



# NET ZERO DELIVERY TRACKER ANALYSIS OF THE UK AUTUMN STATEMENT 2022

## FULL REPORT

23 March 2023



# ACKNOWLEDGEMENTS

## Net Zero Delivery Tracker Analysis of the UK Autumn Statement 2022

### Acknowledgements

Dr Zachary M. Turk and Prof Ben Groom\*

\*Turk: Department of Geography and Environment, The London School of Economics and Political Science, Houghton Street, London WC2A 2AE, United Kingdom (e-mail: [z.turk@lse.ac.uk](mailto:z.turk@lse.ac.uk)); Groom: Dragon Capital Chair of Biodiversity Economics, Land, Environment, Economics and Policy Institute and Department of Economics, University of Exeter, Rennes Drive, Exeter EX4 4PU, United Kingdom, and Visiting Scholar at the Grantham Research Institute on Climate Change and Environment, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, United Kingdom (e-mail: [b.d.groom@exeter.ac.uk](mailto:b.d.groom@exeter.ac.uk))

This report has been produced under a private consultancy agreement. Neither the London School of Economics and Political Science, Grantham Research Institute on Climate Change and the Environment, nor the University of Exeter endorse its analysis and recommendations, nor do they hold responsibility or liability for them.

We want to express our sincere thanks to **Professor Mark Freeman** (Professor of Finance, University of York) for acting as external reviewer on this report. We also thank **Rick Parfett** (Senior Policy Advisor – Climate, WWF-UK), and **Vassilis Gkoumas** (Economist, WWF-UK) for helpful feedback during development.



THE LONDON SCHOOL  
OF ECONOMICS AND  
POLITICAL SCIENCE ■



### Front cover photo:

© Greg Armfield / WWF-UK

### Design:

Clean Canvas Studio

[cleancanvasstudio.co.uk](http://cleancanvasstudio.co.uk)

# CONTENTS

1. ONE-PAGE SUMMARY	4
2. EXECUTIVE SUMMARY	5
A. TACKLING CLIMATE CHANGE: THE ECONOMIC OPPORTUNITY OF THE 21 <sup>ST</sup> CENTURY	5
B. WHAT IS A NET ZERO DELIVERY TRACKER AND WHY DO WE NEED IT?	6
C. RESULTS FROM APPLYING THE NZDT TO THE AUTUMN STATEMENT 2022	8
D. CONCLUSION AND RECOMMENDATIONS	12
3. FULL REPORT	15
A. INTRODUCTION	15
B. METHODOLOGY	16
i. BUDGET TAGGING	17
ii. EMISSIONS MODELLING	18
C. APPLICATION TO THE AUTUMN STATEMENT 2022	20
i. STATEMENT OVERVIEW	20
ii. BUDGET TAGGING	21
iii. EMISSIONS SUMMARY ESTIMATES	25
4. REFERENCES	28

# 1. SUMMARY

## OVERVIEW

- HM Treasury should adopt a Net Zero Delivery Tracker (NZDT) to ensure that each fiscal event is analysed to understand its environmental impact and if it aligns with the net zero target.
- WWF-UK have applied the NZDT framework to the UK Autumn Statement 2022. It finds that the Autumn Statement will do little to help the UK move towards a net zero-aligned emissions pathway.

## WHAT IS A NET ZERO DELIVERY TRACKER AND WHY DO WE NEED IT?

- The NZDT is WWF-UK's proposed framework to enable HM Treasury to analyse the contents of UK fiscal events (Budgets, Statements, and Spending Reviews) before they are published to assess their climate impact. It consists of two elements:
  - A budget tagging tool, which tags fiscal policies on whether they have a positive, negative, or neutral impact on several environmental criteria.
  - An emissions modelling exercise, which estimates the impact on greenhouse gas emissions of individual policy decisions and the overall fiscal package.
- There are huge economic advantages in a fast transition to a net zero economy. As the recently-published [Independent Review of Net Zero](#) shows, benefits include significant growth potential for UK business and financial institutions, massive opportunities for growth in high-quality jobs, and increased productive capacity and co-benefits across the economy.
- To seize these growth opportunities, strategic and efficient public investment will be needed. The Office for Budget Responsibility calculates that government spending accounts for almost half of UK national income, so it is essential that fiscal policy and public investment are aligned with net zero.
- Most of the investment for net zero, though, will come from the private sector. Government needs to provide clear policy signals and attractive incentives to unlock this investment, based on rigorous analysis of financial flows and an understanding of the impact of public tax and spending decisions.
- Formally incorporating the NZDT into government analyses would help HM Treasury to seize these opportunities by providing valuable data on if a fiscal event will help the UK get on track for net zero or push us further off course.

## KEY FINDINGS OF THIS REPORT

- The UK Autumn Statement 2022 is expected to result in an increase in UK emissions of 47 million tons of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub>e) between 2022 and 2050 and will do little to help the UK move towards a net zero-aligned emissions pathway.
- Fiscal policies remain far from sufficient to satisfy the UK Government's net zero commitment. Without each fiscal event resulting in substantially decreased national emissions, it will be extremely challenging to meet the Climate Change Committee's (CCC) Balanced Net Zero Pathway or any credible alternative pathway.
- Greening 'neutral' tax and spending policies to crowd in private investment remains an unaddressed priority – this is a huge missed opportunity to turbocharge the transition.
- While WWF-UK supports the Energy Price Guarantee and Energy Bill Relief Scheme, these line items were responsible for driving up emissions. This highlights the need to tackle the root causes of soaring energy bills, including insulating homes and reducing the UK's dependence on imported gas through accelerated rollout of renewables and heat pumps. Action on these issues will permanently reduce energy bills and carbon emissions.
- The outputs of each application of the NZDT should be integrated into the net zero financial flow element of a Net Zero Investment Plan, detailed in this report, which the Government should also commit to introducing.

## 2. EXECUTIVE SUMMARY

### A. TACKLING CLIMATE CHANGE: THE ECONOMIC OPPORTUNITY OF THE 21<sup>ST</sup> CENTURY

The impacts of the climate emergency are increasing and being felt closer to home than ever before. Catastrophic flooding incidents in the UK and wildfires in Europe are becoming more frequent, while the cost of importing expensive, polluting fossil fuels threatens the UK's energy security and has left households facing unaffordable energy bills. The total cost to the UK of climate change damages is currently estimated at 1.1% of GDP per year, increasing to 3.3% by 2050 (*Rising et al., 2022*). Delaying action by ten years will double the amount of investment needed to reach the same target, while UK GDP would be five times lower in 2050 if no action on climate were taken, compared to early action to achieve net zero (*Bank of England, 2021*).

Global climate change is not the only environmental challenge facing the UK, either – nature is in freefall as biodiversity continues to decline (*House of Commons Environmental Audit Committee, 2021*). Urgent action is needed not just to limit global warming to 1.5°C, but to address several other environmental issues which are also worsened by global climate change, such as biodiversity loss.

Net zero, however, is also the biggest economic opportunity of the 21st century, as acknowledged in Chris Skidmore's Independent Net Zero Review. By acting early and decisively, the government can ensure that the UK leads the global race to net zero and deliver high-skilled jobs and robust growth across the country. The benefits of the transition vastly outweigh the costs, from increasing the UK's energy security and reducing household energy bills to unlocking billions of pounds of business opportunities. Benefits include:

- **Significant growth potential for UK business and financial institutions.** Supplying the goods and services to enable the global net zero transition is estimated to be worth £1 trillion to UK businesses by 2030 (*McKinsey Sustainability, 2021*). UK low-carbon financial services could generate export opportunities of up to £7.5bn per year in 2030, rising to £17bn per year by 2050 (*Ricardo Energy & Environment, 2017*).
- **Net zero investments will finance themselves.** The economic multipliers for clean energy investments are 2.2 to 2.5 times larger than for fossil fuels (*IMF Working Paper, 2021*). The transition to a net zero economy could boost economic growth by 2-3% over the period from now to 2050 (*Cambridge Econometrics, 2020*).
- **Foster the growth of a thriving workforce.** For example, investment to meet the growing demand for renewable energy could create 1.7 million new green jobs by 2030 – half of which will be in the Midlands, the North, and Scotland (*Onward, 2021*).
- **Net zero investment will raise productive capacity and deliver co-benefits across the economy.** These will occur through reducing the cost of energy, and increasing efficiency in transport, energy production, and resource use. For example, energy efficiency improvements and low-carbon technologies can reduce household bills by over £1,600 per year (*WWF-UK & ScottishPower, 2022*).

## B. WHAT IS A NET ZERO DELIVERY TRACKER AND WHY DO WE NEED IT?

To seize the economic opportunity of net zero and deliver the benefits outlined above, sustained and strategic investment will be needed. In the current financial climate, however, it is vital that public investment is carefully targeted and based on excellent data and strategic planning. Additionally, it is important to ensure that it leverages in the maximum amount of private capital possible, given that the majority of investment for net zero will come from the private sector. To unlock this investment, government needs to send clear, stable policy signals to the market, based on rigorous analysis of financial flows and an understanding of the environmental impacts of public tax and spending decisions.

As government spending accounts for almost half of UK national income (*OBR, 2022*), it is essential that fiscal policy is aligned with net zero. At present, however, government lacks sufficient tools to assess whether fiscal events (Budgets, Statements, and Spending Reviews) are placing the nation on track to net zero emissions or taking us in the opposite direction. As HM Treasury has noted, “there is no internationally adopted methodology for assessing and reporting on the climate change impacts of government spending in aggregate... nor taxation” (*HM Treasury, 2021*). This means that, while net zero became a legal target in 2019, it is difficult to determine if public tax and spending is supporting the transition or not.

WWF-UK is committed to helping the UK achieve our legally binding net zero target in an effective, just, and efficient manner. We have guided the development of the Net Zero Delivery Tracker framework as a means of assessing and reporting the impacts of fiscal events on the UK’s progress towards its climate and nature goals.

The NZDT consists of two elements:

- **A budget tagging tool, which tags fiscal policies on whether they have a positive, negative, or neutral impact on several environmental indicators and shows how much public investment is flowing towards these areas in the fiscal event.**
- **An emissions modelling exercise, which estimates the impact on greenhouse gas emissions of individual policy decisions, and, crucially, of the fiscal event as a whole. In combination, the budget tagging and emissions modelling components help close the methodological gap, providing a picture of whether fiscal policy is supporting the net zero transition.**

An example of the NZDT framework, applied to the Autumn 2021 Budget and Comprehensive Spending Review, [can be found here](#).

The Net Zero Delivery Tracker can help ensure that public spending is targeted, strategic, and delivers maximum private investment. We recommend the NZDT be adopted by government to track progress toward the net zero target. Formally incorporating it into government analyses would help HM Treasury to:

- Map the public financial flows being directed to key environmental objectives.
- Estimate the overall emissions impact of the fiscal event.
- Assess if the fiscal event is likely to help the UK get on track for net zero or push us further off course.

The results of the analysis could also feed into existing formal mechanisms and bodies for ensuring that net zero and other environmental targets are met, including the Climate Change Committee and the Environmental Audit Committee.

HM Treasury's recent analysis of the 2021 Budget and Comprehensive Spending Review (CSR) is a promising first step in building this vital analytical capability. WWF-UK welcomes this progress and looks forward to working with government to further develop this analysis, particularly with respect to modelling the emissions impact of fiscal events. Crucially, however, this analysis was conducted after the Budget and CSR. WWF-UK is calling on the government to introduce a NZDT and apply it to all tax and spending decisions in a fiscal event **before it is presented** to Parliament, to enable adjustments to be made. The findings outlined below demonstrate that the Autumn Statement 2022 contained missed opportunities to leverage in private investment for the transition by attaching green conditionality to policies. By conducting analysis before the Statement was presented, government could have made adjustments to seize these opportunities and grow the UK economy, while still delivering the goals of the tax and spending commitments made.

Finally, the outputs of each application of the NZDT should be integrated into the net zero financial flow element of a Net Zero Investment Plan, which Government should also commit to introducing. The Net Zero Investment Plan should consist of independent analysis of net zero financial flows, together with a regularly updated government plan setting out actions, including policy and regulatory changes and strategic investment, designed to leverage in private investment to fill any investment gaps. This could result in a rapid and dynamic feedback loop of information and action between policymakers and markets, boosting investor confidence and minimising net zero transition costs.



## C. RESULTS FROM APPLYING THE NZDT TO THE AUTUMN STATEMENT 2022

This report presents the third application of the WWF-UK's NZDT framework, this time to the Autumn Statement 2022. This follows previous applications to the March 2021 Budget, and Autumn 2021 Budget and Comprehensive Spending Review (CSR).

The expected impact of the Autumn Statement 2022 is to drive an increase in UK emissions by 47 million tons of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub>e) between 2022 and 2050. The main driver of emissions is a handful of policies focussed on the cost of living and energy crisis, with ten line items resulting in a net 43 Mt CO<sub>2</sub>e of emissions. The five largest emission-increasing items alone result in 111 Mt CO<sub>2</sub>e, which is partially offset by 65 Mt CO<sub>2</sub>e in reductions from the five largest emission-reducing items.

The results indicate that this fiscal event will do little to help the UK move towards a net zero-aligned emissions pathway. Some line items are likely to lead to emissions reductions, such as investments in electric vehicle infrastructure and the Energy Profits Levy on the windfall profits of oil and gas companies. These positive policies are overshadowed, however, by policies that drive up emissions, such as imposing the Electricity Generator Levy on low-carbon generation on markedly unfavourable terms, and reducing research and development (R&D) tax reliefs.

Two of the main line items responsible for driving up emissions – the Energy Price Guarantee (EPG) and the Energy Bill Relief Scheme (EBRS) – are policies that WWF-UK supports, so are worth discussing in more detail. These policies are essential in the short-term to protect consumers and businesses but do not tackle the root cause of soaring energy bills – the UK's dependence on imported fossil fuels, particularly gas. It is therefore essential that government supplement them with policies to help insulate UK homes and reduce the nation's dependence on fossil fuels for power generation and heating by accelerating deployment of renewables and heat pumps. Action on these issues will permanently reduce energy bills and carbon emissions, as well as saving the taxpayer money.

These policies also highlight an important methodological aspect of NZDT analysis - it assesses the impact of line items in comparison to a world without them, without taking wider context into account. Therefore, while the NZDT is an extremely useful tool for assessing the impact of tax and spending decisions, the context of those decisions is also important to consider.

**THE EXPECTED IMPACT OF THE AUTUMN STATEMENT 2022 IS TO DRIVE AN INCREASE IN UK EMISSIONS BY 47 MILLION TONS OF CO<sub>2</sub> EQUIVALENT (MT CO<sub>2</sub>E) BETWEEN 2022 AND 2050**

The EPG and EBRS were put in place to offset increased energy prices, caused largely by Russia's illegal invasion of Ukraine. The emissions implications of these policies are highly dependent upon the baseline against which they are assessed. Because the NZDT methodology compares line items to a world without them, they are shown to increase emissions, as without them energy consumption by households and businesses would have fallen, due to high prices. This fall in consumption have been socially undesirable, however, as it would mostly have been due to energy rationing, rather than improved energy efficiency.

Even in emissions terms, the EPG and EBRS are only assessed as increasing emissions because they are compared against a world without the line item, rather than against a world without the issue – the energy cost price spike - and the line item seeking to address it. This, however, is a debate that extends beyond the scope of the NZDT and cannot be fully resolved here. It is highlighted to emphasise the importance of considering the results of the analysis in context when deciding their policy implications.



As the NZDT analysis is confined to assessing the impact of line items compared to a world without them, the two energy relief schemes are estimated to result in 53 million tons of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub>e) between 2022 and 2050. This figure includes an assumption of continued energy sector decarbonisation; resulting emissions could be modestly smaller if the energy sector decarbonises faster than expected. The emissions associated with these policies demonstrate that while direct fiscal support is essential in the short-term, it does little to address the root cause of energy bill increases - the soaring price of polluting fossil fuels, whose price is set by global markets and therefore susceptible to international shocks. This illustrates that policy interventions to address urgent issues are likely to occur in many fiscal events, but it is essential that they are attached to medium-term plans to mitigate their carbon implications, enabling the UK to stay on track for net zero.

Even setting aside policy line items that are in response to crises, remaining fiscal policies are far from sufficient to satisfy the UK Government's legally binding net zero commitment. Based on the CCC's balanced Net Zero Pathway, every fiscal event needs to result in substantially decreased national emissions. The NZDT also assesses the alignment of the Statement against five other environmental metrics, beyond greenhouse gas emissions, through a budget tagging exercise. We again find, as in Table 1, that the Autumn Statement 2022 works against environmental protection. That is, each metric has an aggregate unfavourable score. Additionally, even when emissions modelling suggests that line items result in fewer emissions, these reductions are often not the primary purpose of tax or spending decision, but occur as an indirect impact through reduced household, business, and community spending power.

**Table 1.** Autumn Statement 2022 Tagging Summary

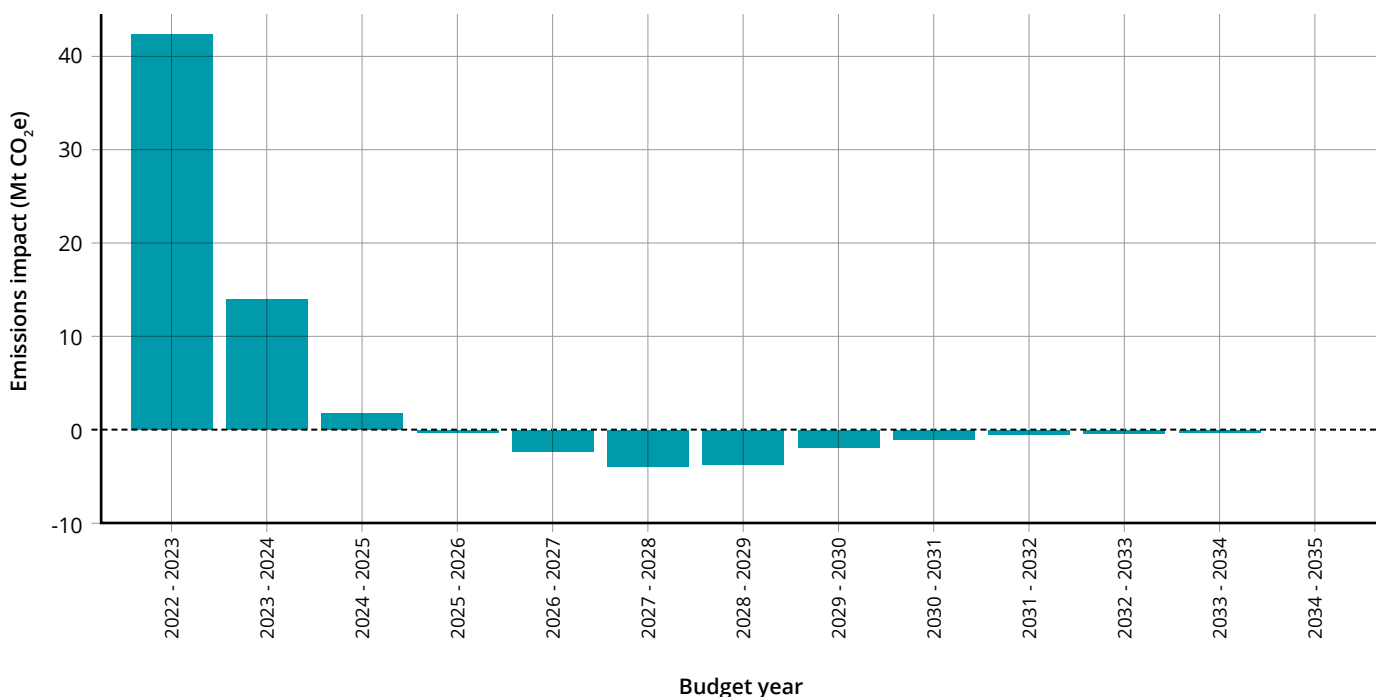
	Budget tag	Adaptation	Mitigation	Biodiversity	Circular economy	Water management	Air quality
Number of relevant fiscal decisions	<b>P2</b>	0	3	0	0	0	1
	<b>P1</b>	1	4	4	0	0	5
	<b>Z</b>	62	51	58	64	65	52
	<b>N1</b>	3	6	5	3	2	8
	<b>N2</b>	1	3	0	0	0	1
Absolute value of relevant fiscal decisions (£ billions)	<b>P2</b>	0	38.8	0	0	0	0
	<b>P1</b>	0.3	0.6	21.3	0	0	39.2
	<b>Z</b>	359.8	300.3	368.2	415.2	418.0	300.4
	<b>N1</b>	58.2	65.5	32.7	7.1	4.3	82.6
	<b>N2</b>	4.0	17.1	0	0	0	0

**Notes:** Results of qualitative assessment and budget tagging of the Autumn Statement 2022. Number of relevant fiscal decisions is a count of the number of line items that fall in the category from P2 (strong positive progress towards environmental outcomes) through Z (neutral) to N2 (strong negative progress against environmental outcomes).

While emissions reductions are welcome, it is troubling that a substantial share of reductions occur through reduced household disposable income and business profits. Accelerating the transition to clean energy will enable further decoupling of emissions from economic activity, enabling the UK to achieve greater prosperity and reduced emissions simultaneously. WWF-UK would encourage government to pursue strategic investments and provide clear signals to the market about its environmental intentions. Green conditionality would encourage a transition that achieves our climate goals while delivering robust growth and prosperity across the country. For example, public spending line items (10-16) could have included directives that spending comply with a set of net zero and other environmental standards. Additionally, we note that the Energy Profits Levy (22) impacting profits from oil and gas exploration and production comes with a decarbonisation investment allowance. Yet, renewable generators impacted by the Electricity Generator Levy (24) receive no similar allowance. The failure to attach green conditionality, such as decarbonisation investment allowances, to more decisions represents a missed opportunity to accelerate the net zero transition.

Figure 1 presents the expected emissions attributable to the Autumn Statement 2022 on an annual basis. Due to policies to address the cost of living and energy crises, the Statement drives large near-term emissions increases. In later years, however, the policies announced drive some emissions reductions. We use the NZDT to assess the expected emissions result out to the 2050 net zero target year. Given that, from around 2035, the Autumn Statement is expected to contribute only slightly to total emissions, Figure 1 focusses on the emissions impacts until then.

**Figure 1.** Total Emissions Impact of the Autumn Statement 2022



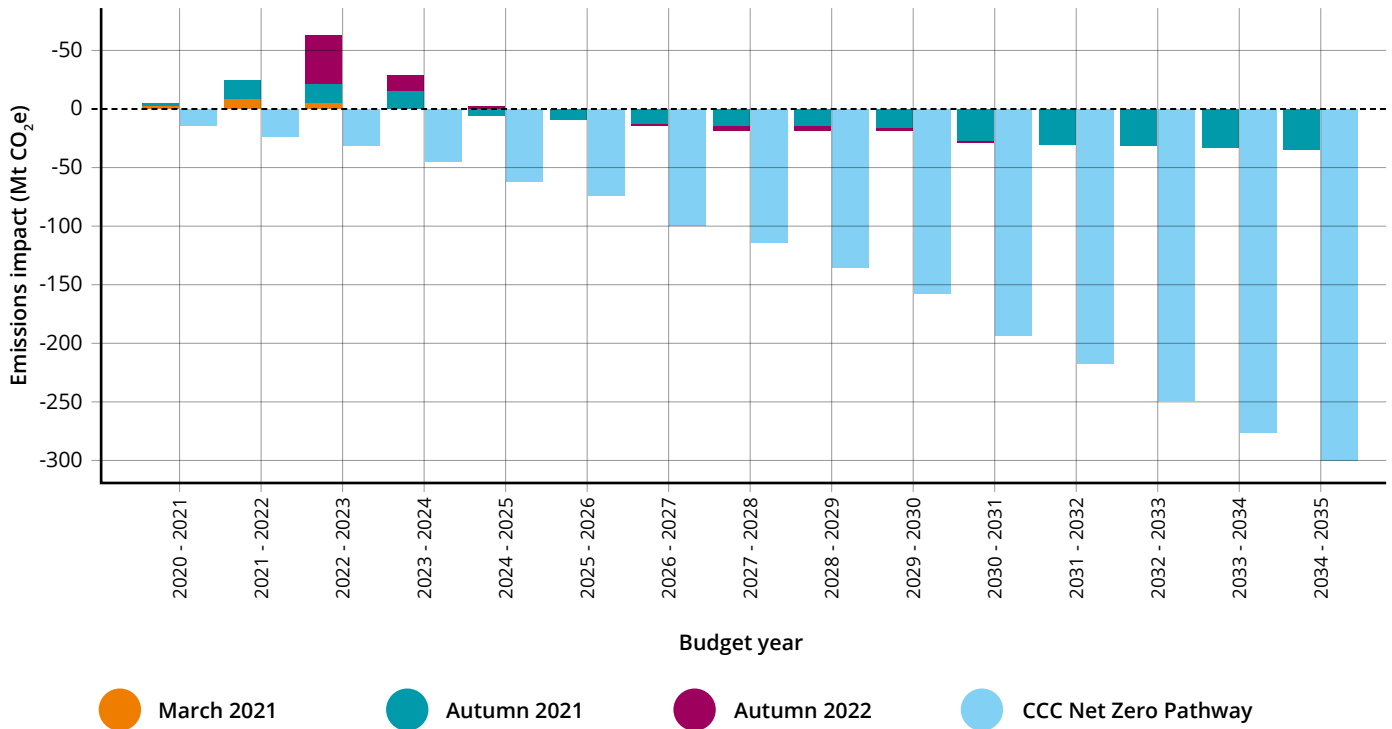
**Notes:** Emissions impact of the Autumn Statement 2022 up to Budget year 2034-2035.

The Autumn Statement 2022 is also put into context by comparing it against the CCC's Balanced Net Zero Pathway in Figure 2. As each fiscal event either contributes or hinders progress toward net zero, we also combine the impact of the Autumn Statement 2022 with the results from prior NZDT applications on the March 2021 Budget and Autumn 2021 Budget and CSR<sup>1</sup>. Clearly, each fiscal event analysed has resulted in greater near-term net emissions in

<sup>1</sup> Subsequent budgets note when they have reversed prior budget decisions. This allows the adding up of a series of fiscal event results without having to re-calculate past results. A NZDT analysis was not conducted on the March 2022 Budget, but we encourage the undertaking of such an analysis.

response to the recent series of national crises. Long-term commitments – if upheld – suggest the offsetting of some near-term emissions in later years. However, even if all commitments modelled to date are kept, public tax and spending packages are not currently doing nearly enough to get the UK on track for net zero..

**Figure 2.** Total Impact of Fiscal Events Modelled by the NZDT versus Net Zero Pathway



**Notes:** Emissions impact of the March 2021 Budget, Autumn 2021 Budget and CSR, and Autumn 2022 Statement up to budget year 2034-2035 versus the CCC's Balanced Net Zero Pathway (CCC, 2021).



## D. CONCLUSION AND RECOMMENDATIONS

The Autumn Statement 2022 did little to put the UK on track for net zero. The Statement's focus on responding to the cost of living and energy crises – as well as demonstrating the UK's fiscal probity – meant that it contained few investments that will permanently, substantially reduce emissions. Rather, several of the policies will markedly drive up emissions in the short-term, although some of these could be partially offset by countervailing policies. An example of this should be the Energy Price Guarantee being partially offset by the Energy Profits Levy and its extension. Unfortunately, the Levy's investment allowances, which are not all focused on decarbonisation, mean that the resulting emissions reductions will be lower – and less certain – than they otherwise would be. There is also deep uncertainty around the extent to which emission increases and their resultant damage can be offset by environmentally positive spending in the long-term.

Results from the next application of the NZDT could be markedly different. Many of the environmentally negative policies in this Statement are relatively short-term measures. Future fiscal events should focus on moving the UK away from a major cause of the cost of living and energy crises – our dependence on volatile and expensive fossil fuels. Investments to accelerate renewable energy buildout, electrify transport, insulate homes and decarbonise their heating, and ensure zero-carbon security of supply would help shield the UK from future crises. Such actions would also reduce household and business bills, increase energy security, and reduce carbon emissions. If government were to take decisive action in these areas through a combination of strategic investments and clear policy signals to private sector actors, the results of the next applications of the NZDT could be markedly more positive.

Greening 'neutral' tax and spending policies to leverage private investment remains an unaddressed priority. As in prior NZDT results, most policies within this Statement are tagged as neutral across all six selected environmental indicators. It is essential that government seek to reduce the emissions implications of negatively tagged items in the Statement, but equally important that they begin attaching green conditionality to as many neutral line items as possible. Neutral fiscal events will not get the UK on track for net zero and all policies should be considered as potential means to support the transition. This means ensuring that line items send clear signals to the market, unlocking private financial flows for key sectors to make the investments needed to reach net zero.

The ongoing decoupling of the economy from emissions is having a substantial impact. Without this decoupling, the carbon impact of the Autumn Statement 2022 would have been far worse. Investments and policies to accelerate this decoupling are likely to have large benefits. These efforts should focus on decarbonising the UK's energy supply, but also increasing household and business energy efficiency. Greening the UK's energy supply ultimately impacts emissions intensity factors across the economy, so should be a key focus of policy.

### GREENING 'NEUTRAL' TAX AND SPENDING POLICIES TO LEVERAGE PRIVATE INVESTMENT REMAINS AN UNADDRESSED PRIORITY

Emissions leakage beyond the UK's borders is a substantial issue. Climate change is a global problem and cannot be tackled in isolation – national policies therefore need to account for emissions leakage. This is not the case at present, meaning that substantial emissions driven by budget expenditures eventually leak to outside the UK through the foreign share of spending and investment activities. Emissions embodied in imports are also effectively unregulated at present. Detailed emissions leakage accounting, coupled with carbon border adjustments and similar methods to encourage foreign entities to reduce emissions, could result in substantial reductions on a global scale. It is essential that the UK is engaged and active in this developing policy space.

Implementing the NZDT is key to an orderly, cost-effective transition to net zero. Government should commit to applying the NZDT to all fiscal events in advance of their publication, in order to reach net zero in an efficient manner, maximising green jobs and growth and leveraging private investment. Without analysing financial flows to net zero and the emissions implications of fiscal events, tracking progress will be impossible. The net zero transition – as well as efforts to improve other environmental indicators – will be more expensive and disorderly without careful monitoring and the UK will miss out on opportunities to be a leader in the industries that will underpin future prosperity.

## WHAT SHOULD THE UK GOVERNMENT DO NOW?

The Government should commit to introducing a NZDT and applying it at each fiscal event, in sufficient time for adjustments to be made based the analysis, if needed. Introducing the NZDT will help government ensure that strategic public investment helps drive the UK towards net zero in a cost-effective and efficient manner, while playing an important role in monitoring progress and providing feedback during policy development. We suggest the process is led by HM Treasury, in coordination with the CCC, Office for Budget Responsibility (OBR), and possibly Parliament's Environmental Audit Committee. Further, we suggest that at each fiscal event:

- **Budget tagging is used to check the alignment of spending and taxation policies against a range of climate and environmental indicators.**
- **Emissions modelling is used to estimate both the carbon emissions impact attributable to each line item and the aggregate impact of the fiscal event.**
- **The full results of the NZDT analysis are published, including an assessment of whether the overall emissions impact is compliant with a credible pathway to net zero, and a summary of how the analysis was used to inform the fiscal decisions made in the fiscal event.**

Alongside the NZDT, Government should introduce a Net Zero Investment Plan, including independent tracking of net zero financial flows, which the NZDT analysis would feed into. To do this, Government should commit to:

- **Empowering an independent body, such as the OBR or the CCC to analyse net zero financial flows on an on-going basis and recommend actions that the Government could take to tackle market barriers and leverage the private investment needed to meet the UK's climate targets.**
- **Producing a Net Zero Investment Plan, which sets out the actions, including policy and regulatory change and strategic investment, that government will take to leverage in private investment to fill any investment gap. This Plan should be regularly updated.**

The NZDT and Net Zero Investment Plan would be complementary, helping ensure that public and private investment work in harmony to unlock the benefits of net zero for the UK.

## WHAT CAN INDIVIDUALS DO TO HELP?

The UK Government has a legal and moral obligation to deliver net zero, which will support limiting global warming to 1.5°C and help safeguard our planet for future generations. Tackling climate change can also help protect nature, improve biodiversity, and improve air and water quality. By focusing public spending on harnessing our island's strengths, the Government can build green industries to be proud of, creating good jobs and prosperity across the UK.

**Please consider adding your voice to WWF-UK's campaign and write to your local MP, asking them to support adoption of the Net Zero Delivery Tracker and the Net Zero Investment Plan by the Government.**



# 3. FULL REPORT

## A. INTRODUCTION

This report summarises the results from applying WWF-UK’s Net Zero Delivery Tracker (NZDT) framework to the UK Government’s Autumn Statement 2022. The NZDT framework is being applied to the Autumn Statement 2022 to demonstrate its ability to assess the environmental and climate impact of public spending and taxation decisions in aggregate for a fiscal event decisions with the net zero target. In 2019, the UK became the first major economy to legislate for net zero emissions by 2050 (*HM Treasury, 2021*). However, the Climate Change Committee (CCC) has estimated that achieving net zero will require substantial investment from both the private and public sector (*CCC, 2021*).

While direct public sector investment will likely constitute a relatively small proportion of total spending, government policies play an essential role in signalling – directing and leveraging private investment, encouraging energy sector decarbonisation, and incentivising businesses and households to alter behaviour. The tax and spending decisions made in fiscal events are critical, providing both strategic investment and clear signals to the private sector. It is therefore important to understand whether the decisions made in a fiscal event are fulfilling these functions and supporting progress towards net zero or not.

The NZDT is intended to support the development of fiscal policies that support progress towards the net zero target. Achieving the target will require prioritisation as well as coordination within fiscal policy. The NZDT is a tool that HM Treasury and other departments can use to ensure strategic, coordinated fiscal policy decisions that support cost-effective progress towards net zero. The NZDT is comprised of two steps:

- **Budget tagging provides a method to qualitatively assess the extent to which public financial flows - tax and spending decisions - are supporting the UK’s environmental priorities.**
- **Emissions modelling provides a method to quantitatively estimate the carbon emissions impact of financial flows.**

Budget tagging provides an expert assessment of the alignment of expected financial flows – tax and spending decisions – with the UK’s environmental priorities, including the net zero target. Budget tagging qualitatively assesses whether budget allocations align with the net zero target across six selected environmental indicators:

- **Climate change mitigation**
- **Climate change adaptation**
- **Biodiversity impacts**
- **Water management**
- **Air pollution**
- **Circular economy**

The budget tagging exercise is constrained to considering the domestic effects of each line item in a national fiscal event. Line items receive a score based on a five-point scale ranging from “strong positive progress towards environmental outcomes” to “strong negative progress towards environmental outcomes.” However, most fiscal event line items to date have received a neutral score – “neutral effect on environmental outcomes. This suggests that there are missed opportunities within fiscal events to drive the transition and leverage private capital through attaching green conditionality to certain line items. The results of budget tagging then help guide the implementation of emissions modelling.

Emissions modelling is a quantitative assessment of the emissions that may result from each line item. The focus of emissions modelling is narrower – on the climate change mitigation aspect of the fiscal event. Emissions modelling estimates the carbon dioxide equivalent level of emissions that each line item is expected to result in, as well as the overall emissions impact of the fiscal event. These estimates are based on historical emissions trends, models of public, firm, and household behaviour, and well-established expectations about the flow of resources through the national economy. As with budget tagging, emissions modelling focusses on domestic events. As such, emissions modelling also notes the importance of identifying and tracking source of emissions leakage – the offshoring of activities that generate emissions. While the main body of this report focusses on the net result from emissions modelling, the Technical Appendix (available upon request) provides line item-level assessments.

In the next section, we discuss the budget tagging and emissions modelling methodologies in more detail before applying the NZDT to the Autumn Statement 2022.

## B. METHODOLOGY

The NZDT approach is being applied to the UK Autumn Statement 2022 to demonstrate its ability to assess the alignment of spending and taxation decisions with the net zero target. The NZDT has two major components: budget tagging and emissions modelling exercises. Budget tagging provides a qualitative assessment of whether each fiscal event line item will positively or negatively impact the environment across six environmental indicators. In comparison, emissions modelling focusses on the climate change mitigation potential of each line item, estimating the expected impact of each year's tax or spending decision in each line item. A comparison of budget tagging and emissions modelling is summarised in Table 2.

**Table 2.** Comparison of Budget Tagging and Emissions Modelling

Tool	Objective	Approach	Selected environmental indicators	Outputs
Budget Tagging	Assess whether the allocation of fiscal resources outlined in a fiscal event is aligned with the net zero objective	Qualitative scoring  Quantitative modelling	1. Climate Change (CC) Mitigation 2. CC Adaptation 3. Biodiversity 4. Water management 5. Air pollution 6. Circular economy	<ul style="list-style-type: none"> <li>Qualitative assessment of the extent of environmentally positive and negative impacts by fiscal event line item</li> <li>Spotlight on positive/ negative environmental policies</li> <li>Total score for fiscal event, to allow comparison over time or across selected environmental indicators</li> </ul>
Emissions Modelling	Estimate the total impact of emissions resulting from a fiscal event.		Climate change mitigation	<ul style="list-style-type: none"> <li>Emissions impact of fiscal event, disaggregated by line item and year</li> <li>Allows a comparison of the fiscal event's emissions impact to the CCC's</li> <li>Balanced Net Zero Pathway</li> <li>Spotlight on positive/negative environmental policies</li> <li>Total impact of fiscal event</li> </ul>

**Notes:** Adapted from WWF-UK (2022) Net Zero Test.



Both components of the NZDT provide potentially useful assessments. Budget tagging provides an assessment of the extent to which the financial flows within a fiscal event impact selected environmental indicators. It also allows the highlighting of line items that are expected to have particularly egregious impacts on one or more of the selected environmental indicators. Emissions modelling then estimates the scale of impacts regarding climate change mitigation. Emissions modelling also often provides sufficient detail to observe whether line items have purely negative or positive impacts or contain offsetting aspects. Budget tagging may be seen primarily as a means of tracking public financial flows towards environmental priorities, and their adequacy or otherwise, and emissions modelling as providing additional insight into the emissions impact of line items and how it may be addressed.

## i) BUDGET TAGGING

Budget tagging is an established method for tracking climate-relevant spending and taxation decisions. Budget tagging has a well-established history and is being adopted by various countries and organisations around the world. Since 1998, the Organisation for Economic Co-Operation and Development (OECD) has required members to tag development-focused financial flows, indicating whether they impact environmental objectives, using the Rio Markers (*OECD, 2023*). Budget tagging has continued to develop, resulting in established guidelines from the OECD, the United Nations Development Programme, and the World Bank (*OECD, 2021; UNDP, 2019; World Bank, 2021*). Environmental budget tagging has been adopted by several nations, including Bangladesh, France and, most recently the UK, where HM Treasury conducted an Environmental Impact Analysis following the UK's Autumn 2021 Budget and Comprehensive Spending Review (*HM Treasury, 2022*).

Budget tagging qualitatively scores each tax and spending decision announced at a fiscal event against six environmental indicators. The budget tagging process follows the decision tree developed during prior applications (*WWF-UK, 2021; WWF-UK, 2022*). Line items are scored against six environmental criteria, drawn from the European Union's Sustainable Finance Taxonomy: (1) climate change mitigation; (2) climate change adaptation; (3) biodiversity; (4) water management; (5) air pollution and (6) circular economy (*European Commission, 2020*). Using multiple indicators reduces the possibility that pollution shifts from an observed indicator to an unobserved one while being recorded as progress. Using the EU's framework also improves the possibility of comparability as budget tagging is adopted by more nations. Line items are scored according to their environmental impact – from strongly positive to strongly negative as in Table 3.

**Table 3.** Summary of Budget Tagging Grading Rubric

Score:	P2	P1	Z	N1	N2
Description:	Strong positive progress towards environmental outcomes	Positive progress towards environmental outcomes	Neutral effect on environmental outcomes	Negative progress towards environmental outcomes	Strong negative progress towards environmental outcomes
Numerical equivalent:	5	2.5	0	-2.5	-5

**Notes:** Adopted from WWF-UK (2021) Net Zero Test.

## EMISSIONS MODELLING IS ALSO A NATURAL EXTENSION OF BUDGET TAGGING, PROVIDING A MORE QUANTITATIVE ASSESSMENT TO COMPARE TO THE TAGGING RESULTS

Budget tagging provides a useful initial assessment of a fiscal event but has limits and should be supplemented with emissions modelling. Line items may encompass spending and offsetting taxation decisions, both of which may have environmental impacts. Aggregation to national line items also obscures many details on how spending or taxation decisions will be implemented. As a result, budget tagging scores are necessarily aggregate qualitative estimates. In addition, aggregation of line items obscures any geographical issues, for example whether spending decisions are resulting in changes to environmentally sensitive or unique environments. The geographic scope of the assessment is also limited to the UK – line items only impacting emissions abroad, such as foreign development assistance, are excluded. The scope of budget tagging as applied in the NZDT is also limited to the line items reported.

It is therefore important to supplement budget tagging with emissions modelling to provide additional, more quantitative evidence of whether fiscal plans are having positive or negative impacts on environmental outcomes. Budget tagging is a natural precursor to emissions modelling, as the line items must be encoded for emissions modelling anyway. Emissions modelling is also a natural extension of budget tagging, providing a more quantitative assessment to compare to the tagging results.

Finally, budget tagging and the NZDT overall only captures marginal changes to the emissions/environmental impact pathway. It will require repeated, consistent application of the NZDT to each fiscal event and revisions of estimates to capture whether the national government is on a net zero pathway. We must sum the marginal changes from each consecutive fiscal event to deduce to what extent public spending and taxation is supporting the net zero transition.

## ii) EMISSIONS MODELLING

Emissions modelling provides a quantitative assessment of the emissions impact of expected financial flows between government and the community. This is in comparison to the qualitative assessment resulting from budget tagging. By modelling the emissions impact of financial flows, we can better assess whether such decisions align with the net zero target. Emissions modelling has a basis in economic and environmental theory. It is parameterised based on government and other historical estimates, which are used to make projections about how emissions will change in the future.

Emissions modelling focusses on the impact that line items have in CO<sub>2</sub> equivalent emissions. As with the budget tagging exercise, emissions modelling is also constrained to domestic effects. However, within that constraint the NZDT emissions model attempts to capture the flow of tax and spending impacts through, as well as out of, the economy. The emissions model attempts to capture the full impact on a year-by-year basis of each line item out to the 2050 net zero target. However, due to the leakage of money outside the domestic scope as well as taxation, the bulk of emissions impacts tends to occur in the first few years. There are exceptions, for instance in funding for projects that reduce or recapture emissions, such as several of the projects included in the Autumn 2021 Budget and CSR.

Emissions modelling is an evolving process. Each application of the NZDT methodology to a fiscal event is taken as an opportunity to improve the modelling methodology. For this iteration of the NZDT, certain aspects of the emissions modelling exercise have received more attention, fitting with the new author's specialist knowledge. In comparison to budget tagging - which closely followed prior approaches - the Autumn 2022 emissions model has several advancements including:

- Expanding the breadth of impacts captured to include second-order, knock-on effects in the economy primarily through household and business expenditures.
- Use of sector-specific business multipliers that capture own- and cross-sector impacts.
- New estimates of emissions intensity factors and other long-run model inputs to account for nonlinear trends.
- Expansion of the time horizon to include impacts from each line item out to 2050 to match the UK government's net zero goal.
- Treatment of the economy as open to trade and subsequently notes the leakage of financial resources driving emissions to outside the geographic scope of the NZDT.
- Impact of energy sector-relevant line items on the national energy production mix.
- Emissions driver decomposition – frequent division of results into direct, indirect, consumption, and savings impacts (included in the Technical Appendix, which is available upon request).
- Sensitivity analysis – the provision of alternative results based on changes in key parameters (included the Technical Appendix).

To support modelling advancements and replicability, the modelling platform has also transitioned from Excel to Python. As a result, emissions modelling is supported by Python code along with explanatory notes and graphics embedded in a Jupyter Notebook. However, the modelling approaches employed have been deliberately kept as simple as possible to aid understanding, modification, and replication. Readers will find little evidence of this change in the main report, while the Technical Appendix provides markedly more detail on how results have been derived.

In the next section we provide a brief overview of the Autumn Statement 2022 and then apply the NZDT methodology.



## C. APPLICATION TO THE AUTUMN STATEMENT 2022

In this section we first overview the composition of the Autumn Statement 2022, then report the results of conducting NZDT budget tagging and emissions modelling exercises on line items. The summary results are reported in this section while more detail is reserved for the Technical Appendix.

### i) STATEMENT OVERVIEW

The economic environment of the UK over the past year might be characterised as tumultuous, with the need to respond to the energy and cost of living crises driving current fiscal decisions. Perhaps as a result, taxation and spending decisions in the Autumn Statement 2022 are decidedly not focussed on environmental concerns. There are no direct references to net zero, climate change, biodiversity preservation or other environmental concerns. Instead, the Autumn Statement 2022 focused on calming markets, restoring investor confidence, and addressing cost of living and energy price concerns. The three main themes were pursuing responsible fiscal strategy, providing support to households, and tackling the extraordinary level of profits that some energy firms, particularly oil and gas producers, received or are expected to receive.

The Statement contained both entirely new line items and some from the immediately preceding governments. Of the 75 line items included, 49 were new tax or spending lines from the Sunak premiership. The Autumn Statement 2022 also contains six surviving line items from the Truss premiership's Growth Plan released on the 23rd September 2022. Additionally, 11 decisions are marked as occurring pre-Growth Plan, and a final line item as occurring between the Growth Plan and the Autumn Statement 2022.

The Statement results in a net decrease in government resources. Within the Autumn Statement 2022, line items suggest a reduction of £20.8 billion in the national coffers. The net total planned additions to spending of about £41.3 billion exceed the net total planned additions to tax revenue of about £20.4 billion. As we might expect, given the ongoing energy and cost of living crises, there is a net outflow from the national coffers in the nearer term – a greater level of support for households and to stimulate economic growth – followed by expected net inflows in later years. The largest outflow in expected tax revenue is due to retained line items from the Truss premiership's Growth Plan, amounting to a net £107 billion reduction in tax revenues. This is overwhelmingly attributable to one item – a reversal of the temporary 1.25p increase in National Insurance Contribution rates from November 2022 and cancellation of the Health and Social Care Levy (£92.5 billion value). The next biggest outflow – of about £69 billion – is due to the package of energy and cost of living support announced by the Sunak Premiership. The energy and cost of living support package is focused on fiscal years 2022-2023 and 2023-2024 and so does not detract from tax inflows in later years.

Some line items have potentially large knock-on effects. A few will impact energy sector investment decisions and research and development (R&D) directions for potentially several years. At least one line item (*Line item 13 – Council Tax: Implications of changes for local authority*) has substantially greater impacts than the Statement would suggest through changes to council taxation policy. It is estimated to have a 20-time greater impact on council taxation and a 19-time greater impact on council expenditures than is recorded in the national Statement. These changes to local spending and taxation will also have environmental impacts and, ideally, would be analysed at local level in coordination with application of the NZDT at national level, to avoid double-counting.

In the next section, we apply the NZDT budget tagging approach to the Autumn Statement 2022.

## ii) BUDGET TAGGING

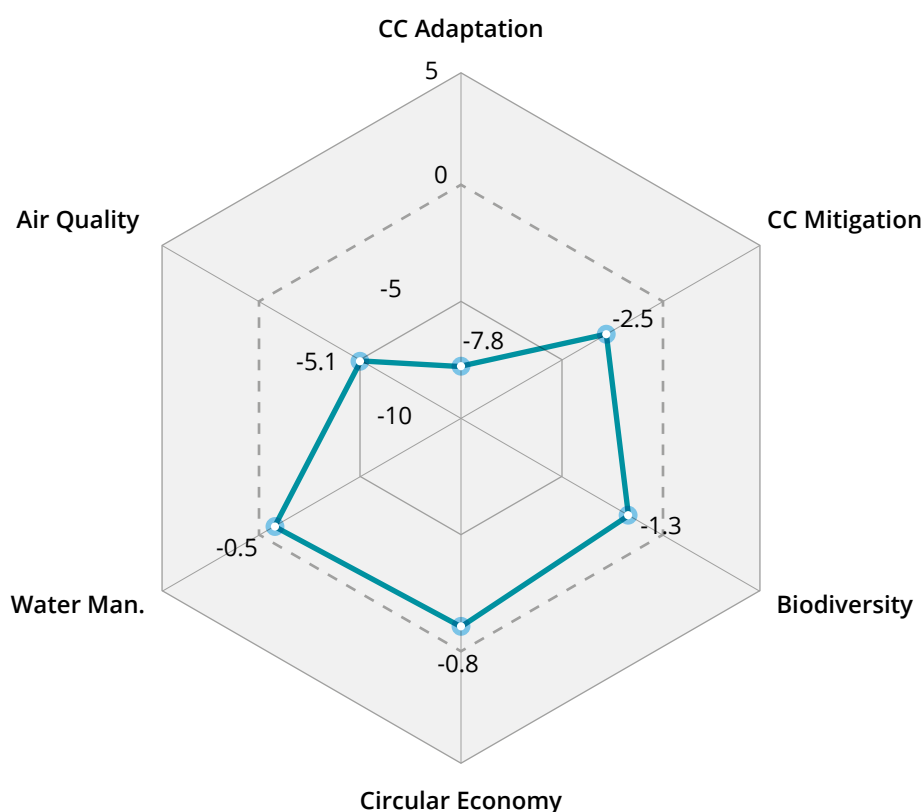
As in prior applications of the NZDT to UK fiscal events, we find that the majority of expenditure and taxation line items must be tagged as neutral. This does not mean that zero emissions result from neutral-tagged line items, but rather that they do not change underlying emissions factors, so do not fundamentally change the UK's capacity to align with the net zero pathway. Emissions may still increase or decrease, for example due to line items resulting in more energy or other consumer expenditures. Given that UK fiscal plans have continually focused on priorities other than net zero, many of the line items within them are assessed as neutral.

It is important to note that a line item being tagged as neutral does not mean that it should have been excluded from further environmental planning. In some cases, line items tagged as neutral or negative could have been positive if green conditionality had been included in their design. In addition to driving further emissions reductions and accelerating progress to net zero, taking this approach would send a clear signal to the market, helping to crowd in private finance for the transition. All public services line items in this Statement (decision 10-16) have been marked neutral. These could have been 'greened' by including a requirement that spending comply with a set of net zero and other environmental standards. Additionally, introducing decarbonisation investment allowances more equally across the energy sector – and more widely across other sectors – could have shifted several line items to a more favourable environmental standing. A set of investment allowances encompassing the wider set of environmental metrics would have been even more effective.

**WHILE ENERGY POLICY LINE ITEMS IN THIS STATEMENT UNDERSTANDABLY FOCUSED ON MAINTAINING AN AFFORDABLE ENERGY SUPPLY FOR HOUSEHOLDS, NO POLICIES WERE EXPLICITLY INCLUDED TO OFFSET THEIR EMISSIONS IMPACT, SUCH AS THROUGH GREATER SUPPORT FOR ENERGY SECTOR DECARBONISATION AND INCREASED SUPPORT FOR ENERGY EFFICIENCY IMPROVEMENTS TO HOMES**

The number and magnitude of negative tags exceeds positive tags across all six selected environmental indicators. Figure 3 and Table 4 present the emission tagging results – both the number of relevant fiscal decisions and their absolute value. Several decisions related to energy policy negatively impacted the climate change mitigation and air quality indicators. However, with little spend on construction outlined in the Autumn Statement 2022, there are fewer assessed impacts on biodiversity and water quality. As in prior applications, there was also little to tag with regard to the transition to a circular economy. While these are important factors to the long-term wellbeing of society, they consistently receive little attention at fiscal events. Additionally, we might consider whether the UK's environmental priorities are the same as the European Union's and subsequently whether the EU's taxonomy is entirely relevant to the UK. If defined appropriately, the forthcoming UK taxonomy could help address this issue.

Environmentally supportive line items have helped partially offset those tagged as negative. However, it is difficult to sufficiently offset environmentally negative energy policies. While energy policy line items in this Statement understandably focused on maintaining an affordable energy supply for households, no policies were explicitly included to offset their emissions impact, such as through greater support for energy sector decarbonisation and increased support for energy efficiency improvements to homes.

**Figure 3.** Autumn Statement 2022 Tagging Net Result

**Notes:** Each axis displays the sum of numerical tagging scores (both positive and negative scores) for each of six selected environmental indicators recommended in European Commission regulation (EU) 2020/852. A score greater than zero suggests line items that overall support environmental goals and negative scores suggest items that overall hinder environmental goals or lead to greater environmental degradation.

**Table 4.** Autumn Statement 2022 Tagging Summary Table

	Budget tag	Adaptation	Mitigation	Biodiversity	Circular economy	Water management	Air quality
Number of relevant fiscal decisions	<b>P2</b>	0	3	0	0	0	1
	<b>P1</b>	1	4	4	0	0	5
	<b>Z</b>	62	51	58	64	65	52
	<b>N1</b>	3	6	5	3	2	8
	<b>N2</b>	1	3	0	0	0	1
Absolute value of relevant fiscal decisions (£ billions)	<b>P2</b>	0	38.8	0	0	0	0
	<b>P1</b>	0.3	0.6	21.3	0	0	39.2
	<b>Z</b>	359.8	300.3	368.2	415.2	418.0	300.4
	<b>N1</b>	58.2	65.5	32.7	7.1	4.3	82.6
	<b>N2</b>	4.0	17.1	0	0	0	0

**Notes:** Results of qualitative assessment and budget tagging of the Autumn Statement 2022.

There are a few fiscally large, environmentally positive line items. This section will focus on analysing the top five for climate change mitigation. These are listed in Table 5 but required additional discussion. The Energy Profits Levy (line item 57) is a pre-Growth Plan 2022 announcement of a 25% surcharge on the profits of the oil and gas industry. This does not in itself change the carbon intensity of the industry. It does, however, decrease the returns to investing in the oil and gas industry relative to other investment options. The Energy Profits Levy extension (line item 22) further increases the length and intensity of the levy. It also includes a new decarbonisation allowance, set at 80% for upstream decarbonisation expenditure. While decarbonisation incentives are usually welcome, there is some debate over whether this one improves the Energy Profits Levy as a driver of reduced emissions. As supply decarbonisation was already mandated in the North Sea Transition Deal (*BEIS, 2021*), the impact of the allowance may instead be to shift the financial burden of upstream decarbonisation from oil and gas companies onto taxpayers and to increase oil and gas investment in the UK versus elsewhere.

Next, the Climate Change Levy (36) contains two effects: it freezes the rate for the first two years on electricity and LPG and increases the rate on natural gas and solid fuels. The net effect is likely to be environmentally positive - the relative emissions intensities and quantities of fuels involved would have to be confirmed to be certain. However, this is a comparatively small line item. The extension of R&D tax reliefs to data & cloud costs (58) likely provides a small positive effect by steering research investment toward a comparatively low-carbon industry. Finally, the extension of the First Year Allowance on electric vehicle charge points (44) is a welcome continuation of the national commitment to support the transition to electric vehicles through the funding of sufficient charging infrastructure.

**Table 5.** Autumn Statement 2022 Largest Positive Line Items, Climate Change Mitigation

Line item	Policy decision	Budget tag	Absolute value (NPV, £ billion)
57	Energy Profits Levy	P2	21.3
22	Energy Profits Levy: extend until 31 March 2028 and increase rate to 35% from 1 January 2023	P2	17.5
36	Climate Change Levy: rebalance rates in 2024-25 by increasing rates on natural gas and solid fuels, while freezing other rates	P1	0.3
58	R&D tax reliefs: extend to data & cloud costs and refocus reliefs towards UK innovation	P1	0.2
44	First Year Allowance for electric vehicle charge points: extend for a further two years until April 2025	P1	0.05

**Notes:** Largest positive-tagged line items in the climate change mitigation category.

There are also a few fiscally large, environmentally negative line items. Again, focussing on climate change mitigation, these are listed in Table 6 and require additional discussion. The largest negative expenditure in the Autumn Statement is the Energy Price Guarantee (line item 1) which caps the unit rate on electricity and gas for households. As discussed earlier, WWF-UK supports this policy on social grounds, but, as the UK energy system is not yet fully decarbonised, it is likely to generate additional carbon emissions, compared to if the policy were not implemented. Given that the unit rate thresholds are still higher than historical averages, however, it is expected that households will still somewhat reduce their energy use. So, it receives an N1 instead of an N2 score. The Statement also includes the Energy Bill Relief Scheme (line item 9), which provides support for businesses in managing their energy costs. As it is only available for one year, it is unlikely to lead businesses to adopt permanent energy saving measures. The Electricity Generator Levy (line item 24) targets excess returns above a baseline applied to certain renewable, nuclear and biomass electricity generators. This levy is liable to increase revenue uncertainty for low-carbon generators, thereby threatening to discourage investment. The lack of investment allowance to offset against the levy is particularly problematic. The Annual Investment Allowance change (line item 72) doesn't appear to set any sort of limitations on how investments are spent, other than excluding North Sea investment. Finally, rebalancing of R&D tax reliefs (line item 34) reduces the relief that businesses can claim through R&D expenditures. While not directly earmarked against environmental R&D, it contributes to less research at a time when more innovation is needed to drive growth and support the net zero transition.

**Table 6.** Autumn Statement 2022 Largest Negative Line Items, Climate Change Mitigation

Line item	Policy decision	Budget tag	Absolute value (NPV, £ billion)
1	Energy Price Guarantee: support for households through a cap on the unit rate of electricity and gas bringing typical household energy bills to £2,500 from 1 October to 31 March 2023 and £3,000 from 1 April 2023 to 31 March 2024	N1	37.1
24	Electricity Generator Levy: implementation of 45% tax on excess returns from 1 January 2023 to 31 March 2028	N2	13.2
9	Energy Bill Relief Scheme: support for businesses for a 6-month period	N1	18.4
72	Annual Investment Allowance: permanently set at £1m from April 2023	N1	6.5
34	R&D tax reliefs: rebalance generosity of reliefs from 1 April 2023	N1	4.0

**Notes:** Largest negative-tagged line items in the climate change mitigation category.

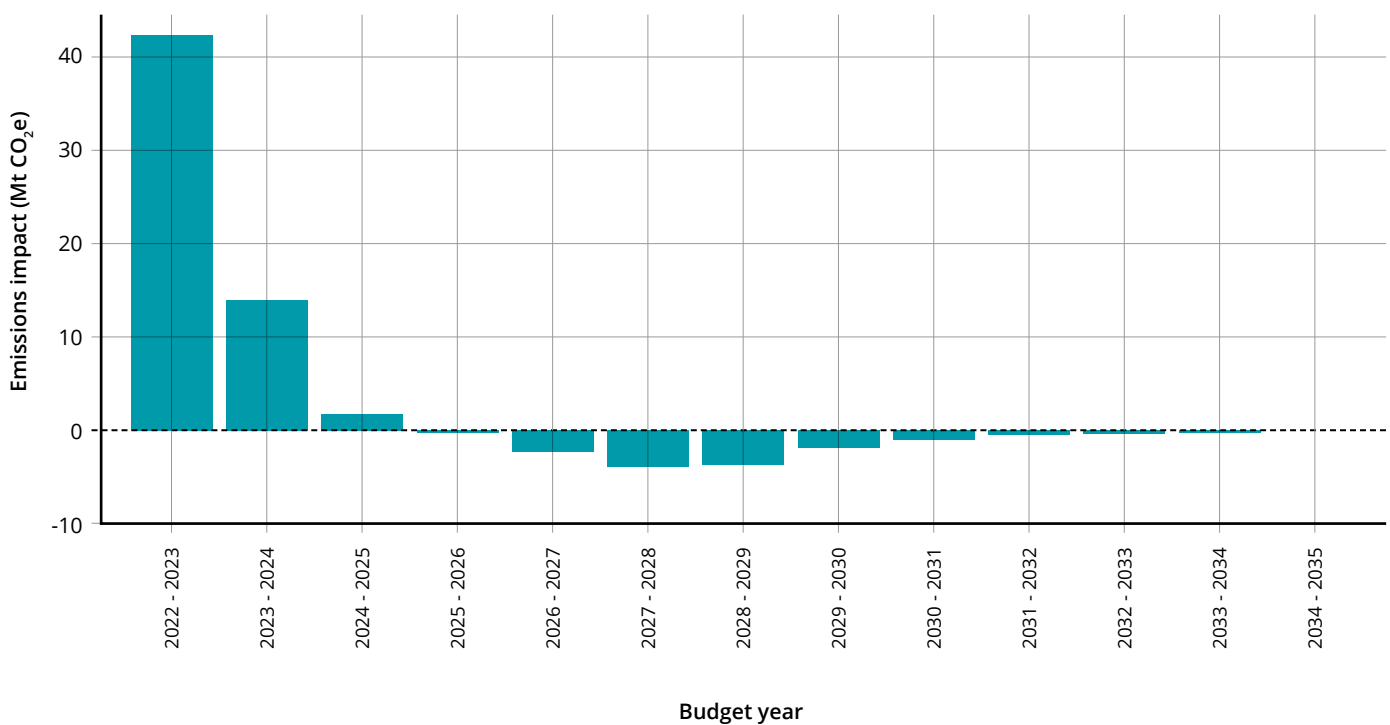
In the next section, we present the summary emissions impact of the Autumn Statement 2022 as well as comparing it to prior Budget and CSR results and the CCC's Balanced Net Zero Pathway.



### iii) EMISSIONS SUMMARY ESTIMATES

The expected impact of the Autumn Statement 2022 is to drive an increase in UK emissions by 47 million tons of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub>e) between 2022 and 2050. The majority of increased emissions occur almost immediately - as depicted in Figure 4, the net result of the Autumn Statement 2022 is emissions increases in years one to four, followed by a negative net level of emissions from year five to eleven. While there is then a slightly positive net level of emissions out to 2050, the emissions beyond year 11 are minor. As a result, we focus on years 2022-2035 for comparability with prior NZDT applications.

**Figure 6.** Total Emissions Impact of the Autumn Statement 2022, 2022-2035



**Notes:** Emissions impact of the Autumn Statement 2022 is modelled out to the 2050 net zero target but is minor beyond 2035.

The main driver of emissions has been a handful of policies focussed on the cost of living and energy crises. A net £5.4 billion of outflows into the economy via only 10 line items results in a net 43 Mt CO<sub>2</sub>e of emissions. The five largest line items in terms of driving emissions result in 111 Mt CO<sub>2</sub>e (Table 7), partially offset by 65 Mt CO<sub>2</sub>e in reductions from the five largest line items in terms of emissions reductions (Table 8). Five of the ten largest line items in terms of emissions impact (three increasing, two decreasing emissions) are energy related. Two of the remaining (one increasing and one decreasing) involve changes to household and business contributions to the NHS. These impact emissions primarily through household and business spending and household savings. Household spending is not particularly emissions intensive, but the sheer size of any change to NHS contributions by households and businesses results in a noticeable impact. Changes to resource spending (RDEL) and income tax collection are also sufficiently large to make a noticeably expected impact for the same reason. Finally, a reduction in the generosity of R&D tax reliefs rounds out the top five lists. The information available on how general R&D spending impacts national emissions is limited. This results in uncertainty about the scale of the impact. However, it is likely that decreased R&D spending results in increased emissions as it is riskier to invest in research that could reduce emissions intensity.

**Table 7.** Top 5 Line Items by Total Emissions

Line item	Policy description	Net flow into the economy (£ billion)	2022 - 2050 impact (Mt CO <sub>2</sub> e)
1	Energy Price Guarantee: support for households through a cap on the unit rate of electricity and gas bringing typical household energy bills to £2,500 from 1 October to 31 March 2023 and £3,000 from 1 April 2023 to 31 March 2024	37.6	35.3
68	National Insurance: reverse temporary 1.25pp increase in NICs rates from November 2022, and cancel the Health and Social Care Levy	92.5	28.2
9	Energy Bill Relief Scheme: support for businesses for a 6 month period	18.4	18.3
34	R&D tax reliefs: rebalance generosity of reliefs from 1 April 2023	-4.5	15.1
24	Electricity Generator Levy: implementation of 45% tax on excess returns from 1 January 2023 to 31 March 2028	-14.2	14.1

**Notes:** Million tons of CO<sub>2</sub> equivalent emissions (Mt CO<sub>2</sub>e)

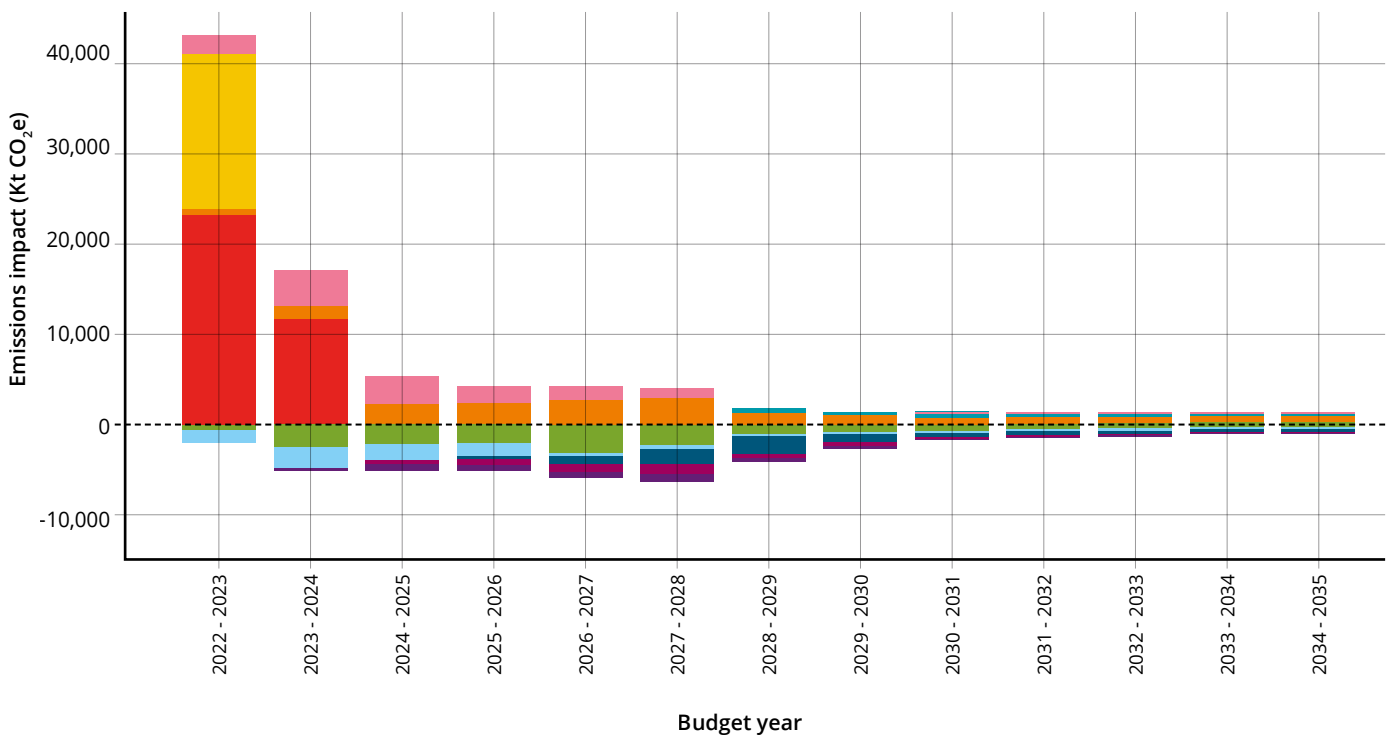
**Table 8.** Top 5 Line Items by Total Emissions Reductions

Line item	Policy description	Net flow into the economy (£ billion)	Long run impact (Mt CO <sub>2</sub> e)
22	Energy Profits Levy: extend until 31 March 2028 and increase rate to 35% from 1 January 2023	-19.4	-26.5
57	Energy Profits Levy	-22.2	-11.4
15	Day-to-day (RDEL) spending assumption: increase by 1% p.a. on average in real terms beyond Spending Review 2021	-42.3	-11.2
67	Income Tax: maintaining the basic rate at 20%	-26.1	-7.9
32	National Insurance: maintain the secondary threshold for employer contributions at current level from April 2023 until April 2028	-25.1	-7.6

**Notes:** Million tons of CO<sub>2</sub> equivalent emissions (Mt CO<sub>2</sub>e)

Figure 5 highlights the large, potentially detrimental impact of just a couple of line items. However, once the nation moves beyond the current energy and cost of living crises, the ongoing emissions impact of the Autumn Statement will be close to neutral. This does not mean that the nation will be closer to net zero, just that the Statement itself has not pushed the UK off course in the medium-term. To reach net zero, government will need to make strategic investments at each fiscal event, together with clear policy signals to the private sector, which help to dramatically reduce the overall emissions of the economy. For WWF-UK’s recommendations on how to achieve this, please see the Conclusion and Recommendations section on p.12-14.

**Figure 7.** Impact of Top-5 Largest Polluting and Avoiding Line Items



- **Policy No. 1: Energy Price Guarantee:** Support for households through a cap on the unit rate of electricity and gas bringing typical household bills from £2,500 from 1 October 2023 and £3,000 from 1 April 2023 to 31 March 2024
- **Policy No. 68: National Insurance:** Reverse temporary 1.25pp increase in NICs rates from November 2022, and cancel the Health and Social Care Levy
- **Policy No. 9: Energy Bill Relief Scheme:** Support for businesses for a 6 month period
- **Policy No. 34: R&D tax relief:** Rebalance generosity of reliefs from 1 April 2023
- **Policy No. 24: Electricity generator levy:** Implementation of 45% tax on excess returns from 1 January 2023 to 31 March 2028
- **Policy No. 22: Energy Bill Relief Scheme:** Support for businesses for a 6 month period
- **Policy No. 57: Energy profits levy<sup>8</sup>**
- **Policy No. 15: Day-to-day (REDL) spending assumption:** Increase by 1% p.a. on average in real terms beyond the Spending Review 2021
- **Policy No. 67: Income Tax:** Maintaining the basic rate at 20%<sup>10</sup>
- **Policy No. 32: National Insurance:** Maintain the secondary threshold for employer contributions at current level from April 2023 until April 2027<sup>7</sup>

**Notes:** Emissions impact of the Autumn Statement 2022 out to the net zero target year of 2050.

## 4. REFERENCES

- Bank of England. (2021) "Key elements of the 2021 Biennial Exploratory Scenario: Financial risks from climate change." <https://www.bankofengland.co.uk/stress-testing/2021/key-elements-2021-biennial-exploratory-scenario-financial-risks-climate-change>
- BEIS. (2021) "North Sea Transition Deal." <https://www.gov.uk/government/publications/north-sea-transition-deal>
- Cambridge Econometrics. (2020) "Economic Impact of the Sixth Carbon Budget." <https://www.theccc.org.uk/publication/economic-impact-of-the-sixth-carbon-budget-cambridge-econometrics/>
- Climate Change Committee. (2021) "Joint Recommendations: 2021 Report to Parliament." <https://www.theccc.org.uk/wp-content/uploads/2021/06/CCC-Joint-Recommendations-2021-Report-to-Parliament.pdf>
- Climate Change Committee. (2022) "About the Climate Change Committee." <https://www.theccc.org.uk/about/>
- European Commission. (2020) "Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088." [https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities\\_en](https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en)
- HM Treasury. (2021) "Net Zero Review: Analysis exploring the key issues." [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1026725/NZR\\_-\\_Final\\_Report\\_-\\_Published\\_version.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026725/NZR_-_Final_Report_-_Published_version.pdf)
- HM Treasury. (2022) "Environmental impacts: analysis to accompany Autumn Budget and Spending Review 2021." <https://www.gov.uk/government/publications/environmental-impacts-of-spending-review-2021/environmental-impacts-analysis-to-accompany-autumn-budget-and-spending-review-2021>
- House of Commons Environmental Audit Committee. (2021) "Biodiversity in the UK: Bloom or bust?" <https://committees.parliament.uk/publications/6498/documents/70656/default/>
- IMF Working Paper. (2021) "Building Back Better: How Big Are Green Spending Multipliers?" <https://www.imf.org/en/Publications/WP/Issues/2021/03/19/Building-Back-Better-How-Big-Are-Green-Spending-Multipliers-50264>
- IPPR. (2020). "Transforming the economy after COVID-19: A clean, fair and resilient recovery." <https://www.ippr.org/files/2020-07/transforming-the-economy-after-covid19-july2020.pdf>
- McKinsey Sustainability. (2021), "Opportunities for UK businesses in the net zero transition." <https://www.mckinsey.com/capabilities/sustainability/our-insights/opportunities-for-uk-businesses-in-the-netzero-transition>
- OECD. (2023), "OECD DAC Rio Markers for Climate Handbook." [https://www.oecd.org/dac/environment-development/Revised%20climate%20marker%20handbook\\_FINAL.pdf](https://www.oecd.org/dac/environment-development/Revised%20climate%20marker%20handbook_FINAL.pdf)
- Office for Budget Responsibility. (2022). "A brief guide to the public finances." <https://obr.uk/forecasts-in-depth/brief-guides-and-explainers/public-finances/>

Onward. (2021) "Greening the Giants."

<https://www.ukonward.com/reports/greening-the-giants/>

Ricardo Energy & Environment for the Committee on Climate Change. (2017). "UK business opportunities of moving to a low carbon economy – final report."

<https://www.theccc.org.uk/wp-content/uploads/2017/03/ED10039-CCC-UK-Bus-Opportunities-Draft-Final-Report-V7.pdf>

Rising, J., Dietz, S., Dumas, M., Khurana, R., Kikstra, J., Lenton, T., Linsenmeier, M., Smith, C., Taylor, C., Ward, B. (2022) "What will climate change cost the UK? Risks, impacts and mitigation for the net-zero transition." London, UK: LSE Grantham Research Institute on Climate Change and the Environment.

<https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2022/05/What-will-climate-change-cost-the-UK-risks-impacts-mitigation-1.pdf>

Skidmore, Chris. (2023) "Mission Zero: Independent Review of Net Zero."

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1128689/mission-zero-independent-review.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1128689/mission-zero-independent-review.pdf)

UK Parliament. (2023) "Environmental Audit Committee."

<https://committees.parliament.uk/committee/62/environmental-audit-committee/>

UNDP. (2019) "Climate Change: Knowing What You Spend."

<https://ndcpartnership.org/toolbox/climate-budget-tagging>

World Bank. (2021) "Climate Change Budget Tagging."

<https://openknowledge.worldbank.org/handle/10986/35174>

WWF-UK. (2021) "Net Zero Test." (March Budget 2021)

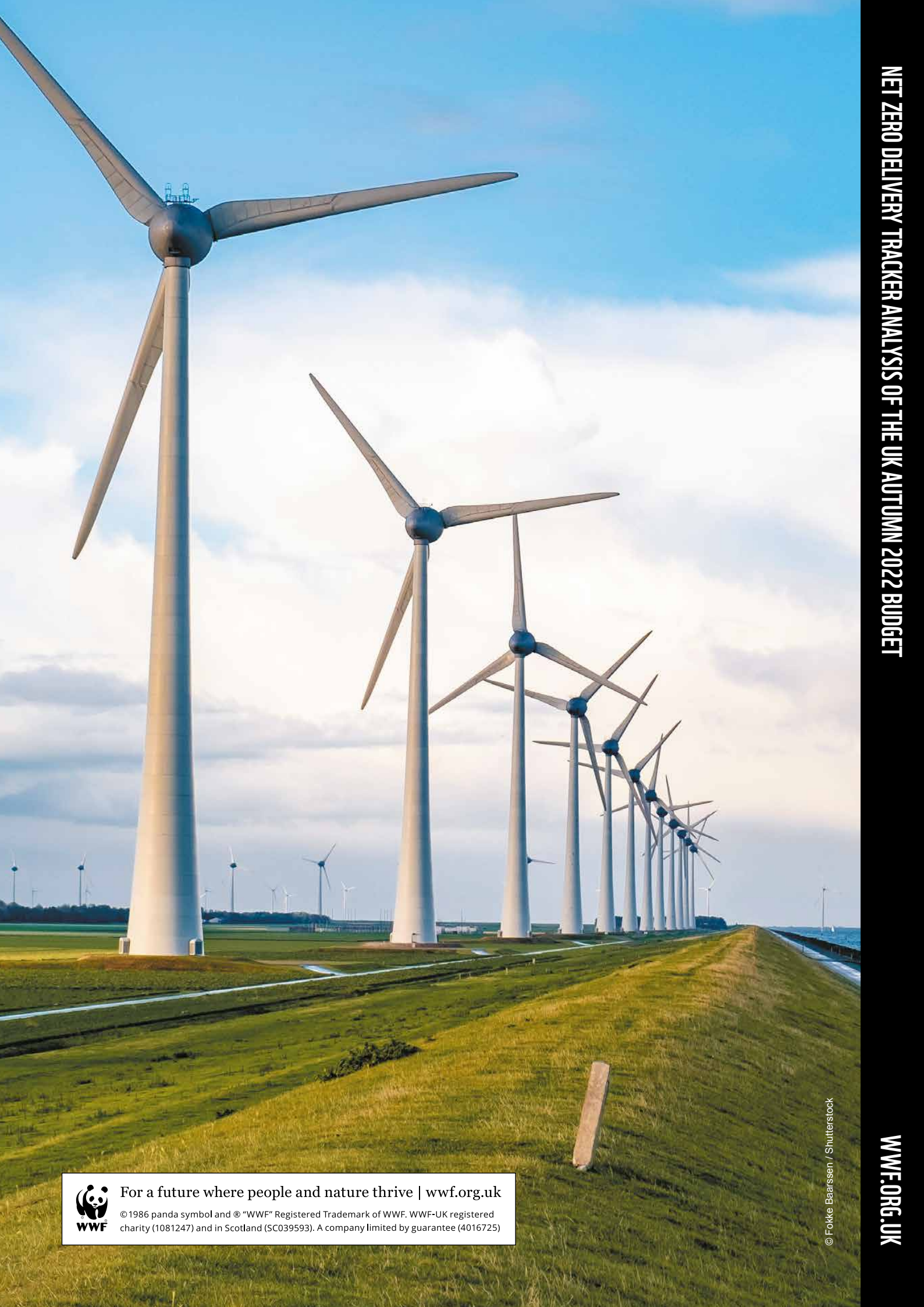
[https://www.wwf.org.uk/sites/default/files/2021-10/WWF\\_UK\\_NetZero\\_Full\\_Report\\_October2021.pdf](https://www.wwf.org.uk/sites/default/files/2021-10/WWF_UK_NetZero_Full_Report_October2021.pdf)

WWF-UK. (2022) "Net Zero Test." (Autumn Budget and Comprehensive Spending Review 2021)

<https://www.wwf.org.uk/our-reports/net-zero-test-autumn-budget-full-report>

WWF-UK & ScottishPower. (2022) "Better Homes, Cooler Planet."

[https://www.wwf.org.uk/sites/default/files/2022-08/Better\\_Home%2C\\_Cooler\\_Planet\\_Report.pdf](https://www.wwf.org.uk/sites/default/files/2022-08/Better_Home%2C_Cooler_Planet_Report.pdf)



For a future where people and nature thrive | [wwf.org.uk](http://wwf.org.uk)

© 1986 panda symbol and ® "WWF" Registered Trademark of WWF. WWF-UK registered charity (1081247) and in Scotland (SC039593). A company limited by guarantee (4016725)