing activities for scientific study. The UK remains fully committed to the Protocol on Environmental Protection and its ban on commercial mining in Antarctica. We will continue to work with the Arctic States to further our understanding, and enhance the protection of the fragile environment, and to advocate that only sustainable and responsible development takes place in the high North.

Actions we will take include:

- Taking a leading role in developing an ambitious post-2020 international biodiversity strategy.
- Hosting the IWT conference in 2018, we will work with other nations to drive coordinated global action in the fight against IWT.
- We will strengthen partnerships to tackle IWT beyond borders, including investigating the feasibility of an anti-poaching taskforce.
- Continuing to provide targeted financial help to developing nations in order to manage biodiversity and tackle the illegal wildlife trade.
- Developing new techniques to manage protected areas in the OTs, for example by introducing the use of remote sensing, earth observation satellites and use of autonomous vehicles.
- Working with our OTs we will continue the implementation of the Blue Belt programme, including supporting efficient monitoring and enforcement of large scale protected areas.
- We will continue to support the global moratorium on commercial whaling and lead calls for those countries that still engage in commercial whaling practices to stop.
- Playing an active role in securing a new international agreement for the conservation and sustainable use of marine areas beyond national jurisdiction.

2. Helping developing nations to protect and improve the environment

The actions taken by developing countries, which often suffer the worst effects of climate change, are key to improving the global environment, particularly as their economies grow over coming decades. If we are to protect and improve the global environment, we must work with developing countries to support them in strengthening their resilience to climate change, support sustainable development and conserve biodiversity.

i. Providing assistance and supporting disaster planning

The UK will use Official Development Assistance and our scientific and technical expertise to help developing countries understand and manage their environments sustainably.

We have already pledged at least £5.8bn of International Climate Finance from 2016-20, playing our part in the collective effort by all developed countries to mobilise at least $100bn of climate finance a year by 2020 from public and private sources. We are one of the largest providers of this kind of finance. Our aim is to target funds in areas where the money will have a transformative effect, to leverage in further finance, and to build on UK strengths and experience.

To help achieve our environmental ambitions we will continue our work on the UK's Darwin Initiative and Darwin Plus funds, which aim to help deliver long-term strategic outcomes for the natural environment in the UK's Overseas Territories and developing countries.

The next rounds of the Darwin Initiative, Darwin Plus and the Illegal Wildlife Trade Challenge Fund are expected to open for applications in spring 2018.

The UK will continue to support countries with National Adaptation Programmes of Action and disaster risk plans. Through UK-funded programmes such as Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED), the UK can demonstrate global leadership and reduce the impact of humanitarian disasters. We will support further engagement with climate-related policies on a national, regional and international scale, in particular in drawing up processes for Adaptation Plans.

The UK has built up a wealth of expertise while improving the performance of its own economy and energy systems over the past quarter of a century. We are sharing the lessons learned with partner countries, supported by the £1.2bn cross government Prosperity Fund that has been set up to tackle barriers to sustainable and inclusive growth between 2018 and 2021. Prosperity Fund programmes in China, India, Brazil, Mexico and South East Asia will provide expertise about regulating clean energy markets, improving the flow of finance to low carbon projects, and building up capacity to improve regulation. We will build on the experiences of the Commonwealth Marine Economies programme which is working with 17 Commonwealth small island developing states to combat the effects of climate change, ocean acidification, extreme weather events, pollution, over fishing, loss of habitat and to enable conservation and sustainable use of their marine space.

Actions we will take include:

- Continuing to help support developing countries on high priority environmental projects.
- Doing more to help developing nations tackle pollution and reduce plastic waste, including through UK aid.
- Continuing to deliver the UK's Darwin Initiative and Darwin Plus programmes.
- Assisting countries in preparing, producing and implementing National Adaptation Programmes of Action.
- Sharing UK expertise with emerging economy partners through Prosperity Fund programmes.
- Helping to produce national capacity building plans (complementing existing national and regional plans) for developing Blue Economies of small island developing states by 2025.
- Continuing to improve the flow of finance to low carbon projects and ensure proper regulation of clean energy markets. This will help emerging markets to improve medium-term regulation.

ii. Supporting and protecting international forests and sustainable global agriculture

Forests support 90% of the world's biodiversity, regulate water quality, and mitigate climate change by absorbing and storing huge quantities of carbon from the atmosphere. More than 1.6 billion people depend on forests for food, medicine and livelihoods. Illegal logging increases greenhouse gas emissions and results in the loss of biodiversity. It can also have a devastating impact on the people who live in forests or rely on them for their livelihoods.

But there is a balancing act to perform with the ever increasing need for productive agriculture. Sustainability is particularly important in agriculture. Two billion people are supported through smallholder farming in developing countries: these enterprises produce over 70% of the world's food. With the global population expected to reach nearly 10 billion by 2050, these farmers must become even more productive if we are to be sure of having enough food for all.

We cannot continue with the current massive conversion of forests and other natural habitats into farmland. Already, high levels of food insecurity and malnutrition persist despite an increase in global supply, and climate change ratchets up the pressure to produce food and other crops sustainably.

To tackle these challenges, we are working to make agricultural systems more productive, sustainable and resilient to climate change through strategic investments. As part of the Clean Growth Grand Challenge, the Industrial Strategy

White Paper set out our ambition to put the UK at the forefront of the global move to high-efficiency agriculture through the new Industrial Strategy Challenge Fund 'Transforming food production: from farm to fork'. The Department for International Development (DFID) has also significantly increased the money it puts into agriculture, raising it from £243m in 2011/12 to £484m in 2014/15. This covers the world's largest climate change adaptation programme focused on smallholder farmers - the International Fund for Agriculture Development's (IFAD) multi-donor Adaptation for Smallholder Agriculture Programme (ASAP).

Through the support of UK International Climate Finance, we are helping to make sure that this agricultural development happens in the right way, supporting developing countries to halt deforestation, protecting the world's most biodiverse forests and establish sustainable livelihoods to eradicate poverty. In Brazil, for example, we are supporting farmers to protect and restore forest landscapes in the Amazon, Atlantic Forests and Cerrado by helping them access private sector loans to fund the transition into low carbon sustainable agriculture.

Actions we will take include:

- Ensuring deforestation remains a priority when targeting future Official Development Assistance spend.
- Continuing to work with multilateral development organisations so that momentum is maintained on key environmental issues.
- Remaining firmly committed to halting illegal logging and combating deforestation, and devising new solutions to support and recognise improvements in forest governance.

Adapting the Ethiopian Coffee Economy to Climate Change

Scientists from Royal Botanical Gardens Kew worked with cooperatives in Ethiopia to produce a higher value export coffee sold through Waitrose and other retailers, showing what successes can be achieved. Yayu Forest Coffee is the upshot of a three-year, £315,790 project funded by the Darwin Initiative, aimed at securing both local livelihoods and the local environment.

Ethiopia is the world's fifth largest coffee producer. Its exports of Arabica coffee beans generate a quarter of the country's export earnings and provide livelihoods for around 15 million people. Arabica has a very narrow tolerance of environmental fluctuations – particularly temperature and rainfall. The fear was that the traditional 'forest-friendly' method of coffee production in Ethiopia could be jeopardised due to the effects of climate change.



Four fifths of coffee in Ethiopia is grown under forest canopy – a production method that is good not only for the growers but also the natural environment and local people. Forests that are seen to 'pay their way' are conserved rather than converted to other uses, which could then run the risk of threatening the stock of natural capital and damaging ecosystem services such as water cycling and soil protection.

Scientists from RGB Kew, in collaboration with Ethiopian researchers, began to study the impact of climate changes on coffee production and come up with options for the future. They identified that climate change could reduce viable coffee producing areas by up to 60% in the absence of adaptation strategies. Conversely, the research also showed that a positive adaptation approach could actually lead to increased production.

As a result, one of the forest coffee cooperatives, along with Union Coffee is now producing a higher value export product – achieving better margins at no extra cost to the natural world. The UK's involvement helped to produce sustainable and resilient local livelihoods while conserving valuable local biodiversity.

3. Leaving a lighter footprint on the global environment

Our vision for the natural world of the future is one in which economic growth, development and environmental protection go hand in hand wherever you are in the globe and this approach was at the heart of our Industrial Strategy. It is in everyone's best interests to avoid any 'race to the bottom'. For centuries the UK has been a great trading nation and the legacy of this is that we remain a leader in understanding and promoting the importance of the environment.

i. Enhancing sustainability

As is the case with all our environmental work we set out to be an example for others, focusing attention on how to create and drive up standards everywhere. We will do this by making sure that our consumption and impact on natural capital are sustainable, at home and overseas.

We believe that environmental sustainability should be at the very heart of global production and trade, and we will be a passionate advocate for it. We will develop a trading framework that supports foreign and domestic policy, sustainability, environmental and development goals. In this way we will help make sure that the global environment is properly protected, and that threats of extinction are greatly reduced.

We will use natural capital approaches to help guide us and as part of this encourage better uptake of natural capital reporting, standards and accounting across government and businesses, in conjunction with key initiatives such as the Taskforce on Climate-related Financial Disclosures and the Natural Capital Coalition Protocol.

Actions we will take include:

- Working in partnership with industry to explore the possibility of developing additional tools that support businesses to identify sustainable supply chains.
- Establishing appropriate mechanisms to screen policies and strategies for potential negative environmental effects overseas.
- Using our prominence as innovators to develop new approaches and techniques that help take account of natural capital.
- Hosting an international conference to discuss new ways of incorporating natural capital approaches to long-term policy making.

ii. Protecting and managing risks from hazards

We are committed to maintaining high standard of protections for consumers, workers, and the environment in our trade agreements.

As part of this we will work on the international stage under frameworks such as the Strategic Approach to International Chemical Management to set long-term aspirational goals after 2020.

We will support countries to develop effective chemical and waste management regimes, and thus facilitate existing and future trade whilst minimising the risk of adverse effects from harmful chemicals and wastes.

We will develop methods to identify substances of concern: our aim is to substantially reduce deaths and ill-health arising from hazardous chemicals and wastes. We will use existing multilateral environment agreements, such as the Stockholm and Basel Conventions to ban and restrict chemicals of global adverse impact and develop guidelines to support safe movement of hazardous waste internationally.

Actions we will take include:

- Maintaining high standard of protections for consumers, workers, and the environment in our trade agreements.
- Playing a leading role in developing goals for international chemical management beyond 2020.
- Supporting countries to develop effective chemical and waste management regimes.
- Understanding if further R&D is needed into methods to identify substances of concern and supporting other countries to do the same.
- Setting up international partnerships over the sustainable use and production of chemicals. These will make it easier to share data, skills and fresh approaches to risk assessment and management.

iii. Supporting zero-deforestation supply chains

The UK is determined to make good on its clear commitments to support companies to implement zero-deforestation supply chains. This stems from our endorsement of the Amsterdam Declarations and the New York Declaration on Forests.

We will continue to invest in reducing environmental risk in key sourcing countries. In one example of this we will work directly with local producers under the Partnerships for Forests programme: this supports zero-deforestation commitments led by the private sector, and deepens demand for sustainably produced commodities in our own markets while helping the transition to sustainable farming practices. This shows how the sustainable trade model can help drive economic growth in developing countries.

Palm oil and cocoa are key commodities linked to deforestation for which viable measures of sustainability already exist and on which we are working in partnership with industry. We intend to expand this approach to look at other internationally traded commodities linked to deforestation. Our goal is to create demand-side incentives for sustainable international sourcing at home, while supporting supply-side improvements by influencing, and investing in better resource governance in trading partner countries. This initiative would build on the range of existing partnerships aimed at making specific commodities more sustainable.

Actions we will take include:

- Establishing a cross-government global resource initiative in 2018 to work with businesses, NGOs, producer countries and intermediary countries. This will bring together key actors to identify actions across supply chains that will improve the sustainability of products and reduce deforestation.
- Convening a roundtable discussion over one chosen commodity as a scoping exercise to explore the sustainability of key supply chains.

Section 2 - Putting the Plan into practice

At a glance

We will:

- Consult on setting up a new independent body to hold government to account and a new set of environmental principles to underpin policy-making.
- Develop a set of metrics to assess progress towards our 25 year goals and undertake a second 'National Ecosystem Assessment' type initiative beginning in 2022.
- Refresh the 25 Year Environment Plan regularly to ensure that collectively we are focusing on the right priorities, using the latest evidence, and delivering better value for money.
- Strengthen leadership and delivery through better local planning, more effective partnerships and learning from our four pioneer projects.
- Establish a green business council and explore the potential for a natural environment impact fund.
- Work closely with a large range of stakeholders over the coming year to identify their contribution to the goals set out in this Plan.

This Plan is a living blueprint for the environment covering the next quarter of a century. It is an ambitious project, made even more so by our use of a natural capital approach, a world first.

Turning the vision into reality requires solid foundations: comprehensive, reliable data, strong governance, a robust delivery framework, and everyone to play their part.

This Plan will be revised and refreshed over the next 25 years to take account of fast-moving changes in technology, science, data and society. Our starting point however, is that we will:

1 Set a clear, long-term direction with flexibility to adapt to new evidence and circumstances.

2 Provide robust and credible reporting, governance and accountability.

3 Put in place strong local leadership and a more integrated delivery framework.

4 Resource, set incentives and support innovative finance, including from the private sector.

5 Make sure everyone plays their part in delivering the improved environment we all want.

1. Setting long-term direction with flexibility to adapt to new evidence and circumstances

The goals for the next quarter of a century are set out earlier in the document. They provide a long-term agenda that everyone can work towards.

We have also outlined the next policy steps Government will take, working with stakeholders. This and future governments will need to build on and refine these policies in the light of developing scientific and economic understanding, and changes in society and the natural world.

The Plan coincides with the once-in-a-generation opportunity presented by our leaving the EU. We will make the most of the chance to improve our environmental policy framework, align it with the ambitious goals we have set, and lead from the front in pursuit of higher standards across the world.

The European Union (Withdrawal) Bill will ensure that the body of existing EU law, including environmental law, continues to hold sway in the UK. Key underlying principles of existing policy, such as the 'polluter pays' principle and the precautionary principle, are reflected in this legislation and in the historic judgements of the European Court, also covered by the Bill.

We will be consulting on the development of a policy statement on environmental principles to underpin policy-making post-EU Exit. This will provide maximum certainty about environmental regulations as we leave the EU.

Currently, EU rules create a consistent approach across the UK in a range of policy areas. While the UK Government and devolved administrations make different choices on implementation in some policies, these common rules provide a number of benefits, including making it simple for businesses from different parts of the UK to trade with each other, helping the UK to fulfil its international obligations and protecting our common resources.

Outside of the EU, we will need to ensure that we do not create any new barriers to living and doing business within our own union. For these reasons, there will be some areas where we will continue to need common frameworks. We have already started discussions with the devolved administrations on where common frameworks may be required.

After leaving the EU, we will build on the many benefits provided by EU environmental regulation, and make sure that our policy framework delivers an environment of which we can feel even more proud, in a cost-effective way to tax-payers. Our work will build on the immense progress achieved in recent years, both locally and nationally.

Should we identify opportunities for improving environmental regulation, we will consult upon them before making changes. We remain fully committed to implementing within the UK those international agreements to which this country is a party and will continue to lead their application globally, working in partnership across the UK and internationally.

i. Measuring progress towards our goals

We recognise the need for rigorous scrutiny and will create a framework which will specify how progress is to be measured.

At present, we have well-developed systems that monitor many aspects of our environment but these will need to evolve to accommodate the needs of the Plan and a greater emphasis on using a natural capital approach.

We will develop better measures in areas such as:

- soil health;
- how ecological systems are functioning;
- the human health benefits associated with a better environment; and
- the overseas impact of domestic consumption.

We will also engage widely over the next six months as we develop a comprehensive set of metrics that we can use to monitor progress.

The box below gives more detail on how these indicators and measures might be produced and used.

As a first step we will review which of our current indicators and monitoring programmes remain relevant and can be reworked to take account of natural capital.

Because this is the first time in the world that government strategy centres on natural capital considerations, we will need reliable measurements of all the key relationships between natural capital and its benefits. We will carry out research to establish which measures give us the best insight into how natural capital changes as time passes – these will include the quantity and quality of natural capital, and where it is vested. The national metrics are likely to be supplemented by local metrics, tailored to a narrower set of needs and circumstances.

Both types of metrics will take advantage of rapidly-advancing new technologies. Remote sensing, environmental DNA (i.e. nuclear or mitochondrial DNA released from an organism into the environment) and ever-smarter mobile phones have the potential to revolutionise how we monitor changes in natural capital in ways currently technically impossible or prohibitively expensive. Satellite data, for example, can allow improved monitoring and enforcement in fisheries, or can record more accurately and with greater frequency how land is being used. Underwater vehicles (marine robots) will help us map and monitor Marine Conservation Zones.

Metrics and monitoring will be regularly reviewed to check we are measuring the right things at the right time and in the most cost-effective way. This will ensure that it is not the blind pursuit of targets that drives us, but rather the most appropriate policies and incentives for improving the environment.

Further details of requirements for a comprehensive monitoring and evaluation framework can be found in Section 5 of the supporting Evidence Report.

Measuring the impact of the 25 Year Environment Plan

Metrics are a critical part of the 25 Year Environment Plan. They enable us to comprehend the complexity of the environment and allow us to:

- understand how the environment as a whole is changing – the pressures, the state of assets and the flow of benefits;
- assess the effectiveness of our policies and show how we are delivering our domestic and international commitments; and,
- inform decisions and promote action within and outside government, locally and nationally.

We have a large number of existing indicators and associated statistics, data and monitoring systems. A natural capital approach will require careful selection of these and development of further indicators.

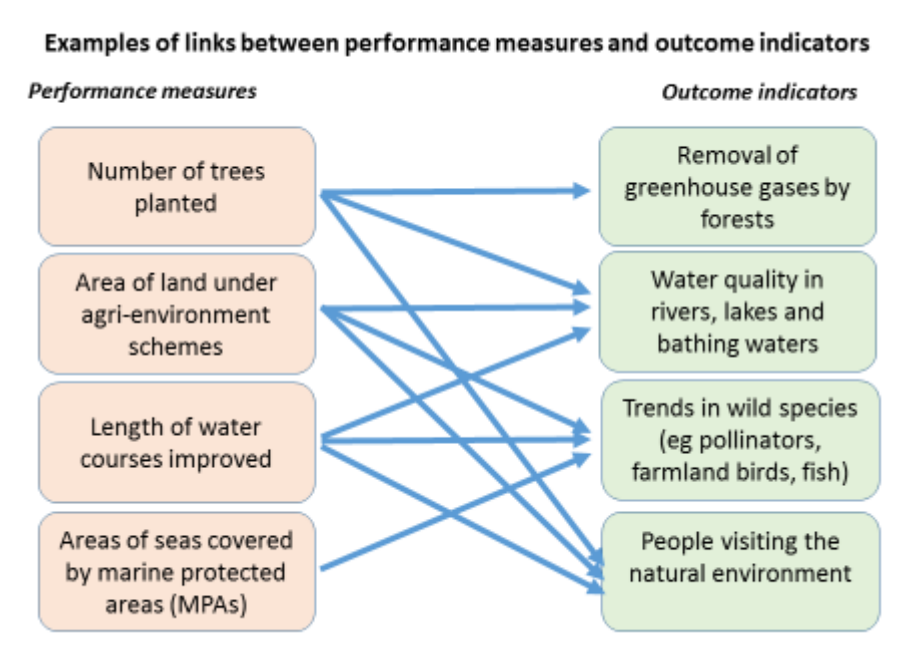
Goals of the 25 YEP.	Examples of existing indicators relevant to each goal*
Clean air	Emissions of key pollutants; number of high or moderate air pollution days; area of sensitive habitats with excessive levels of air pollution.
Clean and plentiful water	Water quality in rivers and lakes, bathing waters, and groundwater; inputs of hazardous substances to the marine environment.
Thriving plants and wildlife	Extent and condition of protected sites on land and at sea; status and trends of wild species and habitats.
Reduced risk of harm from environmental hazards	Number of households better protected from flooding.
More sustainable and efficient use of resources	Area of sustainably managed and harvested woodland; fish stocks harvested within safe limits; amount of raw materials consumed per person and resource productivity.
Enhanced beauty, heritage and engagement with the natural environment	Area of woodland; people visiting the natural environment and volunteering for conservation activities.

*We will also need to measure pressures on the environment: e.g. greenhouse gas emissions and removal, waste and resource management, chemical emissions, and pest/non-native species establishment.

We propose that we measure both the actions that we take ('performance measures') and long-term progress towards our goals ('outcome indicators'). This will enable us to check progress annually within a longer-term context, looking across all the goals of the 25 Year Environment Plan.

Understanding how different interventions contribute to a number of outcomes will help us review their effectiveness and strengthen the synergies between them.

Analysing trends and considering groups of indicators together will provide a more robust assessment of environmental change.



ii. Using benefits of better evidence for better decision-making

Good evidence is the cornerstone of effective policy making. The natural capital approach will help place science and economic evidence at the forefront of decision-making, ensuring that policies are aligned with our desired environmental outcomes and yield the best return on every pound spent.

In order to improve our understanding of our natural capital we will:

- Continue to work with the Office for National Statistics (ONS) to develop a full set of natural capital accounts for the UK that are widely understood and shared internationally. Taken with the new outcome indicators, these accounts will provide a much richer picture of changes to the environment over time.

- Improve our understanding and valuation of the benefits of natural capital through our own research and working with the research community, learning from best practice abroad where appropriate.

- Better incorporate the full spectrum of natural capital and the value of the benefits it provides into analysis and appraisal across government. We will also develop new digital tools and maps to make the use of robust economic values easier for everyone (see box on recreational values below).

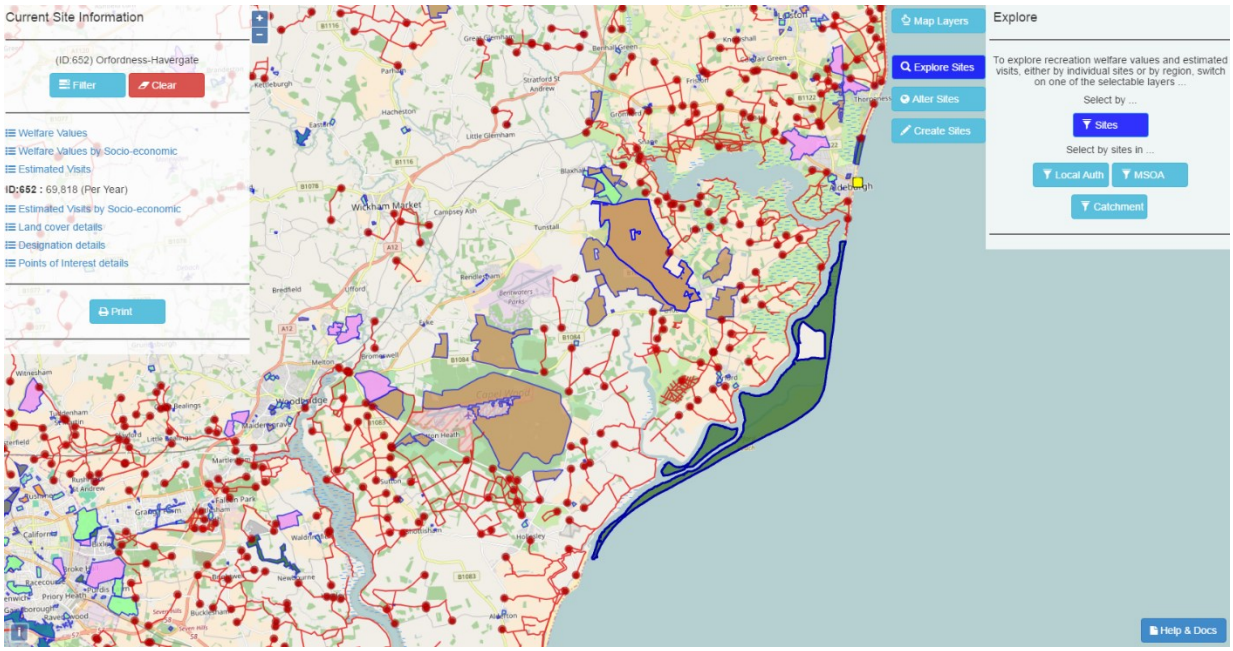
- Improve monitoring and evaluation of policies so that both costs and benefits can be more accurately estimated in future analysis.

Valuing outdoor recreation using a new online tool

The University of Exeter, funded by Defra, developed the Outdoor Recreation Valuation (ORVal) tool in order to quantify recreational values provided by accessible greenspace in England.

ORVal is an online map-based application that allows users to explore accessible greenspace across England in a user-friendly, intuitive way. Based on a cutting-edge, world-leading statistical model of recreational demand, ORVal brings data together and provides information that can now be included in the decisions made by communities, government and businesses.

The online tool is in map form, giving people the opportunity to explore recreational opportunities close to them. It also helps connect them with their local environment, both in urban as well as in rural areas as the map below shows.



At present we cannot robustly value everything we wish to in economic terms; wildlife being a particular challenge. On the NCC's advice, we propose to undertake risk assessments of the threats facing our natural assets, and use the findings in strategic decision-making and prioritisation exercises for future iterations of this Plan.

Over the long term, we will work with research councils, academic, professional and voluntary bodies to help to develop a more relevant, accessible and transferable knowledge base and the skills to support better decisions – all based on a sound understanding of natural capital and the effectiveness of interventions to improve it.

We will seek out innovative ways to collect and analyse data about our natural environment and how people engage with it, building on the digital revolution. We will promote research that sets the UK's action in a global context, taking account of what happens in our dependencies and the impact we have on the world.



At present we cannot robustly value everything in economic terms; wildlife being a particular challenge (Photo: James LePage).

iii. Refreshing the 25 Year Environment Plan

We propose to update the Plan at least every five years, following progress reviews (see section below on reporting). During the first five year period we may update the Plan more frequently to capitalise on the opportunities of leaving the EU.

Learning lessons – innovating through pioneer projects

Defra has created four pioneer projects to inform the development and implementation of the 25 Year Environment Plan. Each pioneer is located in a different area of England and is led by part of the Defra group, working closely with local partner organisations.

Defra asked the pioneers to explore four broad objectives:

- Applying a natural capital approach to decision making;
- Developing innovative funding opportunities;
- Demonstrate integrated approaches to planning and delivery; and
- Building our understanding of ‘what works’ in practice.

The pioneers started in 2016 and have since been exploring policies that feature prominently in this Plan. The locations offer a range of environmental challenges and circumstances against which to test ourselves, and also reflect pre-existing strong partnerships and relevant initiatives in each area. The pioneers are working with partners on what they learn to adapt or propose future projects to meet the four objectives. Defra has asked the pioneers to be ambitious and to take managed risks; to learn from what does not work as well as what does. As a result, and as intended, each pioneer has approached their objectives in a different way according to their local circumstances and the priorities of their respective partners.

The four pioneers

Cumbria Catchment Pioneer

The Catchment Pioneer is led by the Environment Agency (EA). The devastation caused by the floods of 2009 and 2015 and the subsequent response provides the starting point and has shaped the way affected communities engage with their environment. The pioneer is encouraging communities to take a broader interest in how the management of land and water affects them, using a natural capital approach.

Priorities for this pioneer include: testing new governance models for the environmental management of river catchments as a whole; looking at how the different agencies can work better together to improve the process of securing

environmental permits needed for development schemes; and testing the application of innovative finance mechanisms, for example a 'visitor giving' scheme. These objectives are closely linked with many policies in this Plan, supporting for example increased tree planting, restored peatlands, the delivery of a new environmental land management system and work with the Lake District National Park Authority to conserve and enhance natural beauty and cultural heritage.

North Devon Landscape Pioneer

The Landscape Pioneer is led by Natural England (NE) and is based in the North Devon UNESCO Biosphere Reserve. This pioneer is testing the use of natural capital in determining environmental priorities and agreeing actions to target them. At its heart is an innovative process for creating a shared plan that identifies where investment in natural capital is most needed and securing new investment for those projects in the pioneer area.

The pioneer has already mapped how existing funding for natural capital is distributed across the Biosphere Reserve. The pioneer then identified the ecosystem services that are provided by the different land uses and worked with stakeholders to value them and assess how they change over time. Investment priorities – such as saltmarsh restoration or natural flood management – will be established jointly with partners, based on this assessment.

The pioneer will trial a new local governance model, design and trial a payment-by-results environmental land management scheme for farming, and test natural capital as a tool for engaging communities with the benefits provided by their environment. The pioneer will also promote net environmental gain through strategic planning to expand North Devon's most valued natural capital. It will look to support more tree planting and greater enjoyment of our coastal areas.

Greater Manchester Urban Pioneer

The Urban Pioneer is led by the EA and covers the whole of the Greater Manchester Combined Authority (GMCA). This pioneer is focused on how environmental enhancements can improve people's lives. It is built on a strong partnership with the GMCA – an enthusiastic supporter of a natural capital approach with extensive devolved responsibilities including health, skills, planning, and economic development. The pioneer is supporting GMCA in understanding how natural capital helps deliver these objectives and the benefits of investing in it, including through the development of a natural capital account for the GMCA area.

The pioneer has supported the GMCA in committing to achieving a biodiversity net gain through planning and development across the city region. The pioneer is also working with the GM Mayor to increase public engagement with the environment through its 2018 Green Summit.

Other Plan policies that the pioneer will look to support include urban tree planting, natural flood management, sustainable drainage and creating green infrastructure.

Marine Pioneer

The Marine Pioneer is led by the Marine Management Organisation (MMO). It operates in two separate locations, covering areas of coast and sea based on the North Devon Biosphere and the Suffolk Coasts and Heaths Area of Outstanding Natural Beauty.

Applying a natural capital approach to the marine environment has not been attempted before on this scale: this is a great opportunity to develop our understanding. The pioneer is working with partners to produce practical tools for capturing natural capital in decision making, and using natural capital to identify environmental priorities and investment opportunities. The pioneer is undertaking a natural capital assessment of saltmarsh restoration and is developing a fisheries partnership with the industry and others to test regional management opportunities and create a market for sustainably-caught local fish.

Other Plan policies that the pioneer will look to support include sustainable fisheries, better managed MPAs and development of the planning and licensing system.

The pioneers' continuing role

Defra expects the pioneers to make an important contribution to the future iterations of the 25 Year Environment Plan. Updates following the UK's exit from the EU will be a key opportunity to share good practice from the pioneers across the country. With foundations now in place, the pioneers can make quick progress on their existing objectives, and on testing and supporting the policies in this Plan.

2. Reporting on progress, governance and accountability

Transparency and accountability are key features of successful reform programmes and will be built into our environmental reforms.

Defra will act as 'owner' of the Plan on behalf of government. The department will lead on developing future iterations and overseeing delivery at a strategic level, working closely with other government departments, local authorities, businesses, the public and other stakeholders.

i. Reporting on progress

We will put in place regular and transparent reporting of progress against our new metrics, including to Parliament. We propose to report annually on the plan itself. Reports will cover the progress against performance measures and an analysis of recent outcome indicator monitoring. As the monitoring cycles for different outcome indicators will vary in frequency and timing, each annual report

will place greater emphasis on a slightly different set of metrics, and in so doing build up over a time a more complete picture of overall progress towards the 25 year goals.

Alongside partners within government, such as the Office for National Statistics, and interested parties outside, including environmental organisations, we will continue to publish regular official and national statistics, giving everyone information on how the environment is changing. We will adhere to the UK's Code of Practice for Statistics and ensure that all the statistics we produce are trusted and high quality, and meet user needs. We will continue to invest in the systems that we use to collect data on the environment and people's engagement with it. As far as we can, we will make the data collected available externally for others to use.

In addition, government will arrange for comprehensive assessments of natural capital to take place on a roughly 10 year cycle. The UK National Ecosystem Assessment (NEA), completed in 2011, was the first comprehensive assessment of the state of ecosystem services in the UK. It has been hugely influential in the development of natural environment policy in England, the devolved administrations, and internationally.

A second assessment to be started in 2022 will provide an updated picture of the state of the environment at Brexit. Building on annual progress reports, this will involve a more detailed evaluation of the effectiveness of policies and measures. In it, we will take account of new scientific knowledge and explore future scenarios and policy options.

The assessment will be repeated towards the end of the 25-year period to assess outcomes and inform future planning.

ii. Ensuring independent oversight and accountability

We intend that there should be robust and thorough oversight of progress against the Plan. Government will launch a consultation in early 2018 on establishing a new, world-leading, independent, statutory body to give the environment a voice, championing and upholding environmental standards as we leave the European Union. We will consult widely on the precise functions, remit and powers of this new body, including any significant role in scrutinising and advising on the 25 Year Environment Plan, subject to consultation.

3. Supporting strong local leadership and delivery

At present many organisations and partnerships pursue their own plans, across different areas and boundaries. In places there is good coordination between them, but in other places opportunities for joining up and integrating environmental work are missed.

At a local level we want environmental effort to be guided by the goals we have outlined but also to reflect local needs and priorities as well as being more integrated and efficient.

Work has already started. The larger environmental delivery bodies in the Defra Group, have aligned around a common geography of 14 areas. Each now has its own Area Integrated Plan (effectively, a joint statement of intent between the Environment Agency, Natural England and the Forestry Commission) that we propose to develop into natural capital plans. These will be aligned with the 25 Year Environment Plan (ensuring a clear line of sight to national government) but be particularly relevant to the local area or geographies within them.

The aim is for the 14 areas to work together, using a natural capital approach, bringing in other partners to maximise the environmental benefits that can be achieved from better coordination across individual remits. Lessons from the pioneer projects will provide vital information as they develop and implement natural capital plans in their respective areas. They also provide a valuable opportunity to test approaches.

The organisations involved may vary by area according to need, but should include Local Enterprise Partnerships, leading businesses and utility companies, Local Nature Partnerships, Catchment Partnerships, local authorities, National Park Authorities and water companies. The level of involvement of external parties will vary between areas but it is key that the plans for each are co-designed and delivered.

Ultimately, we want to move towards an approach in which the 14 local areas are mapped and managed more as a system, with a 'system operator' responsible for the strategic management of the natural capital in accordance with respective local plans. We recognise that this is a long way from where we are now and that considerable work is required to map out how this might operate in practice. We will continue to explore innovative ideas, such as the natural capital trust idea which seeks to channel funding to agreed priorities (See box below), to make progress.

Innovation in governance – a natural capital trust

The West of England Nature Partnership (WENP) is working closely with local authorities and the West of England Combined Authority to explore how the establishment of a Natural Capital Trust for the West of England could both enable development and investment in natural capital, improving the quality of life for people across the region.

Defra has provided support for this project as the model has the potential to be replicated across the country. Such a model could improve the strategic allocation of funding generated from developer contributions and payment for ecosystem services schemes to have maximum benefit to the protection and enhancement of a region's natural capital.

4. Funding, financing and incentivising improvement in natural capital

We now have strong evidence on how natural capital underpins the economy, supports long-term growth and benefits human health and wellbeing. We know carefully-planned investments in natural capital assets can deliver significant value for money and generate economic returns that rank favourably with those generated by more traditional infrastructure investments. When the NCC examined a range of natural capital investment types in their third report to government, it found that the benefit:cost ratios ranged from 3:1 to 9:1[42]. In other words, for every pound spent, the nation received £3 to £9 back in economic value.

The right mix of public and private funding and financing for projects that protect and enhance natural assets will be crucial to the successful delivery of this ambitious plan. To date, such projects have typically been resourced through subsidies and grants from government and the EU, the Heritage Lottery Fund (HLF) and philanthropic foundations as well as local authorities, environmental organisations and private sector investment, notably by water companies.

While data for direct spending on improving natural capital is not consistently gathered across all sectors, HM Treasury and Defra estimate that central government funding for this in England amounted to approximately £805m in 2015-16. Spending at UK level by environmental organisations with a biodiversity or nature focus was £236m in 2014-15[43] and the HLF awards around £100m per year to UK natural heritage project.

[42] The State of Natural Capital: Protecting and Improving Natural Capital for Prosperity and Wellbeing, NCC, 2015

[43] This value is likely to be an underestimate as the indicator does not include all NGOs with an environment or customer focus. Biodiversity 2020: a strategy for England's wildlife and ecosystem service: Indicators, Defra, 2017

Philanthropic and Lottery funding for the environment

The Esmée Fairbairn Foundation (EFF) is one of the largest independent grant-makers to the natural environment sector in the UK. Innovative funding models used by EFF include a £10m fund which is used to purchase pieces of land with a high conservation value that come on to the market in the UK. The land is purchased directly by EFF and simultaneously leased to a pre-approved conservation organisation with the option for them to buy it in two years' time at the price EFF paid for it, plus a small interest charge. This provides the conservation organisation with a window to fundraise.

EFF has also committed a social investment of £400,000 to the South Midlands Newt Conservation Partnership to support its role in a pilot scheme testing an innovative approach to the protection of great crested newts through the planning system. The EFF investment will help kick start a longer-term programme supporting over 100 habitats, leading to the creation of up to 1,000 ponds, 500 hectares of grassland and 100km of hedgerows over 10 years, with the investment being repaid over time through compensation payments from developers.

The HLF uses money raised by National Lottery players to help people across the UK explore, enjoy and protect the heritage they care about. This includes natural heritage and HLF provides around £100m of grant funding to UK landscape and nature projects each year, with a particular focus on connecting people with nature. Defra will work with HLF, as recommended in the recent DCMS-led tailored review,[44] to consider how HLF can engage with the 25 Year Environment Plan and to explore whether alternative options to pure grant-giving would support the sustainability of the natural heritage sector.

[44] Tailored review of Heritage Lottery Fund/National Heritage Memorial Fund, Department for Digital, Culture, Media & sport, 2017

Case study: Water companies innovating in natural capital investment solutions

South West Water's (SWW) Upstream Thinking scheme, a partnership with the Wildlife Trust and the Rivers Trust involves joint investments between farmers and the water company aimed at making sure that land is managed in such a way that potential pollutants do not run off into surrounding water courses. It is much cheaper for SWW to tackle pollution up front than pay to remove it once it has affected the water: as such, it is part of a long-term sustainable approach to managing costs by reducing ongoing maintenance and/or deferring large capital investments; it also helps keep down customers' bills.

Wessex Water's EnTrade scheme uses an innovative reverse auction online platform to determine the optimal mix of payments to encourage farmers to grow cover crops to reduce nitrogen run-off in Poole Harbour. As with the SWW scheme, it is a more efficient way of tackling pollution.

United Utilities' (UU) Sustainable Catchment Management Programme (SCaMP) works with farm tenants and in conjunction with partners such as the RSPB, Natural England and the Forestry Commission. Between 2005 and 2015, UU invested over £22m in moorland restoration, woodland management, farm infrastructure improvements and watercourses to protect and improve water quality and the surrounding natural environment, while delaying or reducing the need for future capital investment in additional water treatment.

For the current price review (PR19 – the process through which Ofwat regulates to set the price, investment and service package for customers), Ofwat is proposing higher rewards for water companies that deliver innovative and stretching outcomes, including for environmental performance. Ofwat also expects water companies' business plans to embed natural capital approaches at catchment scales. These incentives could spur a shift towards significant innovation in delivering more environmental benefits, supported by private capital.

2017 saw the first UK public utilities green bonds issued. Anglian Water issued a green bond that raised £250m to fund projects which contribute to their sustainability strategy. Tideway, the company responsible for delivering the Thames Tideway Tunnel supported by contingent government financing, issued a £250m green bond which was three times oversubscribed, demonstrating the strength of demand in the market for sustainable investment opportunities. A second green bond issue means that Tideway is now the largest issuer of corporate green bonds in Sterling with a total amount of £450m.

i. Continuing public investment

This initial iteration of the 25 Year Environment Plan contains a mix of confirmed policies and longer-term aims, with further announcements over the coming years. Public funding sources will continue to play an important role in protecting and enhancing the natural environment. A significant proportion of UK taxpayer's money is currently channelled via the European Commission. Brexit brings with it a unique opportunity to make sure public funding is targeted at our most pressing priorities as enshrined in this Plan, achieving maximum impact including by stimulating private investment. For example, Government's near £6m investment in the Northern Forest will help unlock further investment from a range of sources which could generate more than £2bn for the country's economy.

A new environmental land management system will use public money to deliver public goods through simple and effective administration. The Government has also committed to underwrite the funding awarded to UK projects on a competitive basis by the EU, for example through the LIFE Programme, even where projects continue beyond the UK's departure from the EU. We will work with partners to develop post-EU exit arrangements and scope the potential for novel funding streams and incentives, including levies and charges. Ultimately we need to ensure that we all face the right incentives to take action on the environment.

Everyone should bear the full cost of practices that negatively impact on it and face a suite of incentives that make positive practices in their economic interests. The 5p plastic bag charge and consequent reduction in plastic bag use is a powerful example.

ii. Catalysing private investment

Increased private sector investment in natural capital will equally be crucial. The development of natural capital thinking, data and tools will usher in more opportunities to generate revenue from projects that improve the natural environment. By measuring the benefits of natural capital improvements we will sharpen the business case for private sector investment and help to unlock new markets, funding streams and private finance for natural environment projects.

The Government will take steps to encourage private sector investment wherever possible, targeting public funds at projects that provide purely public goods.

Such private sector opportunities were previously identified and explored by the industry-led Ecosystems Markets Task Force. Between 2012 and 2015, Defra funded three rounds of pilot projects to both improve the environment *and* generate revenue. The pilots offered valuable evidence of the opportunities and challenges associated with innovative funding approaches. We have since seen pioneering schemes from water companies, and environmental NGOs working with businesses and other organisations willing to fund environmental improvements because

benefits accrue to them. The RSPB and Oliver Wyman will shortly publish a discussion paper on large-scale domestic conservation finance.

More recently, a report for Defra identified projects and initiatives involving private sector expenditure that protect or enhance natural capital; The Aldersgate Group also published a paper exploring the current state of play in the natural capital finance market and ways to increase investment.

Clean Growth Strategy and Green Finance Taskforce

HMG's Clean Growth Strategy sets out a series of policies and proposals to develop new green finance solutions to mobilise more private capital into sustainable technology and infrastructure projects in sectors such as energy, water, waste and air quality. This includes setting up a Green Finance Taskforce, comprising senior representatives from the finance industry and government, to develop ambitious policy proposals which could further accelerate private sector investments to help deliver the Clean Growth Strategy and 25 Year Environment Plan.

Shortly, the Green Finance Taskforce will make recommendations to government on how to accelerate private sector investment in sustainable projects and infrastructure by building on the UK's strength in green finance.

In the following examples we set out a number of innovative market mechanisms that can capture and monetise more of the benefits from the natural environment in order to generate revenue streams or cost savings.

- Listed companies can invest in tree planting and peatland restoration projects to offset their residual carbon emissions – for example by using the Woodland Carbon Code or Peatland Code.

- Housing and infrastructure developers can invest in habitat creation projects as a cost-effective way of fulfilling their obligations to compensate for habitat loss under the National Policy Planning Framework. Natural England's metric does this by converting damage to biodiversity into a comparable unit.

- Providers of infrastructure can invest in natural flood management projects to increase their resilience. The Green Alliance and National Trust's work on natural infrastructure schemes explores how an area-based market in avoided costs could deliver environmental improvements by bringing together groups of land managers to sell natural services such as flood protection to groups of beneficiaries.

- Product and supply chain certification schemes allow goods produced to certain environmental standards to be sold at a price premium, enhancing brand value, helping ensure resilience of supply and securing access to markets. The practice of benchmarking of such schemes could help improve consumer awareness and drive higher environmental standards.

- Business in the Community (BITC) has been working with businesses that are already investing in natural capital to ensure resilience of supply, provide a healthy attractive environment for their employees and to meet environmental standards. There is an opportunity to align this investment to make sure that it is used to the best effect in communities. For example, the Landscape Enterprise Network approach developed by BITC, Nestle and 3Keel identifies the businesses working within a landscape and maps the natural capital that they are reliant on, enabling more effective investment and a greater understanding of shared needs.

- Matched crowd-funding schemes combine crowdfunding and institutional funding to get great ideas off the ground. A recent report from Nesta looked at the impact of such schemes by analysing a £251,500 matched crowdfunding pilot involving the HLF.

- Visitor giving schemes are a simple way to invite voluntary donations from tourists, inspiring them to help look after the places they love. Nurture Lakeland's visitor giving scheme enables tourism businesses to collect contributions from their customers: the money supports a host of projects across Cumbria to protect the beautiful landscape, support communities and promote the region's heritage.

Case study: Kingsbrook, Aylesbury Vale – putting nature at the heart of development

The RSPB joined forces with Barratt Developments to set a new benchmark for nature friendly housing developments – the first national agreement of its kind in the UK. At Kingsbrook, some 2,450 new homes, new schools and community facilities have been designed in a way that puts nature at the heart of proposals. Around 60% of Kingsbrook will be green infrastructure, including 250 acres of accessible, wildlife-rich open space, orchards, hedgehog highways, newt ponds, tree-lined avenues, fruit trees in gardens, bat, owl and swift nesting boxes and nectar-rich planting for bees.



Aylesbury Vale District Council has been instrumental in promoting this approach from the start and are now looking to adopt these principles in planning their garden town. This is good for people and business as well as wildlife. Barratt expects the value and saleability of its homes to be improved by the quality of greenspace and there is evidence that local businesses can also be boosted by a green setting. For the community, greenspace can improve children's educational prospects and their connection to nature, and contribute to improved mental and physical health and wellbeing. The Kingsbrook project will be carried out over about a decade with a comprehensive monitoring programme, developed and overseen by RSPB scientists.

Barratt have a unique national partnership with the RSPB helping to translate the lessons learnt at Kingsbrook across their development portfolio, having rolled out a 'Growing with Nature Guide', embedding a biodiverse approach to all developments, and planting high value plant species that support more wildlife.

We want the Plan to help organisations make more of these innovative ideas. To that end, the Government will:

- Set up a stronger domestic carbon offset mechanism and carbon guarantee scheme. These will encourage private sector investment and develop markets for domestic carbon sequestration. Businesses will be encouraged to plant trees as a cost-effective way to counterbalance their residual carbon emissions; we will also explore how we could extend this approach to include other land activities. First, we will introduce a reporting framework for businesses that drives demand for *Domestic Offset Units* or *Credits.* Government will also explore whether a Forest Carbon Guarantee scheme is viable, using the existing Woodland Carbon Code as a way of sharing the risk to attract investors and increase demand for domestically grown timber.

- Embed an 'environmental net gain' principle for development, including housing and infrastructure and explore options to introduce a system of conservation covenants in English law. This will provide long-term assurance that compensatory habitats will be maintained to the standard required.

- Test, encourage and embed natural flood management solutions in the appropriate places, and alongside more traditional defences where needed, including new ways of financing schemes (see chapter 3).

- Work with partners to consider whether benchmarking of environmental products and supply chain certification schemes could make consumers more aware of them, and drive higher standards.

- Consider the results of Natural England's pilot of the BITC Landscape Enterprise Network approach in the Hampshire Avon catchment and assess how to encourage better uptake.

Working with businesses on natural capital investment

Business in the Community works to create healthy communities with successful business at their heart. As well as their Landscape Enterprise Network initiative referenced above, BITC's Water Resilient Cities programme has been working with schools and NHS sites in Manchester to explore an innovative way of financing the retrofitting of sustainable drainage features (SuDS – e.g. green roofs and rain gardens).

A scoping study has identified benefits from a strategic roll out of SuDS in public estates across Greater Manchester, having investigated the time taken to pay back the upfront capital costs through savings made from reduced surface water charges in the schools' water bills. The SuDS measures would bring benefits to the schools and wider communities in the form of air and water quality, flood risk reduction, education, health, carbon sequestration, urban cooling and biodiversity. More information is available on the BITC website.

- Work with partners to determine the potential for a domestic natural environment impact fund. Such a facility could provide technical assistance and financing for projects that use the kind of market mechanisms listed above (see box below).
- Government will establish a green business council to advise government on setting the right conditions to stimulate environmental entrepreneurism. We will work with partners to determine its exact focus (see box below).

A Natural Environment Impact Fund

The government wants to build on the momentum for more private sector financing and drive further progress in the use of market mechanisms that capture the value of natural capital.

Defra will work with a range of partners on stimulating innovation in designing and implementing projects that can improve the natural environment and generate revenue to pay for project costs. We will convene interested parties to explore the potential for a facility to blend capital from a range of sources (e.g. public, private philanthropic) to provide technical assistance funding and repayable finance to projects with the potential to improve the natural environment and generate revenue.

Such a blended facility could issue a mix of grants and loans on a long-term repayment basis at below-market rates to help address some of the market failures that have to date limited the take up of return-generating natural environment projects. This would encourage innovation, help to develop the evidence base and develop a track record that could lead to such projects attracting mainstream investment and the creation of new natural capital markets.

A Green Business Council

The government will also work with partners to establish a green business Council for advice on the following:

- Actions by government to encourage, incentivise and create the right conditions for private sector innovation in green enterprise and environmental entrepreneurialism.
- Developing and articulating the 'business case' for companies to assess, address and report on natural capital risks and opportunities in their operations and supply chains.
- Positioning the UK as an international leader in providing knowledge-based goods and services, contributing to the protection of natural capital and its sustainable use.
- Options on how to develop new natural capital markets – for example, in exploring how more revenue streams could be generated to make natural capital assets investable.
- Seeking opportunities for new sector-specific environmental initiatives, inspired by the Courtauld Commitment and the plastic bag levy; enabling more water company investment in natural capital solutions.

5. We will work across society to secure lasting change

We want this Plan to speak to everyone – citizens, local councils, charities, NGOs, businesses. It is important that everyone who impacts on the environment and derives benefits from it plays their part. We all need to adopt a long-term and committed approach of 'Do more: harm less'.

It is clear that momentum for positive change is growing and we must harness this in coming months and years. Government will help bring about change in a variety of ways, using both incentives and regulation where necessary, to make sure that responsible attitudes towards the environment become the norm. Many businesses are also playing their part. Fast-food outlets are introducing segregated recycling bins with separate

sections for paper cups, plastics and liquids, proclaiming their ‘ambition to send zero waste to landfill’. Other retailers are swapping plastic straws for paper, and replacing plastic coffee stirrers with wooden ones. Another example is the work of water companies, high street retailers, coffee shops and transport hubs who we will support to offer new refill stations for people to top-up their water bottles in every major city and town in England. The water industry will also fund the scaling up of an app to enable the public find their nearest refill station.

Consumers are beginning to realise that their plastic cotton bud has a lifespan that far outlasts their fleeting usefulness, but there is much further to go.

This Plan sets out how government is leading, and we will now work with all parts of society and all sectors of the economy over the coming year to identify their contribution to improving the environment.

Conclusion

We humans and the stunning multitude of other living creatures on this earth are completely dependent on each other. Our beautiful green and blue planet is our shared and only home. We have a choice. We can destroy and degrade our natural capital for short term gain, and leave an impoverished inheritance for future generations. Or we can preserve and enhance the world - for ourselves, for future generations and for all the other creatures who share the globe with us.

This Government has chosen the path of preservation and enhancement. Our Plan sets out an ambitious agenda for the next 25 years. Delivery of the Plan will require sustained and committed effort not just from government but from organisations and individuals across our nation. This needs to be a shared endeavour and the Government intends to work collaboratively with partners across the nation and globally to make a reality of its aspirations. We call on all organisations and individuals – in this country and globally - to join us in our commitment to improving the environment.



We can preserve and enhance the world - for ourselves, for future generations and for all the other creatures who share the globe with us (Photo: Rich Lukey).