



# A GREENER BUDGET

CHOICES FOR A PROSPEROUS FUTURE



WWF is at the heart of global efforts to address the world's most important environmental challenges. We work with governments, businesses and communities to promote sustainable patterns of development so that both people and nature can thrive. Together, we're safeguarding the natural world, tackling climate change, and promoting prosperous and resilient economies.

Appropriate economic policy is crucial to the achievement of these goals, and the annual Budget is the focal point of economic policymaking in the UK. This report sets out a series of recommendations on what HM Treasury could do, in the 2016 Budget and beyond, to help drive the transition to a sustainable, resource-efficient and low-carbon economy in the UK.

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**SNAPSHOT: WHY INVESTING IN NATURAL CAPITAL IS IMPORTANT**

**£7.9 BILLION**

Value of potential net benefits from measures to improve the quality of water bodies and rivers in England<sup>7</sup>

**£121.7 BILLION**

Turnover generated in 2013 by the low carbon economy, including supply chains<sup>9</sup>

**£1.5 TRILLION**

The monetary value of selected components of the UK's natural capital in 2011, broadly equivalent to the UK's GDP that year<sup>12</sup>

**£3.1 BILLION**

Value of benefits over 50 years of wetland creation across 100,000ha in England<sup>5</sup>

**£8.4 BILLION**

The net present value of improving the status of the UK's freshwater ecosystems<sup>3</sup>

**£500 MILLION**

Value of benefits that could be gained per year by planting 250,000ha of new woodlands near towns and cities in England<sup>6</sup>

**£440 MILLION**

Value of pollination to UK agriculture per year<sup>2</sup>

**£16 BILLION**

Economic value of the effect of small particulate (PM2.5) pollution on mortality in the UK in 2008, equivalent to 29,000 premature deaths<sup>10</sup>

**£39.9 BILLION**

The size of the UK's 9% share of the global climate-aligned bond market<sup>11</sup>

**£2.1 BILLION**

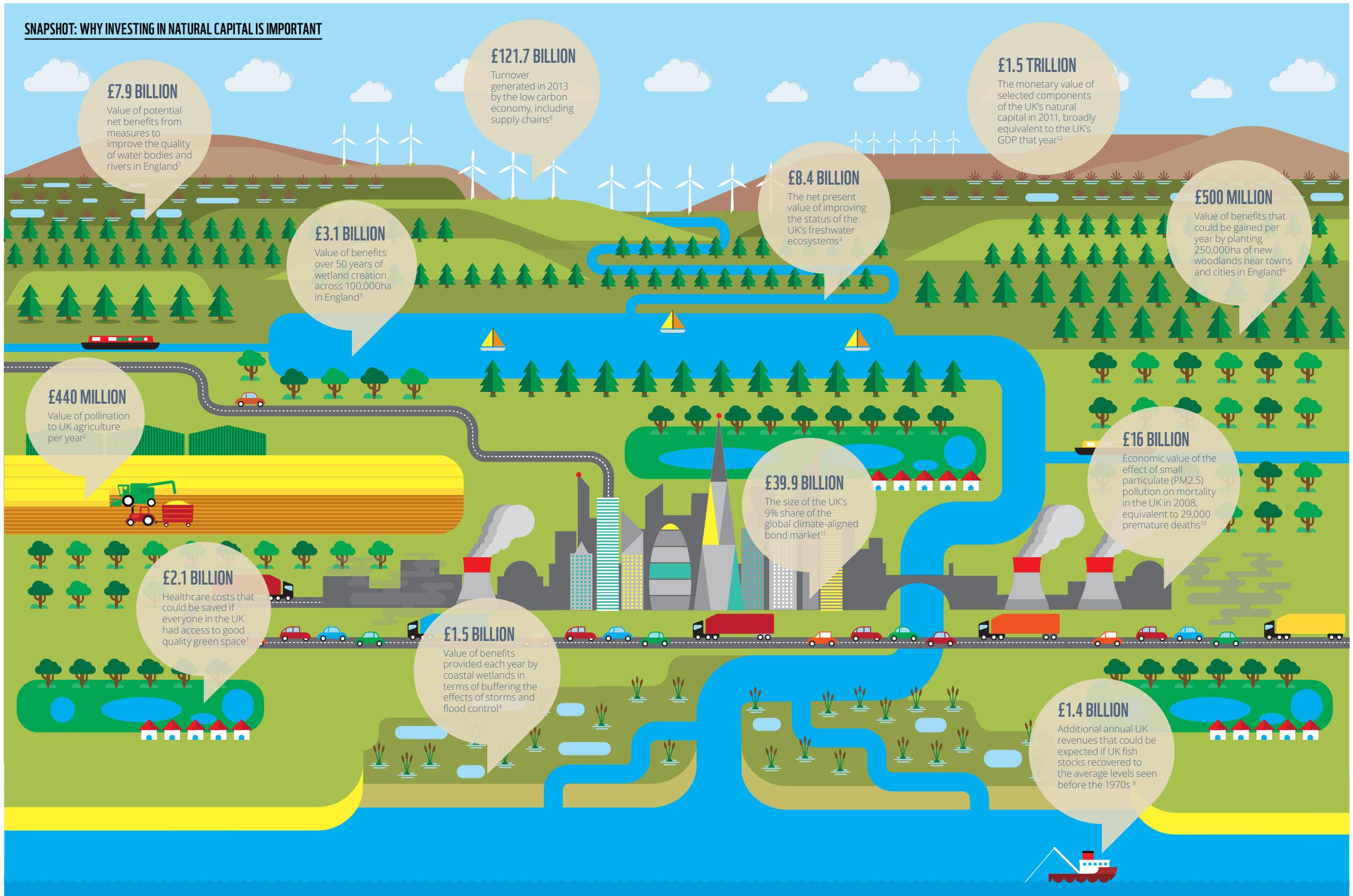
Healthcare costs that could be saved if everyone in the UK had access to good quality green space<sup>1</sup>

**£1.5 BILLION**

Value of benefits provided each year by coastal wetlands in terms of buffering the effects of storms and flood control<sup>4</sup>

**£1.4 BILLION**

Additional annual UK revenues that could be expected if UK fish stocks recovered to the average levels seen before the 1970s<sup>8</sup>



# FOREWORD

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There is growing awareness that a healthy economy and a healthy natural world are intrinsically linked, and that global action is required to achieve a more environmentally sustainable economic pathway.

And the world is beginning to act. Last year, the UK joined 192 other nations in signing up to the Sustainable Development Goals to ensure that our economic prosperity is not achieved at the expense of future generations. The UK government also rallied behind the global climate deal in Paris, to help put the world on the low-carbon trajectory that is so urgently needed to avoid dangerous climate change. And the recent commitment to phase out unabated coal power by 2025 is a signal that the UK is taking steps to reap the rewards of a low-carbon economy.

However, there appears to be a disconnect between the UK government's longer-term aspirations and recent policy decisions. The cost of failing to address this now will be high. From the recent UK floods to the loss of agricultural productivity from soil erosion, and from the health-related impacts of urban air pollution, to lost opportunities in new and fast-growing green industries – evidence shows that we are already paying the price for failing to tackle the threats affecting nature.

Faced by the trinity of mounting threats posed by climate change, resource scarcity and environmental degradation, there is an urgent need to structure economic policy so that it promotes investment in the natural asset base, and drives a transition to a sustainable, resource-efficient, low-carbon economic model.

This report outlines some of the things HM Treasury could do in the 2016 Budget to address these issues better. The measures would help to put natural capital at the heart of economic policy-making, and would incentivise innovation and action across all areas of the economy to help restore nature's assets – measures which should form a key pillar in the government's new 25-year Plan for Nature. And they would help to drive public and private investment in clean, green industries that will be the engines of sustainable economic growth in the future.

Only HM Treasury has the power to shift economic policy-making in this way, and to secure the substantial rewards for the UK economy that this will bring. The sooner Britain gets on board, the greater the benefits - in terms of reduced future risks and costs, improved economic resilience and new opportunities for job creation, and competitiveness.

HM Treasury has the opportunity now to provide leadership, the right incentives and, most of all, assurance that it recognises and is addressing these long-term risks that jeopardise the country's future prosperity.

A handwritten signature in black ink, reading "Glyn Davies". The signature is written in a cursive style with a large, sweeping initial "G".

Glyn Davies  
Acting chief executive, WWF-UK

## INTRODUCTION

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It is now widely recognised that a healthy natural world is the foundation of a productive and resilient economy. Yet, from the serious flooding incidents we have seen in recent years (which have been caused at least in part by the way river catchments have been managed), to the health-related impacts of urban air pollution and associated human and economic costs - the evidence shows that we are failing to protect and invest in our natural assets, and that this is already affecting the UK's economy and the well-being of its population. If unabated, these trends will have profound implications for the nation in the future.

Accordingly, government, business and wider civil society are increasingly recognising the need to structure economic policy so that it promotes investment in our natural assets and makes the transition onto a sustainable, resource-efficient, low-carbon economic trajectory.

In our 2015 report, *A Greener Budget: Sustaining Our Prosperity in a Changing World*,<sup>1</sup> WWF-UK set out a series of recommendations to HM Treasury to help drive this agenda forward. The report highlighted how future economic policy – and thus HM Treasury's annual Budgets – must evolve to help address today's challenges (see Box 1), and it set out a suite of practical policy recommendations focusing on what HM Treasury could do in the 2015 Budget.



## BOX 1: FUTURE BUDGETS MUST BE DIFFERENT

Future Budgets must evolve to help address today's challenges by, for example:

- **Recognising the links between a healthy economy and a healthy environment.** All economic activity ultimately depends on natural capital. Protecting and improving it must be a key objective of a sustainable long-term economic policy, and a core consideration in budgetary processes.
- **Taking an integrated, cross-governmental approach.** Breaking down departmental silos is crucial for tackling complex, long-term issues at the lowest cost. There's a need to focus on outcomes rather than on spend, and to make more use of modernised public service agreement approaches.<sup>2</sup>
- **Putting greater emphasis on long-term planning and investment.** The National Audit Office (NAO) has highlighted how longer-term budgetary planning leads to better outcomes, reduced public spending, and greater value for money.<sup>3</sup> It creates the conditions for promoting 'spend to save' investment in, for example, preventative and restorative action, the benefits of which may only pay off over the long term.
- **Driving investment in maintaining and restoring natural capital assets.** Like all forms of capital, natural capital requires investment both to maintain and improve it. Targeted public investment would provide significant benefits to the economy, businesses and communities. The Budget also needs to mobilise private finance at a greater scale, to minimise the burden on the public purse.
- **Providing incentives for more sustainable development pathways.** The Budget needs to create a framework where government, industry and civil society are rewarded for making sustainable, resource-efficient and low-carbon choices that will enable us to compete in a global economy where natural resources and carbon are increasingly constrained.

This report updates the analysis in our 2015 report based on the latest developments, and supplements our previous recommendations. A key conclusion is that there is a misalignment between the government's current policy decisions and its long-term aspirations. For example, the government signed up to an ambitious climate deal at the Climate Change Conference COP21 in December 2015, but since the election has introduced a number of policy measures that will make it difficult to achieve these goals.

Similarly, while the government has committed to protecting and improving our natural capital as a key part of the economy's asset base, it recently ruled out integrating a long-term investment strategy for natural capital into the National Infrastructure Plan (NIP), and it is developing a 25-year plan for food and farming that does not appear to reflect adequately the dependence of a thriving UK agricultural sector on a healthy natural environment.

This suggests a perception that environmental and economic goals are conflicting, whereas in reality this is not the case. A growing body of evidence shows that protecting and improving the asset base on which the economy depends is important to enable the UK to meet its economic goals. There is an urgent need to adopt a longer-term sustainable economic policy framework that integrates and supports the full range of aspirations the government has set out. This report lays out some of the things HM Treasury can do to help bring this about.

Measures are set out under four key themes, as follows:

- **Promoting the protection and improvement of natural capital** – an issue of fundamental importance to the economy that is entering the mainstream of public and corporate decision-making, including via the government's proposed 25-year plan for nature, and in which substantial untapped opportunities still exist.
- **Decarbonising the UK economy and driving investment in low-carbon industries** – a sector that has grown substantially over recent years but currently shows signs of slow-down, and has been subject to a range of recent policy changes that threaten future growth.
- **Developing a sustainable, thriving UK bioeconomy** – a sector that has the potential to grow significantly, but requires active policy intervention in order to ensure it grows sustainably.
- **Promoting a more resilient and sustainable UK financial system** – a policy agenda that is advancing rapidly, driven by the urgent need to manage risks and promote a shift towards investment patterns that put the UK on a resilient and sustainable development pathway.

*“In the wake of the Paris agreement, and with the impact of climate change on homes and businesses becoming impossible to ignore, creating a green economy through smarter use of taxes and targeted public spending should be a far higher priority for government. Free markets won’t deliver this on their own. The Treasury needs to take a hard look at how we can use all available policy levers to drive this change, starting with this year’s budget.”*

Lord Adair Turner, 2016; senior fellow at the Institute for New Economic Thinking; former chairman of the UK Financial Services Authority (2008-2013), and first chairman of the Climate Change Committee (2008-12)

### ***Global developments over the last year and implications for the UK***

The last year has been a period of continued rapid global change. Record global temperatures in 2015<sup>4</sup> have been accompanied by a spate of extreme weather events, such as heatwaves, storms, rainfall and droughts. In the UK, the winter 2015/16 floods prompted a major review of flood defence policy and look set to have cost the economy at least £5bn.<sup>5</sup> At the same time, megatrends such as shifts in global economic power, technological advances and demographic changes have transformed the macroeconomic landscape<sup>6</sup>, all of which influence domestic policy choices in the UK.

The last year also saw a number of era-defining international political commitments. On 25 September 2015, the United Nations General Assembly formally adopted the 2030 Agenda for Sustainable Development, along with a set of 17 Sustainable Development Goals (SDGs) and 169 associated targets.<sup>7</sup> The SDGs cover a wide range of issues, from the promotion of more sustainable and inclusive patterns of economic activity and growth, to sustainable management of natural resources, to gender equality, peace and justice.

The creation of the SDGs was a defining moment in the history of economic development. They reflect the global realisation that the biggest challenge we face today is the need to find ways to develop and prosper that are consistent with life within the environmental limits of one planet. Thus the SDGs are a new and transformative agenda, one that will need to promote a significant shift away from the unsustainable patterns of development we have seen to date.

The UK government has signed up to these goals and has said it will support their delivery in the developing world through the UK's aid programme. But the SDGs apply to all countries, not just developing countries, so the government needs to ensure the UK is itself meeting the goals – which is not yet the case. This is discussed further below.

In December 2015, the United Nations climate change conference (COP21) led to the adoption of the Paris Agreement, in which the 196 parties attending committed to a goal of limiting the increase in the global average temperature to less than 2°C above pre-industrial levels, and to “pursue efforts to limit” the increase to 1.5°C. The former would require zero net anthropogenic greenhouse gas emissions to be reached during the second half of the 21st century, the latter sooner. If ratified by 2017, the agreement will be binding.

The success of the climate deal will depend on the extent to which national policies are implemented to achieve those commitments, and many commentators have noted that the level of ambition in the national policies of many countries does not match that of the commitments made. This certainly seems to be the case in the UK, as is discussed later in this report.

### *Progress made by the UK government over the last year*

Since the release of WWF-UK's 2015 *A Greener Budget* report in February 2015, the UK has seen substantial change in the political and economic policy landscape, including through the general election (May 2015), Spring Budget (March 2015), Summer Budget (June/July 2015) and combined Spending Review and Autumn Statement (Nov 2015).

Public policy highlights over the last year include the following:

- The UK government signed up to the new SDGs and the Paris Agreement, against which all aspects of UK public policy decision-making will need to be aligned, including economic and budgetary.
- The government committed to phasing out coal-fired power stations by 2025 and restricting the use of coal from 2023,<sup>9</sup> recognising it will no longer be economically or financially viable in the near future.

*“We commit to make progress in a way that is sustainable and protects our one and only planet for the long term, and treasures and conserves our natural resources for future generations.”*

David Cameron,  
UK prime minister, 2015<sup>8</sup>

*"The industry is angry at the treatment of renewables compared with fossil fuels. We are sick and tired of being treated extremely unfairly. If we lose jobs that is bad for DECC, the Treasury and the prime minister. People will be knocking on the door of the Department of Work and Pensions and living on the public purse"*

Reza Shaybani,  
chair, British Photovoltaic  
Association<sup>13</sup>

- An initial framework for the UK government's '25-year plan for nature' is being developed, the effort being led by the Department for Environment, Food and Rural Affairs (Defra) in collaboration with other government departments (including HM Treasury) and wider stakeholders. The plan has the potential to generate a step change in the way natural capital is managed in this country, setting the UK on a course in which protecting and investing in nature and our landscapes are the cornerstones of our long-term economic plan and our transition to a sustainable, resource-efficient and low-carbon economy.
- The Natural Capital Committee (NCC) was re-established until the end of the current Parliament, to continue its vital role in advising the UK government on protecting and restoring natural capital on which the UK economy depends.
- A refreshed road map was published (in March 2015) setting out details of the next phase of work (up to 2017) towards incorporating natural capital into the national environmental accounts by 2020.<sup>10</sup>
- The Green Investment Bank (GIB) is to be privatised, which could help the GIB leverage private sector finance for investment and thus enhance its impact, as long as the process is undertaken with sufficiently strong safeguards in place to protect the GIB's green mission and ensure that it continues to address market failures and promote green investment.
- The Conservative manifesto included a commitment to putting in place a new 'Blue Belt' to protect precious marine habitats; spending £3bn from the Common Agricultural Policy to enhance England's countryside over the next five years; planting an additional 11m trees; launching an ambitious programme of pocket parks; and tackling air and water pollution.<sup>11</sup> In the combined 2015 Spending Review and Autumn Statement, a commitment was also made to protecting budgets for forests and national parks.<sup>12</sup>
- Passing of the Well-being of Future Generations (Wales) Act 2015, which provides a framework for future sustainable development in Wales.

However, there have been a number of public policy developments over the past year that jeopardise meeting our long-term aspirations, including the following:

- Announcements on the withdrawal of support for wind, solar, low-carbon homes, climate levies and Carbon Capture and Storage (CCS). These are likely to have profound implications

*"The government has a huge credibility problem, having signed a treaty of historic importance, and yet [having] been pursuing a path of [energy policy] travel that is 180 degrees opposed to what is needed."*

Jeremy Leggett,  
founder of renewable  
energy company  
Solarcentury®

for the viability of many emerging firms in the sector (the government's own analysis suggested that the changes to solar subsidies alone would lead to a loss of between 9,700 and 18,700 jobs<sup>14</sup>) and the UK's ability to meet its own carbon budgets. These announcements were unexpected, given the Government's commitments, ahead of COP21, to lead in tackling climate change.

- The government confirmed that it does not currently agree that an investment programme for natural capital should explicitly feature in the National Infrastructure Plan. The missed opportunity to help ensure that future development pathways in the UK are sustainable suggests again the existence of a disconnect between long-term aspirations and short-term policy focus.
- The government announced that farmers would be allowed to dredge ditches on their land without needing permission from the Environment Agency. Experts have warned that this could potentially increase downstream flood risks by increasing flow conveyance, and it seems contradictory to a government proposal to reward farmers who allow their land to flood.<sup>15</sup>
- Significant cuts were made to the annual departmental budgets of Defra and the Department of Energy and Climate Change (DECC), putting additional strain on their ability to drive key aspects of the transition to a sustainable, resource efficient and low-carbon economy that invests in the natural asset base.

*"All of us will work to implement the Agenda within our own countries and at the regional and global levels."*

United Nations General  
Assembly, 2015<sup>17</sup>

### ***The implications of the new Sustainable Development Goals for the UK economy***

As a member of the United Nations, the UK has formally signed up to the SDGs. The declaration that accompanies the SDGs<sup>18</sup> states that "the SDGs and targets are integrated and indivisible, global in nature and universally applicable". That they are indivisible means that they must all be delivered – governments cannot cherry-pick the ones they like and ignore the others. This is crucial, because we know that achieving the goals will imply competition for resources such as land and water (e.g. should we use land to grow more food, or to plant biofuels to create renewable energy, or increase forest cover to help tackle climate change?), and thus there could be trade-offs between achieving the different goals.

This is explained in a recent report by the United Nations Environment Programme (UNEP), which showed that in implementing the SDGs, there will be potentially significant trade-offs between food systems, biodiversity, climate mitigation, nutrient pollution and freshwater use.<sup>19</sup>

*"The Goals set out a plan of action for people and for the planet. They start from the premise that eradicating poverty in all its forms, including extreme poverty, is an indispensable requirement for sustainable development. Protecting the resources we all depend on is a crucial part of that."*

Nicola Sturgeon,  
first minister for Scotland,  
2015<sup>21</sup>

This implies that it will be impossible to achieve all of the goals unless we can decouple growth and development more effectively from environmental degradation. Thus the goals that facilitate this decoupling – those relating to sustainable consumption and production, and sustainable management of natural resources – cannot be ignored.

The UK government has committed to supporting developing world efforts to meet the SDGs through the UK's aid programme. But the SDGs also incorporate the concept of universality, which means that they apply to all countries – not just developing countries.<sup>20</sup> The UK government must therefore also deliver sustainable development in the UK. This also makes economic sense because, in a world of increasing demand for scarce resources, it is the only way to ensure our future prosperity as a nation and that of other countries with which we are interdependent.

The UK government will need to undertake a review of current UK performance against the SDGs. Evidence suggests that the UK is performing well against the SDGs in some areas, but in other areas is falling short (see Box 2). Where there are shortfalls or conflicts, the government should institute a process to ensure that new policies are consistent with the achievement of the goals.

Because the SDGs cut across many different areas of public policy, all government departments need to consider their implications and have a significant role to play in meeting them. However, HM Treasury has a particularly important role to play, as it must assess the extent to which the UK's current growth path and patterns of economic activity are consistent with meeting the SDGs. SDG delivery should also be built into budget planning: when assessing departmental budgets, HM Treasury should consider their capacity to implement the SDGs. For example, it should ensure that DECC has sufficient resources to support deployment of clean, affordable and sustainable energy.

In addition, effective SDG implementation will require a coordinated cross-Whitehall approach, ideally led by the prime minister and Cabinet Office, as recommended by the Environmental Audit Committee, and with different government departments leading on different goals and targets according to their areas of expertise, but with an integrated approach to address the many interlinkages between the goals. Thus the SDGs should bring about changes to how the UK government operates as a whole, requiring greater links between departments and an emphasis on sustainability right across government policy.

## BOX 2:

### MEETING THE SDGs THROUGH PUBLIC POLICY: HOW WELL IS THE UK DOING?

- The UK is already meeting the SDGs in many areas. One study, which reviewed performance of all the Organisation for Economic Co-operation and Development (OECD) countries against the SDGs, shows that the UK does relatively well with regard to SDGs associated with air quality, waste-water treatment, and domestic material consumption (a measure of resource efficiency).<sup>22</sup>
- But there are several major areas where we are doing less well. For example, on Goal 7, which deals with affordable and clean energy and includes a target to “increase substantially the share of renewable energy in the global energy mix”, the UK is already performing relatively poorly compared with many similar countries on some measures, with just 7.2 per cent of final energy consumption coming from renewables, placing it 25th out of the 28 EU member states.<sup>23</sup>
- Another of the targets is to double the global rate of improvement in energy efficiency by 2030. Since 2000, the energy intensity of the UK economy has improved at roughly 2% per year.<sup>24</sup> Doubling this rate will require continued improvements to the efficiency of our building stock, the rate of which has slowed since 2011 due to cuts in government support, and continued improvements to product and vehicle efficiency standards, which the current Government has lobbied against at the EU where these are decided. (For further discussion of energy policy see Section 2 of this report).
- According to the study, we also do poorly in relation to sustainable agriculture, which is part of Goal 2, called ‘Zero Hunger’. Goal 2.4 requires that countries “by 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality”. Yet the study notes that the UK uses relatively high levels of nitrogen and phosphorous in farming, which are harming the environment. In addition, a recent study conducted on behalf of Defra estimated that we are losing approximately 2.9 million tonnes of soil per year<sup>25</sup> as a result of soil erosion, which is often caused or exacerbated by unsustainable agricultural practices.

- Addressing this would make economic sense: the same study showed that soil degradation was generating economic costs in the region of £1.2bn per year in the form of lost farm productivity, flood damage, the effects of reduced water quality and other costs. These costs hit farmers, the water industry, the tourism industry, households affected by floods, taxpayers and wider society. The implications of these findings for the government's new 25-year plan for food and farming are also clear: the hoped-for increases in agricultural production will depend on the underpinning natural capital, which is in fact being eroded at a high rate, and efforts to increase production might themselves exacerbate that degradation unless care is taken to promote increased sustainability in the agriculture sector alongside production increases.
- Considerable improvement is also needed on Goal 6 targets for clean water and sanitation, particularly when it comes to improving water quality by reducing pollution, and protecting and restoring water-related ecosystems including rivers. WWF together with The Angling Trust & Fish Legal recently won a legal challenge against the government, focusing on its failure to protect some of our most precious rivers and wetlands from farm pollution.<sup>26</sup> Monitoring has shown that just 16% of our rivers are in good health, and that very little improvement has been made in recent years. The High Court recognised the need for urgent action to protect these sites and the wildlife that lives there, ruling that the government must now change its approach and evaluate the use of regulation alongside the voluntary steps farmers can take, which have so far failed to protect these vulnerable places from pollution. Addressing this issue would make economic sense: the government's own figures show that getting 75% of rivers, lakes and wetlands healthy would benefit the economy by £8.5bn through increased tourism, recreation, improved flood resilience and quality of life.<sup>27</sup>

- Goal 15 on land use has a target that countries should, by 2020, promote sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally. The UK government's current policy target is to increase forest and woodland cover in England from 10% (current level) to 12% by 2060,<sup>28</sup> a highly conservative target given that forests currently cover around 40% of the European Union's land area<sup>29</sup> (in Germany, Spain and France the figure is around 30%<sup>30</sup>). Furthermore, in the UK as a whole, analysis by the University of Leicester highlighted significant forest loss between 2006 and 2012, suggesting that more needs to be done even to meet this conservative target.<sup>31</sup> Increasing the percentage of forest cover makes economic sense, providing opportunities to create jobs and sustainable growth through a vibrant bioeconomy based on sustainable forest management, as is discussed later in this report, as well as supplying considerable carbon sequestration and health benefits. The NCC has shown that creating new forest areas near urban centres would generate particularly significant benefits.<sup>32</sup>
- Another target of Goal 15 is that governments should take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect threatened species and prevent their extinction. Yet the National Ecosystem Assessment<sup>33</sup> has shown that England's natural capital is in long-term decline; and the State of Nature report, which reviewed populations of more than 3,000 species in the UK, found that 60% of those species have declined over the last 50 years, 31% have declined strongly, and a large number of species are threatened with extinction.<sup>34</sup>

# PRIORITY AREAS FOR ACTION IN THE BUDGET: A SUMMARY

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## *Section 1: Promoting the protection and improvement of natural capital*

- Develop and implement a new natural capital stress test to evaluate the exposure of the UK economy and individual economic sectors to risks associated with potential future changes in stocks of natural capital, and to help inform policy responses.
- Incorporate a new section on natural capital in the annual Budget report, including information on stocks, service/benefit provision, risks, liabilities and future outlook.
- Initiate a natural capital investment strategy, within the context of the 25-year Plan for Nature and integrated with the National Infrastructure Plan.
- Establish a new UK business-focused Natural Capital Task Force, to provide a forum through which to identify how the private sector can best contribute towards natural capital goals, and to identify how public policy intervention can best incentivise action, innovation and investment.

## *Section 2: Decarbonising the UK economy and driving investment in low-carbon industries*

- Demonstrate support for a long-term policy package that will give industry the confidence to invest in renewables and energy efficiency, and clarify what financial support is available to the UK's renewable energy industry beyond 2020.
- Support a major programme of investment in domestic energy efficiency as part of the government's long-term infrastructure plan, under the new National Infrastructure Commission, including the retrofit of the UK building stock.
- Channel research and development funding to ensure the development of technologies essential for the security of the future energy system.

### ***Section 3: Developing a sustainable, thriving UK bioeconomy***

- Develop a Bioeconomy Strategy building on previous work by the Department for Business, Innovation and Skills (BIS) and the upcoming bioeconomy review, that undertakes a comprehensive assessment of the competing demands for biomass, taking into account the economic growth potential and sustainability benefits of each sub-sector of the bioeconomy.
- The government should not provide any further subsidy for the use of biomass to generate power (unless it also generates heat – ideally for industry or district heating). Existing sustainability rules for bioenergy subsidies should be strengthened in line with the sustainability requirements of the Forest Stewardship Council (FSC) and Roundtable on Sustainable Biomaterials (RSB).
- The government should strengthen support for bioenergy from waste feedstocks, in efficient applications (such as heat and Combined Heat and Power) and in sectors without other renewable solutions (such as industrial heat, freight, aviation and shipping).
- The government should strengthen and broaden its existing procurement policy to favour bio-based products, with a preference for reused and recycled products, certified to FSC or RSB.

### ***Section 4: Promoting a more resilient and sustainable UK financial system***

- Commit to a clear time frame for the adoption of a legislative framework for climate and natural capital-related financial risk disclosures by financial companies, on a mandatory comply or explain basis.



# 1 PROMOTING THE PROTECTION AND IMPROVEMENT OF NATURAL CAPITAL

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WWF-UK's 2015 *A Greener Budget* report outlined how a healthy natural world is the foundation of a productive and resilient economy. The report also highlighted the urgent need to structure economic policy so that it is geared towards protecting and improving the natural asset base, and it set out a series of recommendations to HM Treasury to help drive this agenda forward. Since then, the UK's decision to develop a 25-year plan for nature (which has also been termed the 'Open Environment' plan<sup>35</sup>) provides an important opportunity to promote a significant shift in the way that our natural environment is managed, to recognise and better value its importance to our social and economic wellbeing.

In order to achieve this shift, the 25-year plan for nature should promote the systematic incorporation of the value of nature into economic decision-making, in order to incentivise all actors to manage or use natural resources sustainably, efficiently and in a way that delivers the best overall outcomes for society. By putting the value of nature at the heart of government policy and process, the plan can drive a new cross-government agenda that elevates the maintenance of natural capital as a foundational policy objective with which all other policy areas should be aligned.

HM Treasury must play a key role in developing and implementing the 25-year plan for nature, for two reasons. First, because it has a responsibility to ensure that the asset base upon which the economy depends is maintained, as well as to understand and manage the risks associated with its depletion. Second, because HM Treasury also holds the key to driving forward many key aspects of the plan. For example, HM Treasury can be involved in managing future risks to the UK economy arising from natural capital depletion, analysing how protecting and improving natural capital assets can help to cut public sector risks and costs, ensuring that infrastructure planning and investment is cognisant of natural capital-related impacts and opportunities, and designing market-based instruments (MBIs) to incentivise investment in natural capital.

### ***Priority areas for action in the Budget***

The 25-year plan for nature will take a year to develop, and will set out the agenda for a long-term programme of work to protect and restore the UK's natural assets. However, there are a number of areas in which HM Treasury can take action now, including via the Budget. Recommendations in this section are set out under the following four headings:

- Incorporate information on natural capital into the annual Budget report.
- Develop new tools and approaches for assessing the economic risks associated with natural capital depletion.
- Implement policies to help drive investment in priority natural capital assets.
- Establish a new UK business-led Natural Capital Task Force to support the development and implementation of MBIs and other relevant policy interventions.

The remainder of this section provides further detail and rationale in each area.

### ***Incorporate information on natural capital into the annual Budget report***

As WWF-UK argued in its 2015 *A Greener Budget* report, one of the key areas in which HM Treasury can make progress is by starting to incorporate natural capital information in the Budget report. Since then, the political and corporate appetite for action - and the feasibility of taking that action - has grown (for example, due to greater availability and accuracy of information). In this section, we further develop ideas on what HM Treasury can do to take this agenda forward.

The annual Budgets, which present a 'state of the economy' report based primarily on Gross Domestic Product (GDP), say little about natural capital, despite the fact that it underpins the nation's long-term economic health. Ultimately, future Budget reports will need to provide information on, for example, the status of natural capital stocks, as well as associated risks, liabilities and maintenance investment requirements (see Box 3). Without such information it's impossible for HM Treasury to understand fully the UK's current economic standing and future outlook – nor can it make informed decisions about the budgetary policies and allocations required to protect the UK's longer-term economic interests.

### BOX 3: MAINTAINING NATURE'S ASSETS THROUGH INVESTMENT

Like all forms of capital, natural capital requires investment to maintain. Dieter Helm (in his new book *Natural Capital: Valuing the Planet*)<sup>36</sup> argues that a balance sheet set of accounts subject to an overall sustainability criterion should provide for a capital maintenance charge to maintain the overall stock of natural assets – and that this should be against the current revenue, not a depreciation charge. In other words, assuming the societal goal is to maintain the overall stock of capital for future generations (a prerequisite for sustainable development), “the economy needs to find a surplus in cash terms sufficient to pay for the necessary capital maintenance of the assets in perpetuity”. This investment needs to be found via a combination of public and private sources, and taken into account in the annual Budget.

*“A reduction in the value of natural capital over time, as recorded in the accounts, can be seen as giving rise to a corresponding requirement for a capital maintenance provision ... to keep an asset or capital item intact through time.”*

Natural Capital Committee, 2015<sup>37</sup>

The government has made a commitment to integrating natural capital into the national environmental accounts by 2020.<sup>38</sup> In March 2015, the Office for National Statistics (ONS) published a refreshed road map setting out the next phase of work (up to 2017), and it has made progress in a number of areas, including publishing initial aggregate natural capital estimates, initial asset and services accounts for key ecosystems (woodlands and freshwaters), and initial UK land cover and land use accounts.<sup>39</sup>

While there is still much to do before a full set of natural capital accounts is available, there is a clear desire within ONS, Defra and the NCC, and among stakeholders, for early practical application – in other words, to start using the natural capital information we have already to improve long-term policy decision-making. The NAO has also highlighted how longer-term budgetary planning is an area in which HM Treasury could improve, as it leads to better outcomes, reduced public spending and greater value for money.<sup>40</sup>

While this kind of joined-up long-term budgetary analysis and reporting may still be some way off, there's much that HM Treasury can start to report on in the next Budget to move towards this goal (see Box 4). The NCC has recommended that government actively explore the policy uses of the natural capital accounts currently being developed.<sup>41</sup> The Budget is one such policy area in which incorporation of natural capital information could be fast-tracked. As the availability and accuracy of information improve over time (for example, via the work of the ONS and reappointed NCC), the aim would be to build on this picture in successive Budgets.

*“When we published our revised economic strategy in March, it stated explicitly that ‘protecting and enhancing our stock of natural capital – is fundamental to a healthy and resilient economy.’”*

Nicola Sturgeon,  
first minister of Scotland,  
2015<sup>42</sup>

#### **BOX 4: POTENTIAL WAYS IN WHICH HM TREASURY COULD REPORT ON NATURAL CAPITAL IN THE BUDGET**

- Recognise the contribution of natural capital to the UK economy and its impacts on the public finances, such as by considering: the UK’s dependence on both domestic and international natural capital; trends in the overall asset base and the extent to which they are affecting service/benefit provision; analysis of the implications of improvements in natural capital for the economy; and potential scope for public and private investment.
- Commit to incorporating natural capital information in future Budgets, and develop principles setting out how it will be used to inform budgetary decision-making (for example, design of economic and fiscal measures, infrastructure planning, and long-term investments in natural capital maintenance, protection and enhancement).
- Summarise existing data on the status of UK natural assets (for example, quality/quantity of stocks, service/benefit provision, natural assets and benefits at risk, future demands/threats).
- Discuss the potential macroeconomic risks and liabilities associated with natural capital loss/degradation in the UK and internationally.
- Summarise how natural capital information was used to inform development of the Budget.
- Assess the impacts of the Budget (i.e. the policies and budgetary allocations it contains) on UK natural capital and associated benefits and risks.
- Describe future work that the government (including HM Treasury) will undertake to build on the existing information over the coming year(s).

#### ***Develop new tools and approaches for assessing the economic risks associated with natural capital***

A common perception is that protecting the environment is too costly. However, there is growing evidence that allowing nature’s capital to be lost will be much more expensive in the long run. The NCC warned that many of the services provided by our natural capital are at high or very high risk.<sup>43</sup> This is already imposing significant costs to UK taxpayers, businesses and landowners (see Box 5).

*“Ecosystem decline can influence customer preferences, cash flows, stockholder expectations, regulatory regimes, public policies, the cost and availability of finance and insurance. Reverberating effects can undermine economic stability.”*

Eric Usher, acting head of the UNEP Finance Initiative and Natural Capital Declaration (NCD) co-director; and Andrew Mitchell, founder and executive director of the Global Canopy Programme and NCD co-director, 2015<sup>44</sup>

## BOX 5: EXAMPLES OF THE ECONOMIC IMPLICATIONS OF NATURE'S DECLINE

**Flooding:** it is widely accepted that poor land-use practices in river catchments are a major contributing factor to flooding, and that we need to work more with natural processes than we have in the past (such as by improving soil condition to enhance water infiltration, restoring upstream wetlands to store flood water at source, and planting of trees and re-naturalising water courses to slow water conveyance).<sup>45</sup> The role that the UK's coastal wetlands play in mitigating flooding and storm damage has been valued at £1.5bn per year.<sup>46</sup> Investing in natural capital solutions can be more cost-effective in reducing flooding than building man-made structures, as well as producing a wide range of other economic benefits. The potential cost of the winter 2015/16 floods has been estimated to be at least £5bn; costs that will be borne by the UK's insurance sector, businesses, individuals, communities and government.<sup>47</sup> Extreme weather events are also predicted to become more frequent under climate change scenarios, exacerbating future flood risks.

**Soil degradation:** the total annual costs of soil degradation in England and Wales (through loss of organic matter, compaction, and wind and water erosion) have been estimated at £1.2bn a year, including the costs of reduced productivity and carbon emissions from degraded soils.<sup>48</sup>

**Overfishing:** overharvesting of many wild fish stocks has dramatically reduced yields, leading to lower economic returns to coastal communities. The NCC estimated that the UK fishing industry could generate an additional £1.4bn in annual revenues if UK fish stocks were recovered to the average levels seen before the 1970s.<sup>49</sup>

**Air quality:** some 50,000 people a year are dying prematurely in the UK because of air pollution. The annual health, environmental and CO<sub>2</sub> costs of air pollution from UK industry alone have been estimated at £9.5-£15.5bn.<sup>50</sup>

The NCC recently recommended that the government develops a better understanding of “the impact of changes in natural capital upon the economy, jobs and growth”.<sup>51</sup> The UK National Ecosystem Assessment Follow-on (UKNEAFO) has also recommended improvement of the government's analytical capability around macroeconomy–environment interactions.<sup>52</sup> HM Treasury, supported by the reappointed NCC, should now take action to address this.

*“While there are concerns that policies to improve the natural environment may impact negatively upon measures such as national income, growth and jobs, there is also evidence that longer term effects might be significantly positive, while the eventual costs of natural capital degradation may be very substantial.”*

UK Natural Capital Committee, 2015<sup>53</sup>

Many businesses are taking steps to assess impacts and risks related to natural capital at the individual company level, and reaping benefits via improved decision-making and business performance. The Natural Capital Coalition is currently developing a Natural Capital Protocol in order to provide a consistent methodology that can be applied by businesses globally, and which could be used to help inform a framework for considering sectoral risks and opportunities.

However, these company-level efforts reveal little about macroeconomic risks at the national or sectoral level. Given its duty to maintain a resilient and prosperous UK economy, HM Treasury should take responsibility for undertaking this analysis at the national level. There is an urgent need for a clearer picture of where risks in the economy could be most significant, including assessment of the potential macroeconomic consequences, including on productivity and the competitiveness of different sectors, and the likelihood of them occurring.

In its 2015 *A Greener Budget* report, WWF-UK proposed that a natural capital stress test (NCST) could be part of the government’s toolbox for assessing, monitoring and mitigating natural capital risks in the economy.<sup>54</sup> The proposal has since been supported by members of the Aldersgate Group (an alliance of leaders from business, politics and civil society that drives action for a sustainable economy).<sup>55</sup>

Stress testing is used widely in the UK banking sector to evaluate risk exposure and resilience of financial institutions. It has been used by banks for internal risk management since the 1990s, and gained further momentum following the 2008 financial crisis.<sup>56</sup> In this context, stress testing is used to examine the ‘health’ of a bank in terms of its capacity to maintain its lending and trading activities under different future economic and financial scenarios.

More recently, a number of initiatives have sought to measure carbon risks in the financial sector better (for example, the Bank of England is investigating the potential influence of climate change externalities on the stability of the financial system<sup>57</sup>), and have also adopted a stress testing approach. Thus a similar approach could be adopted to help assess and manage risks associated with changes in natural capital.

An number of initiatives are also looking at natural capital risks to financial institutions, such as the Natural Capital Declaration (a finance sector initiative that seeks to integrate natural capital considerations into financial products, as well as in accounting, disclosure and reporting frameworks).<sup>58</sup> It is becoming clear that incorporating natural capital considerations will bring about significant changes in the financial sector, with material impacts on the economy and the public (see also section 4



on promoting a sustainable financial system). Recent work by Trucost examined natural capital risk exposure of financial institutions in some countries such as Brazil (see Box 6) and India. But no such national level analysis of natural capital-related risks to the financial sector exists for the UK, despite the importance of the sector to the UK economy.

### **BOX 6: ASSESSING NATURAL CAPITAL RISK EXPOSURE OF FINANCIAL INSTITUTIONS IN BRAZIL**

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), a company specialising in sustainable development, and the Brazilian Business Council for Sustainable Development (CEBDS), recently commissioned Trucost to assess the exposure of Brazilian financial institutions to natural capital risks.<sup>59</sup> The study used an environmentally extended input:output model to quantify the external (i.e. unpriced) natural capital costs of 45 business sectors. The study also derived 'natural capital exposure ratios' (NCERs), which express the natural capital costs in relation to the financial value of investments.

The study found that the Brazilian financial system is significantly exposed to natural capital risk because the sectors that are financed by banks and pension funds are heavily reliant on Brazil's natural capital asset base. In total, the unpriced natural capital costs of companies that Brazilian financial institutions are financing amounts to R\$1,646bn (£366bn).<sup>60</sup> The majority of the sectors examined had NCERs of greater than 1, indicating that their external natural capital costs are greater than the financial system's investment in the sector. For half the sectors this ratio was around 3 or more, and for beef cattle it was 22, showing that the external costs greatly exceed the value of investments.

At present, these external costs are being borne by Brazilian society (e.g. through the impacts of habitat and species loss, soil erosion and water pollution) and the global community (e.g. via climate change impacts). Even if companies had to internalise only part of this cost (as could be required by future policy changes), the impacts could be significant (such as increased liabilities, stranding of assets, reduced shareholder returns and/or changes to loan repayments).

Investors and credit analysts can use this kind of information to integrate natural capital risks into investment and financing analysis in order to protect returns in the future. At the same time, there exists an opportunity for the financial sector to capitalise on the growing market for more sustainable and resource-efficient business models. It can do this through investing in 'best-in-class' companies which better manage their environmental impacts, and by diversifying their portfolios to sectors that should benefit from changing consumer demand and environmental legislation.

WWF-UK recently commissioned research examining how an NCST could be developed and applied by the UK government<sup>62</sup> and illustrating the kinds of insights a stress test could provide (see Box 7).

*"Financial institutions are exposed to natural capital risks through their investment and lending activities. For example, bank loan portfolios are likely to face higher credit risks if lending occurs predominantly to sectors and regions with high natural capital impacts and dependencies. For equity investors, shareholder value reduces as companies face higher operating costs, increasing costs of capital and asset degradation."*

Trucost, 2015<sup>61</sup>

### **BOX 7: EXAMPLE OF ANALYSIS THAT COULD BE UNDERTAKEN IN A NATURAL CAPITAL STRESS TEST: SOIL DEGRADATION IMPACTS FROM AGRICULTURE**

Soil degradation is a significant problem in the UK, generating external (i.e. unpriced) costs that have been estimated to be £1.24bn per year<sup>63</sup>, equivalent to 15% of the £8.4bn of output generated by agriculture in England and Wales (i.e. for every unit of agricultural output, the net gain in value to the economy is only 85% of the value of that output). These costs arise as a result of loss of soil fertility, release of greenhouse gases, impacts of eroded particulates on water supplies and other factors, and are largely borne by people other than farmers (i.e. wider society).

An NCST could be applied to the assessment of the potential costs of soil degradation under future growth scenarios. This is particularly relevant given that the forthcoming 25-year plan for food and farming aims to increase agricultural production, which could increase the rate of soil degradation.

For example, under a scenario (for England and Wales only) where the food and farming plan increases agricultural output by 1% per year, the sector's annual output would increase from £8.4bn per year (current) to £10.67bn per year in current prices after 25 years (a rise in annual output of £2.27bn). Assuming soil degradation continues at the same rate in proportion to total production, annual soil degradation costs would be equivalent to £1.62bn after 25 years. These figures suggest that, if growth was 1% per year, the total annual soil degradation costs after 25 years could be equivalent to 71% of the additional annual output as a result of that growth - an undesirable and costly outcome.

Note that this is a purely illustrative example, designed to highlight the kinds of economic risks that an NCST can help to identify and monitor. Further details are provided in recent work commissioned by WWF-UK.<sup>64</sup> They can be developed further with more detailed modelling, for example by: integrating more detailed measurements of the natural capital costs involved (of soil erosion, in this example); covering a wider range of natural capital costs; accounting for future changes, such as due to climate change and/or population change; examining more sector-level risks, including in higher value-added sectors and by taking account of the degree of natural capital dependency (or elasticity of resource use); and inputting results into input:output models to identify potential consequences across the economy from natural capital risks.

Such a test could be routinely applied to assess risk exposure of the UK economy and specific economic sectors to potential changes in the state of natural capital, and to help inform policy decisions to help mitigate risk (for example, to identify what level of assets should be maintained and areas in which policy intervention may be needed).

An NCST would complement the NCC's proposed natural capital 'asset risk register' (which would highlight where the benefits we currently derive from natural capital are most at risk), by assessing and comparing the potential economic impacts associated with different future natural capital scenarios, in order to assess priorities for investment or improved management in economic terms. Building on this work, the potential for developing and piloting an NCST could now be explored further via a multidisciplinary research effort, led by HM Treasury.

### ***Implement policies to help drive investment in priority natural capital assets***

#### **The need for careful targeting of natural capital investments**

The NCC has identified a package of priority natural capital investments (opportunities to protect and improve key natural capital assets) and set out a strong economic case for undertaking them. These investments include adapting current (mainly agricultural) land use to provide a range of benefits from peatlands, forests, grasslands and other ecosystems; and restoring fish stocks.<sup>65</sup> The NCC's calculations showed that the economic benefits of these investments would more than outweigh the costs, generating a potential net present value (NPV) of between £3.3bn and £9.2bn over 50 years.<sup>66</sup> In other words, society receives benefits that are between two and three times larger than the overall investment costs. These investments therefore represent a solid basis on which to develop the 25-year plan for nature.

New research commissioned by WWF-UK has also highlighted that by carefully targeting investments in specific locations and contexts, there is an opportunity to maximise benefits and minimise costs.<sup>67</sup> For example, the NCC's land-based investments would involve moving land out of agricultural production, or introducing less intensive production methods, over approximately 1.13m ha of mainly agricultural land (approximately 13% of the 8.4m ha of farmland in England) over a 25-year investment period. However, our findings

*“Well-designed policy measures to sustain natural capital are positive for long-run economic prospects, helping to drive resource productivity, a key competitive factor.”*

HSBC, 2015

show that by mainly targeting less productive lower-grade agricultural land and/or by continuing agriculture at lower intensity in some areas, these investments would reduce agricultural production by only 4.5% in total. Box 8 describes several existing natural capital projects that represent effective targeting of investment.

Measures could also be implemented to help mitigate and minimise any associated adverse impacts to the agricultural sector including, for example, providing targeted financial support (such as tax relief), and incentivising technological innovation and support in retraining.

In parallel, there is also a need to help the agriculture sector take advantage of new opportunities. For example, with the right support and incentives, some operators could enter new markets in environmental management/protection and provision of ecosystem services – attracting much needed private sector investment. Such support could include help in brokering payment for ecosystem services (PES) arrangements, long-term guarantees on environmental payments (for example, on a 10- to 15-year basis) and support for monitoring and verification of their outcomes.

Targeted government support to the agricultural sector would not only promote uptake of the NCC’s investments, it would generate significant public benefits. Evidence shows that natural capital solutions typically provide multiple benefits simultaneously (restoring peatlands, for example, can reduce flood risk, improve water quality, reduce soil erosion, provide recreation and tourism opportunities, sequester carbon, and improve biodiversity).<sup>68</sup>

The NCC’s proposed investments would also create new economic growth opportunities and employment – both directly (for example, in land restoration, remediation and ongoing management) and indirectly, through tourism – and have other positive workforce impacts (such as on workers’ health).

Similarly, careful targeting of marine-based investments (to restore fish stocks) will have a significant bearing on their economic impacts (such as consequences for fleet profitability and job creation), as well as implications for the health and recovery of marine ecosystems (for example, towed gear generally generates greater environmental costs).<sup>78</sup> Policy interventions to improve targeting could involve allocating restrictions on landings (during stock recovery) and fishing rights (for landings as stocks recover) to more sustainable parts of the fleet.

*“Last year we restored just over 20 square miles [of peatland in Scotland]. We spent approximately £5m on doing so. That spending would make no sense if you used conventional accounting methods. But if you focus on climate change, and use natural capital as a guide, it’s one of the best investments we can make as a society.”*

Nicola Sturgeon,  
first minister of Scotland,  
2015<sup>69</sup>

## BOX 8: EXAMPLES OF TARGETED NATURAL CAPITAL PROJECTS

### **Peatlands**

The NCC identified that restoring 140,000ha of UK upland peatland would generate benefits equivalent to £570m in terms of avoided carbon emissions alone over a 40-year period.<sup>70</sup> Further benefits to biodiversity are suggested to be worth hundreds of millions more, and other services, such as flood prevention and improved grazing, have not been accurately valued but certainly contribute to local economies.

Evidence shows that the return on investments from restoring peatland varies widely depending on the area and context. By focusing investment on upland peat, this proposal reduces the opportunity costs to agriculture and steers restoration projects away from more productive lowland peat grazing. Reseeding bare areas of peat can deliver benefits of £5,000 per hectare over a project’s life, while improving the most degraded areas of peat could deliver around £10,000 per hectare in prevented carbon emissions and carbon storage.<sup>71</sup> Benefits are also on average higher in heavily populated catchments, where the benefits of improved ecosystem service supply to downstream users are significant (including water quality improvement and flood risk mitigation). For example, the annual benefits of improving 3,700ha of the Pumlumon pilot area in Wales are forecasted to be as high as £2m, delivered through water quality and carbon storage improvements.<sup>72</sup> These enormous benefits are largely due to the site’s function as a watershed populated by around 4 million people.

Currently, local peatland investment projects are facilitated by organisations such as the Northern Upland Chain Local Nature Partnership, which is working to attract the initial project investments needed, and to provide frameworks that may allow investors to take advantage of future incentives like peat carbon credits. Investing in restoring peatland is still relatively risky for landowners, and previous peat restoration schemes have needed to work with Natural England’s Higher Level Stewardship (HLS) scheme to provide farmers with the necessary upfront assurances for investment.<sup>73</sup> The focus is now on involving more private investors. For example, the International Union for Conservation of Nature recently launched the Peatland Code, a mechanism by which businesses can invest in preselected peatland restoration projects with confidence that their funds will return clear carbon benefits, enabling them to meet corporate social responsibility targets.<sup>74</sup>

### ***Saltmarsh***

The potential benefits to the UK of increasing and improving the UK's saltmarsh ecosystems are estimated to be worth £730m over the next 50 years. This figure considers the predicted increased services in flood prevention, recreational use, carbon storage and biodiversity that would follow the gradual creation of 42,750ha of new saltmarsh by 2030.<sup>75</sup>

As with peatland restoration, the targeting of sites is important for maximising returns on investment. Some sites are geographically better suited to restoring wetlands and so offer reduced capital expenditure costs, while others offer greater potential benefits (i.e. restoring saltmarsh is often a cost-effective way to mitigate the risks of coastal flooding and erosion). A large coastal realignment project was implemented by the Environment Agency in Medmerry, Sussex. Without intervention, 348 homes, a waste-water works and local transport infrastructure were deemed to be at high risk of future flooding. The £28m project moved sea defences 2km back from existing defences and created 186ha of flooded saltmarsh, which compensated for Natura 2000 habitat lost elsewhere in the Solent. Benefits were calculated before construction to be worth £82m for infrastructure protection and £13m for environmental protection, projecting an estimated benefit cost ratio of over 3:1.<sup>76</sup>

Though the significant public benefits of coastal protection make these good candidates for public investment, there is also potential to attract private investment. For example, a pilot has been created to attract community funding to cover costs for a saltmarsh restoration project in the Deben Estuary, Suffolk. This project is trialling a Community Contribution for Ecosystem Services model (a variation on the PES model) in which scheme beneficiaries purchase 'saltmarsh credits' scaled according to the estimated level of benefits that would be received. Although the scheme is voluntary, there will need to be purchase assurances to attract investors.<sup>77</sup>

However, further work is needed to understand fully the costs and benefits of projects at the local or site level, in order to help operationalise the NCC's investment package in the most efficient and equitable way. The first aim should be to identify quick wins (i.e. specific priority projects where there is a clear case/opportunity to proceed), as well as further candidate projects that could be initiated to show 'proof of concept' that they are viable and provide economic/financial returns. This can be achieved if HM Treasury commits to working closely with Defra and the NCC to identify a national portfolio of investment opportunities, within the context of

## BOX 9: CONSIDERATIONS FOR IMPROVING TARGETING OF NATURAL CAPITAL INVESTMENTS<sup>79</sup>

A framework is needed to guide the targeting of natural capital investments based on the available evidence, including the analysis for the NCC's third report. Such a framework should refer, among other aspects, to the need to:

- Understand the economic effects of investments in more detail at a site/local level, particularly opportunity costs (in order to minimise them), positive economic impacts and jobs (to maximise them), and the distribution of both of these across different groups in society that may be positively and negatively impacted.
- Organise the redistribution of agricultural subsidies, including payments that will no longer be needed for land on which agricultural production ceases as a result of investments (analysis by Defra of redistribution of agricultural subsidies from production support to environmental measures has previously identified that this transfer of spending to what is known as Pillar 2 of the Common Agricultural Policy, has a benefit:cost ratio of over 10).<sup>80</sup>
- Identify how the range of different public spending sources (for example, on agricultural production and fuel subsidies, catchment and flood management, nature conservation, tourism development) that influence natural capital management can be better deployed to support investments.
- Use existing and enhanced governance mechanisms to improve coordination of different natural capital investments. This should link both to funding opportunities in the environment sector – such as through agricultural subsidies and economic instruments like payments for ecosystem services (for example through development of peatland and carbon woodland codes, water companies, and other sectors) – and to synergies with the National Infrastructure Plan, by ensuring a proportionate investment in green infrastructure is made to protect new grey infrastructure from natural hazards and from being impaired by climate change.
- Ensure appraisal of investments fully operationalises developments of HM Treasury's Green Book in line with NCC recommendations<sup>81</sup> which include: adopting a clearer framework for assessing how people value changes in natural capital; more coverage of how environmental changes can impact on firms' profits; assessing impacts of projects on stocks of natural capital, including irreversibility, uncertainty and uninsurable risks.

the 25-year plan development process. This should be informed by a new investment priority framework (as recommended by the NCC), and new guidance to help target natural capital investments based on the available evidence (see Box 9).

*"If our natural capital is to continue to support development now and in the future, it is essential that it is properly taken into account in all decision-making and is invested in appropriately, such as through the government's national infrastructure plan."*

Natural Capital Committee, 2014<sup>83</sup>

### ***Developing a natural capital investment strategy***

The NCC emphasises that it is crucial to support the 25-year plan for nature with a long-term programme of investment in natural capital.<sup>83</sup> Yet, as highlighted in the 2015 *A Greener Budget* report, investment is not flowing at the scale and pace required to halt, let alone reverse, declines in natural capital stocks.

The 25-year plan should include the development of a natural capital investment strategy, developed through close collaboration between HM Treasury, Defra, the NCC and other relevant agencies. This should identify and evaluate the full range of financing options available – from both public and private sources – and identify the required enabling policy mechanisms, to ensure they are realised. The NCC has broken down financing options into a number of distinct categories, namely:

- capital maintenance payments from public, not-for-profit, and private-sector asset owners;
- rents from non-renewable resources (for example, oil or shale gas);
- compensation payments from developers;
- greater use of economic instruments (for example, taxes and charges);
- reforming and eliminating perverse subsidies;
- potential new and innovative sources (for example, plastic bag charge, crowdfunding schemes, payment for ecosystem services);
- taking advantage of match funding opportunities (for example, the EU LIFE programme).

As the NCC stresses, financing arrangements are not the sole responsibility of HM Treasury, and the financing options it sets out include a number of non-public sources. With ongoing concern over public sector cuts and deficit reduction, it's more urgent than ever that effort is scaled up to attract other sources of finance. Thus the use of market based instruments (MBIs) should be a major focus of the 25-year plan for nature, as a way to promote private investment in natural capital, and which could be introduced via the annual Budget (see Box 10).

MBIs can be used to incentivise changes in behaviour (of the stewards, users and beneficiaries of natural capital) in order to reduce or eliminate pollution and damage to our natural capital, and to enhance its protection and recovery. Indeed, there is much potential for market mechanisms to play a key role in achieving more sustainable management of natural capital, and for private finance to be catalysed through innovative financing mechanisms, to promote much greater investment in natural capital. Mechanisms such as PES, environmental impact bonds, and tradeable permits have considerable potential for further exploration and scale-up (see Box 10).

But for this to succeed, the enabling conditions must be created by government. Most MBI's require some form of policy or regulatory underpinning to create appropriate incentives. They can use various levers to effect change – such as: taxes, charges and subsidies, regulation, establishment of rights and responsibilities relating to the stewardship of natural capital (via licences, for example), certification schemes, and the establishment of new markets for ecosystem services.

Markets work best within stable, clearly defined rules, in order to create certainty and stronger incentives. Thus, government must provide the right framework for well-functioning markets – for example through long-term public planning, clearly defined targets, effective measurement and accounting systems, and appropriate regulation and enforcement.

Other complementary measures will also be needed to help boost investor interest and confidence, such as options for aggregating projects and investments; targeted use of public funds to improve project investment ratings and reduce risks (for example, first loss debt financing and guarantees); investor engagement and marketing. If HM Treasury also supports a new, cross-government policy framework for the restoration of natural capital (including clear targets and regulatory measures), this will also help to provide certainty on the direction of travel that investors need.

## BOX 10: EXAMPLES OF MARKET-BASED INSTRUMENTS TO PROMOTE INNOVATION AND INVESTMENT IN NATURAL CAPITAL

- **Taxes and charges** can be used to disincentivise harmful activities, to stimulate demand for – and investment in – alternatives, and to raise revenue that could contribute towards protecting natural capital. Peat, fertiliser and pesticide taxes would be obvious areas in which more could be done. The water sector is another area in which charges and levy mechanisms have great potential, for example, via potential new payments from river catchment service users (e.g. water supply/regulation and flood risk mitigation services).
- **Tradeable permits**, whereby credits are awarded for investing in natural capital improvements, which can be bought and sold, thus ensuring efficient allocation of the investment costs, akin to carbon trading schemes. For example, the Freshwater Trust in the USA has been developing a system of water quality ‘credits’ that measure the ecological recovery achieved through environmental restoration projects. These water quality credits can then be traded or purchased by waste-water treatment facilities, power plants, developers, and other entities that need to meet regulatory compliance requirements and mitigate negative environmental impacts. The purchase of these credits is then used to finance environmental interventions by landowners or non-governmental organisations (NGOs) – such as planting trees near rivers and streams to filter water and lower water temperature.
- **Voluntary certification schemes** can catalyse markets towards sustainable forms of production and consumption. In order to secure certification, businesses typically need to meet specific standards and/or adhere to codes of practice (which will require investment and changes to business practices). Businesses benefit through improved public image, competitive advantage, sometimes a price premium, and improved access to markets. Such effects and benefits can be passed down the supply chain, affecting both UK and overseas producers and suppliers.
- **Voluntary transparency agreements** between government and business. For example, WWF-UK has been advocating, through its 2015 Forest Campaign, for such an approach to be used alongside other measures in order to ensure that the UK market is trading in only legal and sustainable timber and timber products by 2020. The agreement would include clear targets for both private and public procurement, technical support and reporting requirements to maintain transparency and measure

overall progress against the 100% goal, rewarding the good performers and highlighting the bad. It would replicate similar models such as the Courtauld Commitment, which aims to improve resource efficiency and reduce waste in the UK grocery sector. The government commitment to support this through public procurement is important, as due to its scale it helps drive down prices and creates a stronger market for sustainable products, which makes compliance easier for business.

- **A well-regulated biodiversity offsets regime** would reduce natural capital depletion by encouraging developers to seek less damaging alternatives (in order to reduce the costs of offsetting). It would also generate finance for investment in natural capital, ensuring that any unavoidable depletion of natural capital is adequately compensated for through investment in natural capital elsewhere. The government's Ecosystem Markets Task Force estimated that a statutory offsetting regime could stimulate a market worth £1.2bn per year.<sup>84</sup>
- **Payments for ecosystem services (PES) schemes** – whereby a user or beneficiary of an ecosystem service (commonly a business) provides payments to individuals or communities whose management decisions influence the provision of those ecosystem services (commonly farmers or landowners) – are a well-known approach to generating private finance for investment in natural capital. This can be on a purely commercial basis if the incentives are clear, and the impacts of changing management practices can easily be monitored and verified. But PES schemes usually require a clear regulatory framework to incentivise action, and there is scope to strengthen those incentives – if, for example, the costs of alternative (non-natural capital-dependent) solutions increase, or pollution taxes or charges are imposed or increased, or if regulation or licensing conditions are made more stringent, which might make the ongoing delivery of the ecosystem service a stronger requirement.
- **Conservation or restoration bonds** – could potentially be issued either by government or private entities (capitalising on the fast growing green bond market). The finance made available through the issue of these bonds would be used to pay for the maintenance or rehabilitation of ecosystems that provide vital services and are degraded or endangered. Recipients of the financing would repay the costs from their financial returns on provision of ecosystem service benefits to public or private entities, so would rely on some form of PES scheme to monetise those returns.

- **Environmental Impact Bonds** – are a financial vehicle that monetises the future savings that will be generated from a particular natural capital investment, by allowing the managers of that natural capital to borrow the money upfront in order to undertake the required investment, and to repay the money later when the savings have been realised. This kind of approach is being developed in the USA, through a project which it is hoped will enable the US Forest Service to borrow from future wildfire fighting funds in order to pay for current wildfire prevention, thus reducing future costs by more than the amount borrowed, which means they will be able to pay back the loan and have some money left over, creating a virtuous cycle in financing for wildfire prevention.<sup>85</sup>

### *Integrating natural capital into wider economic policymaking*

As emphasised in our 2015 *A Greener Budget* report, there is a need to look across different aspects of government expenditure and identify how natural capital solutions can contribute, for example by reducing health costs, flood-related costs, and infrastructure investment costs. The use of fund pooling approaches – whereby different government departments collaborate to invest in natural capital together in order to generate improved joint outcomes – is one possible means to help achieve this, as we proposed in the report. Coordinating funding from multiple sources, and targeting investments in natural capital, both require additional governance effort and resources, including from HM Treasury.

Maximising synergies across current expenditure also represents an enormous opportunity to promote cost-effective solutions. For example, greater coherence of existing funding for river catchments would help to promote better outcomes with existing funding sources, if these sources were brought together rather than conflicting with each other. In relation to river catchments, greater alignment is needed between the objectives and timelines associated with Common Agricultural Policy (CAP) payments, Environment Agency flood defence, and water company investment, to ensure we get the best value for the money we are already committed to spending – only central government can bring them into line to ensure all objectives are met cost-effectively.

It is also vital that the government's forthcoming review of flood defences takes account of the crucial role that improved management of natural capital can play in a cost-effective and future-proofed UK flood strategy. As part of this, there's a need to

*"Government will use the concept of natural capital to help enhance decisions on how public money is invested in land and water asset management to deliver greater value and multiple benefits."*

Defra, 2015<sup>86</sup>

*"We are learning to understand and quantify the benefits we get from nature, to treat rivers, trees and bees as national assets just as much as infrastructure like the M25, Manchester Airport or the Forth Rail Bridge... I want to embed this [natural capital] approach in the DNA of every decision we make – from a business planning a new housing development to deciding what we plant in our gardens or what furniture we buy."*

Liz Truss, secretary of state for environment, food and rural affairs 2015<sup>87</sup>

*"Protecting and enhancing this stock of natural capital, which includes our air, land, water, soil and biodiversity and geological resources is fundamental to a healthy and resilient economy. It also supports sectors such as agriculture, forestry, fisheries, tourism and renewables."*

Scottish government, Economic Strategy, 2015<sup>88</sup>

look at ways to reward farmers better for managing their land in a way that helps tackle flooding and other water policy challenges, including pollution (via more targeted public expenditure, and other arrangements such as PES).

As emphasised by the NCC, integrating natural capital into the National Infrastructure Plan (NIP) is another priority.<sup>87</sup> The government will publish a National Infrastructure Delivery Plan in spring 2016, setting out in detail how it will deliver key projects and programmes over the next five years.<sup>88</sup> This, and future iterations of the NIP, should fully embed natural capital concepts, ensuring that all publicly funded infrastructure investments make a positive contribution to protecting and enhancing the UK's natural environment (a government commitment<sup>89</sup>).

All of the main infrastructure sectors (for example housing, transport, energy and water) should fully address impacts on natural capital according to the established mitigation hierarchy (avoid, minimise, restore, offset). In accordance with forthcoming revisions to HM Treasury's Green Book on natural capital, information on natural capital impacts and risks should be added to the existing infrastructure pipeline evidence base for all NIP projects in order to help potential investors evaluate investment options.<sup>90</sup>

However, the NIP also needs to recognise that many natural assets are vital 'natural infrastructure' in their own right – providing a range of vital public services of immense value – and as such should be afforded 'infrastructure' status in the UK's infrastructure planning frameworks. The government has already clearly stated its vision that all public policy should reflect this.<sup>92</sup>

In the context of the NIP, this doesn't mean charging the full costs to the public purse – rather it is a way of treating priority natural infrastructure investments in a consistent way against other infrastructure priorities, and affording them an appropriate level of support to attract additional private funding. However, the government has ruled out incorporating natural capital investment decisions formally into the NIP, thus missing an opportunity to ensure that government policy is coherent and that natural capital is making the biggest contribution possible to meeting our infrastructure needs. This again appears to represent a misalignment between government's long-term goals and its current policy decisions.

The Scottish government is already making progress in this area, having explicitly included investment in natural capital as a key element of



its economic strategy – and including priority natural infrastructure projects in its latest National Planning Framework (for example, the Central Scotland Green Network is one of 14 major infrastructure priorities, alongside others such as national broadband).<sup>93</sup>

*“We are supportive of a multi-stakeholder platform that will bring together government, the private sector and society to discuss the complex issues that have an impact on our natural capital. It is important that this platform works with the World Forum on Natural Capital and others to develop consistent tools and approaches to this issue”*

Adrian Greet,  
global sustainability  
program director, Mars

### ***Establish a new UK business-focussed Natural Capital Task Force***

A major barrier to unlocking private sector innovation and investment in natural capital is the lack of clarity on how the private sector can best contribute towards natural capital goals, and on how public policy intervention can best incentivise action, innovation and investment in a business-friendly way. In some cases, public policies actively discourage business action on this agenda (for example via environmentally harmful subsidies).

WWF-UK has been consulting businesses about their views on natural capital, their understanding of the risks and opportunities they face, actions they are taking as a result, and any barriers or opportunities to do more that could be unlocked by appropriate government action. Such action could range from creating appropriate incentives, to the promotion of coordinated multi-stakeholder approaches to developing solutions.

A commonly cited barrier is a lack of clear direction by government, or a lack of proactive requests for partnership to tackle specific issues. Businesses can, and many do, operate independently to tackle these issues, but it would be more efficient and coherent to develop joint strategies, where businesses can work together with other businesses or stakeholders who have similar interests or who face similar issues.

Another frequently cited barrier to this kind of solution is the absence of suitable mechanisms to facilitate dialogue and collaborative working between public and private sectors. Without the right people at the table it is difficult to adopt the integrated view required to identify and implement practical and effective solutions. There appears to be a strong case for new mechanisms to facilitate dialogue with multiple stakeholders, to identify the required policy mechanisms that deliver outcomes in the most efficient and equitable way. This could be achieved via the creation of a new UK business-focussed Natural Capital Task force (NCTF).

The NCTF could add significant value during the development of the 25-year Plan for Nature: it could help to bridge the gap between sectoral interests (for example agriculture, water and land-management), and it could provide a valuable business perspective on

*"By putting more focus on improving the state of our natural capital in policymaking and investment decisions, government and businesses can manage risks more effectively and will reap the benefits in terms of long-term growth and competitiveness."*

Nick Molho,  
executive director of the  
Aldersgate Group,  
November 2015

potentially feasible and cost-effective policy measures, and advise on their potential impacts and affordability.

By engaging a ready-formed forum that is developing joint positions on key issues and exploring collaborative solutions, HM Treasury and Defra could save time and resources compared to engaging disparate groups bilaterally. The NCTF would also be highly complementary to the role of the NCC, and build on the progress made by the former Ecosystem Markets Task Force.<sup>94</sup>

Evidence shows that businesses are not only actively pursuing many initiatives that could support delivery of the 25-year plan objectives but also calling for a closer dialogue with government and other sectors to help them do more. This is evident in the rapid growth in interest in local-level partnership-based approaches, such as the Surrey Natural Capital Investment Strategy (see Box 11).

### BOX 11: A NATURAL CAPITAL INVESTMENT STRATEGY FOR SURREY

Surrey is the most densely populated county and the largest sub-regional economy in the south-east of England<sup>95</sup>. It is also the most wooded county in England (over 24% by area), and has a rich and important natural heritage. Recognising that the importance of nature to its economic prosperity and the well-being of residents, the county is applying the concept of natural capital to help address local issues such as health, flooding and air pollution by incentivising investment in natural capital schemes that can benefit the businesses, people and wildlife of Surrey.

The work is being led by Surrey Nature Partnership, an initiative that links organisations and individuals with the aim of conserving and enhancing the county's natural assets. The partnership recently published *'Naturally richer – a natural capital investment strategy for Surrey'*<sup>96</sup>, the first of its kind in the UK, setting out a framework for how the county can maximise benefits from targeting investments to improve its natural wealth. A forthcoming investment plan will identify a 'pipeline' of locally-specific natural capital projects to help attract investors and operationalise the strategic vision.

Local businesses are key to the success of the strategy. The partnership is overseen by a board that brings together the county's director of business and growth, director of public health and their cabinet member for environment and planning, as well as a number of business representatives among others. Surrey's businesses will also be involved through the partnership in developing new ways to manage the county's natural assets, and encouraged to adopt corporate natural capital accounting systems themselves.

### *Promoting enabling conditions*

The NCTF could facilitate dialogue with business about the enabling conditions that would support the development of market solutions for natural capital. The private sector should itself be able to develop innovative solutions to promote better natural capital outcomes, and should be given the space to do so as part of the 25-year Plan for Nature, alongside a strong steer on the government's direction of travel and the potential future policy framework. Given a clear time frame, and the potential for future regulation or pricing of ecosystem services, the private sector should have a strong incentive to find workable, market-friendly solutions. Ongoing dialogue with business to identify specific enabling conditions that would support the development of such solutions would be needed alongside this process.

### *Joint approaches*

The NCTF could also help to develop joint government/business approaches to delivering natural capital solutions. For example, some businesses we spoke to expressed interest in developing such joint approaches to tackling flood risk (through upland habitat restoration and woodland management schemes in river catchments for example). Many businesses are at considerable risk from disruption and costs associated with floods in high risk areas, and have strong reputational incentives to engage with the local community to tackle these issues. Attempts to do this bilaterally have struggled in the past due to lack of central coordination. However, joint approaches are likely to provide a stronger framework to engage and catalyse stronger business action: led by local authorities, multiple stakeholders in an area convene to agree a way forward and develop joined-up solutions in which different stakeholders are prepared to invest in partnership with others.

Proactive approaches from government to local businesses in an area, along with community groups, could also represent an important component of the 25-year Plan for Nature. The Cities of Service initiative<sup>97</sup> might provide a model, given its focus on harnessing local volunteers and partnerships to solve local problems. Modest funding from government could make this possible, to pay for a convening and coordination function, and provide some seed funding or investment capital with the expectation that this will be matched by local business.

*"Protecting and restoring natural capital can bring significant rewards to the UK. Government and local authorities would do well to pull in businesses to solve local problems so that the economy is more resilient to threats in future such as the increasing impacts from climate change"*

Dax Lovegrove,  
director of sustainability  
& innovation, Kingfisher  
Plc, 2015

### **Restorative approaches**

The NCTF might also help to develop an overarching framework within which business restorative approaches can be coordinated. There is growing interest in restorative approaches, in which businesses commit to improving the natural capital upon which they depend, recognising that this will yield benefits in terms of future supply chain security. But businesses operating in isolation to restore particular areas will not be able to deliver the strategically optimised, landscape-level approaches we need to really invest in natural capital in the most effective – and cost-effective – way possible. Thus, providing an overarching framework – within which business commitments to net positive and restorative approaches can be harnessed and managed coherently – should generate an outcome that adds up to more than the sum of its individual parts.

### **Business reporting**

The NCTF could also play a role in supporting business reporting on natural capital. Many businesses are already developing reporting frameworks on sustainability issues, but there remain many questions about how natural capital issues should be incorporated. Businesses are keen to avoid developing their own approach to natural capital measurement and reporting, only to have a different one mandated in future, so working together with government through the NCTF to develop a unified approach could be an efficient way to achieve this goal.

# PRIORITY RECOMMENDATIONS TO HM TREASURY FOR THE ANNUAL BUDGET:

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- Develop and implement a new natural capital stress test to assess exposure of the UK economy and individual economic sectors to risks associated with potential future changes in stocks of natural capital. The test could explore the potential economic (and budgetary) implications associated with a range of different future scenarios, related for example to changes in specific UK and international natural assets (such as fish stocks, water and forests) and/or relevant drivers/pressures (such as extreme weather events, global warming and population growth). As the process is refined, interactions between scenarios, natural capital assets and/or economic sectors could be explored. The test could be used to inform policy responses, such as determining what level of assets should be maintained to mitigate risk (and associated policy/investment requirements).
- Incorporate a new section on natural capital in the annual Budget report. This could include information on stocks, service/benefit provision, risks, liabilities and future outlook. The 2016 report could draw on existing evidence (for example from the NCC and UKNEAFO), and subsequent reports could provide a more complete picture as evidence gaps are filled and analytical capability improves. It should also include discussion on the implications for: the UK's economic outlook, public finances (including natural capital investment requirements, linking with the reports of the Office for Budget Responsibility (OBR)) and potential impacts of other policies on natural capital stocks/risks (for example economic/fiscal measures, infrastructure development). It should also provide clarity on how the information was used to inform development of the Budget.

- Initiate a natural capital investment strategy, within the context of the 25-year plan for nature, and integrated with the National Infrastructure Plan. Building on the work of the NCC, commit to supporting a long-term, cross-government initiative that would seek to identify priority natural capital investments and to incentivise and secure funding. Develop an investment priority framework (as recommended by the NCC) and identify demonstration projects to help strengthen the ‘proof of concept’ that natural capital investments provide economic/financial returns. Identify and evaluate the various financing options available and establish the enabling policy mechanisms. A strong focus on measures to help boost investor interest and confidence will be needed, such as options for aggregating projects/investments, targeted use of public funds to improve project investment ratings/reduce risks, investor engagement and marketing.
- Establish a new UK business-focussed Natural Capital Task Force (NCTF), to provide a forum through which to identify how the private sector can best contribute towards natural capital goals, and how public policy intervention can best incentivise action, innovation and investment. An NCTF could be jointly sponsored and coordinated by Defra and HM Treasury, to ensure adequate cross-departmental engagement and cross-fertilisation of ideas and knowledge.

## 2 DECARBONISING THE UK ECONOMY AND DRIVING INVESTMENT IN LOW-CARBON INDUSTRIES

WWF-UK's 2015 *A Greener Budget* report emphasised the importance of promoting low-carbon industries and energy efficiency in order for the UK to remain internationally competitive in an increasingly low-carbon global economy and to meet its climate commitments and tackle climate change as cost-effectively as possible. It showed how changes to the energy system should not simply be viewed as an extra cost, as resulting structural changes to the economy can lead to net benefits<sup>99</sup>.

*"Britain is already leading the way in work to cut emissions and help less developed countries cut theirs - and this global deal [Paris Agreement] now means that the whole world has signed up to play its part in halting climate change. It's a moment to remember and a huge step forward in helping to secure the future of our planet"*

HM government, 2015<sup>98</sup>

Since then, in December 2015, the UK has signed up to the historic COP21 agreement, in which more than 190 countries agreed a new international climate change deal under the auspices of the United Nations. The agreement commits signatories to reducing global emissions in line with keeping the rise in global average temperature to well below 2°C, and with the aim of limiting any rise to 1.5°C. This is a significant step forward in tackling climate change at the international level.

However, the success of the climate deal will depend on the extent to which national policies are implemented to achieve those commitments. Indeed, the deal also outlined a new, regular review process which will bring countries back to the table every five years to re-examine the ambition of their own commitments.

And here the UK has a problem, because its domestic policies are currently a very long way from moving us onto the low-carbon trajectory needed to meet these commitments. The UK is already performing relatively poorly compared with many similar countries on some measures, with just over seven per cent of final energy consumption coming from renewables<sup>101</sup>, placing it 25th out of the 28 EU member states.<sup>102</sup> Since the UK election last year, a number of policy announcements have been made which seem to be moving us even further in the wrong direction (see Box 12).

*“The Paris Agreement represents a strong outcome and will therefore help boost the long-term fundamentals of the capital-goods and low-carbon power-generation sectors while weakening the long-term fundamentals of fossil-fuel industries”*

Mark Lewis,  
managing director,  
european utilities research,  
Barclays Bank, 2015)<sup>100</sup>

## BOX 12: A SUMMARY OF CHANGES MADE TO CLIMATE AND ENERGY POLICIES SINCE THE 2015 GENERAL ELECTION

Since the start of the new Parliament, the government has made numerous changes to the funding and regulatory regime for renewables. The cumulative effect of these policy changes threatens to end investment in the two cheapest forms of renewables, onshore wind and solar, both of which are almost subsidy free (when compared to unabated gas facing a carbon price).<sup>103</sup>

### **Onshore wind:**

- The government has committed to the early closure of the Renewables Obligation (RO) to onshore wind.
- It has made it more difficult for onshore wind to obtain planning permission.
- Onshore wind may be prevented from participating in the next Contracts for Difference auction.

### **Solar:**

- DECC is consulting on stopping solar farms from accessing the RO, which, if the proposals go through, will close off the last existing subsidy route for solar farms.
- The process of pre-accreditation for projects which access the Feed in Tariff scheme has been removed, with the effect of increasing uncertainty about future returns.

DECC is arguing that these changes are necessary because the overall cap on low-carbon energy subsidies is in danger of being breached. The extent of this problem is unclear, and DECC has not yet provided its own data to clarify the issue. In addition to this problem, the funding cap (called the Levy Control Framework or LCF), and the guaranteed capital spending for low-carbon energy infrastructure which sits underneath it, are due to expire in 2020. The government has not yet announced whether the LCF will be extended.

**Removal of the Climate Change Levy (CCL) exemption:** In the Summer Budget, the Chancellor announced that the exemption from the CCL for businesses sourcing renewable energy would be scrapped. The CCL, which is a carbon tax, was introduced in 2001 to encourage demand for renewable energy. Until the Budget, the tax was not paid on renewable energy. The removal of the exemption could cost renewable energy generators around £450 million this financial year.<sup>104</sup>

**Zero Carbon Homes:** The Zero Carbon Homes (ZCH) policy was a standard that required new build homes to be highly energy efficient and to generate most of their energy on-site through low-carbon means such as solar PV. ZCH was due to be implemented in 2016, but implementation was scrapped in the 2015 Summer Budget due to claims the policy would reduce the rate of new house building. This decision will lead to higher energy bills for new homeowners (average annual bills would have been around 35% lower in ZCH than under current regulations) and lead to higher carbon emissions – a missed opportunity, as it is far cheaper to integrate energy efficiency in new buildings than to retrofit old buildings.

**Termination of the Green Deal Home Improvement Fund (GDHIF) and the Green Deal:** Financing for the Green Deal (a pay-as-you-save energy efficiency scheme) has been ended. Although beset by poor uptake, the Green Deal provided a useful means for those without access to upfront capital to pay for improvements, especially in the rented sector, where minimum efficiency standards will be introduced in 2018. The scrapping of GDHIF, which provided grants to homeowners, will further reduce energy efficiency activity in the able-to-pay sector, where uptake was supposed to be stimulated by the Green Deal. If Government does not come forward with a replacement for this scheme, energy efficiency improvements to homes will fall well short of the levels recommended by the Committee on Climate Change to meet carbon budgets.

**Vehicle Excise Duty (VED) banding changes:** The Chancellor announced changes to the banding structure of VED in the 2015 Summer Budget. While zero emission cars will still be exempt from VED, the banding changes will disincentivise low emission vehicles such as plug-in hybrids. The revenues from VED will also now be ring-fenced specifically for investment in roads.

**Green Investment Bank privatisation:** The government announced in June 2015 that the GIB will be moved into private ownership. While privatisation could unlock increased finance that would scale up the GIB's potential impact, it is important that appropriate safeguards are put in place to ensure the Bank remains true to its green mission. The attractiveness of GIB's existing and potential future investment portfolio – and thus potential for a successful privatisation – depends crucially on government policy towards renewables and new low-carbon technologies.

### ***Changes announced through the Comprehensive Spending Review (CSR)***

***Renewable Heat Incentive:*** The budget for the Renewable Heat Incentive (RHI) is set to increase to £1.15bn per year by 2020/2021. However, the planned increase is now £690m less for that year than the previous forecasts from the Office for Budget Responsibility (OBR). There will also be a new spending cap on the scheme's annual budgets.

***Energy Efficiency:*** The Energy Company Obligation (ECO) will end in March 2017 and will be replaced with a new scheme which will run for five years with an annual budget of £640m (versus £800m a year under ECO).

***Innovation:*** The Innovation Programme for research and development will double to over £500m, and will largely focus on research into small nuclear reactors. The CSR also created a Shale Wealth Fund, which will recycle revenues from fracking into the local communities.

***DECC:*** The Department of Energy and Climate Change will cut its day-to-day spending by 22% over the course of this Parliament. The cuts amount to £220m of resource savings by 2019/2020, achieved through cutting back office and corporate services and reducing the cost of contracts for dealing with decommissioning outdated power plants.

### **Changes that are consistent with a greener Budget:**

***Coal Phase Out Announcement:*** The UK has committed to phase out coal fired power generation from 2025, with restricted usage from 2023, contingent on there being sufficient gas capacity brought online through the 2020s.

***Offshore Wind:*** The government has announced it is prepared to support up to 10GW of offshore wind in the 2020s, contingent on the costs of the technology continuing to fall.

***Doubling of International Climate Finance:*** The government announced plans to double its commitment to the International Climate Fund to £5.8bn over the next five years. The money will help developing countries build resilience against climate change.

However, the overall direction of travel, as brought about by all of the policy announcements listed above, is clearly and substantially away from investment in renewables and energy efficiency.

*"This is devastating – Moving the goalposts just at the time when a four-year competition is about to conclude is an appalling way to do business. It is a real blow to confidence for companies investing in CCS. This technology is critical for the UK's economic, industrial and climate policies."*

Dr Luke Warren,  
chief executive,  
Carbon Capture & Storage  
Association<sup>105</sup>

## **Economic costs of these changes**

Many of these changes appear to be driven primarily by a need to make savings, as part of HM Treasury's austerity drive. But there is a substantial body of evidence, for example from the Stern Review<sup>106</sup>, the Fourth Carbon Budget Review<sup>107</sup>, the International Energy Agency (IEA) World Outlook reports<sup>108</sup> and the UNEP Emissions Gap report,<sup>109</sup> showing that early intervention is the only way to achieve decarbonisation cost-effectively. Thus, investing in a low-carbon economy makes sense, and cutting support for it is a false economy, and a short-termist one, which will have the effect of imposing much higher costs – both economic and environmental – on both current and future generations.

There is growing clarity on the likely economic costs of climate change and environmental damage. Climate modelling suggests that the likely impact of climate change on UK weather will be increased precipitation leading to more flooding events, which, as the UK population is already too aware, are very costly. The winter 2015/2016 floods look set to have cost the economy at least £5bn.<sup>110</sup> UK flood defences designed to withstand a 1 in 100 year flood (including those built as recently as 2013) have already failed to protect some local populations and businesses during the storms in late 2015, suggesting a failure to understand the scale and probability of future weather-related threats.<sup>111</sup>

Significant economic, political and social upheaval from climate change worldwide will inevitably impact upon the UK economy: a 2015 report from the World Bank<sup>112</sup> warned that climate change could push over 100 million extra people into poverty by 2030, and increased scarcity of resources such as water and land will push up the prices of many products we import.

## **Impact on business success**

As a result of the recent UK government policy announcements discussed above, Ernst & Young has downgraded the UK in its global rankings of perceived attractiveness for renewables investment, saying "a raft of policy revisions....have been rushed through (apparently on cost grounds), while a pro-nuclear, offshore wind and shale gas stance has left investors wondering what the UK government is trying to achieve, and what evidence, if any, is being used to inform policy".<sup>113</sup> Significant voices in the international community, including those of Al Gore and the UN's chief environmental scientist,<sup>114</sup> have indicated that the UK government's policy cuts are undermining its international credibility on climate change.

*"The low-carbon revolution is already offering huge opportunities for business, the economy and society as a whole. Companies have the potential to unleash a wave of innovation in low-carbon technologies, creating new products and services, generating employment, reducing energy consumption and increasing savings if the right policies are in place"*

We Mean Business  
Coalition, 2016<sup>118</sup>

Thus the UK risks being left behind in the global race to decarbonise after the Paris COP21<sup>115</sup>, which will have implications for our competitiveness and industrial development. This has happened before: the Energy and Climate Change Select Committee's 2014 report on marine renewables concluded that the UK's overly cautious approach towards supporting the onshore wind sector in the 1980s meant that it lost out to Denmark in becoming an industrial leader in the sector.<sup>116</sup>

Going forward, this could mean we lose out on a rapidly growing and potentially huge new market for low-carbon technology, with all the income and jobs that could bring. Business groups like We Mean Business, a coalition that aims to amplify the business voice to help accelerate the low-carbon transition, and The Prince of Wales's Corporate Leaders Group (CLG), were active at COP21, talking not only about the risks to business from climate change but also about the huge new opportunities that a low-carbon transition brings to business. In 2014, the global market for renewables grew at the fastest rate to date, with renewables now around 50% of energy supply additions worldwide.<sup>117</sup>

Yet the UK government allocated £48bn of support between 2015 and 2020 to the offshore oil and gas industries through the National Infrastructure Plan,<sup>119</sup> at a time of austerity when support for renewables has been cut. It would make more economic and environmental sense if, instead of providing support to the UK's declining industries, the government prepared these industries and the workers they support for the low-carbon transition that must come. This can be done by aligning current policy decisions with the government's stated long-term aspirations, as reflected in commitments under COP21.

Buoying up a declining oil and gas industry also sends the wrong signals to the financial sector. The risk to the financial system of holding stranded assets (for example, assets in the fossil fuel based industries that are likely to lose value significantly over time as a result of climate change and associated policy responses) in investment portfolios is increasingly recognised, as discussed in section 4 on finance. The government needs to put in place measures to support the transition to a new, low-carbon economy, instead of supporting declining industries at significant costs to the taxpayer, and slowing down the necessary adaptation.



*“The government must provide a stable environment that enables investment in cleaner, more affordable and more secure energy generation, including renewable technologies and new gas plants.”*

Carolyn Fairbairn,  
director general of the  
Confederation of British  
Industry<sup>120</sup>

## **What needs to change?**

The recent announcements discussed above have, in effect, cut support for energy generation technologies which are the cheapest in terms of costs per megawatt hour, and have undermined the certainty for all investors in the energy mix. This has destabilised a sector that will need to deliver significant replacement capacity between now and the mid-2020s as ageing generation infrastructure comes to the end of its life. Thus it is crucial that the government now determines how it will meet its climate change commitments and what new measures it will put in place to do so.

To do this most cost-effectively, the government needs to create a long-term policy package that will give industry the confidence to invest in renewables and energy efficiency, and clarify what financial support is available to the UK’s renewable energy industry beyond 2020. Increased investor confidence would reduce the cost of capital, and mean that the costs of decarbonising our energy infrastructure will be paid for by an increasingly broad range of actors in the private sector (including institutional investors). It would accelerate the reduction of costs in these technologies, and permit the development of a competitive UK supply chain for energy efficiency and renewable energy technologies, which would boost UK exports and lead to GDP gains.

The chancellor launched a new National Infrastructure Commission (NIC) in October 2015, which will determine Britain’s infrastructure priorities and hold governments to account for their delivery.<sup>122</sup> Energy will be a key focus of the new commission, particularly exploring how the UK can better balance supply and demand, so the commission can play a crucial role in shifting the UK economy onto a lower-carbon trajectory.

The government will be responsible for setting the fifth carbon budget in this Parliament, which will cover the period of the late 2020s and early 2030s, when power sector decarbonisation should be well under way and other sectors of the economy will be decarbonising, including the agriculture and manufacturing sectors. The government should make sure that it has enough budget and expertise to invest now for R&D towards innovative new technologies and systems in order to deliver the fifth carbon budget cost-effectively. In particular, the NIP needs to include technologies such as CCS, smart infrastructure, energy efficiency improvement of the existing building stock, and electrification of transport systems.

*“What I’m saying is that instead of making excuses tomorrow to our children and grandchildren, we should be taking action against climate change today. What we are looking for is not difficult, it is doable and therefore we should come together and do it.”*

David Cameron,  
UK prime minister, 2015<sup>121</sup>

*"It's vital that at a national level policy frameworks are developed with business to deliver rational, affordable and progressive action on climate change."*

Celine Herweijer,  
PwC sustainability and  
climate change partner,  
2015

*"Countries that don't move fast enough will have a retrograde industrial policy. We do need to make sure national governments with large coal industries as they close down will put in place policies that seek to retrain and reskill those workers."*

Nigel Topping,  
chief executive of the We  
Mean Business Coalition,  
2015<sup>122</sup>

It is also vital that the government invests in energy efficiency and heat policies in this Parliament if it is to meet the fourth carbon budget at least cost. In particular, moving both householders and industry over to lower cost, efficient, and renewable forms of heating has been identified by the Committee on Climate Change as a priority for this government.<sup>123</sup> There must be a clear and stable investment in domestic renewable heat, and a regulatory approach should be considered, given the cost-effectiveness of such an approach.

Energy Efficiency should be a strategic priority given the value that it offers to both the economy and the individual householder. A study by VERCO and Cambridge Econometrics in 2014 showed that investing in energy efficiency would return around £3.20 in GDP for every £1 spent, and accrue £1.27 in tax revenues per £1 of government investment<sup>124</sup>. Making the retrofit of the UK building stock a priority in the NIP, with appropriate capital investment, to bring domestic buildings up to the Energy Performance Certificate (EPC) Band C by 2035, would have a cost benefit ratio (a measure of value for money) of 2.27:1, outperforming other government infrastructure projects such as High Speed 2.

The need for a long-term framework for investment in the low-carbon economy in the UK, and an ambitious fifth carbon budget, is strongly supported by industry – over 80 UK companies published an open letter in the Financial Times in June 2015, calling on the prime minister to make the low-carbon economy and the passing of the fifth carbon budget a priority of this Parliament.<sup>125</sup>

# PRIORITY RECOMMENDATIONS TO HM TREASURY FOR THE ANNUAL BUDGET:

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- Demonstrate support for a long-term policy package that will give industry the confidence to invest in renewables and energy efficiency, and clarify what financial support is available to the UK's renewable energy industry beyond 2020. This should support an ambitious fifth carbon budget and a new Carbon Plan that details how the government will deliver against its climate commitments.
- Support a major programme of investment in domestic energy efficiency as part of the government's long-term infrastructure plan, under the new National Infrastructure Commission, including the retrofit of the UK building stock. Consider introducing a regulatory approach, to ensure that deployment of energy efficiency measures is sufficient to enable us to achieve the fourth carbon budget.
- Channel research and development funding to ensure the development of technologies essential for the security of the future energy system. In particular, batteries, smart-grid technologies, and CCS require investment.

## 3 DEVELOPING A THRIVING, SUSTAINABLE UK BIOECONOMY

The UK can benefit significantly from the development of a thriving and sustainable bioeconomy. The bioeconomy comprises those parts of the economy that use renewable biological resources from land and sea (such as crops, forests, fish, animals and microorganisms) to produce food, materials and energy. It incorporates forestry and logging, agriculture, fishing and food manufacturing, industrial biotechnology and bioenergy. It comprises both conventional and innovative uses of biomass, from the production of food and clothing, through to cutting edge industrial biotech.

It also spans the full product life cycle: from production, to use, to reuse, to recycling, to energy generation from waste – and therefore forms a key part of the circular economy (in which resources are kept in use for as long as possible, and the maximum value extracted from them while in use, and then components and materials are recovered and regenerated, reused or recycled).

According to Capital Economics, the UK's bioeconomy already contributes £36.1bn in gross value added each year, and 600,000 jobs to the UK economy.<sup>127</sup> It is a potentially significant growth area for the UK, as is already well recognised by the government, which has projected a market for the wider bioeconomy of around £100bn per annum.<sup>128</sup>

Provided biomass is responsibly used in efficient and effective applications, and taking into account the UK's ambitions to protect and improve natural capital, it provides significant opportunities for innovation, jobs and more environmentally sustainable growth. In particular, it can play a role in helping the UK phase out its use of fossil based fuels and feedstocks, by replacing them with responsibly sourced bio-based alternatives (i.e. wholly or partly made using biomass).

The government intends to develop a long-term plan for a high value waste-based bioeconomy (a key component of the wider bioeconomy). As part of this, in 2015 the Department for Business, Innovation and Skills (BIS) published a report that identified the potential to convert underutilised wastes into high-value products and, at the same time, provide a low-carbon alternative to traditional petrochemical, virgin material or finite resource based sources.<sup>129</sup> It could also help the UK to

meet more easily the commitments on waste management and reuse/recycling outlined in the new EU Circular Economy Strategy that was published in December 2015.<sup>130</sup>

Bioenergy (energy generation from biomass such as wood, biofuels or agricultural waste) can make an important contribution to mitigating climate change and developing a renewable energy system in the UK. However, the impact on carbon emissions must be carefully assessed - the way existing policies assess the greenhouse gas (GHG) benefits of bioenergy is the subject of intense scientific debate.<sup>131</sup>

In addition, the allocation of land for bioenergy feedstock production has also led to indirect GHG emissions, with existing agricultural activity displaced into natural environments at the expense of carbon sinks and habitats. The resulting GHG emissions can in some instances result in greater atmospheric GHG levels relative to fossil fuels.<sup>132</sup> WWF-UK therefore considers that while bioenergy has a role to play, other forms of renewable energy should be prioritised.

Subsidies are currently provided for biomass power through the Renewables Obligation and Contracts for Difference schemes. Using biomass for power only is inefficient, because the conversion efficiency of biomass power stations is only around 30-40 per cent.<sup>133</sup> It is also not an effective use of biomass, because there are many other clean solutions for the power sector (such as wind, solar, marine renewables, interconnection, storage, demand side response and electricity demand reduction). Concerns have also been raised over the carbon and broader sustainability impacts of wood pellets imported from North American forests<sup>134</sup>, which are commonly used in the power sector. The current biomass sustainability standards could be strengthened considerably, to bring them in line with standards imposed by the Forest Stewardship Council (FSC) and/or the Roundtable on Sustainable Biomaterials (RSB).

The previous coalition government produced a Bioenergy Strategy in 2012, which is due to be updated in 2017. However, for the reasons discussed above, it would be more advantageous to develop a broader Bioeconomy Strategy that considers the interlinkages between the different aspects of a bioeconomy in a holistic way, and considers new economic opportunities (for example from waste) and at the same time promotes the uses of biomass that deliver optimal climate change mitigation (for example, carbon storage and sequestration in farms and forests, carbon storage in bio-based products, and carbon dioxide removal through bioenergy with carbon capture and storage).

The government's forthcoming review of growth opportunities in the UK bioeconomy<sup>35</sup>, is a step in the right direction and should help to build understanding of the demand and potential for biomass, as well as any associated risks and opportunities for the bioeconomy to help the UK meet its sustainability objectives.

For the bioeconomy to be sustainable, the government must ensure that biomass is efficiently and effectively used, and that our natural capital is responsibly managed (see Box 13). It must also ensure that at the end of product life, once biomass can no longer be reused or recycled, it is efficiently used to fuel industry and transport.

## PRIORITY RECOMMENDATIONS TO HM TREASURY FOR THE ANNUAL BUDGET:

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- Develop a Bioeconomy Strategy building on previous work by BIS and the upcoming bioeconomy review, that undertakes a comprehensive assessment of the competing demands for biomass, taking into account the economic growth potential and sustainability benefits of each sub-sector of the bioeconomy.
- Avoid providing any further subsidy for the use of biomass to generate power (unless it also generates heat – ideally for industry or district heating). Existing sustainability rules for bioenergy subsidies should be strengthened in line with the sustainability requirements of the Forest Stewardship Council (FSC) and Roundtable on Sustainable Biomaterials (RSB).
- Strengthen support for bioenergy from waste feedstocks, in efficient applications (such as heat and Combined Heat and Power) and in sectors without other renewable solutions (such as industrial heat, freight, aviation and shipping).
- Strengthen and broaden existing public procurement policies to favour bio-based products, with a preference for reused and recycled products, certified to FSC or RSB standards.

### BOX 13: A POSITIVE VISION FOR THE BIOECONOMY

WWF-UK believes that the sustainable use of biomass is important for reducing our use of fossil based fuels and feedstocks in the energy and materials sectors. Growing the bioeconomy is therefore an important environmental priority, but if this growth is poorly managed, it could actually add to existing pressures on the natural environment, as well as exacerbating social issues like food insecurity. It is important that the Government only supports the efficient and effective use of responsibly sourced biomass, without degrading the other ecosystem services afforded by natural capital.

**Efficiency:** The more efficiently biomass is used, the less pressure there will be on the natural environment and food security. This means applying the cascading use principle (extracting the most efficient material use of biomass and biomass products, throughout any number of life-cycle stages, before finally recovering energy from the residual material), and favouring the use of virgin biomass (feedstocks that have been directly extracted from a farm or forest) for food and materials while focusing bioenergy support on waste biomass and residues.

Efficiency also applies in the factory or energy plant: processes should be favoured if they are highly efficient (e.g. combined heat and power, CHP) and/or produce valuable co-products to maximise the use of the resource. Simple power generation, especially in old generating plant, is a very inefficient use of biomass.

**Effectiveness:** Again, in order to limit pressures on natural environments and food security, the substitution of biomass for fossil fuels and feedstocks should be limited to those sectors where biomass is the only non-fossil solution available. These sectors include materials (such as bioplastics) and fuel for industry, aviation, shipping and freight. On the other hand, there are lots of alternative renewable sources of electricity and space/water heating, while electric vehicles should be the main option for decarbonising ground transport.

**Responsible sourcing:** Despite the risks of biomass production to natural environments and food security, when it is done well it can actually benefit both. Biomass that is certified under a credible certification scheme such as FSC or RSB will not only avoid harm, but will actually promote sustainable development. These schemes should form the basis of the Government's own sustainability criteria for its own procurement and for Government mandates and/or subsidies.

**Natural capital and ecosystem services:** It is important to consider the trade-offs between biomass production and extraction for provisioning services, such as fuel and materials, and the other ecosystem services provided by natural capital, such as carbon storage, habitats, flood prevention and recreation.

# 4 PROMOTING A MORE RESILIENT AND SUSTAINABLE UK FINANCIAL SYSTEM

In our 2015 *A Greener Budget* report we discussed the urgent need to promote a more sustainable and resilient financial system, as financial markets currently support investment flows that are undermining future economic prosperity by perpetuating unsustainable patterns of resource use and carbon emissions. Short-termism and mispricing of environmental assets are two of the main problems, among other well-documented market failures.

There has been a growing focus on these issues within the financial sector over the last year. In September 2015, Mark Carney, governor of the Bank of England, gave a speech at Lloyds of London, highlighting the significant future risks facing the stability of the financial system that are associated with climate change. He highlighted in particular the challenges facing the insurance sector, noting that losses from weather-related events have increased from an annual average of around \$10bn in the 1980s to around \$50bn over the past decade.<sup>136</sup>

He said that the long-term nature of climate change and the fact that many of the costs will be felt by future generations means that the current generation – including both politicians and market participants – have few incentives to fix it. In particular he noted that addressing these risks goes beyond the horizon of central banks, which are bound by their mandates. This suggests the strong need to mandate financial regulatory bodies more explicitly to think about long-term sustainability issues, as recommended in our 2015 *A Greener Budget* report.

The speech was at an event to launch a report by the Prudential Regulation Authority (PRA) on the impact of climate change on the UK insurance sector. The report concludes that insurers are exposed to a number of different types of risks associated with climate change, and that while the sector is well placed to respond in the short term, “Looking further ahead, increasing physical risks could present meaningful challenges to insurance business models and the full range of risks from climate change identified in this report will be important to consider.”<sup>138</sup> Over this longer time frame, the risks could be severe for both insurers and their policyholders, and have the potential to render currently lucrative businesses non-viable.

*“The horizon for monetary policy extends out to 2-3 years. For financial stability it is a bit longer, but typically only to the outer boundaries of the credit cycle – about a decade. In other words, once climate change becomes a defining issue for financial stability, it may already be too late”*

Mark Carney,  
governor of the Bank of  
England, 2015<sup>137</sup>

Carney argued that the role of the financial sector is to develop the frameworks that help the market itself to adjust efficiently, including clear, harmonised disclosure mechanisms, particularly on the carbon intensity of different assets, which would allow investors to assess risks to companies' business models and to express their views in the market.

Indeed, since then, in December 2015, the Financial Stability Board (FSB) – the international body that monitors the global financial system, and coordinates action by national financial authorities – announced it was establishing an industry-led Taskforce on Climate-related Financial Disclosures (TCFD) to develop “voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to lenders, insurers, investors and other stakeholders”.<sup>139</sup>

However, given the short-termism of markets already noted, relying on voluntary disclosure is unlikely to be enough. Evidence suggests that voluntary approaches are not as effective as regulation and are often beset by low rates of private sector participation and, as a result, the lack of a level playing field for those participants seeking to improve their performance.<sup>140</sup>

Thus, mandatory reporting is likely to be necessary in order to promote effective progress towards improved sustainability of the financial sector, which is an urgent priority in light of the increasing risks and costs associated with climate change. The French government has already taken this step by announcing at COP21 that it was making disclosure of climate risk mandatory for institutional investors, and also for financial intermediaries such as asset managers.

While various implementation issues remain to be resolved, this kind of requirement for mandatory reporting is likely to speed up significantly progress towards the proper incorporation of climate risks into financial investment decisions. Thus we would recommend that the UK government also commits to a clear time frame for the adoption of this kind of mandatory framework.

### *Risks and Opportunities*

The need to adapt efficiently to climate change isn't only about managing risk, but also capitalising on new opportunities. The PRA report mentioned previously also highlights future opportunities for the insurance sector, such as renewable energy project insurance, supporting resilience to climate change through risk awareness and risk transfer, and investments in green bonds.

This is in line with a recent report by the global consultancy Mercer (on which WWF was a project partner among others), which examined in more detail the impact of climate change on investment returns, finding for example that, “depending on the climate scenario which plays out, the average annual returns from the coal sub-sector could fall by anywhere between 18% and 74% over the next 35 years, with effects more pronounced over the coming decade (eroding between 26% and 138% of average annual returns). Conversely, the renewables sub-sector could see average annual returns increase by between 6% and 54% over a 35-year time horizon (or between 4% and 97% over a 10-year period)”.<sup>141</sup>

Crucially, it finds that if the strong policy framework needed to deliver a 2°C scenario – as envisaged by the recent COP – is implemented, this “does not have negative return implications for long-term diversified investors at a total portfolio level over the period modelled (to 2050), and is expected to better protect long-term returns beyond this time frame”. Thus the findings of the study should give confidence to investors that there are opportunities associated with climate change and not just risks, and that they can advocate for strong climate policy action without sacrificing financial returns.

### *Incorporating natural capital considerations into financial decisions*

*“In our view, it is appropriate for investors to devote time to identifying the contribution of natural capital to economic activity and the impact on expected growth and asset values arising from natural capital degradation and the policy changes adopted in response.”*

HSBC, 2015<sup>142</sup>

There is also growing effort to incorporate natural capital-related risks into financial investment decisions. But the Natural Capital Declaration (NCD) - a global finance sector initiative aiming to integrate natural capital considerations into financial sector thinking - recently published a report stating that existing material costs and risks relating to natural capital are yet to be systematically quantified in financial accounting and analysis.<sup>143</sup> It concluded that integrating natural capital factors would strengthen risk management and promote more sustainable investment practices.

A number of assessments are being undertaken of natural capital risk exposure of financial institutions in particular countries such as Brazil<sup>144</sup> and India.<sup>145</sup> This – and the proposal for the UK government to develop a natural capital stress testing approach, to assess the impact of natural capital risks on the economy under different scenarios – is discussed in more detail in Section 1 of this report on natural capital.

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- Commit to a clear time frame for the adoption of a legislative framework for climate and natural capital-related financial risk disclosures by financial companies, on a mandatory comply or explain basis. Providing a clear time frame will help to speed up and mainstream action by the financial sector to develop practical methodologies for assessing these risks, and it will promote greater awareness of the need to manage these risks, among financial companies and investors alike.

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