RAF012/2324:

Evaluation of non-domestic energy affordability support schemes

Annex A: Technical annex

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1. Introduction

1.1 Background and context

Prices for electricity, gas and other fuels in the UK and Europe started increasing during the summer of 2021 before spiking in the winter of 2022. This was initially caused by international supply chains readjusting when economies reopened after COVID-19 and was further exacerbated by the effect that Russia's invasion of Ukraine had on global energy markets.

In response, the UK government implemented three Non-Domestic Energy Affordability support schemes between October 2022 and March 2024 to mitigate the impact of increased energy bills on Non-Domestic Organisations (NDOs): the Energy Bill Relief Scheme (EBRS), Non-Domestic Alternative Fuel Payments (NDAFP) and the Energy Bills Discount Scheme (EBDS).

Process, impact and economic evaluations were conducted using a mixed-method approach, incorporating theory-based analysis, quantitative surveys, qualitative interviews, and secondary data analysis and cost-benefit analysis. The evaluation was conducted in two stages, beginning in September 2023 and concluding in March 2025. Stage 1 covered EBRS discounts which were applied between October 2022 and March 2023, as well as NDAFP discounts, which were applied between March 2023 and June 2023. Stage 2 focussed on EBDS discounts, which were applied between April 2023 and March 2024.

1.2 Evaluation Framework

1.2.1 Evaluation Aims

The overarching aims of the evaluations were to:

- Understand how the interventions were implemented, including the effectiveness and consistency across recipient groups of the delivery mechanisms employed.

- Explore awareness, understanding, perceptions and experiences of the interventions among different recipient groups and suppliers.

- Provide insights on the perceived impacts of the interventions as reported by organisations, including short-term changes made by organisations and indicators of longer-term changes.

- Assess the impact and value for money of the Non-Domestic Energy Affordability policies.

1.2.2 Evaluation Questions

A list of the final evaluation questions is included in Table 1, below.

Table 1.1 Process, impact and economic evaluation questions

Process evaluation questions	Schemes
What were the intended processes involved in the delivery of each of the schemes and how were they delivered in practice? How did these differ and why? What processes worked well and less well? How could they have been improved?	All Schemes
To what extent were the chosen delivery mechanisms (e.g. payment in instalments, automatic payments, application-based payments) effective and efficient? What were the advantages and disadvantages of these delivery mechanisms for DESNZ, suppliers and intended recipients?	All Schemes
What were the intended processes involved in the closure of EBRS and NDAFP and the transition to EBDS? How were they delivered in practice?	All Schemes
What lessons were learned from the delivery of support over winter 2022/23? Were any lessons learned applied to the delivery of subsequent support, if so what and how and if not why? What if any further delivery lessons could be considered going forward?	All Schemes
What precautions were in place to avoid, and check and correct for, duplicative or overlapping payments to end users? How effective were they? How much duplication of payment was there and what was the cost of this compared to additional or different precautions? What processes were in place to claw back unspent money from suppliers? To what extent were these effective? What procedures were in place to encourage compliance and minimise gaming, fraud and error? How effective were they? What was the nature, extent and scale of fraud and error? How did this compare to other government support schemes? What compliance, audit and enforcement processes were carried out and to what extent did they ensure that suppliers had passed on the benefits of schemes to end users? What were the governance and assurance processes across the interventions and to what extent were they effective in delivering the schemes? How effective were communications to suppliers and intended recipients about the schemes? How did this compare across the schemes and their intended beneficiaries?	All Schemes
What were the processes in place to ensure that applicants for support were paid in a timely manner? To what extent were they effective?	Non-standard EBRS (NDAFP (top Up), EBDS (ETIIs and Heat Networks)

Process evaluation questions	Schemes
What were the experiences of non-domestic organisations of the various delivery mechanisms? How do these experiences vary by different sub-groups of recipients, as well as over time?	All Schemes
What were the experiences of eligible domestic consumers of the various delivery mechanisms and of receiving the interventions (including through Heat Networks and pass through by intermediaries)?	All Schemes
What was the level of awareness and understanding of pass-through among eligible non-domestic and domestic consumers?	All Schemes
What, if any, issues were encountered by recipients during the delivery of interventions? To what extent did issues differ between different sub-groups of recipients?	All Schemes
What, if any, issues were encountered by recipients during the closure of EBRS and NDAFP and transition to EBDS (e.g., due to the reduction in support, the need to apply, the application process)?	All Schemes
To what extent, and how, did later starts to some schemes affect their beneficiaries?	Non-standard EBRS, NDAFP (Top Up), Non-standard EBDS (ETIIs and Heat Networks)
To what extent, if at all, did end beneficiaries experience challenges with accessing support via applications? If so, what challenges and why?	Non-standard EBRS, NDAFP (Top Up), Non-standard EBDS (ETIIs and Heat Networks)
What was the scale of burden on applicants for each of the schemes? What steps did DESNZ take to mitigate the burden on applicants? To what degree were these effective?	Non-standard EBRS, NDAFP (Top Up), Non-standard EBDS (ETIIs and Heat Networks)
What steps did DESNZ take to mitigate the burden on applicants? To what degree were these effective?	Non-standard EBRS, NDAFP (Top Up), Non-standard EBDS (ETIIs and Heat Networks)

Process evaluation questions	Schemes
What were the experiences of organisations who applied for support, but did not receive funding?	Non-standard EBRS, NDAFP (Top Up), Non-standard EBDS (ETIIs and Heat Networks)
What were the experiences of suppliers in delivering the interventions?	All Schemes
To what extent did suppliers and delivery partners deliver the schemes as intended?	All Schemes
Were any issues encountered by suppliers and delivery partners in delivering the schemes? What worked well? What lessons can be learned?	All Schemes
What was the scale of burden on energy suppliers to deliver the different interventions? What steps did DESNZ take to mitigate the burden on energy suppliers? To what degree were these mitigations effective?	All Schemes
To what extent were suppliers reimbursed on time? What were the processes in place to ensure that they were paid on time? To what extent were these measures effective?	All Schemes
Were the interventions delivered consistently across different energy suppliers? If not, why not?	All Schemes
What actions did energy suppliers take to provide organisations with information on the different interventions?	All Schemes
What, if any, issues were encountered by suppliers during the closure of EBRS and NDAFP and transition to EBDS?	All Schemes
To what extent were intermediaries aware, and have an understanding, of pass-through requirements? To what extent did they feel they met the requirements? What enablers and barriers were there?	All Schemes
To what extent were intended recipients aware of their eligibility for support, the timescales of the support, and whether they had received this support?	All Schemes
What were the perceptions of recipients regarding whether the schemes met their needs?	All Schemes

Process evaluation questions	Schemes
How did recipients' awareness, understanding and perceptions of the interventions vary over time, among different sub-groups, and across the individual schemes?	All Schemes
To what extent did energy suppliers understand the processes of delivery and reimbursement?	All Schemes
What were the perceptions of suppliers regarding whether the schemes met their needs and those of their customers?	All Schemes
How did suppliers' awareness, understanding and perceptions of the interventions vary over time and across the schemes?	All Schemes
If applicable, what were the reasons that some eligible recipients did not receive the full support available?	All Schemes
How did the design of support interact with the individual contexts of non-domestic organisations?	All Schemes
What steps did DESNZ take to ensure that groups were not over- or under-compensated by the level of price support? To what degree were these effective? What, if any, further steps could DESNZ have taken?	All Schemes
What was the level of pass-through from intermediaries and Heat Network Operators to domestic consumers?	All Schemes
To what degree did NDAFP ensure that non-domestic alternative fuel users not covered by EBRS support were also supported?	NDAFP
What processes were in place to ensure that the intended recipients of NDAFP Top-Up payments, non-standard EBRS, EBDS ETII and EBDS Heat Networks took up this targeted support? To what extent were these processes effective?	Non-standard EBRS and EBDS, NDAFP (Top Up), EBDS (ETIIs and Heat Networks
How has the support for heat network consumers compared between EBRS and EPG pricing levels, and between EBDS and EPG pricing levels?	EBRS, EBDS (Heat Networks)
What interactions and overlaps were there with both other energy affordability schemes and other non-domestic support policies? To what extent did any interactions and overlaps affect the efficient delivery of support to organisations?	All Schemes
In what ways were there interactions or overlaps between the non-domestic energy affordability schemes and the wider energy affordability schemes (e.g. EBSS, EPG)? Why?	All Schemes

Process evaluation questions	Schemes
What was the context in which the initial schemes were designed, implemented and delivered?	EBRS and NDAFP
How effectively were the EBRS and NDAFP schemes designed, implemented and delivered in this context? What worked well and what worked less well? Why?	EBRS and NDAFP
To what extent were lessons implemented from previous interventions (e.g. Covid job retention scheme) to inform non-domestic affordability programme design, implementation and delivery?	EBRS and NDAFP
What was the context in which EBDS was designed, implemented and delivered?	EBDS
How effectively was EBDS designed, implemented and delivered in this context? What worked well and less well? Why?	EBDS
How have organisations adapted to the context of increasing energy prices?	All schemes
To what extent, and how, have organisations changed their energy efficiency/decarbonisation plans and behaviours over this period? How has this been affected by the introduction of the non-domestic energy affordability schemes?	All schemes
In what ways were there interactions, (mis)alignments, or overlaps between the non-domestic energy affordability schemes and the transition to Net Zero? Why?	All schemes

Impact evaluation questions	Schemes
To what extent did all eligible non-domestic organisations and eligible domestic recipients receive the full support available? How did this compare across the schemes and by different sub-groups of recipients?	All schemes
To what extent was the support delivered/received at time of business need? How did this compare across the schemes? How has reach varied across the schemes and by different sub-groups of recipients?	All schemes
To what extent did energy support reach eligible Heat Network consumers?	EBRS and EBDS for HNO
To what extent have the schemes led to a reduction in energy bills for eligible non-domestic customers?	All schemes

Impact evaluation questions	Schemes
To what extent have the schemes had an effect on reducing insolvencies and redundancies in non-domestic organisations, relative to the counterfactual?	All schemes
To what extent have the schemes provided support to non-domestic organisations' short term financial health (e.g. maintaining positive cashflows)? To what extent have the schemes provided support to non-domestic organisations' longer term financial health?	All schemes
To what extent did the interventions allow time for organisations to identify measures to protect themselves from increasing energy prices (e.g. contractual changes, energy efficiency measures)?	All schemes
Have the schemes reduced the extent of extraordinary non-domestic organisation borrowing (e.g. overdraft usage or borrowing for reasons other than investment)?	All schemes
To what extent have the schemes mitigated energy bill-related inflation (non-domestic cost pass-through to product/service prices)?	All schemes
How have each of these potential impacts on non-domestic organisations' finances compared across the schemes and by different sub-groups of recipients?	All schemes
What was the impact of the additional support given to ETIIs under EBDS? To what extent did EBDS support international competitiveness of ETIIs?	EBDS for ETII
To what extent can we attribute these impacts to the scheme and/or to other factors?	All schemes
What have been the effects of the schemes on non-domestic organisation energy consumption by fuel, organisation type, size, industry, location and scheme?	All schemes
Have the schemes had an effect on reducing insolvencies and redundancies in suppliers relative to the counterfactual, and if so, to what extent? To what extent have the schemes maintained the stability of the UK energy sector? How have each of these potential impacts on energy suppliers compared across the schemes?	All schemes
To what extent have the schemes interacted with existing energy market processes and organisation contracts? What, if any, distortions to the market occurred over the course of intervention delivery?	All schemes
To what extent have the schemes provided additionality?	All schemes
To what extent have the schemes reduced the impact of high energy bills on eligible nondomestic organisations' productivity and/or services?	All schemes
To what extent have the schemes provided additional non-tangible benefits to nondomestic organisations beyond financial support (e.g. reduced	All schemes

Impact evaluation questions	Schemes
uncertainty, increased business confidence, influenced investment decisions)?	
Were there any unintended consequences for either non-domestic organisations or suppliers? Why?	All schemes
What have been the effects of ending/reducing support?	All schemes
What was the impact of the additional support given to organisations eligible for the NDAFP Top Up payment?	NDAFP top-up payment

Economic evaluation questions	Schemes
What costs have been incurred in the delivery/implementation of these schemes by stakeholders, suppliers, and applicants and beneficiaries? What other administrative burdens has been incurred?	All schemes
How did the costs of delivering the schemes compare with the extent of the benefits realised? Were the levels of administration associated with participating in the schemes commensurate with the levels of support received?	All schemes
To what extent did schemes offering universal support of the schemes offer value for money versus the schemes using application-based approaches?	All schemes
To what extent have the schemes provided benefits to the wider economy?	All schemes
How did each of these value for money considerations, and value for money as a whole, compare across the schemes and between different types of organisations?	All schemes

1.3 Evaluation Scoping

1.3.1 Initial scoping work

An initial evaluation plan was developed under a scoping project (under a separate contract) which included the following activities:

- Scoping interviews with DESNZ staff involved in the schemes
- Assessment of potential secondary data sources and evaluation approaches
- Theory of Change and causal pathway development
- Evaluation question development
- A workshop to develop Theories of Change and evaluation questions.

The scoping study recommended a mixed methods approach, to include:

- A **process evaluation**, involving primary data collection (interviews and surveys), as well as the use of secondary data;

- An **impact evaluation**, focused on scheme benefits, and involving surveys and interviews, as well as existing secondary data and dataset matching;

- A **Value for Money evaluation**, using modelling on scheme.

Following the start of this evaluation contract, there was a further refinement of the evaluation framework, including review of the evaluation questions, a workshop to further develop Theories of Change, review of the available secondary data sources, and creation of an evaluation plan for stage 1 and a further version for the start of stage 2.

The evaluation was designed with flexibility in mind to support any potential additional policies implemented over winter 2023/24. With no further policies having been implemented during this period, it was decided at the end of Stage 1 that the original plan for a third stage of primary research would not be necessary. It was also agreed during Stage 1 of the evaluation that two additional surveys should be conducted with Heat Network organisations. These surveys targeted NDOs where the achieved base size in the primary longitudinal survey of NDOs was anticipated to be too low for analysis:

1.3.2 Theory of change and contribution analysis development

Contribution Analysis (CA) was undertaken to assess the contribution that the support schemes made to the impacts identified in the Theory of Change (ToC). An overall ToC was developed in addition to ToCs for individual schemes. The CA was structured to assess the contribution of schemes to impacts identified in the Theory of Change (ToC) at both portfolio and scheme levels. It focused on triangulating evidence to address high-level impact evaluation questions.

An initial ToC was developed, outlining causal pathways and contribution claims. These claims described how policy mechanisms are expected to lead to specific outcomes. The CA aimed to

test these claims against the evidence collected through surveys, qualitative interviews, and secondary sources. This evidence was used to assess the strengths and weaknesses of the links in the ToC.

The CA used a framework which included criteria like authoritative sources, triangulation, consistent chronology, and signature to assess the strength of evidence. This analysis was an iterative process, with steps to develop, test, and refine causal claims. The final step involved mapping evidence supporting contribution claims and alternative explanations. This led to conclusions about the necessity and sufficiency of the schemes' contributions to intended impacts, alongside other factors.

The CA aimed to provide a structured approach to evaluate the contribution of the schemes to their intended impacts, using a combination of evidence sources and methodological rigor to draw conclusions.

1.3.3 Assessing the feasibility of quasi-experimental methods

During the evaluation scoping phase, a comprehensive exploration of quasi-experimental methods (QEM) was conducted to determine the most effective approach for quantifying the impact of the schemes.

The exploration focused on understanding the counterfactual scenario—what would have happened to the target population in the absence of the intervention. This involved evaluating methods such as Difference in Difference, Regression Discontinuity Design, and Synthetic Control Methods, which utilise either cross-sectional or time-variation in treatment to provide causal identification, contingent on data availability.

Several challenges were identified in implementing these methods. Key obstacles included the difficulty in obtaining pre-intervention data, distinguishing between treated and non-treated populations, and accessing micro-level control and outcome data. These challenges were anticipated to limit the ability to perform causal identification through QEM.

The Cambridge Econometrics team, in close collaboration with DESNZ, reviewed the meter level data collected as part of the EBRS and the EBDS schemes. The two datasets presented serious limitations that established them as unusable for quasi-experimental analysis. This was because:

- Inconsistent indicators: energy consumption is available for both EBRS and EBDS, but discount value is available only for EBDS. The tariff that each meter would be facing in the absence of the EBRS and EBDS is not available. For EBDS there is an average estimate of the tariff excluding the EBDS effective government tariff threshold, but this cannot be used to validate the discount as this would have required reliable estimates of energy consumption which were not available. Instead, the estimate is used as an input to review the degree of exposure of different types of NDOs to high retail energy prices during the time of the EBDS.

- Frequency & missing data: observations are reported in not reported in a clear time series structure, and instead follow the different disbursement schedules. As a result, the tariff cannot be used in the form of a time series for the EBDS period. EBDS descriptive statistics on electricity or gas consumption have been used in the secondary data analysis, but not in a structured time series format.

- Pre-scheme observations: The greatest issue presented by the data is that pre-scheme data was not available at meter level.

For EBRS, there was no pre-scheme data available at meter level for counterfactual analysis. There was no robust method of estimation (backcasting) that could be used, given the properties of the EBRS meter data which cannot be used as a time series and lacks reliable estimates on discount provided and energy consumption. Owing to these limitations, IO analysis was selected as the most appropriate method to obtain a short-run counterfactual.

To assess the impact of EBDS, a valid counterfactual was needed. Using EBDS non-beneficiaries as a counterfactual was not applicable, because this group likely had lower unit cost energy tariffs; because EBDS targeted NDOs with higher energy costs, supported NDOs would have had higher tariff costs than non-supported ones. Energy tariff data included in EBDS support data was not usable for this analysis as it lacked data on non-supported NDOs and did not reflect the actual cost of the tariffs the NDOs would have been experienced with the support. As with EBRS, because data limitations prevented the development of a robust counterfactual, IO analysis was selected as the most appropriate method to obtain a short-run counterfactual.

To address the lack of a natural counterfactual, Cambridge Econometrics explored the possibility of using a synthetic counterfactual. Because similar energy price interventions in neighbouring countries, such as the REPowerEU plan, meant that these countries also did not experience a crisis without mitigations, regression discontinuity analysis was deemed inappropriate. Due to the universal nature of the scheme, propensity score matching was also deemed as inapplicable in this case.[1]

For universal schemes, purely time-variation settings were considered, focusing on short-term impacts by observing the target population's performance before and after the intervention. This exploration was part of a broader strategy to ensure a robust evaluation, demonstrating that alternative approaches were thoroughly investigated to effectively address the evaluation's objectives.

1.4 Final Evaluation Design

This was a theory-based evaluation which included primary data collection, contribution analysis, quantitative modelling and secondary data analysis. Limitations of each aspect of the design are included at the end of each dedicated section.

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[1] EUR-Lex - 52022DC0108 - EN - EUR-Lex

1.4.1 Primary data collection

A series of telephone surveys were conducted with NDOs over the course of the evaluation to provide insight into their perceptions and experiences of energy affordability schemes, including their reported impact. These included:

- a longitudinal survey of Non-Domestic Organisations (NDOs) conducted by telephone with a nationally representative panel of NDOs (3,900 in each wave);

- a telephone survey of Heat Network Operators (HNOs) with 155 interviewed in Stage 1 and 151 in Stage 2;

- a telephone survey of 108 successful applicants for the NDAFP flat payment and top up payment, conducted during Stage 1;

- a telephone survey of 219 successful applicants to the Energy and Trade Intensive Industries (ETIIs) scheme under EBDS, conducted during Stage 2.

1.4.2 Qualitative interviews

Qualitative interviews were conducted with a wide range of stakeholders between January 2024 and January 2025. These interviews were undertaken to obtain in-depth insights into the perceptions and experiences of recipients of non-domestic energy affordability support and stakeholders involved in the design and implementation of schemes. In total, 404 qualitative interviews were conducted as part of the evaluation.

More detail on each strand of primary data collection can be found in Chapters 2 and 3 of this report.

1.4.3 Secondary data analysis and modelling

A range of data sources were used to provide descriptive data on the scale of potential impacts as well as conducting modelling to assess the impacts of the schemes, where feasible. The data used is shown in Chapter 4 of this annex, and includes: ONS demographics data, Bank of England borrowing and uncertainty metrics and the Inter-Departmental Business Register (IDBR).

The modelling focused on two main channels by which the schemes were expected to mitigate the effect of increased energy bills on organisations and the economy:

Increased uncertainty

This analysis aimed to understand the extent to which the energy crisis and the introduction of the NDEA schemes translated into a change in economy-wide uncertainty. Uncertainty was expected to increase during the energy crisis as energy prices and volatility increased, and planning for costs became more challenging. The schemes aimed to provide relief to Non-Domestic Organisations (NDOs) against these price increases so, after their implementation, uncertainty was expected to stabilise and decrease.

The uncertainty analysis included econometric analysis linking variations in a set of uncertainty indicators with variations in wholesale energy prices. This analysis controlled for indicators that are correlated with uncertainty but not with wholesale energy prices. The analysis then examined whether variations in uncertainty induced by wholesale prices could explain variations in other key outcome variables such as employment, GDP, and financial health.

Time series analysis was also used to assess whether the schemes had any causal impact on uncertainty. Within this analysis, a combination of Autoregressive Integrated Moving Average (ARIMA) and Vector Autoregression (VAR) modelling was employed. To extract meaningful trends from the meter level data, panel regressions were fitted to the firm-level data to evaluate whether the schemes had a causal impact on financial health.

Impact of higher energy bills on the economy and organisations

This analysis aimed to understand at a macro-economic level, how the energy crisis and introduction of the NDEA schemes affected and spread through the economy. It drew insights on how the schemes' effect on energy prices translated into further economic impacts. This involved creating two scenarios a) one which simulated an energy crisis shock, and b) another which simulated an energy crisis shock coupled with the NDEA schemes' support. The results from these two scenarios were compared against each other to draw insights on the impacts of the schemes' introduction on the economy, including industrial output and GDP. This analysis included:

- **Input-Output (IO) modelling**. This method uses IO tables, which offer a snapshot of the economy's structure at a specific time to simulate external shocks to the economy. Specifically, IO tables map economic transactions across sectors through a matrix that illustrates how industries interact with one another through supply and demand.

- **Meter-level analysis**. Additionally, quantitative analysis was conducted on of firm-level data on the amount of discount received by individual NDOs and their financial health at the time. An econometric regression model was developed to estimate the relationship between the support from the schemes and changes to financial performance.

After reviewing all relevant secondary data sources and firm-level data available, data limitations led to the conclusion that quasi-experimental methods were not feasible for this evaluation. Several natural counterfactuals were explored, such as using other countries as counterfactuals, or comparing across changes of the schemes' support. However, due to similar interventions being implemented across Europe, and the lack of pre-scheme data,

these options were deemed unsuitable. Therefore, final value for money analysis was based on IO modelling approach, rather than through these methods.

Further detail on the approach to the modelling and secondary data analysis is included in Annex B: Quantitative Impact Report.

1.4.4 Theory-based evaluation approach

The evaluation used a theory-based evaluation approach to assess the outcomes and impacts of the schemes. Theories of Change (ToC) were developed for the portfolio of schemes. The ToC describes the causal pathways to impacts in the scheme logic models,[2] and the main assumptions and external factors or risks that may affect the ability of the scheme portfolio to achieve intended impacts.

Contribution Analysis (CA) was undertaken to assess the contribution that the schemes have made to the impacts identified in the ToC. This approach provided a framework to support the triangulation of evidence across all primary and secondary data sources and to assess the strength of evidence regarding the extent to which the schemes contributed to their intended impacts. The CA has been used to form overall conclusions on the contribution of the schemes to each type of impact.

Detail on the contribution analysis and development and use of the Theory of Change is included in Annex C: Theory of Change and Contribution Analysis.

1.4.5 Value for money approach

The VfM analysis conducted as part of this evaluation is based on a social cost-benefit analysis (CBA) approach. A CBA assigns monetary values to both the costs and benefits of an intervention, allowing for the evaluation of the net benefit of the intervention in monetary terms, relative to a counterfactual in which the intervention did not occur. The CBA considers the costs and benefits of the schemes to society and calculates the net benefit (or cost) and benefit to cost ratio (BCR) of these programmes.

The CBA uses the quantified scale of the impacts from the impact evaluation, and converts these to money so costs and benefits can be evaluated. In this CBA, the estimated costs and benefits of the schemes were compared to a counterfactual scenario in which the energy crisis occurred, but the schemes were not implemented. Costs and benefits are aggregated over the period during which the schemes were active (i.e. October 2022 to March 2024). Potential costs and benefits extending beyond this period are not considered. Monetary results are presented in nominal pounds based on the value of the pound in 2023

More detail on the approach to the economic evaluation can be found in Chapter 5 of this report.

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[2] See Figures 1.1 to 1.4 of Annex C: Theory of Change and Contribution Analysis

2. Primary Research - Surveys

2.1 Longitudinal survey of Non-Domestic Organisations

2.1.1 Aims and purpose

The longitudinal survey of Non-Domestic Organisations (NDOs) was conducted by telephone with a nationally representative panel of 3,900 NDOs during Stage 1 (Winter 2023) and Stage 2 (Summer 2024). The purpose of this survey was to assess and track changes in NDOs' experiences, perceptions, and behaviours in response to energy affordability schemes.

2.1.2 Sampling

IFF created a bespoke panel for the NDO survey using a stratified random sampling approach. The sample was primarily sourced from the Inter-Departmental Business Register (IDBR).[3] The panel was also supplemented with samples from a commercially available database (Market Location) and charity regulator databases where coverage in the IDBR was insufficient.[4] In total, there were 56,646 NDOs in the Stage 1 sample and 50,452 NDOs in the Stage 2 sample.

To ensure longitudinal analysis was possible, the sample for Stage 2 included all NDOs that had agreed to recontact in the Stage 1 survey. Named contacts were available for all recontact records, with a preference to speak to the same individuals from stage 1. If unavailable, another responsible person for energy usage and expenditure was sought. The recontact sample followed a different, shorter survey route that did not ask for information that was already known about their organisation.

An overall target of 3,900 surveys was set for each Stage (Stage 1: 3,000 core surveys and 900 boost surveys; Stage 2: 3,267 core surveys and 633 boost surveys),[5] stratified by organisation type, size, country and sector to ensure the achieved sample was broadly representative of the underlying population and to deliver sufficient base sizes for sub-group analysis.

In Stage 1, the boost survey targeted organisations eligible for the NDAFP, Energy and Trade Intensive Industry (ETII) Standard Industry Classification (SIC) codes and organisations based in Northern Ireland. In Stage 2, the composition of the boost survey was altered to target public sector organisations in addition to organisations based in Northern Ireland.

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[3] https://www.ons.gov.uk/aboutus/whatwedo/paidservices/interdepartmentalbusinessregisteridbr IFF obtained access to an IDBR data export containing the details of 252,993 UK organisations on 28 September 2023.
[4] https://marketlocation.co.uk/
[5] The core and boost survey targets for Stage 2 are less rounded compared to Stage 1 due to a change in the composition of the boost sample between stages. The same target for organisations in Northern Ireland (333) was retained and a new target of 555 was set for public sector organisations.

2.1.3 Questionnaire design

The questionnaires for Stages 1 and 2 of the NDO survey were designed to take 20 minutes to complete.

Cognitive testing took place among targeted organisations during the questionnaire design phase to confirm questions were understood by organisations and to assess whether any wording changes were needed. 14 cognitive interviews took place across private, public and voluntary organisations and across size bands. These cognitive interviews determined that the questionnaire ran to time, confirmed overall understanding of the questions was good and identified some minor potential improvements. Identified improvements were confirmed by DESNZ and changes were implemented prior to mainstage fieldwork.

The questionnaires began by introducing the research, gaining informed consent in relation to General Data Protection Regulation (GDPR) and a screening question to confirm eligibility for the survey. Following this, the questionnaires covered:

- Organisation profile;

- Energy use and procurement;

- Effect of energy price increase;

- Awareness of the support schemes;

- Engagement with and understanding of the support schemes (including reasons for not receiving support);

- Perceived suitability of energy affordability schemes; and

- Perceived impact of energy affordability schemes.

It was necessary to maintain some consistency in the questionnaires used in Stages 1 and 2 of the survey to allow for tracking of changes in NDOs' experiences, perceptions, and behaviours over time. However, it was also necessary to adapt the questionnaires to fit with the context of each stage and to incorporate any emerging trends and issues.

Table 2.1 presents a broad overview of the topic coverage of the questionnaire at each stage. It should be noted that Table 2.1 represents the question topics for an NDO that took part in both Stages 1 and 2. Where NDOs were surveyed for the first time in Stage 2, it was necessary to include questions on some topics from Stage 1 (e.g. awareness of schemes to inform the route through the remainder of the survey).

Table 2.1 NDO survey topics by Stage

Topic	Stage 1	Stage 2
Organisation profile	Y	
Energy use and procurement	Y	Y
Effect of energy price increase / need for support	Y	Y
Summer 2021 vs Summer 2022	Y	
Winter 21/22 vs Winter 22/23	Y	
Winter 22/23 vs Winter 23/24		Y
Awareness of schemes	Y	
EBRS	Y	
EBDS	Y	
NDAFP	Y	
Engagement and understanding of schemes	Y	
EBRS	Y	
EBDS	Y	
NDAFP	Y	
Suitability of schemes	Y	Y
EBRS	Y	
EBDS		Y
NDAFP	Y	
Short term impacts of schemes	Y	Y
EBRS	Y	
EBDS		Y
NDAFP	Y	
Long term impacts of schemes		Y

Topic	Stage 1	Stage 2
EBRS		Y
EBDS		Y
NDAFP		

2.1.4 Fieldwork

Ahead of the launch of mainstage fieldwork for Stage 1, cognitive interviews were completed with 14 NDOs between 17 October and 25 October 2022. The results were positive; there were no issues with the screening process, there was limited feedback from interviewers regarding issues with participant comprehension and businesses were generally willing to participate. Only minor refinements were required ahead of the launch of mainstage fieldwork.

Mainstage fieldwork for Stage 1 of the NDO survey took place between 7 November 2023 and 22 January 2024. Stage 2 mainstage fieldwork commenced on 9 May 2024 and concluded on 13 September 2024, following a break in fieldwork during the UK election period. In total, 1159 organisations that took part in Stage 1 were successfully re-contacted and participated in Stage 2.

Before the start of mainstage fieldwork in both stages, all interviewers received a briefing on the survey and were issued with a written briefing pack, providing them with an understanding of the background to the research, the questionnaire design, the screening criteria and the sample design.

In total, 3,900 interviews were completed in each stage. On average, the survey took 15 minutes to complete. The tables below present the profile of the achieved sample in terms of organisation type, size, country and sector.

Table 2.2 Profile of NDO survey completes by organisation type

Organisation type	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
Private sector	3,250	83%	3,187	82%
Public sector	325	8%	381	10%
Voluntary sector	325	8%	332	8%

Table 2.3 Profile of NDO survey completes by size

Organisation size	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
Micro (<10 employees)	2,419	62%	2,033	52%
Small (10-49 employees)	1,018	26%	1,111	29%
Medium (50-249 employees)	308	8%	516	13%
Large (250+ employees)	155	4%	240	6%

Table 2.4 Profile of NDO survey completes by country

Country	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
England	2,836	73%	2,766	71%
Scotland	336	9%	360	9%
Wales	325	8%	342	9%
Northern Ireland	403	10%	432	11%

Table 2.5 Profile of NDO survey completes by sector

Sector	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
Manufacturing	565	14%	426	11%
Construction	530	14%	450	12%
Professional, Scientific and Technical Activities	440	11%	510	13%
Administrative and Support Service Activities	360	9%	493	13%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	321	8%	271	7%
Human Health and Social Work Activities	247	6%	283	7%
Education	246	6%	285	7%
Other Service Activities	223	6%	186	5%
Arts, Entertainment and Recreation	202	5%	192	5%
Transportation and Storage	193	5%	184	5%
Information and Communication	190	5%	173	4%
Accommodation and Food Service Activities	110	3%	136	4%
Agriculture, Forestry and Fishing	90	2%	76	2%
Real Estate Activities	82	2%	93	2%
Financial and Insurance Activities	68	2%	106	3%
Mining and Quarrying; Electricity, Gas and Air Conditioning Supply; Water Supply; Sewerage, Waste Management	33	1%	36	1%

As presented in Table 2.6, 56,646 NDO sample records were issued for fieldwork in Stage 1 and 50,452 NDO sample records were issued for fieldwork in Stage 2. In both stages, around one in seven (14% in Stage 1 and 15% in Stage 2) started the survey. Of these, 3,900 completed interviews were achieved for each survey. This equates to a response rate of 49% in Stage 1 and 53% in Stage 2 respectively (see Table 2.7). Almost half (49%) of those that agreed to recontact in the Stage 1 survey completed the Stage 2 survey, with 1,159 out of 2,358.

Table 2.6 Outcomes for sample issued for fieldwork, NDO survey

Sample outcome	Stage 1 (n)	Stage 1 (%)	Stage 2 (n)	Stage 2 (%)
Total sample issued for fieldwork	**56,646**	**100%**	**50,452**	**100%**
Business called 1 to 10 times but unable to secure interview	37,803	67%	36,702	73%
Appointment made but not achieved during fieldwork period	662	1%	119	0.5%
Out of quota (sector, country etc.)	2,164	4%	201	0.4%
Not available in fieldwork period / nobody at site available	1,961	3%	1,967	4%
Unobtainable telephone number	6,024	11%	4,025	8%
Started survey	**8,032**	**14%**	**7,429**	**15%**

Table 2.7 Outcomes for sample that started the survey, NDO survey

Survey outcome	Stage 1 (n)	Stage 1 (%)	Stage 2 (n)	Stage 2 (%)
Started survey	8,032	100%	7,429	100%
Achieved interviews	3,900	49%	3,900	53%
Refusals	3,966	49%	3,426	46%
Drop out during the interview	166	1%	103	1%

2.1.5 Weighting

Upon the completion of each stage of the NDO survey, the data was fully validated, cleaned and weighted by IFF's in-house Data Services team.

It was necessary to weight the survey data for two reasons: firstly, to correct for non-response bias, and secondly, to accommodate for our deliberate over-sampling of some audiences (e.g. large organisations).

Owing to the absence of a single data set that covers the profile of the population of UK NDOs, it was necessary to use a combination of two data sets: the Department for Business and Trade's Business Population Estimates (BPE) and the IDBR. The former has better coverage of the UK NDO population as a whole but does not contain detail on the profile of public and voluntary sector organisations in terms of size and sector. We therefore used IDBR data to fill this gap.

Using these data sets, IFF applied a series of five calibration weights to make the achieved survey sample representative of the underlying population of UK NDOs in terms of organisation type (i.e., private, public and voluntary), sector, size (i.e., micro, small, medium and large) and region. More information on the weighting approach can be found in Appendix A: NDO survey weighting approach.

2.1.6 Analysis

The data was analysed against each research question to uncover the emerging narratives and to identify differences between key sub-groups and waves of the survey. This was achieved through the application of descriptive (e.g. frequency distributions and averages) and statistical analysis techniques to establish significant differences at the 95% significance level. The margin of error for a proportion of 50% at a 95% confidence level was 1.6% for both Stage 1 and Stage 2. Data tables were produced to employ two types of testing:

- Testing for significant differences between each set of cross break headings, such as comparing findings between different sector categories within the sector cross break header (t-testing)
- Comparing data within each subgroup break to the total minus the data in the individual column (z-testing)

2.1.7 Notes to tables

The following notes apply to all quantitative tables:
- Where the base number is less than 30, numbers rather than percentages are shown.
- Column percentages may add to 99% or 101% due to rounding.
- In some cases, a figure may be quoted that is the sum of two or more categories. This may differ by one percentage point from the sum of the percentages in the tables due to rounding.
- In weighted tables (i.e. NDO survey tables), column totals for counts of respondents may not equal the sum of the rows due to rounding.
- Statistical significance is at the 95% confidence level.
- Statistically significant differences are indicated by the letter of the significantly lower column being included in the significantly higher column (e.g. 'b' in column 'a'

indicates that the result for column 'a' is significantly higher than column 'b' at the 95% confidence level).

- Values for means and medians are shown to an appropriate number of decimal places.

- Information from an individual who participated in the survey may be incomplete because the individual did not know the answer to, or refused to answer, a question that was necessary to receive a follow-up question.

- The following conventions have been used within the tables:

  o a*: Small bases are indicated by an asterisk next to the column letter (for example, 'a*').

  o *%: An asterisk in the percentage row ('*%') indicates a percentage of less than 0.5%

  o *: An asterisk used in place of a base number indicates less than 0.5 respondents gave an answer (only possible due to weighting, so only occurs in the NDO survey tables).

  o [c]: Where a column total is 9 or fewer, cell values are reported as [c] to reduce the risk of identifying individual respondents.

2.2 Survey of Heat Network Operators

2.2.1 Aims and purpose

Telephone surveys of approximately 150 Heat Network Operators (HNOs) were conducted in Stages 1 and 2 of the evaluation. The findings from these surveys provided insights into HNOs' experiences, perceptions, and behaviours in response to energy affordability schemes. This included insights on the extent to which HNOs were aware of and understood pass-through requirements and the extent to which they complied with them.

2.2.2 Sampling

IFF used a database of 11,326 heat networks as the sample frame, provided by DESNZ. Any duplicate records were removed. IFF's data services team removed any extraneous variables, and the reworked sample was checked against the original file provided by DESNZ. In Stage 1, IFF used the details of successful applicants for the EBDS higher rate discount for HNOs as the sample frame. It was not possible to stratify the sample due to there being limited information available in the EBDS application data. It was therefore necessary to adopt a random probability sampling approach.

At the end of the Stage 1 survey, we asked HNOs for consent to recontact them in Stage 2. Around three quarters (72%) of HNOs that completed the survey consented to recontact, providing a starting sample of 112 HNOs for Stage 2. This sample was supplemented with unexhausted sample from Stage 1 and additional HNOs that were successful in their application after the sample for Stage 1 was drawn. The top-up sample for HNOs in Stage 2 was constructed using the original source provided by DESNZ.

2.2.3 Questionnaire design

The questionnaires for Stages 1 and 2 of the HNO survey were designed to take 20 minutes to complete on average. The questionnaires begin by introducing the research and gaining consent in relation to GDPR. Following this, the questionnaires for Stages 1 and 2 covered:

- Organisation profile;
- Energy use and procurement;
- Awareness of energy affordability schemes;
- Engagement with and understanding of energy affordability schemes (including the application process);
- Awareness and experience of pass-through requirements; and
- Perceived impact of energy affordability schemes.

The questionnaire for Stage 1 was adapted to fit with the context of Stage 2 and to incorporate any emerging trends and issues. Table 2.8 presents a broad overview of the topic coverage of the questionnaire at each stage. It should be noted that in Table 2.8, Stage 2 represents the

question topics for a HNO that took part in both stages. Where HNOs were being surveyed for the first time in Stage 2, it was necessary to include questions on some topics from Stage 1 (e.g., awareness of schemes to inform the route through the remainder of the survey).

Table 2.8 HNO survey topics by Stage

Topic	Stage 1	Stage 2
Organisation profile	Y	
Energy use and procurement	Y	Y
Awareness of schemes[6]	Y	
EBRS	Y	
EBDS	Y	
Engagement and understanding of schemes	Y	
EBRS	Y	
EBDS	Y	
Pass-through requirements	Y	Y
EBRS	Y	Y
EBDS	Y	Y
Short term impacts of schemes	Y	Y
EBRS	Y	
EBDS	Y	Y
Long term impacts of schemes		Y
EBRS		Y
EBDS		Y

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[6] The evaluation gathered evidence on awareness of the schemes primarily to inform the 'route' of questioning in surveys and qualitative interviews.

2.2.4 Fieldwork

Mainstage fieldwork in Stage 1 took place between 15 November and 13 December 2023 and mainstage fieldwork in Stage 2 took place between 22 July and 22 November 2024.

All interviewers were briefed on the survey prior to mainstage fieldwork starting and issued a briefing pack, providing them with an understanding of the research background, and questionnaire design, as well as the screening criteria and sample design.

In total, 155 interviews were completed in Stage 1, and 151 interviews were completed in Stage 2. The average interview length was 22 minutes in Stage 1 and 15 minutes in Stage 2. Tables 2.9 to 2.12 present the profile of the achieved sample in terms of organisation type, size, country and sector.

Table 2.9 Profile of HNO survey completes by organisation type

Organisation type	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
Charity/Non-government organisation	35	23%	22	15%
Private	104	67%	71	47%
Public	16	10%	27	18%

Table 2.10 Profile of HNO survey completes by number of heat networks operated

Number of heat networks operated	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
1	76	49%	63	42%
2 to 5	44	28%	38	25%
6 to 10	10	6%	8	5%
11 to 20	11	7%	11	7%
More than 20	14	9%	22	15%

Table 2.11 Profile of HNO survey completes by country

Country	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
England	145	94%	139	92%
Scotland	3	2%	6	4%
Wales	5	3%	5	3%

Table 2.12 Profile of HNO survey completes by type of property supplied

Type of property supplied	Stage 1 (N)	Stage 1 (%)	Stage 2 (N)	Stage 2 (%)
Residential properties	145	94%	113	75%
Non-residential properties	3	2%	3	2%
Both	5	3%	34	23%

The sample for the HNO survey was entirely made up of those that had successfully applied for the EBDS higher rate discount. Therefore, at least one contact at all participant HNOs was aware of the support scheme at some point and had interacted with DESNZ prior to the research in some capacity. While not all HNOs reported being aware of the scheme at the point of the survey, their prior involvement in an application may have made them more willing to take part in the research.

As presented in Table 2.13, 555 HNO sample records were issued for fieldwork in Stage 1 and 804 HNO sample records were issued for fieldwork in Stage 2, which included records from applications approved after the Stage 1 sample was extracted. A target of 150 interviews was initially set for each fieldwork period. As a percentage of those that started the survey, this equates to a response rate of 88% in Stage 1 and 67% in Stage 2 (see Table 2.14). Of the 112 that agreed to recontact in the Stage 1, 48 survey completed the Stage 2 survey.

Table 2.13 Outcomes for sample issued for fieldwork, HNO survey

Survey outcome	Stage 1 (n)	Stage 1 (%)	Stage 2 (n)	Stage 2 (%)
Total sample issued for fieldwork	**555**	**100%**	**804**	**100%**
Business called 1 to 10 times but unable to secure interview	277	50%	504	62%
Appointment made but not achieved during fieldwork period	80	14%	0	0%
Not available in fieldwork period / nobody at site available	14	3%	34	4%
Unobtainable telephone number	8	1%	45	5%
Started survey	**177**	**32%**	**225**	**28%**

Table 2.14 Outcomes for sample that started the survey, HNO survey

Survey outcome	Stage 1 (n)	Stage 1 (%)	Stage 2 (n)	Stage 2 (%)
Started survey	177	100%	225	100%
Achieved interviews	155	88%	151	67%
Drop out during the interview	22	12%	74	33%

2.2.5 Analysis

Upon the completion of each stage of HNO fieldwork, the survey data was fully validated and cleaned. It was not possible to weight the achieved survey sample of HNOs because there is insufficient information available on the characteristics of the underlying population.

The evaluation team reviewed the data against each research question to uncover the emerging narratives and to identify differences between key sub-groups and waves of the survey. This was achieved through the application of descriptive (e.g. frequency distributions

and averages) and statistical analysis techniques to establish significant differences at the 95% significance level. To ensure findings are robust, findings are not reported where base sizes ware lower than 50. Data tables were produced to employ two types of testing:

- Testing for significant differences between each set of cross break headings, such as comparing findings between different sector categories within the sector cross break header (t-testing)

- Comparing data within each subgroup break to the total minus the data in the individual column (z-testing)

2.3 Survey of NDAFP applicants

2.3.1 Aims and purpose

The incidence of NDAFP organisations is low within the NDO population, prompting the need for a separate, targeted survey. A telephone survey of 108 successful NDO applicants for the NDAFP flat payment and top up payment was conducted in Stage 1. Interviewers asked to speak to the person responsible for the organisation's energy usage and expenditure. The findings from this survey provided insight into the NDAFP application experience and the reported impacts of the NDAFP top-up payment, two topics which the primary survey of NDOs did not provide sufficient insight on owing to low base sizes.

2.3.2 Sampling

IFF used the details of successful applicants for the NDAFP flat payment and top up payment as the sample frame. It was not possible to stratify the sample due to there being limited information available in the NDAFP application data. It was therefore necessary to adopt a random probability sampling approach.

2.3.3 Questionnaire design

Like the NDO and HNO questionnaires, the questionnaire for NDAFP applicants began by introducing the research and gaining consent in relation to GDPR. Following this, the survey covered the following topics:

- Organisation profile;
- Fuel use and procurement;
- Effect of fuel price increase and the need for support;
- Awareness and understanding of the flat payment;
- Engagement with the flat payment and application experience;
- Impact and suitability of the flat payment;
- Awareness and understanding of the top-up payment;
- Engagement with the top-up payment and application experience;
- Impact and suitability of the top-up payment.

2.3.4 Fieldwork

Mainstage fieldwork took place between 2 February and 5 March 2024. All interviewers were briefed on the survey prior to mainstage fieldwork starting and issued a briefing pack, providing them with an understanding of the research background, and questionnaire design, as well as the screening criteria and sample design.

A target of 100 interviews was initially set. In total, 108 surveys were completed. The survey took 18 minutes to complete on average. The tables below present the profile of the achieved sample in terms of organisation size, country, sector, and application status for the flat payment and top-up payment.

Table 2.15 Profile of NDAFP survey completes by size

Organisation size	N	%
Micro (<10 employees)	45	42%
Small (10-49 employees)	40	37%
Medium (50-249 employees)	17	16%
Large (250+ employees)	6	6%
TOTAL	108	100%

Table 2.16 Profile of NDAFP survey completes by country

Country	N	%
England	84	78%
Scotland	14	13%
Wales	7	6%
Northern Ireland	3	3%
TOTAL	108	100%

Table 2.17 Profile of NDAFP survey completes by sector

Sector	N	%
Accommodation and Food Service Activities	23	21%
Other Service Activities	22	20%
Agriculture, Forestry and Fishing	19	18%
Human Health and Social Work Activities	14	13%
Manufacturing	12	11%
Education	6	6%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	4	4%
Arts, Entertainment and Recreation	3	3%
Real Estate Activities	2	2%
Construction	1	1%
Transportation and Storage	1	1%
Administrative and Support Service Activities	1	1%
TOTAL	108	100%

As presented in Table 2.18, 322 sample records were issued for fieldwork. In total, 108 surveys were completed. As a percentage of those that started the survey, this equates to a response rate of 69% (see Table 2.19).

Table 2.18 Outcomes for sample issued for fieldwork, NDAFP survey

Sample outcome	N	%
Total sample issued for fieldwork	322	100%
Business called 1 to 10 times but unable to secure interview	111	34%
Appointment made but not achieved during fieldwork period	27	8%
Not available in fieldwork period / nobody at site available	18	6%
Unobtainable telephone number	7	2%
Started survey	**156**	**48%**

Table 2.19 Outcomes for sample that started the survey, NDAFP survey

Survey outcome	N	%
Started survey	156	100%
Achieved interviews	108	69%
Excluded complete[7]	1	1%
Refusals	47	30%

2.3.5 Analysis

Upon the completion of fieldwork, the survey data was fully validated and cleaned. It was not possible to weight the achieved survey sample because there is insufficient information available on the characteristics of the underlying population.

Once the final dataset and data tables for the NDAFP survey were available, the evaluation team reviewed the data against each relevant research question to uncover the emerging narratives and to identify differences between key sub-groups. This was achieved through the application of descriptive (e.g. frequency distributions and averages) and statistical analysis

[7] Upon quality control assessment of this participant's responses, it was determined their responses were unclear and could not be counted on for accurate analysis. As such, they were removed from the analysis.

techniques to establish significant difference at the 95% significance level. Data tables were produced to employ two types of testing:

- Testing for significant differences between each set of cross break headings, such as comparing findings between different sector categories within the sector cross break header (t-testing)

- Comparing data within each subgroup break to the total minus the data in the individual column (z-testing)

2.4 Survey of EBDS for ETII applicants

2.4.1 Aims and purpose

A telephone survey of 219 successful NDO applicants for the EBDS for ETII scheme was conducted in Stage 2. The findings from this survey provided insight into the experience of making ETII applications and the reported impacts of EBDS for ETII discounts, two topics which the primary survey of NDOs did not provide sufficient insight on owing to low base sizes.

2.4.2 Sampling

IFF used a database of 3226 successful applicants for the EBDS for ETII scheme as the sample frame, provided by DESNZ. Any duplicate records were removed. IFF's data services team removed any extraneous variables, and the reworked sample was checked against the original file provided by DESNZ. It was not possible to stratify the sample due to there being limited information available on the NDAFP application data; therefore a random probability sampling approach was used. The profile of surveys completed by sector, meter type (supported or unsupported) and country was closely monitored during fieldwork to ensure sufficient representation of sectors and meter types for analysis.

2.4.3 Questionnaire design

Like the other surveys, the questionnaire for this audience began by introducing the research and gaining consent in relation to GDPR. Following this, the survey covered the following topics:

- Organisation profile;

- Energy use and procurement;

- Effect of energy price increase and the need for support;

- Awareness and understanding of the EBDS for ETII scheme;

- Engagement with the EBDS for ETII scheme and application experience; and

- Impact and suitability of the EBDS for ETII scheme.

2.4.4 Fieldwork

Fieldwork was conducted between 23 July and 22 November 2024. All interviewers were briefed on the survey prior to mainstage fieldwork starting and issued a briefing pack, providing them with an understanding of the research background, and questionnaire design, as well as the screening criteria and sample design.

A target of 200 interviews was initially set. In total, 219 surveys were completed. The tables below present the profile of the achieved sample in terms of organisation type, size, country, and meter support.

As presented in Table 2.20, 1,756 sample records were issued for fieldwork. In total, 219 surveys were completed. As a percentage of those that started the survey, this equates to a response rate of 62% (see Table 2.25).

Table 2.20 Profile of ETII survey completes by organisation type

Organisation type	N	%
Private sector	166	76%
Voluntary sector	38	17%
Public sector	15	7%
TOTAL	219	100%

Table 2.21 Profile of ETII survey completes by size

Organisation size	N	%
Micro (<10 employees)	67	31%
Small (10-49 employees)	79	36%
Medium (50-249 employees)	49	22%
Large (250+ employees)	20	9%
Refused	4	2%
TOTAL	219	100%

Table 2.22 Profile of ETII survey completes by country

Country	N	%
England	175	80%
Scotland	16	7%
Wales	10	5%
Northern Ireland	18	8%
TOTAL	219	100%

Table 2.23 Profile of ETII survey completes by meter support

Meter support	N	%
Supported meter	146	67%
Unsupported meter	73	33%
TOTAL	219	100%

Table 2.24 Outcomes for sample issued for fieldwork, ETII survey

Survey outcome	N	%
Total in scope of study	**1756**	**100%**
Business called 1 to 10 times but unable to secure interview	1257	72%
Appointment made but not achieved during fieldwork period	9	1%
Not available in fieldwork period / nobody at site available	38	2%
Unobtainable telephone number	62	4%
Started survey	354	20%

Table 2.25 Survey outcome for the sample in scope of fieldwork, ETII survey

Survey outcome	N	%
Started survey	354	100%
Achieved interviews	219	62%
Drop out	3	1%
Refusals	133	38%

2.4.5 Analysis

Upon the completion of fieldwork, the survey data was fully validated and cleaned. It was not possible to weight the achieved survey sample due to insufficient information available on the characteristics of the underlying population.

Once the final dataset and data tables for the survey were available, the evaluation team reviewed the data against each research question to uncover the emerging narratives and to identify differences between key sub-groups. This was achieved through the application of descriptive (e.g. frequency distributions and averages) and statistical analysis techniques to establish significant difference at the 95% significance level. Data tables were produced to employ two types of testing:

- Testing for significant differences between each set of cross break headings, such as comparing findings between different sector categories within the sector cross break header (t-testing)

- Comparing data within each subgroup break to the total minus the data in the individual column (z-testing)

2.5 Survey Limitations

- **Sub Scheme Base Sizes:** Initial surveys of NDOs yielded small base sizes of those eligible for sub schemes with a more niche audience. Additional surveys were conducted, enhancing data representativeness and insights. However, base sizes remained low, particularly for those in receipt of non-standard case elements of EBRS and EBDS, as well as for NDAFP, limiting the generalisability of some of these findings.

- **Awareness and Understanding:** Low awareness and understanding of support schemes among eligible NDOs resulted in low base sizes for some survey questions around experience and impact. This, in turn, may limit the extent of analysis possible for this audience.

- **Recall:** Stage 1 surveys were conducted a substantial time after EBRS and NDAFP stopped providing support to NDOs (, and so respondents were asked questions relating to their experience several months prior to the survey being completed.

- **Non-Applicants:** Across Stages 1 and 2, limited evidence was collected from organisations eligible for application-based support schemes that did not apply or submitted unsuccessful applications. This was due to a low incidence of non-applicants in the NDO survey. Early qualitative research with organisations eligible for the EBDS for ETII scheme similarly showed how difficult it was to identify non-applicants. Consequently, less insight can be gauged from these audiences when compared to the baseline EBRS and EBDS schemes.

- **Public Sector Survey Responses:** Securing enough survey responses from public sector organisations as part of the Stage 2 NDO survey proved challenging. This was caused by a variety of factors, including sample churn (with organisations listed as public on the source sample self-reporting as private or voluntary sector organisations), difficulty reaching relevant contacts, and unintended timing overlaps with the school summer holidays cause by the six-week pause of fieldwork for the lead up to 2024 General Election. We employed a variety of techniques to improve participation, including sourcing additional sample and adjusting interlocking size quotas. However, despite these mitigations we completed the Stage 2 NDO survey with 381 interviews against an original target of 550 surveys set for this audience. While lower than the original target, a base of this size is sufficient for robust analysis.

- **Lack of significant longitudinal survey findings:** The NDO and HNO surveys were designed to be longitudinal to explore organisations' responses to the changes in schemes and energy prices over time. However, there were few significant results nor identifiable patterns when the survey data for those who had taken part in both survey waves was analysed. Therefore, these results are not presented in this report.

3 Primary research – qualitative interviews

3.1 Overview of qualitative research

In-depth qualitative interviews were conducted with a range of stakeholders including DESNZ officials, scheme delivery partners, energy suppliers and regulatory bodies. They were also conducted with NDOs and HNOs that participated in surveys in both stages, to obtain in-depth insights into their experience and perceptions of energy affordability interventions. This provided an indication of causation, contribution and attribution of outcomes and impacts from the funding schemes.

The audiences that were qualitatively interviewed and the number of interviews conducted at each stage is summarised below:

Table 3.1 Qualitative interview audiences

Interviews	Stage 1	Stage 2	Total
Organisations that participated in the longitudinal survey of NDOs, NDAFP applicants and EBDS for ETII applicants	140	156	296
Stakeholders involved in the design and implementation of the schemes, including scheme administrators, regulators, energy suppliers and DESNZ staff	44	39	83
Follow-up interviews with HNOs that participated in the HNO surveys	9	11	20
Heat Network trade bodies	5	-	5
ETII trade bodies	-	3	3

3.1.1 Non-Domestic Organisations

IFF conducted in-depth follow-up interviews with NDOs that participated in the longitudinal survey of NDOs, NDAFP applicants and EBDS for ETII applicants and consented to recontact. In total, 296 interviews were achieved, 140 in Stage 1 and 156 in Stage 2.

The sample was structured by organisation type (private, public, and voluntary sector), size, region, sector and scheme eligibility to ensure enough responses to compare interview findings between these sub-groups. We also used survey responses to target NDOs with experiences, perceptions and behaviours of interest.

A single topic guide with a modular design was used, consisting of a core module of questioning for all participants followed by other modules that covered discrete issues or topics of relevance to specific sub-groups. This allowed interviewers to tailor interviews and ensured that only relevant questions were asked and maximised respondent engagement levels. The specific topics covered in the guide are listed below:

- Organisation profile and respondent background;

- Experience of rising energy costs;

- Awareness and understanding of the support schemes in general;

- Awareness, understanding, experience and impact of EBRS;

- Awareness, understanding, experience and impact of NDAFP;

- Awareness, understanding, experience and impact of EBDS;

- Awareness, understanding, experience and impact of domestic support schemes;

- Arrangements with intermediaries and receipt of pass-through discounts; and

- Alternative support with energy bills received.

Recruitment was conducted in-house by specialist qualitative recruiters, guided by a screening questionnaire. This questionnaire explained the purpose of the research in a consistent way and ensured participants met the agreed recruitment criteria.

Interviews lasted up to one hour and conducted via telephone or video call. A charity donation of £25 was offered to those that completed an interview to incentivise participation.

A similar approach to qualitative recruitment and fieldwork was employed in Stage 2. The specific topics covered in the guide are listed below:

- Organisation profile and respondent background;

- Experience of rising energy costs in Winter 2023/24;

- Long term impacts of EBRS

- Experience of the switch from EBRS to EBDS

- Experience and impacts of EBDS

- Arrangements with intermediaries and receipt of pass-through discounts;

- Changes made to decarbonise and improve energy efficiency since October 2022;

- Alternative support with energy bills received; and

- Expectations and future plans in terms of energy prices.

3.1.2 Energy suppliers

In Stage 1, qualitative interviews were conducted with 15 energy suppliers which had NDO customers. Interviews gathered feedback on suppliers' experience of delivering energy support for the different schemes. The interviews explored suppliers' views on how straightforward scheme implementation was, what challenges they faced and what could be improved if similar schemes were implemented in the future.

In Stage 2, interviews with 12 energy suppliers were conducted. These interviews had less focus on scheme design, consultation and communication at initial launch of schemes, as these topics were covered in Stage 1, and instead had a focus on suppliers' views on how effective the schemes have been at supporting NDOs through the energy crisis, and their experience of the latter stages of delivery, such as reconciliation and clawback. The sample of achieved interviews included all suppliers with a large market share (the 'big six') as well as a purposively selected sample of smaller suppliers to ensure representation on involvement across the different schemes.

3.1.3 Scheme delivery stakeholders

Qualitative interviews were conducted with scheme delivery stakeholders that were involved in supporting the design and implementation of the support schemes. The purpose of these interviews was to gain in-depth understanding of their role and involvement in scheme processes, what worked well and what could be improved for future learnings if similar schemes are implemented.

In Stage 1, 22 interviews were conducted with wider stakeholders and a further 18 interviews were conducted in Stage 2. An overview of organisations that were interviewed in this strand of research, and a brief summary of their role in the schemes is provided in Table 3.2 below. The latter columns note whether the organisations were interviewed in Stage 1 and Stage 2.

Despite attempts to interview insolvency and business administrators, no interviews were ultimately secured. It is likely that insolvency and business administrators may feel somewhat distanced from the schemes, as they were not directly involved in the scheme design or delivery, and therefore may not consider it a priority issue to feed back on.

Table 3.2 Scheme delivery stakeholder interviews

Organisation	Role in scheme	Interviewed in Stage 1	Interviewed in Stage 2
UK and Ireland Fuel Distributors Association (UKIFDA)	NDAFP Top-up applications validity checks	Yes – 1 interview conducted	No
Hinduja Global Solutions Ltd (HGS)	Processed ETII and Heat Network applications for EBDS	Yes – 1 interview conducted	Yes – 1 interview conducted
Elexon	Scheme administrators for GB. They reconciled and corrected past payments to electricity suppliers.	Yes – 1 interview conducted	Yes – 1 interview conducted
Xoserve	Scheme administrators for GB. They reconciled and corrected past payments to gas suppliers.	Yes – 1 interview conducted	Yes – 1 interview conducted
Ofgem	Played a key role in UK compliance, enforcement, and fraud and miscalculation avoidance.	Yes – 1 interview conducted	Yes – 1 interview conducted
Uregni	Played a key role in NI compliance, enforcement, and fraud and miscalculation avoidance.	Yes – 1 interview conducted	Yes – 1 interview conducted
Arvato	Processed applications regarding NDAFP Top-Up payments and edge cases	Yes – 1 interview conducted	No
Energy Ombudsman	Addressed the complaints of Heat Network consumers in GB who raised a complaint that they had not received pass-through benefits of the schemes	Yes – 1 interview conducted	No
Consumer Council	Addressed the complaints of Heat Network consumers in NI who raised a complaint that they had not received pass-through benefits of the schemes	Yes – 1 interview conducted	No

Organisation	Role in scheme	Interviewed in Stage 1	Interviewed in Stage 2
Office for Product Safety and Standards (OPSS)	Role to receive notifications from heat suppliers and implement enforcement activities	Yes – 1 interview conducted	No
Local Government Association	Provide insight on the impacts of the support on local authorities.	No	Yes – 1 interview conducted
DESNZ officials	Involved in scheme design, delivery, provision of data and monitoring delivery.	Yes – 7 interviews conducted	Yes – 9 interviews conducted
Trade associations/ sector bodies representing HNOs	Provided insight on the impacts of the support on HNOs	Yes – 5 interviews conducted	No
Trade associations/ sector bodies representing ETIIs	Provided insight on the impacts of the support on energy and trade intensive industries	No	Yes – 3 interviews conducted

3.1.4 Heat Network Operators

Following each stage of the HNO survey, in-depth follow-up interviews were conducted (10 in Stage 1 and 11 in Stage 2).

In Stage 1, these interviews focused on the perceived impact of the support, the effectiveness of communications about pass-through requirements and the experience of complying with pass-through requirements. Qualitative interviews conducted with this audience in Stage 2 focused on remaining evidence gaps (e.g. EBDS closure and emerging impacts).

In Stage 1, the approach used was to re-contact HNOs who had completed the survey. Whilst the target of ten interviews was met, this was time consuming, with a high level of non-response before ten interviews were reached. It is likely that many HNO survey respondents felt they have already contributed to the evaluation and did not wish to be involved in an interview as well. Similarly, it was anticipated that non-response and perceived over burdening may be problematic if HNOs interviewed in Stage 1 were recontacted with requests for another interview in Stage 2. Therefore, the approach to sampling in Stage 2 was to filter out a fresh sample of HNOs from the survey sampling frame to be contacted for qualitative interviews instead of using Stage 2 survey respondents as a sampling frame. This approach resulted in a better level of response from HNOs.

3.2 Analysis of qualitative interviews

Transcripts and notes from depth interviews were used to produce detailed write-ups in bespoke Excel-based analysis frameworks for each audience. These frameworks were structured under headings aligned with the evaluation's research objectives, allowing interviews to be compared and judgements made about the commonality of perceptions, experiences and behaviours. The frameworks also included 'firmographic' variables (e.g. sector, size and scheme receipt) to enable analysis of subgroup differences.

To ensure consistency and accuracy in analysis, the interviewing team received a thorough briefing on the structure and requirements of each framework. Entries into the framework involved synthesising feedback from different parts of the interview, documenting key insights, highlighting impactful verbatim, and identifying areas to explore further in other interviews. We incorporated drop down menus to facilitate categorisation and thematic coding for the interviews.

At the conclusion of each phase of qualitative interviewing, an in-depth analysis session was convened. During these sessions, the teams collectively discussed themes emerging from the interviews and triangulate them against the findings from other strands of data collection and analysis (e.g. surveys) in relation to the objectives of the evaluation.

It should be noted that because qualitative samples are relatively small and purposively designed, the findings from qualitative interviews cannot be considered representative of the views of all stakeholders (e.g. NDOs or HNOs). However, qualitative interviews are a valuable component of this evaluation as they provide in-depth and nuanced insight into perceptions, feelings, and behaviours that may be overlooked in numerical data.

3.3 Limitations of the qualitative research

In the main, the team encountered very few challenges related to qualitative data collection and analysis, these are listed below:

- The qualitative topic guide covered schemes in more detail than the quantitative survey which may have prompted more issues with recollection for some organisations, given the timeframe between receiving discounts and the qualitative research taking place.

- As discussed in Chapter 2, the surveys encountered challenges in identifying sub-samples for niche schemes such as NDAFP and EBDS for ETIIs, particularly for non-applicants. This also affected the numbers interviewed for the qualitative research, although there were some non-applicants included in this research.

4 Secondary data sources

4.1 Introduction

This chapter presents the key secondary data sources that were identified as relevant over the course of the evaluation. The data sources include information that describes at least one of the following: scheme data; scheme outcomes; information associated with key outcomes; and control variables. This data was used to evaluate the observed outcomes of the schemes and inform non-causal analysis.

The methodology for the secondary data analysis included three main steps:

- **Broad Data Scoping:** Identifying potential indicators of interest.

- **Data Extraction and Automation:** Extracting data and automating updates throughout the evaluation period.

- **Creation of Descriptive Figures:** Visualising the evolution of key indicators.

Schemes were analysed sequentially. All data mentioned in this section and used in the evaluation was last accessed in January 2025.

In addition to the secondary data analysis, further analysis was conducted to infer impact attribution. This involved:

- **Time Series Analysis of uncertainty:** This analysis involved using an econometric model to capture the dynamic nature of uncertainty, as recorded in the Economic Policy Uncertainty (EPU) index. The econometric model was used to (a) establish the extent to which the EPU index reacted to changes in energy prices, and (b) whether this relationship with energy prices changed when the schemes were implemented. Vector autoregressive modelling (VAM) was used to measure the change of the correlation of wholesale energy prices and the EPU index over time, to see if these decoupled after the schemes were introduced, such that increases in energy prices did not increase the EPU index as much.
- **Input-Output (IO) Modelling:** Simulated the effect of the energy crisis and the introduction of the schemes across the whole economy, based on static IO tables from 2019 that show the demand of sectors for other sectors' services. This model was used to evaluate the extent to which the schemes were able to mitigate the negative impacts of the crisis, identify the sectors that were most affected, and estimate the total impact on macroeconomic indicators such as employment and output. IO modelling uses static IO tables to model dynamic relationships, and therefore is at risk of overstating benefits. The benefits reported from the IO modelling are upper limits.
- **Multivariate Regressions of meter-level data:** Quantitative analysis of firm-level data outlining the amount of discount received by individual NDOs and their financial health at the time. An econometric regression model was developed to estimate the relationship between the support from the schemes and changes to financial performance.

These methods were used to analyse the observed data and determine the statistical significance of the scheme's impacts. Detailed analysis and modelling methods are presented in Annex B: Quantitative Impact Report.

4.2 Secondary data sources

Table 4.1 presents the data sources which encompassed aspects of the UK business landscape. These sources offered insights into business expenditures, energy costs, energy consumption patterns, and operational metrics, for non-domestic organisations. These data sources allowed the consortium to explore the number, activity, industry, and pertinent details concerning non-domestic organisations. These sources encompassed registered companies, and market sentiments influencing business decisions.

Table 4.1 Business data sources

Name of data source	Short description	Use of the data
Bank of England: DMP (Decision Maker Panel)	Gathers insights into businesses' viewpoints and uncertainties through a panel, offering insights into market sentiments and business uncertainties, potentially impacting decision-making processes.	Observed impacts of mitigating energy prices effects on uncertainty.
Business insights & conditions survey (BICS)	Weighted estimates from the voluntary fortnightly business survey (BICS) about financial performance, workforce, prices, trade, and business resilience. Goes back to August 2020.	Observed impacts of mitigating energy price effects on uncertainty, energy bills, and financial health.
Inter-Departmental Business Register (IDBR) data	Comprehensive list of UK businesses, which contains information on all businesses in the United Kingdom which are VAT registered and/or operating a PAYE scheme. The IDBR covers around 2.7 million businesses in all sectors of the economy, but since the main two tax sources have thresholds, very small businesses operating below these will, in most cases, not be included.	Impact attribution of mitigating energy price effects on energy bills, market stability, and financial health.

Employment and wage data include datasets that provide information on the employment trends and on the workforce composition in public, private and non-profit sectors (see Table 4.2). These sources provide data on occupations and employment levels. Collectively, these sources enabled impact evaluators to analyse wage structures, trends, and disparities across different sectors and demographics.

Table 4.2 Employment and wage data sources

Name of data source	Short description	Use of the data
ONS: Workforce jobs by industry (JOBS02)	Workforce jobs by industry, employee jobs by industry and self-employment jobs by industry. UK, published quarterly.	Observed impacts of mitigating energy price effects on employment.
ONS: Business Register and Employment Survey (BRES)	The Business Register and Employment Survey (BRES), administered by the ONS, provides a comprehensive view of employment trends across various industries and regions. This dataset is used for evaluating the economic impact of employment-related policies or industry-specific interventions, offering detailed insights into workforce composition, regional employment dynamics, and industry trends.	Observed impacts of mitigating energy prices effects on employment.
ONS: UK input-outputs analytical tables (employment by sector)	The input-output tables of the UK describe how products (and primary inputs) are used to produce further products and satisfy final use. They are derived from the annual Supply and Use Tables, which provide a picture of the flows of products and services in the economy for a single year, and certain economic assumptions.	Detailed employment composition from the IO used to inform impact attribution of mitigating energy price effects on employment and productivity.
ONS: Labour Market Statistics	Collates data from various sources to provide an overview of the UK labour market, including employment figures, vacancies, and unemployment rates.	Observed impacts of mitigating energy price effects on employment.
ONS: HM Revenue and Customs' (HMRC's) Pay As You Earn (PAYE) Statistics	Statistics derived from earnings and tax data from payroll systems, providing wage information for employed individuals at a country-wide level.	Observed impacts of mitigating energy price effects on employment.

The macroeconomic data sources outlined in Table 4.3 present economic indicators relevant for evaluating competitiveness and uncertainty in the UK and Europe. These sources encompass various datasets, such as international trade in goods, comparative Producer Price Indices (PPIs), and the structure of the economy. Additionally, they include indices and statistics assessing economic uncertainty. Collectively, these data sources cover metrics like unit labour costs, PPIs and Consumer Price Indices (CPIs), economic policy uncertainty, and business sentiment indicators. These sources provide a diverse toolkit to analyse economic trends, and market perceptions, necessary for robust impact assessments and economic analyses.

Table 4.3 Macroeconomic data sources

Name of data source	Short description	Use of the data
Economic Policy Uncertainty (EPU) Index	This index measures uncertainty based on newspaper coverage, tax code volatility, and disagreement among economic forecasters. The EPU Index is available for various countries, including the UK.	Observed impacts and impact attribution of mitigating energy price effects on uncertainty, and energy market stability.
ONS: UK input-outputs analytical tables	The input-output tables of the UK describe how products (and primary inputs) are used to produce further products and satisfy final use. They are derived from the annual Supply and Use Tables, which provide a picture of the flows of products and services in the economy for a single year, and certain economic assumptions.	• Impact attribution of mitigating energy price effects on energy bills, employment, energy consumption, and productivity. • Value for Money analysis.
ONS: UK Trade in goods by industry, country	Dataset providing a breakdown of UK trade in goods by industry, country, and commodity on a balance of payments basis.	Trade intensity ranking across sectors, which is a key input to modelling exercises.
Bank of England Businesses' finance raised	Annual growth of lending to businesses, lending to industries headline flows, and net finance raised from banks, building societies and capital markets.	Observed impacts of mitigating energy price effects on financial health.
ONS: monthly gross domestic product (GDP) by gross value added	Gross value added (GVA) tables showing the monthly and annual growths and indices as published within the monthly gross domestic product (GDP) statistical bulletin.	Observed impacts of mitigating energy price effects on productivity.
ONS: Output per job, UK	Estimates for gross value added (GVA), jobs and output per job by section level industry, as defined by the Standard Industrial Classification (SIC). Contains annual and quarterly statistics. Contains estimates for industry quarter-on-quarter, year-on-year and quarter-on-year contributions to output per job.	Observed impacts of mitigating energy price effects on productivity.

Name of data source	Short description	Use of the data
Bank of England Publications	• **Business Cost Indices**: Quantify changes in business operating costs. • **Industry Inflation Rates**: Measure inflation specifically within industries. • **Cost of Production Indicators**: Offer insights into production costs across sectors.	Observed impacts of mitigating energy price effects on uncertainty.
Bank of England Decision Maker Panel (DMP) Survey	The DMP Survey by the Bank of England includes questions related to uncertainty faced by businesses, providing insights into their expectations and perspectives on future economic conditions.	Observed impacts of mitigating energy prices effects on uncertainty.

Table 4.4 compiles the publicly available data sources used which offered insights into price dynamics across various sectors in the UK. From indices tracking consumer and producer prices to energy market trends, and industry-specific price indices, these sources provided information on inflation, market trends, and competitiveness. These datasets enabled observation of pricing dynamics, market sentiments, and industry-specific trends.

Table 4.4 Price data sources

Name of data source	Short description	Use of the data
ONS: Inflation and price indices	• **Producer Price Index (PPI):** Measures the average changes in selling prices received by producers. • **Import/Export Price Indices:** Track changes in prices of goods traded internationally. • **Input/Output Prices:** Reflects prices paid and received by industries for goods and services used in production.	Observed impacts of mitigating energy price effects on inflation.
ONS: UK Consumer Price Index (CPI)	The CPI, published by the ONS, tracks changes in prices of a basket of goods and services purchased by households, providing insights into consumer price trends and inflation, influencing purchasing power and economic decisions.	Observed impacts of mitigating energy price effects on inflation.
ONS: Retail Price Index (RPI)	The RPI, also released by the ONS, measures changes in the cost of a representative sample of retail goods and services, offering insights into retail price trends and influencing various economic calculations and policies.	Observed impacts of mitigating energy price effects on inflation.
Bank of England Publications	The Bank of England offers various indices such as Business Cost Indices, Industry Inflation Rates, and Cost of Production Indicators, providing insights into production costs and industry-specific price dynamics in the UK.	Expected theory and observed impacts of mitigating energy price effects on inflation.

Table 4.5 outlines various sources of data used over the course of the evaluation to offer insight into energy pricing and consumption across different sectors and levels in the UK.

Table 4.5 Energy data sources

Name of data source	Short description	Use of the data
ICIS Energy price data by delivery dates	Detailed time series of the wholesale energy prices in the UK market by delivery rates and type of contract.	Observed impacts and attribution of mitigating energy price effects on uncertainty and energy bills.
DESNZ Industrial energy price statistics	Statistics on the price of fuels in the industrial and non-domestic sectors.	Observed impacts of mitigating energy price effects on energy bills.
DESNZ Meter Level data by scheme	Meter level data shows the amount of discount provided, energy consumption, and firm characteristics.	Observed impacts of mitigating energy price effects on energy bills and attribution to financial health impacts.
DESNZ Energy Trends for the UK	Energy trends in UK; consumption and production.	Observed impacts of mitigating energy price effects on energy bills.
DESNZ Energy use: by industry, source and fuel	The UK's energy use by industry (SIC 2007 group - around 130 categories), source (for example, industrial and domestic combustion, aircraft, road transport and so on - around 80 categories) and fuel (for example, anthracite, peat, natural gas and so on - around 20 categories), 1990 to 2022.	Energy intensity ranking across sectors, which is a key input to modelling exercises.
Energy-demand price elasticities by sector in the UK (Agnolucci et al, 2017).[8]	Agnolucci et al. (2017) modelled industrial energy demand functions for a number of UK industry sectors. They provided evidence on energy demand elasticities with respect to economic activity and energy prices for the most affected sectors.	Key input for the input-output modelling exercise.
Energy-demand price elasticities by sectors (Labandeira et al, 2016).[9]	This paper reported a meta-analysis of energy price estimates across the literature. It provided average general electricity and gas elasticities.	Key input for the input-output modelling exercise.

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[8] Paolo Agnolucci, Vincenzo De Lipsis, Theodoros Arvanitopoulos. Modelling UK sub-sector industrial energy demand. Energy Economics, Volume 67, 2017, Pages 366-374, ISSN 0140-9883, https://doi.org/10.1016/j.eneco.2017.08.027

[9] Labandeira, Xavier and Labeaga Azcona, José Maria and López-Otero, Xiral, A Meta-Analysis on the Price Elasticity of Energy Demand (April 2016). Robert Schuman Centre for Advanced Studies Research Paper No. RSCAS 2016/25, Available at SSRN: https://ssrn.com/abstract=2768161 or http://dx.doi.org/10.2139/ssrn.2768161

Table 4.6 presents the sources of data used to assess the impact of energy affordability schemes on insolvency rates in the UK.

Table 4.6 Insolvency data sources

Name of data source	Short description	Use of the data
The Insolvency Service (from ISCIS) / Companies House / Department for the Economy, Northern Ireland	Monthly Insolvency statistics including company insolvencies in England and Wales, with industrial disaggregation, and with seasonal adjustments.	Observed impacts of mitigating energy price effects on financial health.
Inter-Departmental Business Register (IDBR) data	Comprehensive list of UK businesses, which contains information on all businesses in the United Kingdom which are VAT registered and/or operating a PAYE scheme. The IDBR covers around 2.7 million businesses in all sectors of the economy, but since the main two tax sources have thresholds, very small businesses operating below these will, in most cases, not be included.	Impact attribution of mitigating energy price effects on energy bills, market stability, and financial health.

A comprehensive list of evaluation questions was developed to guide the evaluation. For each question, the matrix detailed the available data sources and the approach to analysis. A similar approach was applied across all evaluation questions, systematically exploring options for analysis and modelling. All relevant levels of aggregation for contribution analysis were considered, along with key control and contextual indicators necessary to isolate or contextualise the impact of the schemes.

4.3 Limitations of the secondary data analysis

The evaluation of secondary data has been designed to address data limitations and promote robustness of the primary research analysis throughout. The secondary data analysis has provided valuable insights into how the support schemes were implemented, the experiences of recipients and suppliers, and their impacts. This is despite several challenges related to data collection and analysis that have required navigating and may present limitations to the findings that used secondary data in the evaluation. The limitations of the secondary data collection and analysis are listed below:

- The secondary data sources have varying frequencies and updating schedules. For some indicators, only quarterly or yearly data is available, as opposed to more granular

information. Additionally, although for all data sources, the latest available data in January of 2025 was used, for some indicators the last update to the data was considerably earlier than this.

- An Input-Output (IO) scenario modelling exercise was performed with the latest IO tables from 2018-2020. Because the latest IO table does not correspond with the period of the intervention, the structure of the economy may have changed from the period reflected in the IO tables and the period when the schemes were implemented. To apply sensitivity analysis to the results to partially account for the lack of up-to-date IO tables, the modelling exercise was applied to several IO tables, which represent different economic structures.

5 Value for Money analysis

The value for money (VfM) of the schemes assesses the extent to which the energy cost reductions delivered by the schemes represented good value for money. The VfM of the schemes was assessed using a social Cost Benefit Analysis (CBA) approach. This chapter provides more detail on the methodology used to conduct the CBA.

5.1 Introduction to the Cost Benefit Analysis used

The UK Green Book, which sets out the economic principles that should be applied to both appraisal and evaluation, identifies Cost Benefit Analysis as a useful approach to assess the value for money of an intervention, by comparing the economic costs and tangible or intangible benefits resulting from the intervention.[10] (See Table 5.1 for an overview of impact evaluation guidance considered in this analysis). A CBA endeavours to assign monetary values to both the costs and benefits of an intervention, allowing for the comparison of a variety of costs and benefits and the evaluation of the intervention's net benefit (or cost) to society. In addition to estimating the net benefit of the intervention, the Benefit-to-Cost Ratio (BCR) was also calculated to provide a sense of the extent to which the intervention's benefits outweigh its costs.

Table 5.1 UK best practice on impact evaluation guidebooks considered

Guidance/ Framework	Description
The Magenta Book, HM Treasury	Provides guidance on evaluating government policies, programs, and projects, covering various methodologies for assessing impacts. The Magenta Book is aligned with the Green Book, which sets out the economic principles that should be applied to both appraisal and evaluation.
The Green Book, HM Treasury	Focuses on appraisal and evaluation in public sector decision-making, encompassing economic, social, and environmental impact assessment.
Better Evaluation, BetterEvaluation.org	Offers international resources, tools, and guidance for effective evaluation methodologies.

The schemes were designed to mitigate the effects of high energy bills by providing non-domestic organisations (NDOs) with discounts on their energy bills. A key outcome of these schemes was allowing NDOs to sustain their existing energy use – and hence production level. Compared to a no-intervention counterfactual, the schemes increased overall economic

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[10] The Green Book (2022) (https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020). See esp. Sections 3.2 and 6.

productivity and avoided negative impacts to business operations, including insolvencies, redundancies, and other associated impacts. The societal benefits of continued operation can therefore largely be reflected in macroeconomic terms – e.g., the effect on gross output and employment. In addition to these direct and indirect economic impacts, the sustained energy use resulting from the schemes led to an increase in emissions and associated air quality impacts. These impacts are included as social costs in the BCA, as they represent a disadvantage to society.

CBAs leverage available data or estimates of cost and benefits associated with an intervention. Commonly, this type of analysis involves expressing costs and benefits in monetary terms.[11] The direct costs of an intervention are often more readily observed and quantified than its benefits – especially in cases where direct records of program administration, staffing, and related costs are available. In contrast, benefits often must be estimated (when suitable data and methods are available) or evaluated qualitatively. An overview of the costs and benefits considered within this evaluation can be found in Table 5.2 below.

Table 5.2 Costs and benefits considered

Type	Scope	Variable	Estimation
Costs	Government	Staff costs and contractors	Quantitative
		Consultancy costs	Quantitative
		Audit costs	Quantitative
		Monitoring and evaluation contract costs	Quantitative
		Ofgem cost	Quantitative
		Legal costs	Quantitative
		Digital costs	Quantitative
		T&S costs	Quantitative
		Marketing and media costs	Quantitative
		Other costs	Quantitative
	Economy wide	Increase in fraud and gaming	Quantitative
		Inefficiencies from urgent implementation	Qualitative

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[11] E.g., Chapter 6 of the Green Book (2022) (https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020) notes the importance of appropriately accounting for benefits and costs both with and without observable market values.

Type	Scope	Variable	Estimation
Costs	Economy wide	Reduced incentives for innovation	Qualitative
		Environmental impacts from higher energy consumption (rebound effect)	Quantitative
Benefits	Economy wide	Improved NDOs financial health	Quantitative
		Prevented insolvencies	Quantitative
		Prevented redundancies and increases in employment	Quantitative
		Reduced inflation	Quantitative
		Improved productivity	Quantitative
		Improved energy market stability	Quantitative
		Reduced uncertainty	Quantitative
		Enhanced global market competition	Qualitative

The end result of a CBA is an assessment of the 'value for money' of an intervention undertaken – i.e., whether, and to what extent, the intervention's resources have been well used and whether this use was justified.

It is worth noting that the CBA is subject to limitations, including the precision of estimates of costs and benefits, costs and benefits that were not possible to monetise (and therefore include in the overall net benefit and BCR calculations), and limitations inherent to the methodologies used to estimate certain costs and benefits. A notable limitation is that Exchequer benefits could not be calculated, and therefore only a social BCR is provided. These limitations are discussed at the end of this chapter.

5.2 CBA Methodology overview

Target population

The schemes were implemented for NDOs located in Great Britain and Northern Ireland. As a result, cost and benefits are considered from the perspective of the UK as a whole. As per the Green Book's guidelines, UK society generally includes UK residents and not potential residents or visitors.

Timeline

The costs and benefits are considered over the lifetime of the schemes (starting with the announcement of the EBRS on the 8th of September of 2022, until the end of the EBDS scheme on the 31st of March 2024). This includes historical data as well as estimates of any applicable future costs and benefits.

Disaggregation of effects by schemes

Performing a separate social CBA for each scheme provides an assessment of the net social benefit (or cost) of each scheme. While the data needed to estimate costs by scheme are generally available, the timing of the schemes (e.g., EBRS and EBDS being implemented in immediate succession) and data availability (e.g., due to low frequency of collection) limits the ability to establish a counterfactual and causality uniquely to each scheme (as noted in above in the section discussing secondary data). However, the benefits estimated for the schemes collectively using input-output (IO) analysis can be separated for EBRS and EBDS based on the discounts disbursed under each scheme, providing an estimate of the portion of the overall benefit attributable to each scheme individually. When possible, given available data, other benefits included in the results of the IO analysis – such as the effect of the schemes on financial health and employment – were also disaggregated by scheme. The cost data is also disaggregated, or estimated using the size of the discount (as above), by scheme where possible, to ensure a scheme specific cost-benefit analysis can be performed.

Disaggregation of effects by NDO demographics and sector

As with the disaggregation of effects by scheme, conducting separate CBAs by NDO size would provide an assessment of the differential net social benefit (or cost) of the schemes for different size classes of NDOs. While there is information on certain economic indicators at the NDO level (e.g., employment, turnover, and energy prices), the data is insufficient to estimate benefits separately. We therefore conducted a qualitative (and where possible quantitative) description of the costs faced and benefits incurred by different NDOs, rather than a formal CBA.

For impact categories such as GVA, employment, insolvencies, and output, we were able to provide insights on the differences in impacts across sectors using IO sectoral results. This IO modelling was performed separately for EBRS and EBDS using the total discount under each scheme as an input, and a difference methodology for assigning the total discount based on the schemes' design. NDAFP did not have the same availability of data for the sectoral breakdown of discount, and so was not modelled separately. As NDAFP represented less than one percent of total support, its exclusion is unlikely to have a substantial effect on modelling results.

Avoiding double counting

It was important to avoid double counting as much as possible across impacts and across methods. As many of the schemes' benefits are interrelated, attempting to estimate the total benefit by summing the monetised value of each individual benefit would lead to overestimation. For example, when quantifying the impacts on economy-wide output, financial

health, and employment, it was important to identify the extent to which these benefits are interconnected and are reflected in overall economic output. The logic model presented in Figure 5.1 provides a characterisation of the relationships between the specific benefits considered in the CBA. The use of IO modelling to estimate the schemes' effect on overall economic output avoided the potential for double-counting benefits. Where possible, certain individual benefits are quantified to provide context on their relative magnitude; however, these quantifications are not used to calculate the overall benefits estimate.

Figure 5.1 Logic model of benefits considered
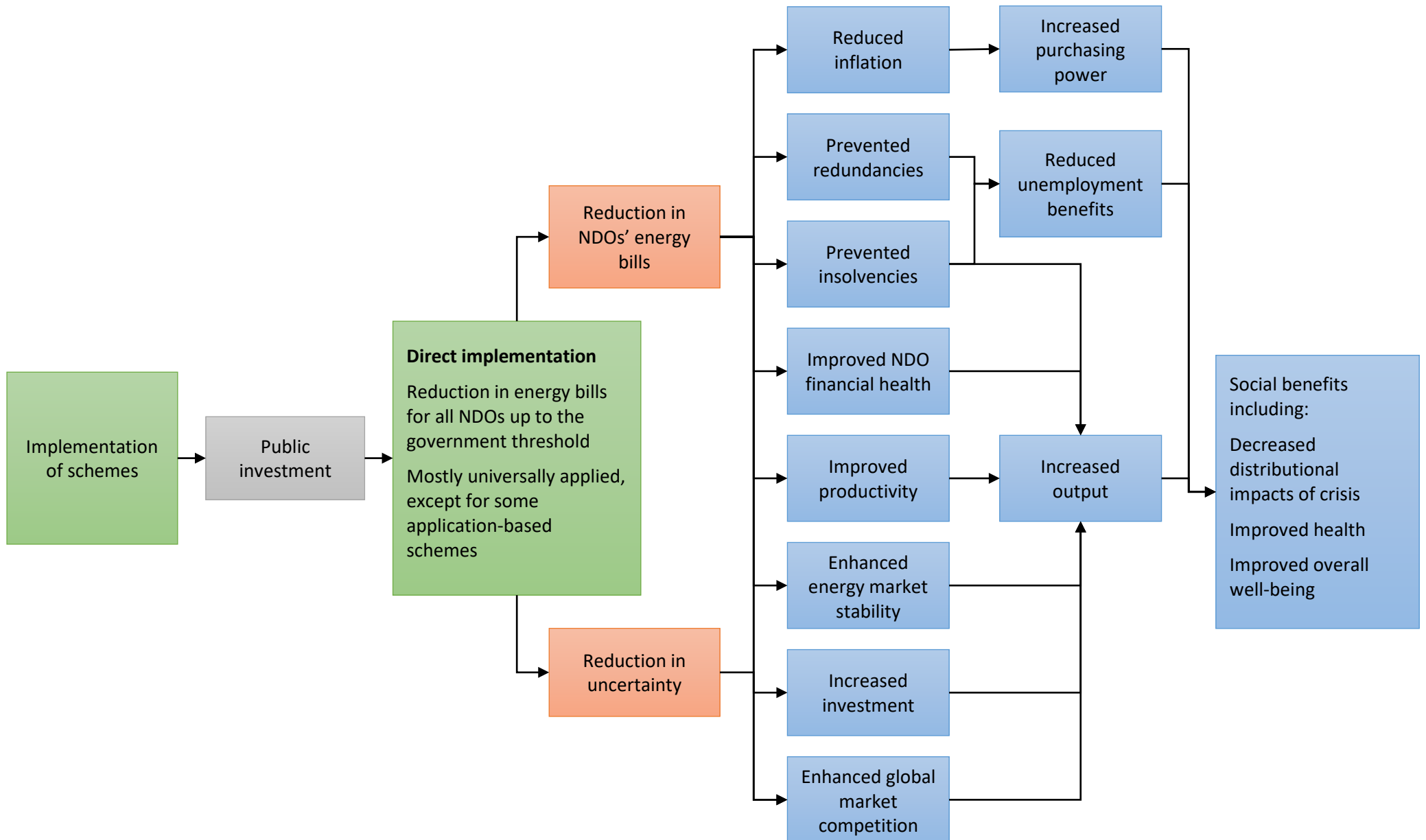
5.2.1 Overview of estimation methods

Table 5.3 provides a general overview of the methodology used to estimate the costs and benefits of each impact considered in the CBA. Further details are provided in the sections following this table.

Table 5.3 Summary of estimation methodology

Category	Impact	Source of estimate	Method for monetary valuation
Primary outcomes	Schemes costs	DESNZ data	Direct valuation from monetary values
Primary outcomes	Reduced Uncertainty	Correlation analysis; econometric time series analysis	Econometric analysis was conducted to estimate the effect of the schemes on uncertainty. However, as there was not sufficient evidence to establish a causal relationship, this benefit was not monetised. The effect of the schemes on uncertainty is discussed in more detail in the Main Report and Annex B: Quantitative Impact Report.
Primary outcomes	Reduced Energy Bills	IO modelling (see below for more detail)	The estimated prevented loss of output, accounting for induced effects, provides an estimate of the total economic benefit of the schemes' effect on reduced energy bills. Note that as the reduction in energy bills is a primary driving force behind other related benefits, the total benefit estimated for this impact also includes the monetary value of other related benefits.
Secondary impacts	Financial health	IO modelling; econometric analysis of IDBR data	The main mechanisms by which financial health issues materialise into monetary costs are via insolvencies and redundancies. The extent to which these can be avoided due to the schemes is thus the primary benefit of improved financial health. These benefits are estimated within the IO modelling of the benefits of reduced energy bills. An additional measure of financial health can be estimated via the schemes' impact on NDOs' turnover. This is estimated econometrically using IDBR data (described below).

Category	Impact	Source of estimate	Method for monetary valuation
Secondary impacts	Insolvencies	Analysis of IDBR and meter level data, and IO modelling	Avoided insolvencies are assumed to impact outputs via both direct and indirect effects: *Direct effects* include legal proceedings, unemployment benefits, and payment of debt and loans. *Indirect effects* include effects on productivity, employee retention, tax revenues, and economic activity. The indirect benefits are reflected within the IO modelling of the benefits of reduced energy bills, as organisations which continue to operate due to the schemes are reflected in the underlying IO modelling.
Secondary impacts	Avoided redundancies	IO modelling	Avoided redundancies are assumed to consist of both direct and indirect benefits: direct benefits include avoided payment of unemployment benefits, while indirect benefits include effects on productivity and output, tax revenues, and consumer spending. The indirect benefits are reflected within the IO modelling of the benefits of reduced energy bills, as organisations which continue to operate due to the schemes are reflected in the underlying IO modelling. Prevented redundancies are also expected to have positive health effects, directly for individuals not made redundant, and indirectly for the whole work force.[12]
Secondary impacts	Inflation	Analysis of inflation indices; survey responses	The impact of the schemes on inflation can be described using quantitative analysis of external inflation index data and survey responses. However, this data is not sufficient to quantify the monetary value of this impact.

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[12] See, e.g., research by The Health Foundation (2024) (https://www.health.org.uk/evidence-hub/work/employment-and-unemployment/relationship-between-employment-and-health) which found that employment rate correlates to how many years people can expect to live in good health (a 'healthy life expectancy').

Category	Impact	Source of estimate	Method for monetary valuation
Secondary impacts	Productivity	IO modelling	The IO modelling framework does not allow for assessing changes in productivity from the schemes. The schemes' effect on economic output – which in turn depends on productivity in each economic sector – is reflected in the IO modelling.
Secondary impacts	Energy consumption and associated environmental impacts	IO modelling and additional calculations	Changes in economic output as a result of lower energy prices (leading NDOs to increase energy consumption, and thus overall output, relative to a no-intervention counterfactual) are reflected above, in consideration of benefits of reduced energy bills. Changes in energy consumption would also lead to changes in GHG emissions and air quality. Emission factors and air quality factors were used to estimate the effect of estimated changes in energy consumption into changes in GHG emissions and air quality. The monetary value of changes in emissions were estimated using Green Book guidance on the value of GHG emissions and air pollution. The methodology and data sources used to conduct this analysis are described below.
Secondary impacts	Energy market stability	Uncertainty analysis and analysis of meter level data (including IDBR data on energy supplier insolvencies, revenue, and employment)	Benefits associated with improved energy market stability are discussed qualitatively. This benefit relates primarily to the risk energy customers are faced with if an energy supplier becomes insolvent – e.g., transferring contracts to new suppliers.
Secondary impacts	Fraud and error	N/A	Qualitative discussion (provided below under 'Potential increase in fraud and gaming')

Category	Impact	Source of estimate	Method for monetary valuation
Social costs and benefits	Distributive impacts	Literature review	A qualitative discussion of social benefits of avoided redundancies, based on a literature review, is included as part of the assessment of the benefit of avoided redundancies.

5.2.2 Estimation of costs

Costs to government

Costs for the schemes consist primarily of operational costs, defined in this report as those costs and expenses which are directly related to the implementation of the schemes, monitoring, and assessing its performance.[13] The operational costs of the EBRS, EBDS, and NDAFP schemes for 2023, 2024, and 2025 were provided by DESNZ, and are summarised in Table 5.4 below.

The cost of the total discount disbursed is excluded from the social CBA. As these costs are the transfer of resources between people and do not involve the consumption of resources, they are considered transfer payments.[14] In line with Green Book guidance, transfer payments should not be included in overall estimates of Net Present Social Value, so are not included in this social CBA. The amount of discounts disbursed are provided in this table for context only.

Table 5.4 Overview of costs to government

Total Costs (million £)	EBRS	EBDS	NDAFP	Total
Total discount disbursed	£7,526.000	£406.000	£62.000	£7,993.000
Staff costs and contractors	£3.824	£6.704	£0.633	£11.160
Other costs	£26.834	£14.732	£1.154	£42.720
Total	**£7,556.443**	**£427.119**	**£63.789**	**£8,047.350**

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[13] Most of the support schemes' cost is in the discounts disbursed. These costs are in turn benefits to the recipient organisations and may therefore be viewed as a transfer payment. Transfer payments are often excluded from cost-benefit analyses, as they represent a transfer of resources from one group to another. As such, these costs are not included in this CBA.

[14] The Green Book (2022) - Section 6.3 Economic transfers

Environmental costs of increased energy consumption

In addition to operational costs, a key societal cost of the schemes is their environmental impact due to increased energy consumption. Higher energy use leads to greater carbon emissions, which contribute to long-term climate change. This results in higher emissions of air pollutants, which degrade local air quality and have lasting negative health effects.

The schemes' environmental impacts were assessed relative to a scenario with high energy prices but without the support schemes. However, it can be argued that the schemes sustained economic production at a similar level to if both the energy crisis and implementation of the schemes had not occurred. The environmental impacts (carbon emissions and air pollution) analysed in comparison to an 'energy crisis without schemes' scenario would be substantially lower if assessed against a 'no energy crisis' counterfactual.

Despite this, the environmental impacts are assessed relative to a scenario with high energy prices but no support schemes, to ensure methodological consistency with the wider evaluation. Therefore, while the costs presented below are included in the cost-benefit analysis to most accurately calculate the schemes' social impacts, it is worth noting that carbon and air pollution costs would still have been below levels in a no-crisis scenario. For this reason, this report presents two BCRs: one including the carbon and air pollution costs as a cost, and one excluding it.

Carbon costs were calculated using the additional economic activity (i.e., economic output) as estimated via IO analysis, and sector-specific emission intensity of output estimates. These sectoral emission intensity figures reflect the mix of fuel sources (beyond gas and electricity) used in each sector's economic output. Thus, the direct, indirect, and induced impacts in economic output were combined with estimates of emissions intensity of output to provide a comprehensive estimate of the total emission impact of the increased economic activity resulting from the schemes.

Surveys of NDOs indicate that the support provided allowed the organisations to maintain pre-crisis levels of energy consumption, rather than reducing energy consumption in response to higher energy costs. The carbon cost of this marginal energy consumption[15] was estimated through the following steps:

- The schemes led to an increase in overall economic activity of £21.6 billion across 105 industry sectors, based on IO modelling results (described below and in Annex B: Quantitative Impact Report).

- The sectoral carbon intensity of output was calculated using published estimates of sectoral emissions and economic output.[16] This derived carbon intensity was multiplied by the estimated increase in economic output due to the schemes to yield an estimate

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[15] I.e., the difference between actual energy consumption and the energy consumption that *would have* occurred in the absence of the schemes.

[16] The latest available data for sectoral emissions is from 2022 (Final UK greenhouse gas emissions national statistics: 1990 to 2022 - GOV.UK, Table 8.2) and sectoral output was matched with them from the same year (based on UK input-output analytical tables: industry by industry - Office for National Statistics).

of the additional CO2 emissions due to the schemes – in total, an additional 4.35 million tonnes of CO2 equivalent (tCO2e), equivalent to 1.1% of total UK emissions in 2022.[17]

- Following the UK government's guidance on carbon valuation,[18] the carbon cost of emissions was valued at £265 per tCO2.[19]

- The estimated increase in emissions was multiplied by the emission cost, by sector, to yield an estimate of the total cost of increased carbon emissions resulting from the schemes. In total, the **cost increased carbon emissions due to the schemes was approximately £1.154 billion**.

Other relevant environmental impacts included the potential effects of the schemes on air pollution and, consequently, on human health, productivity, well-being, and the environment. However, assessing these impacts was significantly more complex than measuring carbon emissions. The IO method did not indicate where the additional sectoral energy consumption physically occurred – a crucial limitation since air pollutants have strong local effects but more moderate overall impacts. This analysis followed Defra's air quality appraisal methodology,[20] which employs a damage cost approach designed to assess relatively small air quality impacts.

Similar to carbon costs, the air quality impacts of marginal energy consumption[21] were estimated through the following steps:

- The sectoral intensity of emissions of different pollutants was calculated from sectoral air pollutant emissions and output. Five main air pollutants were considered: nitrogen oxides (NOx), particulate matter (PM2.5), sulphur dioxide (SO2), volatile organic compounds (VOCs) and ammonia (NH3).[22]

- The derived air pollutant intensities were multiplied by the change in sectoral output, as described above, to estimate the increase in air pollutants due to the schemes. In total, the schemes led to the additional emission of 42 thousand tonnes of NOx, 8 thousand tonnes of SO2, 5 thousand tons of NH3, 13 thousand tonnes of NMVOC, and 1 thousand tonnes of PM2.5.

- The national average per-tonne air quality damage costs of the pollutants were £8,148 for NOx, £16,616 for SO2, £9,667 for NH3, £172 for NMVOC, and £74,769 for PM2.5.[23]

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[17] As the impact of the programmes was spread over several years, the comparison to 2022 emissions is provided for a general sense of magnitude.
[18] See: Carbon valuation - GOV.UK and DECC report
[19] See: data-tables-1-19.xlsx – Table 3, central value in 2023.
[20] Air quality appraisal: damage cost guidance - GOV.UK
[21] I.e., the difference between actual energy consumption and the energy consumption that *would have* occurred in the absence of the schemes.
[22] For 2022, the sectoral emissions of NOx, SO2 and NH3 are available at: Atmospheric emissions: acid rain precursors by industry and gas - Office for National Statistics; that of NMVOC (non-methane VOC) and PM2.5 are available at: Atmospheric emissions: other pollutants by industry and gas - Office for National Statistics.
[23] See: Air quality appraisal: damage cost guidance - GOV.UK – Table 1

- The increased emissions of air pollutants were multiplied by the air quality damage costs to estimate the total cost of increased air pollution. In total, **the cost of increased emissions of these five pollutants was £631 million**, of which NOx accounted for £342 million (54.2%), SO2 for £136 million (21.6%), NH3 for £45 million (7.1%), NMVOC for £2 million (0.4%), and PM2.5 for £105 million (16.7%).

- These results should be **used with caution and as an upper-bound estimate of the potential damage from air pollutants**. In addition to the overestimation of an IO modelling approach, these figures have been monetised using DEFRA's overall monetisation figures, without accounting for sector. In particular, the water transport sector accounts for over half of the air pollution damages, but as shipping mostly occurs far from population centres, the sector-specific monetisation for this damage is considerably lower.

Potential increases in fraud and gaming

Given the high urgency and the rapid implementation of the schemes, DESNZ reported that it was challenging to complete a detailed assessment of potential for fraud and error that could arise within the schemes' design. This is especially relevant for application-based schemes, given the higher level of complexity compared to universal schemes. As a result, fraud and error costs are worth noting within this evaluation. DESNZ estimated that for EBRS 0.7% of the scheme payments, worth £291.8 million were either claimed fraudulently or paid in error.[24] As the most recent estimate at time of writing, this level of fraud and gaming has been applied across the portfolio, in the absence of scheme-specific figures. This level of fraud and error is considered relatively low compared to previous implemented government schemes of similar scale.[25]

Reduced incentives for innovation

The support schemes provided relief during a time of very high energy prices for NDOs. It was possible that receiving the energy support reduced price-induced innovation effects. This could therefore have included lessening the incentive to install energy efficiency measures, or to change to less carbon-intensive fuel sources. However, as energy costs rise, and they increase financial pressures on NDOs, this can also lead organisations to reduce investment in research and development activities.[26] Therefore, to the extent that the schemes alleviated financial pressures faced by NDOs, they may in fact have helped to prevent reductions in innovation that could have otherwise occurred due to the financial crisis. Additionally, the IO analysis (described further below and in Annex B: Quantitative Impact Report) indicated that after the introduction of the schemes, several sectors – including research and development and technology – showed increased economic activity. The survey findings also show that 30% of NDOs had introduced new technology to limit their energy consumption since October 2022; with most (59%) of those that invested in energy efficient technology reporting that the

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[24] National Audit Office: Energy bills support. Available at: Energy bills support: an update
[25] National Audit Office: Energy bills support. Available at: Energy bills support: an update
[26] Financial Stress Can Squeeze the 'R' Out of R&D - National Bureau of Economic Research

schemes had no influence on their decision to do so and a further 36% saying their investment was influenced by the schemes. While the causal effect of the schemes on incentives for innovation was not established in this analysis, it is likely that the schemes did not meaningfully reduce incentives for innovation.

Deadweight loss

The support schemes provided energy cost relief to a broad spectrum of organisations, including some which may not have required these supports to realise the benefits described below (e.g., firms which would not have become insolvent whether or not they received discounts). Payments made to these firms may therefore have constituted a "deadweight loss" – i.e., an economic inefficiency in which the cost to society (program payments to these firms) does not equal the benefit (because these firms would not have been substantially adversely impacted by the energy crisis). This impact was not quantified due to lack of data available to perform a firm-level counterfactual analysis that would have provided an estimate of the deadweight loss, but is recognised as an additional cost of the schemes. More detail on available evidence is provided in Section 7.2.3 of the main report.

Costs to suppliers and beneficiaries

The schemes resulted in additional costs for some NDOs and for energy suppliers. This includes the time taken for energy suppliers to process the scheme information, address NDO claims, process payments, and fill-out necessary forms. Insights into the resource costs for suppliers of implementing the schemes were collected qualitatively (see chapter 3). However, there is uncertainty over the total costs to suppliers, so this could not be accurately monetised and so is not included in the CBA. This is a difference from the equivalent evaluation of the domestic schemes. However, it is expected that these costs would have been a small proportion of scheme costs, as was the case for the domestic schemes.

5.2.3 Estimation of benefits

Benefit estimation through IO modelling

As noted above and displayed in Figure 5.1, **many of the benefits of the schemes are interrelated and can be reflected in the schemes' effect on overall economic output**. To estimate this effect quantitatively, IO modelling was used to simulate the effect of the energy crisis and the schemes on the UK economy.[27] This method leverages IO tables, which map economic transactions across sectors through a matrix of interrelationships that illustrates how industries interact with one another through supply and demand.

In an IO table, each column represents the demand of a particular industry for other industries' products, while each row represents an industry's supply of goods and services to multiple industries. This dual perspective captures the interconnections between sectors, known as "intermediate demand." These connections enable analyses of how changes in one sector can ripple across other sectors. When aggregating the sum of the rows and columns, economy-wide statistics can be calculated such as total output and gross value added (GVA). IO

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[27] Further details on the IO modelling conducted to estimate the impact of the schemes is provided in Annex B: Quantitative Impact Report.

modelling is hence commonly used to estimate how an economic "shock"—such as the introduction of an energy support scheme—affects the broader economy in terms of output and GVA. These impacts are measured both in aggregate terms, to provide insights into how the overall economy is impacted, and at the sector level, to help identify the most affected sectors.

Employment impacts were further calculated using 2019 UK employment data in full-time equivalents (FTE). By combining output and GVA data from the IO model with employment figures, we determine productivity in each sector, defined as GVA per employment, using historic data on output, GVA, and employment. When a shock occurs, the model shows impacts on output and GVA at both aggregate and sector levels. Assuming productivity remains constant during the shock, we calculate the resulting impacts on employment at both aggregate and sector levels from the impacts on output.

The results of the IO model can be classified into direct impacts, which reflect the immediate impact of the schemes on sectors (i.e., the effect of reduced energy bills); indirect impacts, which also capture the secondary impact on related businesses that supply and demand inputs to the affected sectors; and induced impacts, which also account for the changes in household spending resulting from income adjustments in impacted sectors. In this CBA, the total impacts provided are the sum of the direct, indirect and induced impacts, which were used to estimate the impact of the schemes. This considers the immediate direct effect of price changes on firms, the indirect effects upstream and downstream in their supply chains, and the induced effects via consumer spending.

Because IO modelling reflects the overall impact of the schemes within the economy, many distinct but related benefits are encompassed in the estimated effect of the schemes on total economic output, such as avoided redundancies and improved financial health. **In order to avoid double-counting, the impact of reduced energy expenditures on increased economic activity is the sole benefit quantified and included in the BCA**. Other benefits, such as the number of redundancies prevented and improved financial health, are estimated to provide additional contextual information on the magnitude of these secondary benefits. From a monetary perspective, however, these benefits are reflected in the change in economic output attributable to the schemes; as such, they are not included as separate line items in the BCA. Other benefits are not estimated quantitatively and/or monetised, but are similarly reflected in the schemes' effect on overall economic output.

IO benefit modelling limitations

There are a number of caveats related to the IO methodology from which the benefits in the CBA are drawn. One primary limitation is that IO models are inherently static; they provide only a single snapshot of the economy based on historical data, without accounting for how relationships between sectors might evolve. This static nature limits the ability of IO models to predict the dynamic adjustments that industries or consumers might make in response to shocks or policy changes.

Furthermore, IO models typically do not account for price changes or capacity constraints, as they assume constant returns to scale and fixed prices. While it is possible to adjust for price

fluctuations by incorporating price elasticities into the model, this approach requires making additional assumptions. One such assumption is that firms are unable to pass on the price shock to their customers. This means that the model must assume that firms absorb the entire impact of price changes, rather than adjusting their prices in response to market conditions. IO models also do not consider relations with other countries, and as a result, may fail to capture spillover effects across national borders.

Further to this, as mentioned earlier in this chapter and explained in the main report, it was not possible to appropriately quantify benefits to government. The impact modelling approach was unable to support the layer of complexity required to model the increased tax and reduced benefits payments which could be associated with the schemes. As such, Exchequer benefits are not quantified in this report. Given a very large proportion of the costs of the schemes were expenditure on discount disbursed, which is a transfer payment and therefore properly excluded from the Social CBA, there is no BCR which accounts for the large cost of the schemes for the public purse.

Reduced energy expenditures

The primary direct benefit of the schemes was in reducing energy expenditures, which allowed organisations to maintain their existing operations. The total impact of reduced energy expenditures due to the schemes was estimated using IO modelling, as described above. Further details are provided in Annex B: Quantitative Impact Report.

As shown in Table 5.5, the schemes were associated with an avoided loss of output of up to £21.6 billion, compared to a counterfactual scenario in which the energy crisis occurred but no support schemes were implemented. Most of this impact on output – 96.8% – is estimated to be associated with EBRS, with a much smaller share associated with EBDS; because NDAFP constituted less than 1% of the total discount disbursed (see Table 36 above), it was excluded from this breakdown to simplify the presentation of results.

Table 5.5 Estimated benefits of reduced energy expenditures

Impact category	EBRS	EBDS	Total
Direct impacts	£7.5 billion	£0.4 billion	£7.9 billion
Indirect impacts	£5.5 billion	£0.3 billion	£5.8 billion
Induced impacts	£7.5 billion	£0.4 billion	£7.9 billion
Combined impacts	£20.4 billion	£1.2 billion	£21.6 billion

Source: IO modelling analysis based on 2019 UK IO table.

Improved financial health

Improvements in financial health were reflected in prevented redundancies, avoided insolvencies, and increase in organisation's turnover after receiving the schemes' support.

Prevented redundancies and avoided losses in employment

The overall value of the employment impacts of the schemes was estimated using the same IO modelling used to quantify the impact of reduced energy expenditures, as described above and in greater detail in Annex B: Quantitative Impact Report. This analysis found that within the period of EBRS, 69% of negative impacts on employment were mitigated, while within the period of EBDS, 15% of negative impacts on employment were mitigated. An estimate based on the IO modelling indicates that the schemes led to the avoidance of 134,000 full-time employee (FTE) redundancies. EBRS is associated with the avoidance of 130,000 FTE redundancies, and EBDS with the avoidance of 4,000 FTE redundancies.

To give an indication of the monetary size of this benefit, the total prevented loss of employment was multiplied by the median wage in the UK during 2023[28] (£682 weekly, equivalent to £35,464 yearly). This results in an estimated direct benefit of £4.7 billion. This calculation is performed to provide general context on the monetary magnitude of avoided redundancies; however, increased wages paid are included in the estimate of economic impacts from reduced energy expenditures (i.e., the effect of the schemes on overall economic output). This figure is therefore not included as a separate benefit in the CBA to avoid double-counting.

It is important to note that the value of avoided redundancies estimated above does not account for additional social benefits from prevented unemployment. Literature supports the narrative of a strong positive relation between unemployment and mental health,[29] emphasising the central role of work in shaping an individual's identity and social interactions. While difficult to quantify, these factors are essential when assessing the full impact of unemployment.[30] For instance, unemployment has been linked to a higher risk of anxiety and depression[31] and may also contribute to an increase in crime rates.[32] Moreover, increased job market turbulence can heighten job insecurity, leading individuals to save more and spend less as a precaution against potential unemployment. This precautionary behaviour, however, can negatively impact the economy by reducing consumption, potentially deepening the effects of economic downturns. The total social benefits of avoided unemployment are therefore likely to be higher than estimated in this analysis.

Avoided insolvencies

The schemes' effect on NDO insolvencies was analysed using DESNZ meter-level data and ONS IDBR data. This analysis – detailed in Chapter 6 of the Main Report and Section 3.4 of Annex B: Quantitative Impact Report – provides evidence that the schemes contributed to improved financial health of NDOs by reducing the rate of closures after implementation of

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[28] ONS: Employee earnings in the UK: 2023. Available at: Employee earnings in the UK - Office for National Statistics

[29] Taris, T.W. (2002). Unemployment and Mental Health: A Longitudinal Perspective. International Journal of Stress Management, 9, 43-57, https://doi.org/10.1023/A:1013067101217.

[30] Berkman, Lisa (2014). Commentary: The hidden and not so hidden benefits of work: identity, income and interaction. International Journal of Epidemiology, Volume 43, Issue 5, October 2014, Pages 1517–1519, https://doi.org/10.1093/ije/dyu110.

[31] Paul, Karsten and Moser, Klaus (2009). Unemployment impairs mental health: Meta-analyses. Journal of Vocational Behavior, Volume 74, Issue 3, 2009, Pages 264-282, https://doi.org/10.1016/j.jvb.2009.01.001.

[32] Edmark, Karin (2005). Unemployment and Crime: Is There a Connection? The Scandinavian Journal of Economics, Volume 107, Issue 2, June 2005, Pages 353-373, https://doi.org/10.1111/j.1467-9442.2005.00412.x.

EBRS and EBDS. The findings from this analysis were not sufficient to establish a causal link between the schemes and avoided insolvencies, but did provide evidence consistent with this hypothesis. From a CBA standpoint, the monetary benefit of avoided insolvencies is accounted for in the benefits of reduced energy expenditures, as the organisations which continue to operate due to the schemes are reflected in the underlying input-output modelling. This benefit was therefore not estimated separately in the CBA.

Increased turnover

Turnover and employment data for NDOs featured on the Inter-Departmental Business Register (IDBR)[33] were analysed econometrically to determine the relationship between the schemes and firm turnover. The methodology used to conduct this analysis is described in greater detail in the Quantitative Impact Report.

The effect of the schemes on turnover – based on regression analysis of meter level data – was not statistically significant, the direction of findings indicates that the schemes contributed mitigating the decreases in turnover that would have been experienced in the energy crisis. This benefit is reflected in the overall impact of reduced energy expenditures described above (via the effect on output) and was therefore not assessed separately to avoid double counting.

Reduced inflation

A quantitative analysis of inflation rates, presented in Chapter 6 of the main report and with further details provided in Annex B: Quantitative Impact Report, showed that inflation – as measured by the consumer price index (CPI) and producer price index (PPI) – peaked around the introduction of EBRS, and decreased consistently thereafter. However, there was insufficient evidence that the schemes directly led to mitigating inflationary pressure. For example, only six percent of EBRS recipients surveyed stated that the support allowed them to avoid passing on price increases; less than one percent of EBDS recipients surveyed indicated that the support prevented short-term price increases, and only two percent of recipients surveyed indicated that the support prevented long-term price increases.[34] Without the ability to quantitatively estimate the contribution of the schemes to changes in inflation, this impact was not quantified in monetary terms. It was also not reflected in the main benefit derived from IO modelling, as the IO modelling did not account for inflationary effects.

Reduced uncertainty

The potential impact of the schemes on uncertainty was quantitatively analysed using Economic Policy Uncertainty Index data.[35] This analysis – described in the Quantitative Impact

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[33] The IDBR is a database of businesses registered for VAT or PAYE and so excludes charities and some smaller businesses.

[34] Over half (54%) of EBDS recipients surveyed stated that the support had a positive short-term impact on their organisation; of these, one percent stated that this support prevented short-term increases in prices of goods and services. Therefore, approximately 0.5% of EBDS recipients surveyed stated that the support prevented short-term price increases (54% × 1% = 0.54%).
Looking at the long-term impact, around a third (35%) of the EBDS recipients surveyed reported the scheme had a lasting effect on their organisation, of which 6% reported this support prevented long-term increased in prices of goods and services. Therefore, approximately 2% of EBDS recipients surveyed stated that the support prevented long-term price increases (35% × 6% = 2.1%).

[35] Economic Policy Uncertainty Index (https://www.policyuncertainty.com/).

Report – found, by comparing trends in uncertainty before the energy crisis, during the energy crisis but before the schemes, and after the schemes' introduction – that after the introduction of EBRS and EBDS, changes in uncertainty were decoupled from changes in energy prices. While this finding suggested that the schemes may have played a role in reducing uncertainty, this analysis did not provide statistically significant evidence that the schemes had a causal effect on reducing uncertainty. As such, this benefit was not estimated quantitatively in the CBA.

Improved energy market stability

The effect of the schemes on energy market stability was evaluated quantitatively using data on wholesale energy prices and the financial health of energy suppliers.

An analysis of the correlations between energy price series with different delivery dates (1) during the energy crisis and (2) after the introduction of the schemes suggested that the schemes improved market stability.[36] During the energy crisis, energy prices at different delivery dates were strongly correlated with each other; this correlation indicated that the energy market treated the crisis as a systemic issue, with disruptions affecting both immediate and long-term expectations. For further information, see Annex B: Quantitative Impact Report Section 3.3.

However, while the schemes' effect on energy market stability could be observed via correlation analysis, the magnitude of this effect could not be accurately estimated in monetary terms. As such, this benefit is not reflected in the CBA.

5.2.4 Results

Overall, this analysis finds that the benefits generated by the schemes to society outweigh their costs, suggesting good value for money from a social welfare perspective. Table 5.6 summarizes the total costs, benefits, net benefit, and BCR of the schemes. As shown, the schemes generated a substantial net benefit of nearly £20 billion, with a BCR of 11.39. As mentioned earlier, this ratio is high due to the exclusion of discount disbursed; however, the benefit to social cost ratio would be greater than 1 if it were to have been included.

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[36] This analysis is described in detail in Section 3.3 of Annex B: Quantitative Impact Report.

Table 5.6 Overview of CBA results

Measure	Social cost (£ million)	Benefit (£ million)
Costs		
Staff costs and contractors	£11	
Other costs	£43	
Fraud and error	£56	
Greenhouse Gas Emissions	£1,154	
Air pollution	£631	
Benefits		
Increased economic output from reduced energy expenditures and related benefits[1]	–	£21,580
Total	**£1,895**	**£21,580**
Net Benefit		**£19,685**
Benefit-Cost Ratio		**11.391**

Notes: [1] As noted above, this benefit is estimated as a change in overall economic output, and as such includes other distinct but related benefits such as prevented redundancies and insolvencies, and increased turnover.

The CBA findings were similar for EBRS and EBDS individually. Using the estimated costs and benefits for EBRS and EBRS, as described above, both EBRS and EBDS were found to yield substantial positive net benefits – proportional to the size of the scheme), with BCRs of 11.52 and 10.29, respectively.[37]

If the cost of damages from greenhouse gas emissions and air pollution were to be excluded on account of being no higher than a no-crisis scenario, as discussed in section 5.2.2 Estimation of costs, the costs would fall to £110 million and therefore the BCR would instead be 196.48.

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[37] The net benefit and BCRs for EBRS and EBDS were slightly overstated, as the benefits in Table 5.6 included the effects of NADFP (i.e., the *total* benefit of the schemes was allocated to EBRS and EBDS), while the costs did not (i.e., NDAFP costs were *not* allocated to EBRS and EBDS).

Table 5.7 CBA by scheme

Measure	EBRS (£ million)	EBDS (£ million)
Costs		
Staff costs and contractors	£4	£7
Other costs	£27	£15
Fraud and error	£53	£3
Greenhouse Gas Emissions	£1,092	£59
Air pollution	£597	£29
Benefits		
Increased economic output from reduced energy expenditures and related benefits[1]	£20,417	£1,157
Total costs	**£1,772**	**£112**
Total benefits	£20,417	£1,157
Net benefit	£18,645	£1,044
BCR	11.52	10.29

Notes:

[1] As noted above, this benefit is estimated as a change in overall economic output, and as such includes other distinct but related benefits such as prevented redundancies and insolvencies, and increased turnover.

5.3 Limitations of the Value for Money analysis

The CBA is subject to limitations, including in the precision of estimates obtained, costs and benefits that could not be monetised, and limitations inherent to the methodology used to monetise certain costs and benefits.

The primary benefit estimated in monetary terms – changes in overall economic output – was estimated using input-output (IO) modelling. As noted in the discussion of limitations in secondary data collection and analysis, the IO tables used in this analysis – for calendar years 2018 to 2020 – do not align with the period of intervention. As such, the conclusions drawn from IO modelling may differ from an analysis conducted with IO tables aligned to the scheme timeline, once these are released. The degree to which this limitation affects conclusions is likely to be comparatively minimal, but it is noted as a limitation.

The input-output (IO) analysis methodology employed to estimate the economic impacts of the support schemes is not well suited to sensitivity analysis as is often conducted in cost-benefit analyses (CBAs). Typically, CBAs assess the sensitivity of overall findings to variations in key parameters by running the CBA under a central, low, and high value of one or more parameters. Model parameters such as the discount rate, price projections, and similar variables are common targets of sensitivity testing. The structure of the typical CBA generally lends itself well to testing the sensitivity of these variables, as the CBA consists primarily of a

series of individual, stand-alone calculations which are then summed to yield total costs and benefits.

In an IO model, however, there are no model variables suitable to sensitivity analysis, as the values of IO relationships are determined jointly and cannot be varied to test the sensitivity of the overall IO model response. Additionally, the IO model itself is based on the input-output tables produced from national statistics, and therefore has a low level of uncertainty regarding the parameters of the model itself. While the IO model cannot itself be subjected to sensitivity testing, it is possible to test the sensitivity of an IO analysis to different values of the inputs to the IO model. In this case, however, this was deemed to not be a suitable approach, as the inputs were drawn from government records and are not themselves subject to uncertainty.

Alternatively, the results of the IO analysis could be presented under different definitions of overall economic impact. The lower end of this range would consist of direct impacts only (i.e., the immediate effects of the support on the sectors which received it). The upper end of this range - which is presented in this analysis - would consist of the combined direct, indirect, and induced impacts (i.e., the direct impacts, indirect impacts as direct effects ripple through the supply chain, and induced effects resulting from the effects of increased income and household spending). This approach, however, is not a sensitivity analysis, per se, but rather presents different definitions of economic impact. As such, this method was not employed, and only the total impact was presented in this analysis.

Analyses of the schemes' impact on NDOs' financial health (including turnover), employment, and uncertainty did not find statistically significant evidence of the schemes causal effect on these outcomes. While the magnitude of these impacts has been estimated in this report, their monetary value has not been included directly in the CBA or VfM; instead, as noted above, the value of some of these benefits is included implicitly in the IO analysis of the benefits of reduced energy costs and increased (relative to a counterfactual scenario without support) economic activity. The fact that statistically significant links between the schemes and certain outcomes were not found may indicate that the estimated benefits are somewhat overstated, as can be a limitation of IO modelling.

The limited ability to estimate benefits for schemes individually may obscure differences in the net benefit of each scheme. While the overall conclusion that the schemes yielded positive benefits is likely to hold true for each scheme individually, we are unable to characterise differences in the benefit to cost ratio between schemes, and therefore unable to comment on whether specific scheme designs represented better value for money than another.

Additionally, several benefits that can be attributed to the schemes cannot be estimated quantitatively due to data limitations, or can be quantified but not conclusively attributed. These benefits include social benefits of reduced unemployment beyond the effects on overall economic output, such as avoided payment of unemployment benefits, improved mental and physical health, and improved social cohesion; benefits of reduced insolvencies such as avoided costs of legal proceedings and effects on energy market stability; effects on inflation; and effects on reducing gaming and fraud. The directionality of these benefits is likely to be

positive, so if they were able to be included in the CBA, their inclusion would likely strengthen the findings presented above.

Appendix

Appendix A: NDO survey weighting approach

This section summarizes the weighting approach for the surveys of NDOs, which forms part of the wider evaluation of Non-Domestic Energy Affordability Support.

In the absence of a single data set that covers the profile of the population of UK NDOs it was necessary to use a combination of two data sets: the Department for Business and Trade's Business Population Estimates (BPE) and the Office for National Statistics Interdepartmental Business Register (IDBR) sourced from NOMIS. The former has better coverage of the UK NDO population as a whole, but does not contain detail on the profile of public and voluntary sector organisations in terms of size and industry. IDBR data was used to fill this gap.

Using these data sets, IFF applied a series of five calibration weights to make the achieved survey sample representative of the underlying population of UK NDOs in terms of sector (i.e., private, public and voluntary), industry, size (i.e., micro, small, medium and large) and region.

Table A1 Overview of NDO survey weights

Weight	Audience	Description	Source	Profile	Note
A	Private sector	Ensures the achieved survey sample of private sector organisations is representative in terms of industry by size.	BPE	Table A2 and Table A3	
B	Public sector	Ensures the achieved survey sample of public sector organisations is representative in terms of industry and size.	IDBR	Table A4 and Table A5	It was not possible to acquire an interlocking profile of industry and size.
C	Voluntary sector	Ensures the achieved survey sample of voluntary sector organisations is representative in terms of industry and size.	IDBR	Table A6 and A7	It was not possible to acquire an interlocking profile of industry and size.
D	All	Ensures the achieved survey sample is representative in terms of sector (i.e. the split between private, public and voluntary).	BPE	Table A8	
E	All	Ensures the achieved survey sample is representative in terms of region.	BPE	Table A9	

Table A2 Stage 1 Private sector NDO population, industry by size (source: BPE)

Industry	Micro	Small	Medium	Large	Total
Agriculture, Forestry and Fishing	1.97%	0.34%	0.12%	0.09%	2.52%
Mining and Quarrying; Energy; Water Supply; Sewerage, Waste	0.62%	0.28%	0.06%	0.09%	1.05%
Manufacturing	9.38%	5.75%	1.82%	0.62%	17.57%
Construction	11.08%	3.45%	0.65%	0.15%	15.32%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	6.77%	3.29%	0.58%	0.46%	11.11%
Transportation and Storage	3.38%	1.42%	0.31%	0.18%	5.29%
Accommodation and Food Service Activities	1.05%	1.29%	0.62%	0.25%	3.20%
Information and Communication	3.57%	0.98%	0.12%	0.06%	4.74%
Financial and Insurance Activities	1.29%	0.52%	0.18%	0.09%	2.09%
Real Estate Activities	1.75%	0.77%	0.03%	0.06%	2.62%
Professional, Scientific and Technical Activities	10.31%	2.86%	0.37%	0.37%	13.91%
Administrative and Support Service Activities	4.46%	1.48%	0.49%	0.34%	6.77%
Education	1.38%	0.55%	0.18%	0.00%	2.12%
Human Health and Social Work Activities	3.08%	0.77%	0.22%	0.18%	4.25%

Industry	Micro	Small	Medium	Large	Total
Arts, Entertainment and Recreation	1.88%	1.20%	0.28%	0.09%	3.45%
Other	3.57%	0.37%	0.03%	0.03%	4.00%
All	65.54%	25.32%	6.06%	3.08%	100.00%

Table A3 Stage 2 Private sector NDO population, industry by size (source: BPE)

Industry	Micro	Small	Medium	Large	Total
Agriculture, Forestry and Fishing	2.56%	0.07%	0.01%	0.01%	2.64%
Mining and Quarrying; Energy; Water Supply; Sewerage, Waste	0.39%	0.04%	0.01%	0.01%	0.44%
Manufacturing	4.34%	0.38%	0.11%	0.02%	4.85%
Construction	15.53%	0.33%	0.04%	0.01%	15.90%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	9.07%	0.68%	0.09%	0.02%	9.86%
Transportation and Storage	6.09%	0.14%	0.03%	0.01%	6.27%
Accommodation and Food Service Activities	3.35%	0.64%	0.06%	0.01%	4.06%
Information and Communication	5.48%	0.20%	0.04%	0.01%	5.73%
Financial and Insurance Activities	1.36%	0.06%	0.02%	0.01%	1.44%
Real Estate Activities	2.52%	0.10%	0.01%	0.01%	2.63%
Professional, Scientific and Technical Activities	13.37%	0.43%	0.07%	0.01%	13.88%
Administrative and Support Service Activities	8.52%	0.33%	0.08%	0.02%	9.95%
Education	5.49%	0.08%	0.01%	0.00%	5.58%
Human Health and Social Work Activities	5.72%	0.37%	0.07%	0.01%	6.17%

Industry	Micro	Small	Medium	Large	Total
Arts, Entertainment and Recreation	4.94%	0.09%	0.02%	0.00%	5.05%
Other	6.45%	0.10%	0.01%	0.01%	6.56%
All	95.18%	4.01%	0.67%	0.14%	100.00%

Table A4 Stage 1 Public sector NDO population, size and industry (source: IDBR)

Organisation size	%
Micro	58.15%
Small	10.81%
Medium	16.86%
Large	14.18%
Total	**100.00%**

Industry	%
Agriculture, Forestry and Fishing	0.04%
Mining and Quarrying; Energy; Water Supply; Sewerage, Waste	0.44%
Manufacturing	0.04%
Construction	0.12%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	0.04%
Transportation and Storage	0.72%
Accommodation and Food Service Activities	0.08%
Information and Communication	0.08%
Financial and Insurance Activities	0.16%
Real Estate Activities	0.36%

Industry	%
Professional, Scientific and Technical Activities	0.40%
Administrative and Support Service Activities; Public admin and defence	62.26%
Education	30.05%
Human Health and Social Work Activities	3.73%
Arts, Entertainment and Recreation	0.88%
Other	0.60%
Total	**100.00%**

Table A5 Stage 2 Public sector NDO population, size and industry (source: IDBR)

Organisation size	%
Micro	58.15%
Small	10.81%
Medium	16.86%
Large	14.18%
Industry	**%**
Primary and Utilities	0.5%
Construction	0.1%
Accommodation and Transport	0.8%
Business Services	1.0%
Administrative and Support Services Activities	62.2%
Education	30.1%
Human Health and Social Work Activities	3.7%
Arts, Entertainment and Recreation	0.9%
Other Service Activities	0.6%
Total	**100.00%**

Table A6 Stage 1 Voluntary sector NDO population, size and industry (source: IDBR)

Organisation size	%
Micro	78.82%
Small	15.90%
Medium	3.89%
Large	1.39%
Total	100.00%

Industry	%
Agriculture, Forestry and Fishing	0.86%
Mining and Quarrying; Energy; Water Supply; Sewerage, Waste	0.18%
Manufacturing	0.34%
Construction	0.74%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	1.63%
Transportation and Storage	0.61%
Accommodation and Food Service Activities	6.08%
Information and Communication	1.13%
Financial and Insurance Activities	15.67%
Real Estate Activities	3.73%

Industry	%
Professional, Scientific and Technical Activities	3.41%
Administrative and Support Service Activities; Public admin and defence	4.29%
Education	7.49%
Human Health and Social Work Activities	22.93%
Arts, Entertainment and Recreation	10.57%
Other	20.36%
Total	100.00%

Table A7 Stage 2 Voluntary sector NDO population, size and industry (source: IDBR)

Organisation size	%
Micro	78.82%
Small	15.90%
Medium	3.89%
Large	1.39%
Total	100.00%

Industry	
Primary, Manufacturing, Utilities, Construction	2.1%
Trade, Accommodation and Transport	8.3%
Business Services	24%
Administrative and Support Service and Public Administration and Defence	4%
Education	7%
Human Health and Social Work Activities	23%
Arts, Entertainment and Recreation	11%
Other Service Activities	20%
Total	100.00%

Table A8 UK NDO population, sector (source: BPE)

Sector	%
Private	98.22%
Public	0.22%
Voluntary	1.56%
Total	100.00%

Table A9 UK NDO population, region (source: BPE)

Region	%
North East	2.82%
North West	9.81%
Yorkshire and the Humber	7.01%
East Midlands	6.88%
West Midlands	8.07%
East of England	10.25%
London	18.89%
South East	15.34%
South West	9.43%
Wales	3.94%
Scotland	5.37%
Northern Ireland	2.20%
Total	100.00%

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