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Industrial Energy Transformation Fund (IETF) Phase 1: First-Stage Process Evaluation

Main Report

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Acknowledgements

This independent report was produced for BEIS by Steer Economic Development (Steer-ED), supported by specialist industrial consultants Arthur D. Little (ADL) and Cambridge Econometrics, and assisted by JBA Consulting.

We are grateful to all participants who agreed to be interviewed in research for this report.

Any enquiries regarding this publication should be sent to us at:
ietf@beis.gov.uk

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Executive Summary

The Industrial Energy Transformation Fund

The Industrial Energy Transformation Fund (IETF) was announced in the 2018 Budget as a means of supporting businesses with high energy use transition to a low carbon future. It provides grant-funding to manufacturing sectors and data centres to deploy energy efficiency and deep decarbonisation technologies, and to invest in feasibility and engineering studies of emerging technologies.

Strategically, the IETF sits within the context of the Government's long-term plans towards Net-Zero carbon emissions by 2050, as set out in the Government's Energy White Paper (2020)[1], 10-Point Plan (2020), and the Industrial Decarbonisation Strategy (2021).

A total of £289m in grant funding is available through the IETF in England, Wales, and Northern Ireland. Applications were open for the 'first wave' of funding ('Phase 1 Summer 2020 Application Window', approximately £30m) from July to October 2020, and for a 'second wave' ('Phase 1 Spring 2021 Application Window', approximately £30m), from March to July 2021. The evidence in this report relates just to the first 'wave' in Summer 2020[2].

Phase 2 of the IETF will be delivered in subsequent 'windows' from Autumn 2021, incorporating funding for deep decarbonisation measures, and building on lessons learned from Phase 1. Funding for all windows is expected to be spent by March 2025, subject to confirmation in the next Spending Review.

Process Evaluation Purpose and Objectives

Steer Economic Development (Steer-ED), supported by specialist industrial consultants Arthur D. Little (ADL) and Cambridge Econometrics, and assisted by JBA Consulting, were commissioned by the Department for Business, Energy and Industrial Strategy (BEIS) to deliver a Process Evaluation of the IETF's Phase 1 delivery (Summer 2020 Window).

The objectives for the Process Evaluation workstream in the round (i.e this study and a subsequent final-stage one), as set out in the Department's Invitation to Tender, are as follows:

- Understand the response from industry to Phase 1, including the extent to which the incentives offered by Phase 1 were understood and attractive to different industrial sectors. This includes assessing the stakeholder engagement activities of BEIS and Innovate UK (the fund's initial delivery partner);

[1] Energy White Paper: Powering our Net-Zero Future, HM Government, 2020.
[2] The Spring 2021 Application Window is formally out-of-scope for this Phase 1 *first-stage* Process Report. The Evaluators are advised by the IETF Team that learning from the Summer 2020 Application Window (including market intelligence, stakeholder engagement, and findings from early versions of this report) informed some of the changes made to the Spring 2021 Application Window.

- Understand how well the delivery of Phase 1, undertaken on BEIS' behalf by Innovate UK, supported the IETF's aims, and in the light of this to propose improvements;
- Examine the characteristics of Phase 1's design (e.g. timing, length of funding window, eligibility, and assessment criteria) and consider the extent to which these supported the IETF's objectives;
- Describe the adaptations that occurred during the fund's Phase 1 delivery cycle, and determine the extent to which the processes in practice matched the intention;
- Highlight short-term unintended consequences (positive or negative) of the policy (e.g. impact on other policies, changes to industry behaviour, etc);
- Obtain an early understanding of how the IETF has changed the market for energy efficiency and deep decarbonisation technologies and the decision-making of relevant businesses;
- Test the fund's Theory of Change against available evidence, and suggest modifications as necessary; and
- Provide timely process lessons before subsequent funding rounds open (to improve policy and processes economy, efficiency, and effectiveness).

Assessment Framework for this Report

Our approach to delivering the Phase 1 first-stage Process Evaluation of the IETF was informed by HM Treasury's Magenta Book[3] and Cabinet Office's Guidance for General Grants[4] (including Minimum Requirement Five: Competition for Funding[5]).

Accordingly, we devised a fourfold assessment framework for the process evaluation of IETF's Phase 1 Summer 2020 Application Window, comprising:

Evaluation Aspect 1: Programme Design and Governance - This assesses the initial design of the IETF, and how in operation it is being governed and managed, from initiation through to completion. This includes a detailed assessment of how the Strategic Case and Theory of Change for the IETF were developed, and how operational aspects (governance and delivery bodies involved, the justification for a grant programme, the establishment of funding cycles, the overall length of the programme, and eligibility criteria, etc) are being progressed practically;

Evaluation Aspect 2: Awareness Raising and Pre-Application Support - This assesses the activities conducted to promote and publicise the IETF, including the types of networks and media used, and the support given to potential applicants to help inform their decision as to

[3] https://www.gov.uk/government/publications/the-magenta-book
[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896334/Grants-Standards-Guidance-INTRO.pdf
[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896340/Grants-Standard-FIVE-Competition.pdf

whether this is an appropriate support mechanism for their proposed project. This aspect also assesses the process by which applications to the IETF are encouraged and stimulated;

Evaluation Aspect 3: Application, Assessment, and Award - This assesses the application and assessment guidance and how this resource was deployed. Assessment under this aspect considers logistical issues, such as the periodicity, sequencing, and elapsed time of the IETF's funding windows, and the processes of project development. It also includes an assessment of the award and applicant feedback processes;

Evaluation Aspect 4: Monitoring, Evaluating, and Reporting - This final aspect of the assessment framework assesses how the IETF's progress, outputs, outcomes, and impact will be monitored and, as the programme builds momentum, how formal evaluation will take place. This is briefly discussed where relevant in this report but will be explored more intensively in subsequent process work.

Work Done

Scoping

This comprised formal Scoping Interviews with 11 key internal BEIS stakeholders closely involved with the IETF, to inform the overall study's final design;

Desk Review

This involved reviewing documents setting out the context and rationale for the IETF, reviewing relevant parts of the IETF's Full Business Case, the Assurance Framework, fund guidance documentation, application form materials, assessment process documents, applications to the IETF, and assessor feedback. The experience of nine similar schemes operating in the UK and internationally was reviewed to identify relevant learning applicable to the IETF and its context.

Fieldwork

In-depth interviews and focus groups were carried out with applicants (both successful and unsuccessful) and non-applicants (both those who were aware of the IETF, and those who were not). Specifically, this comprised:

- Between November 2020 and February 2021, consulting 35 firms which did not apply to the IETF Summer 2020 Application Window (21 via 'depth' interviews and 14 via two Focus Groups);
- Between February – March 2021, interviewing 'Summer 2020 Application Window' applicants. 22 'depth' interviews covered 15 successful firms, four unsuccessful, and three firms which submitted both successful and unsuccessful applications;
- Formal analysis and review of the IETF Team's post-Application Survey, undertaken in Autumn 2020, taking-in 25 respondents; and

- Consultations with ‘Wider Stakeholders’ interested in the IETF, including seven extended telephone consultations with senior colleagues in the Devolved Administrations, regional cluster bodies, and at the UK Climate Change Committee.

Findings and Recommendations

The headline findings below reflect the Evaluation Aspects used to characterise the IETF’s process approach so far. Alongside ‘findings’ for each Evaluation Aspect, evidence-based recommendations are provided where relevant. For each recommendation offered, key Action Leads are defined (here, the term the ‘IETF Team' is taken to mean those BEIS officials tasked with designing, implementing, and monitoring/evaluating the IETF).

Evaluation Aspect 1A: Governance and Programme Design – Case and Justification

Findings

- The IETF is high-profile, and successful high-quality delivery is vital to building industry confidence in the Government's ability to deliver Net-Zero commitments.
- The IETF’s design aligns well with the Net-Zero imperative defined in UK (and international) policy, and the specific challenges of deep-decarbonisation and energy efficiency in private sector energy-intensive firms. In the IETF’s Strategic Case, the Context demonstrates a strong understanding of the issues faced by industry, and the Rationale for intervention is sound. Wider stakeholders are supportive and recognise the IETF as important and necessary. Good foundations have been laid.
- The IETF’s initial Theory of Change has been iterated and developed since 2019. Refinements include adding Context and Rationale, and specifying a fuller set of Outputs, Outcomes and Impacts with a clear logical connection to the fund’s Objectives. This has brought the Theory of Change into line with the BEIS Monitoring and Evaluation Framework.
- The Strategic Case, stakeholder consultations, and our own work with the IETF Team to revise the Theory of Change provide good evidence that the IETF’s design and early implementation has adjusted to incorporate learning from experience and elsewhere. Going forward, the IETF’ strategic and tactical development needs to continue to reflect on experience from elsewhere.

Recommendations

EA1A-1: The Objectives and Outcomes in the Theory of Change should have timing and quantification detail added to them. Undertaken as a priority, this will complete the integrity of the Theory of Change. Action: IETF Team;

EA1A-2: We propose adding a four-fold typology of ‘strategic added value’ (SAV) to the Theory of Change to incorporate the fund’s role in delivering; Strategic Leadership and Catalysis, Engagement, Synergy, and Leverage regarding national decarbonisation and energy efficiency. Benefits reporting should include qualitative effects alongside formal quantified

Output/Outcome metrics; the combination of qualitative and quantitative effects will comprise the IETF's long-term legacy. Action: IETF Team;

EA1A-3: The Theory of Change should operate as a 'living document' to support the IETF's management, being reviewed explicitly and formally on a regularised six-monthly cycle; this can build on the review work which the IETF Team reports is now occurring. Action: BEIS

EA1A-4: The decarbonisation landscape is busy and noisy. The IETF's ongoing implementation should remain alert to, and aligned with, adjacent policy areas, with the IETF Team making links with these, when/wherever possible. Action: IETF Team, adjacent policy makers, and key IETF stakeholders; and

EA1A-5: Similar and current industrial energy efficiency and decarbonisation schemes implemented in the UK and internationally will continue to provide useful lessons for the IETF. The IETF's strategic and tactical development should continue to reflect on this substantial evaluative research resource, so that when necessary the IETF can deploy purposefully relevant practice. Action: IETF Team and key IETF stakeholders.

Evaluation Aspect 1B: Governance and Programme Design – Operations

Findings

- The IETF's design has been iterated with substantial market input – consultation has been serious and substantive. This is positive and helpful in trying to de-risk as many of the operating and process issues as possible.
- In operation the IETF's design has, so far, been able to flex promptly and responsibly to necessary feedback, be this from consultation, wider feedback, or the operating experience of the first funding window. The model now has a stable and certain core, which needs to be maintained going forward to create confidence and familiarity in the market. At the same time, delivery needs to continue to be agile, so the fund remains capable of adopting to new energy technologies/challenges as they emerge, and critically as the programme itself looks to transition into a second phase of activity.
- Clarity regarding organisational and technology eligibility was a significant weakness in the guidance for the Summer 2020 Application Window and has since been addressed for the Spring 2021 Window. Feedback from Summer 2021 applicants (and non-applicants) on the revised guidance would be beneficial for future stages of the fund.
- Governance arrangements to date are sound and resilient; there is a clear split between strategic oversight (the Project Board) and execution (the IETF Team). The governance structure reflects good practice and provides a solid foundation for a strong and robustly led and executed programme.
- The decision to use existing delivery expertise from Innovate UK was appropriate, benefitting from its previous grant fund management experience to 'quick-start' delivery activity. BEIS is now building its own internal delivery capability for the longer term. This evolution of delivery arrangements represents an effective mix of the need for an early pragmatic solution and building longer term direct responsibility.

Recommendations

EA1B-1: The inclusive and agile approach which the early phase of the IETF has demonstrated should continue; it is important that this is not driven out by the 'routine' of fund operation. Action: IETF Team, Innovate UK, and wider IETF stakeholders;

EA1B-2: With two full rounds completed, the IETF is maturing into a more stable and certain energy efficiency intervention, building confidence in the applicant base. Whilst ensuring this certainty, the IETF Team should at the same time remain open to further policy design and delivery changes, particularly as new technologies and sector opportunities emerge. Action: IETF Team; and

EA1B-3: Improvements made to the eligibility guidance in the Summer 2021 Application Window should be reviewed against applicant feedback to inform future phases of the fund. Action: IETF Team.

Evaluation Aspect 2: Awareness Raising and Pre-Application Support

Findings

- Firms (both applicant and non-applicant) were generally well-informed about the IETF from a variety of sources. Reducing payback periods was identified as strong incentive for applying to the IETF, which aligns closely with the market failures identified in the fund's Theory of Change. For those who had not heard of the IETF until approached by this Process Evaluation, interviewees described issues such as being overwhelmed with information, not having dedicated resources to seek out funding opportunities, and/or a reliance on peers/advisors to bring opportunities to their attention.
- Applicants identified that uncertainty over eligibility criteria was a common issue in deciding whether and what bids to make. Other common themes were the funding threshold and timing, both of which have been addressed with a reduced funding threshold for the Summer 2021 Application Window and a commitment for the remainder of the IETF to be implemented via rolling windows.
- There is no evidence of activity yet to develop supply-side capability (i.e. market-based expertise and funding sources which can pick-up when the IETF programme finishes). Building the supply-side is a key part of the rationale for the IETF and should not be overlooked.

Recommendations

EA2-1: While interviewees mostly showed a good level of understanding of the IETF, there was evidence that some firms had not updated their understanding since early programme communications. As the IETF continues to evolve with each Phase, changes must be communicated clearly to the applicant base. Action: IETF Team and Delivery Function;

EA2-2: Dedicated effort should be given to ensuring that SMEs, in particular, are aware of the opportunities presented by the IETF and its application requirements. Action: IETF Team, Delivery Function, and Wider Stakeholders;

EA2-3: The timing of Application Windows, including their elapsed length, should be kept under review, particularly with respect to the need to align with applicants long-term corporate capital cycles and the challenges for firms 'fitting in' with short windows. Action: IETF Team;

EA2-4: The IETF Team should think through how service providers in the market can be engaged more effectively as substantive partners in the IETF going forward, this as part of building an effective supply-side capability to provide expertise and finance once the IETF has run its course. Action: IETF Team, Wider Stakeholders, and key private sector partners.

Evaluation Aspect 3: Application, Assessment, and Award

Findings

- Our research identified that the Application, Assessment, and Award processes were largely sound. Most issues encountered have been addressed through improvements to the process for the Spring 2021 Application Window. Work is still needed to improve the consistency of assessment, notably additional training for assessors.
- A clear focus on eligibility needs to be retained to ensure that firms are clear on whether their organisation and project concept are in-scope to avoid abortive work by applicants. Against this context, the IETF Team has demonstrated responsiveness and flexibility in responding to feedback by, for example, reducing the minimum grant threshold both for the Phase 1 Summer 2020 Application and Spring 2021 Application Windows.
- Prospective applicants expressed a strong desire for more flexible fund timelines and Application Windows. The IETF Team has responded with future waves of funding to be conducted via a series of rolling Application Windows.
- We assess, and interviewed applicants generally agreed, that the effort required to apply to the IETF is commensurate with, and proportionate to, the financial scale of IETF grant awards. Introducing a two-stage process (perhaps on a pilot basis) could help sift out ineligible projects earlier, and minimise nugatory work, although many of the issues applicants encountered in the Summer 2020 Application Window may be due to this being the first tranche of applications to a new scheme. Providing information about the types and nature of successful applications in preceding windows could help future applicants understand eligibility criteria.
- Several issues highlighted in this Evaluation Aspect were addressed in time for the Spring 2021 Application Window, evidencing the responsiveness of the IETF Team and Innovate UK and their willingness to address concerns. This commitment to continuous development and improvement should be retained throughout the delivery of the IETF.

Recommendations

EA3-1: Further training for assessors should be incorporated into future funding rounds to reduce any inconsistency of application assessment. Action: IETF Team; and

EA3-2: Changing to a two-stage assessment should be considered for future application windows, reflecting applicant feedback around minimising wasted effort on ineligible bids. Action: IETF Team.

Glossary

The following abbreviations are used throughout this report:

Abbreviation	Definition
ACA	Accelerated Capital Allowances
ADL	Arthur D. Little, sub-contractor to Steer-ED
BEIS	Department for Business, Energy & Industrial Strategy
CAD	Computer-aided design
CCC	Climate Change Committee
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Utilisation and Storage
CRC	Carbon Reduction Commitment
EE	Energy Efficiency
EII	Energy-intensive Industry
EPC	Engineering, procurement and construction
GMPP	Government Major Projects Portfolio
HMT	Her Majesty's Treasury
HNIP	Heat Networks Improvement Project
IAAP	Integrated Assurance and Approvals Plan
IDS	Industrial Carbonisation Strategy

Abbreviation	Definition
IETF	Industrial Energy Transformation Fund
IHRS	Industrial Heat Recovery Support programme
JBA	Jeremy Benn Associates Limited, sub-contractor to Steer-ED
NAO	National Audit Office
PMO	Project Management Office
SIC	Standard Industrial Classification
SICE	Science and Innovation for Climate Energy
SMART	Specific, Measurable, Actionable, Realistic, and Timely
SME	Small/Medium Enterprise
SRO	Senior Responsible Owner
TRL	Technology Readiness Level

Chapter 1: Introduction to the IETF and this Process Evaluation

The Industrial Energy Transformation Fund

The Industrial Energy Transformation Fund (IETF) was announced in the 2018 Budget as a means of supporting businesses with high energy use transition to a low carbon future. It provides grant-funding to manufacturing sectors and data centres to deploy energy efficiency and deep decarbonisation technologies, and to invest in feasibility and engineering studies of emerging technologies.

Strategically, the IETF sits within the context of the Government's long-term plans towards Net-Zero carbon emissions by 2050, as set out in the Government's Energy White Paper (2020)[6], 10-Point Plan (2020), and the Industrial Decarbonisation Strategy (2021).

A total of £289m in grant funding is available through the IETF in England, Wales, and Northern Ireland. Applications were open for the 'first wave' of funding ('Phase 1 Summer 2020 Application Window', approximately £30m) from July to October 2020, and for a 'second wave' ('Phase 1 Spring 2021 Application Window', approximately £30m), from March to July 2021. The evidence in this report relates just to the first 'wave' in Summer 2020[7].

Phase 2 of the IETF will be delivered in subsequent 'windows' from Autumn 2021, incorporating funding for deep decarbonisation measures, and building on lessons learned from Phase 1. Funding for all windows is expected to be spent by March 2025, subject to confirmation in the next Spending Review.

Process Evaluation Purpose and Objectives

Steer Economic Development (Steer-ED), supported by specialist industrial consultants Arthur D. Little (ADL) and Cambridge Econometrics, and assisted by JBA Consulting, were commissioned by the Department for Business, Energy and Industrial Strategy (BEIS) to deliver a Process Evaluation of the IETF's Phase 1 delivery (i.e. the Summer 2020 Application Window).

The objectives for the Process Evaluation workstream in the round (i.e. this study and a subsequent final-stage one), as set out in the Department's Invitation to Tender, are as follows:

[6] Energy White Paper: Powering our Net-Zero Future, HM Government, 2020.
[7] The Spring 2021 Application Window is formally out-of-scope for this Phase 1 *first-stage* Process Report. The Evaluators are advised by the IETF Team that learning from the Summer 2020 Application Window (including market intelligence, stakeholder engagement, and findings from early versions of this report) informed some of the changes made to the Spring 2021 Application Window.

- Understand the response from industry to Phase 1, including the extent to which the incentives offered by Phase 1 were relevant and attractive to different industrial sectors. This included assessing the stakeholder engagement activities of the IETF Team and Innovate UK;
- Understand how well the delivery of Phase 1, undertaken on BEIS' behalf by Innovate UK, supported the IETF's aims, and in the light of this to propose improvements;
- Examine the characteristics of Phase 1's design (e.g. timing, length of funding window, eligibility, and assessment criteria) and consider the extent to which these supported the fund's objectives;
- Describe the adaptations that occurred during the fund's Phase 1 delivery cycle, and determine the extent to which the processes in practice matched the intention;
- Highlight short-term unintended consequences (positive or negative) of the policy (e.g. impact on other policies, changes to industry behaviour, etc);
- Obtain an early understanding of how the IETF has changed the market for energy efficiency and deep decarbonisation technologies and the decision-making of relevant businesses;
- Test the fund's Theory of Change against available evidence, and suggest modifications as necessary; and,
- Provide timely process lessons before subsequent funding rounds open (to improve policy and process economy, efficiency and effectiveness).

This Phase 1 first-stage Process Evaluation reports findings from the initial process evaluation work conducted from October 2020 to July 2021. This report provides early findings on the objectives and identifies recommendations for future funding rounds.

Approach and Structure

Our approach to delivering the Phase 1 first-stage Process Evaluation of the IETF was informed by HM Treasury's Magenta Book[8] and Cabinet Office's Guidance for General Grants[9] (including Minimum Requirement Five: Competition for Funding[10]).

The outcomes of a process evaluation should help inform the attribution elements of any associated impact evaluation, in terms of why the intervention did or did not deliver the expected change, however this Phase 1 first-stage Process Evaluation is concerned exclusively with process. Impact evaluation of the IETF will occur later in its life-cycle.

[8] https://www.gov.uk/government/publications/the-magenta-book
[9] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896334/Grants-Standards-Guidance-INTRO.pdf
[10] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896340/Grants-Standard-FIVE-Competition.pdf

Accordingly, we devised a fourfold assessment framework for the process evaluation of IETF's Phase 1 Summer 2020 Application Window, comprising:

Evaluation Aspect 1: Programme Design and Governance (Chapters 2 and 3) - This assesses the initial design of the IETF, and how in operation it is being governed and managed, from initiation through to completion. Chapter 2 includes a detailed assessment of how the Strategic Case and Theory of Change for the IETF were developed, with Chapter 3 addressing operational aspects, such as the governance and delivery bodies involved, the justification for a grant programme (compared, for example, with a loan or tax relief approach), the establishment of funding cycles, the overall length of the programme, and eligibility criteria.

Evaluation Aspect 2: Awareness Raising and Pre-Application Support (Chapter 4) - This assesses the activities conducted to promote and publicise the IETF, including the types of networks and media used, and the support given to potential applicants to help inform their decision as to whether this is an appropriate support mechanism for their proposed project. This aspect also assesses the process by which applications to the IETF are encouraged and stimulated.

Evaluation Aspect 3: Application, Assessment, and Award (Chapter 5) - This assesses the application and assessment guidance and how this resource was deployed. Assessment under this aspect considers logistical issues, such as the periodicity, sequencing and elapsed time of the IETF's funding windows, and the processes of project development. It also includes an assessment of the award and applicant feedback processes, with the latter reported for both successful and unsuccessful applicants.

Evaluation Aspect 4: Monitoring, Evaluating, and Reporting - This final aspect of the assessment framework assesses how the IETF's progress, outputs, outcomes and impact will be monitored and, as the programme builds momentum, how formal evaluation will take place. This is briefly discussed where relevant in this report but will be explored more intensively in subsequent process work.

Summary of Methodology

We assessed each aspect of our assessment framework for the IETF through primary evidence, from interviews and surveys, and secondary evidence collected through desk review. The methodology is summarised below; further methodological detail is in the Methodology Appendix.

Scoping: Initial interviews with 11 internal BEIS stakeholders

Interviewees, drawn from a purposive sample of BEIS personnel involved in the design and launch of the IETF, were identified and provided by the IETF Team to the Evaluation Team. Using a standard Aide Memoire, and with interviews conducted across multiple researchers who could challenge biases in each other, these consultees were invited to comment on:

- IETF's policy development and scheme design;

- What success might look like for the IETF;
- Challenges and successes encountered during IETF's delivery-to-date;
- Key considerations, risks, and opportunities for the Process Evaluation;
- Potential unintended consequences of the IETF; and
- What other work, or stakeholders, should be drawn on to contribute to the evaluation.

Key findings from the Scoping Interviews, which shaped the subsequent design and delivery of the Phase 1 first-stage Process Evaluation, included:

- The importance of the replicability, scalability, and identification of the spill-over of benefits to non-IETF beneficiaries via the dissemination of results (leading, for example, to 'copycat' installations);
- Concern over the extent to which the significant external disruption in 2020 (the arrival of the COVID-19 Pandemic and EU Exit) might affect adversely the fund's launch and establishment;
- Questions around whether the IETF's eligibility requirements were defined appropriately, and whether firms had sufficient clarity and support to be able to complete effective applications to the IETF; and
- Emphasis on the role of Phase 1 in providing a successful 'prototype' model to help inform the delivery of Phase 2, which will tackle more complex technologies and industry requirements.

The findings from these Scoping Interviews contributed to the development of the wider research methodology, and a review of the IETF's then Theory of Change.

Desk Review: Understanding the context to the IETF and other similar schemes; reviewing the guidance documentation, application form, assessment process, applications to the IETF, and assessor feedback

In this workstream, we reviewed documents relating to the design and delivery of the IETF (including key elements of the Full Business Case, and the Department's early work on the IETF's Theory of Change), 'best practice' in new scheme design and implementation (notably from the UK's Cabinet Office, as above), and relevant energy efficiency and decarbonisation policy.

Other information that fed into the Desk Review included early evidence regarding fund awareness and responses from industry provided by the IETF's Market Intelligence Team, and a document detailing how the design of the IETF was finalised in response to a public consultation conducted in 2019[11].

Although these documents varied widely in their natures and structures, a systematic approach to review was taken – i.e. triangulating potential documents across multiple sources, securing access to sensitive ones, maintaining document confidentiality, compiling those documents

[11] BEIS – IETF: finalising the design - summary of feedback and government response https://www.gov.uk/government/consultations/industrial-energy-transformation-fund-finalising-the-design

informed by their ability to help answer the study's objectives, understanding how/why/when documents were produced, determining document accuracy, and finally extracting and synthesising the information from the documents reviewed to help inform the evaluation's objectives. The research was conducted across multiple researchers who could challenge biases in each other.

We also considered similar current and previous energy efficiency and decarbonisation schemes implemented in the UK and aboard to identify potential process lessons of relevance to the IETF. Identified by the IETF Team and our specialist energy sub-contractors (JBA Consulting and Arthur D Little), these examples were selected to provide purposive and pragmatic insight into what have been experienced and learned elsewhere; this was not a rigorous and comprehensive review of the literature. With reviews conducted by multiple researchers who could challenge biases in each other, these schemes included:

Location	Schemes
UK	• The Heat Networks Improvement Project (HNIP); • The Industrial Heat Recovery Support programme (IHRS); and • The Public Sector Energy Efficiency Loan Scheme – England and Wales.
International	• Energy Efficiency Fund (E2F) - Singapore; • Emissions Reduction Fund – Australia; • Accelerated Capital Allowance Scheme – Ireland; • Italian Energy Efficiency White Certificate Scheme; • Swedish Programme for Improving Energy Efficiency in Energy-Intensive Industry (PFE); and • Denmark's Voluntary Agreement Scheme

Fieldwork: 'Depth' interviews and focus groups held with IETF applicants (both successful and unsuccessful) and non-applicants (both those who were aware of the IETF, and those who were not) to the Summer 2020 Window

This workstream comprised two 'waves' of semi-structured interviews and focus groups:

'Wave 1a': We interviewed firms that had not ultimately applied to the IETF's Summer 2020 Application Window. The purpose of these interviews was to understand firms' awareness of IETF, why they had not applied, and any future intention so to do. Drawing on the IETF Team's stakeholder database for non-applicants (a total of 157 firms), Steer-ED undertook 21 depth interviews (c. 45 minutes in length via a tele/video conference platform, depending on the interviewee's preference), and delivered two focus groups (with a total of 14 participants, held under MS Teams). The research was conducted across multiple researchers who could

challenge biases in each other. Given the size of the population available, interviews and focus groups could not be structured as robust and statistically representative samples of non-applicant firms' independent variables. As such, the sampling approach was purposive and pragmatic; given the numbers involved, formal allowance for bias arising from non-response could not be undertaken. The Wave 1a work was undertaken between November 2020 and February 2021; and

'Wave 1b': We interviewed successful and unsuccessful applicants to the Summer 2020 Application Window. The purpose was to understand motivations for applying, experiences of the IETF application process, the content of proposed projects and their expected benefits, and (if unsuccessful) if there was an intention to apply to future windows/Phases. All 63 lead applicants to the Summer 2020 Application Window were approached and asked to take part in depth interviews (c. 45 minutes in length, via a tele/video conference platform). In total, 22 interviews (a response rate of 35 per cent) were conducted. Despite follow-up emails, the response rate from unsuccessful applicants was lower than expected. The research was conducted across multiple researchers who could challenge biases in each other. As for 'Wave 1a', given the very modest size of the population available, interviews could not be structured as robust and statistically representative samples of firms' independent variables. As such, the sampling approach was purposive and pragmatic; again, given the small numbers involved, formal allowance for bias arising from non-response could not be undertaken. The Wave 1b work was undertaken between February and March 2021.

Detailed fieldwork research tools are in the Appendix

Fieldwork: Consultations with 'Wider Stakeholders' with particular interest in IETF

Finally, we sought to explore the perspectives of 'Wider Stakeholders'. Working jointly with the IETF Team, we co-identified organisations having a major influence on energy efficiency and deep decarbonisation in the UK. From this pool, seven extended semi-structured topic-based interviews were undertaken via a tele/video conference platform, covering relevant UK government agencies, the devolved administrations, and regional cluster/representative bodies. To these seven formal interviews was added the response by an eighth organisation to the IETF's recent Assurance Review, which had been prepared recently.

The emphasis of these interviews was on securing IETF-facing observation, commentary, suggestion, and comparison. The interviews focused on stakeholders' insights regarding wider UK's decarbonisation challenges, the degree to which the IETF design and delivery was likely to address these, and any views regarding the implementation of the Phase 1 Summer 2020 Application Window.

The interview cohort was not designed to be statistically representative; as such, the sampling approach was purposive and pragmatic. The research was conducted across multiple researchers who could challenge biases in each other. Again, given the small numbers involved, formal allowance for bias arising from non-response could not be undertaken.

Detailed fieldwork research tools are in the Appendix.

Additional Evidence

We have supplemented the primary research that we conducted independently for this report with, where appropriate, analysis of evidence collected by the IETF team during the policy development and delivery stages. Two key pieces of evidence were drawn on – (i) internal reports detailing qualitative insights and feedback provided by industry to the IETF Market Intelligence Team, and (ii) the results of a survey of all applicants collected by the IETF Team following the closure of the Application Window in Summer 2020. Although this survey was conducted for operational reasons (and so was not designed as a research instrument for process evaluation), it nevertheless provides useful information of evaluative value.

The post-application survey was developed by the IETF's Monitoring and Evaluation Team, and was issued applicants by Innovate UK. Its objective was to assess applicants' experience of the application process so that operational changes could be made to the scheme if required. As this survey was conducted by the IETF Team directly rather than as part of this evaluation report workstream, detailed discussion of methodology and resulting biases is beyond the scope of this report. However, we do note that the survey achieved a response rate of roughly 31% (25 responses relative to the 81 projects applied for in total in Phase 1, although a handful of responses received were from applicants with more than one project), so there is therefore likely to be some non-response bias. There is additionally some risk of sponsor bias (where applicants are aware that BEIS conducting the survey is not fully independent from the subject of the survey), although this may be partly mitigated by delivering the survey online, in an anonymous format, and using Innovate UK as an intermediary.

Similar research with applicants and non-applicants to subsequent IETF Application Windows will be conducted later in 2021/2022 and will be reported on in the Phase 1 final-stage Process Evaluation report.

Chapter 2: Evaluation Aspect 1A: Programme Design & Governance – Case & Justification

Purpose

Aligning with the assessment framework for the evaluation given in the Introduction, this Chapter sets the policy context for the UK's industrial decarbonisation agenda, assesses the rationale for the IETF as an intervention, and then reviews the theory of change for the fund.

The Policy Context

Broad Context of Net Zero

The Climate Change Act (2008) commits the UK government by law to reduce greenhouse gas emissions by 80 per cent by 2050 compared to 1990 levels. The Act created the UK's Climate Change Committee (CCC), an independent body to provide evidence-based advice to the UK Government and Parliament on mandatory carbon budgets and progress in adapting to climate change.

Following the CCC's 2019 report 'Net-Zero: The UK's contribution to stopping global warming'[12], the Government laid the draft Climate Change Act 2008 (2050 Target Amendment) Order 2019 to amend the Climate Change Act to include a 100 per cent reduction of greenhouse gas emissions target (compared to 1990 levels) by 2050. This positioned the UK as the first major economy to commit to a Net-Zero target on a legal basis.

These foundations have put the UK at the forefront of global markets for clean technology and decarbonisation. Large-scale change across the economy, supported by strong legislative, regulatory, and policy mechanisms, is now helping to drive carbon emissions, and transition the UK to a cleaner and greener environment and economy. More recent policy milestones of note include:

The UK Government's '10 Point Plan for a Green Industrial Revolution'[13], published in December 2020 aims to support a green industrial revolution by creating/supporting up to 250,000 jobs by 2030, leveraging private sector investment in innovative technologies that cut emissions in energy, transport, and buildings;

[12] Stark, Chris, Mike Thompson, and Climate Change Committee. 'Net-Zero: The UK's contribution to stopping global warming.' (2019).
[13] https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution

The 'Energy White Paper: Powering our Net-Zero future'[14], published in December 2020, setting out how the UK will clean up its energy system, and reach Net-Zero emissions by 2050.

Two documents of particular relevance to the IETF are the Sixth Carbon Budget[15], published in December 2020, and the Industrial Decarbonisation Strategy (IDS)[16], published in March 2021:

The Sixth Carbon Budget targets a 20% reduction in industrial emissions (the second highest priority, following Surface Transport). The Government is planning to move from the current piecemeal approach across Manufacturing, Construction, and the Fuel Supply industries to a comprehensive transition support framework. Taxpayer funding will be key in the early years to ensure industries stay competitive internationally, whilst reducing emissions.

The Industrial Decarbonisation Strategy for the UK sets how the UK government will support business to improve its energy productivity and help firms cut their energy use. The strategy:

Covers the full range of UK industry sectors, which account for around one sixth of UK emissions, highlighting the need for the transformation of their manufacturing processes if the UK is to meet its emissions targets over the coming decades[17]; and

Argues the UK can have a thriving industrial bases aligned with the Net-Zero target, without pushing emissions and business abroad.

In unison, these policies and strategies are working to ensure an increasingly comprehensive, coherent, and communicable approach to decarbonising UK industry, and ensuring significant progress in the early 2020s to support the UK's commitment to cut emissions by 78 per cent by 2035.

Specific Context for the Industrial Energy Transformation Fund

Rationale

The UK government's intervention in decarbonisation exists to address market and other failures. These include positive externalities (where the benefits of decarbonisation are not advanced spontaneously by the market, because participants cannot capture the value of the benefits they have paid for), and information asymmetries (where actors do not progress decarbonisation actions because they are unsure how to do so or of the benefits that will result).

Similarly, institutional failures (around the lack of coordinated action by policy actors, path dependency (when here-and-now decisions are driven overly by past ones), and an unwillingness to invest in technologies with long pay-back periods) also apply. In response, public sector intervention seeks to help address these market/other failures by leading the

[14] https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future
[15] https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf
[16] https://www.gov.uk/government/publications/industrial-decarbonisation-strategy. The IDS sets out how UK industry can decarbonise in line with Net-Zero, while remaining competitive and without pushing emissions abroad
[17] (BEIS, Final UK greenhouse gas emissions from national statistics: 1990 to 2018: Supplementary tables, 2020).

development, demonstration, and mainstreaming of a range of low-carbon approaches, such as energy efficiency, fuel switching, and carbon capture technologies.

Contextually, the UK's Manufacturing sector is responsible directly for 15.2 per cent of total UK greenhouse gas emissions, consuming 16 per cent of the electricity supplied[18]. Activities to improve energy efficiency are underway in manufacturing sub-sectors, notably in Steelmaking, Chemicals, Paper, and Glass/Ceramic/Cement industries, with major technology development programmes (including support from the Industrial Strategy Challenge Fund) to capture, store, and use carbon dioxide, as well as in the embodied carbon and energy efficiency of manufactured products. A key challenge for the downstream work to develop IETF's evaluation framework will be to separate out existing decarbonisation activities from those stimulated by the IETF itself.

Data centres are increasingly essential to the digitisation of the UK's economy and society, supporting the Fourth Industrial Revolution[19]. In 2018, globally, data centres accounted for 1 per cent of total global electric demand and emitted as much carbon dioxide as the global Aviation Industry[20]. Current estimates suggesting data centres will grow to between 8 per cent and 21 per cent of total electricity demand by 2030[21]. Data centre electricity consumption and carbon emissions must not grow at the same rate.

Against this background, the IETF was brought forward in 2018. It focuses on the manufacturing sectors (SIC 10-33) and data centres (63) and seeks to reduce the costs and risks of deep decarbonisation technologies by demonstrating and deploying these technologies. IETF supports energy efficiency projects and deep decarbonisation studies (in a first phase 'Phase 1'), with deep decarbonisation deployment projects included from 'Phase 2'. It aims to support investment in proven technologies, and in feasibility and capacity-building projects.

Addressing Barriers to Investment in the Private Sector

The IETF aims to address industry barriers to adopting deployable technologies and infrastructure, and accelerating progress towards Net-Zero by providing direct financial support to businesses. It has been designed to respond to the following barriers to investment in decarbonisation in the private sector:

Absolute Capital Constraints - Despite the existence of mature deployment-ready technologies for industrial energy efficiency across a range of industries, these often have lengthy payback periods, which exceed internal investment thresholds within businesses. While these investments may be cost effective in the long-term, they may not go ahead because businesses typically have other short- and medium-term investments to prioritise. Lack of

[18] GHG Source: Ricardo Energy and Environment, Office for National Statistics, Greenhouse Gas Emissions in the United Kingdom, 1990 to 2019; Consumption source: BEIS, Energy consumption by final user (energy supplied basis)
[19] Fourth Industrial Revolution: The growing combination of traditional manufacturing and industrial platforms and practices with the latest smart technology
[20] Pearce (2018)
[21] Masanet et al., 2020; Pearce, Fred (2018)

investment now could create ‘stranded assets’ which are not Net-Zero-compatible, creating so called technological lock-in;

Different stages of industrial decarbonisation maturity - There are a limited number of mature technologies available for industrial decarbonisation deployment (such as small-scale electrification and biomass). However, many of these have not yet reached market readiness, are currently too expensive, and/or are perceived as too risky to reduce cost-effectively carbon emissions, meaning additional support and feasibility may be required in the near term;

Relative benefits - Incentives to decarbonise are often viewed as inadequate compared to other potential investments. This is because:

- The poor current price of carbon, and the long life (and cost) of some capital equipment;
- The lack of knowledge/understanding among industry of the technologies available, their benefits and how/where to access (with associated worries about quality);
- Low profit margins and high competition in IETF target sectors, leading to risk aversion;
- Access to investment for more complex energy efficiency or deep decarbonisation projects is often limited;

Theory of Change for the IETF

IETF’s founding Theory of Change

A Theory of Change (ToC) is a commonly used device for representing the context, underlying rationale, and routes to achieving the intended objectives of a policy or intervention. There is increasing emphasis on their use in the public sector as an evidence-based and rationale-driven approach to developing optimal interventions.

Assessing the coherence, competitiveness, and communicability of the IETF’s ToC was a first key task for this Phase 1 first-stage Process Evaluation. Informed by policy contexts set out above, we assessed:

- The process by which the IETF Team had, over time, developed the fund’s ToC;
- The ongoing appropriateness of the IETF’s ToC, as the fund transitioned from setup and launch to formal mainstreaming; and
- How the ToC’s relevance and value might be maximised as the IETF rolls forward, for example in making it more fit-for-purpose in supporting the IETF’s intended monitoring and evaluation activities.

Figure 1 depicts the Theory of Change originally developed by the IETF Team in 2019, during the strategic development stage of IETF. It depicts the two ‘objectives’ of IETF, namely to (i) reduce energy costs and emissions for industry; and (ii) bring down the costs and risks of deep decarbonisation technologies through demonstration. A series of ‘outputs’, ‘outcomes’ and

'impacts' flow from these 'objectives'. Specific outcomes include reduced energy costs, reduced carbon emissions, increased resource efficiency and increased technical capacity.

Our reflections on this initial Theory of Change for the IETF were:

- The ToC did not present the 'context' being faced, or the 'rationale' for intervention in the market by the public sector. These were significant omissions and meant that the evidence and justification underpinning IETF's 'objectives' were not expressed in the Theory of Change. In line with ToC good practice, specifying the 'options' by which the objectives could be achieved would have been a useful addition to be clear why the IETF was judged to be the optimum form of intervention.
- Not all of the elements of the Theory of Change flowed clearly and sequentially from 'Our Interventions' (that is the proposed 'activities') through to 'impacts', in support of the IETF's objectives.

Subsequent Amendments to the Theory of Change

The Theory of Change at Figure 1 represents a relatively early version of the thinking behind the IETF, developed during initial policy development in Autumn 2019. Subsequently, the IETF Team reviewed and refreshed the ToC with our support in early 2021, after the close of the Phase 1 Summer 2020 Application Window.

We ensured that the revised ToC:

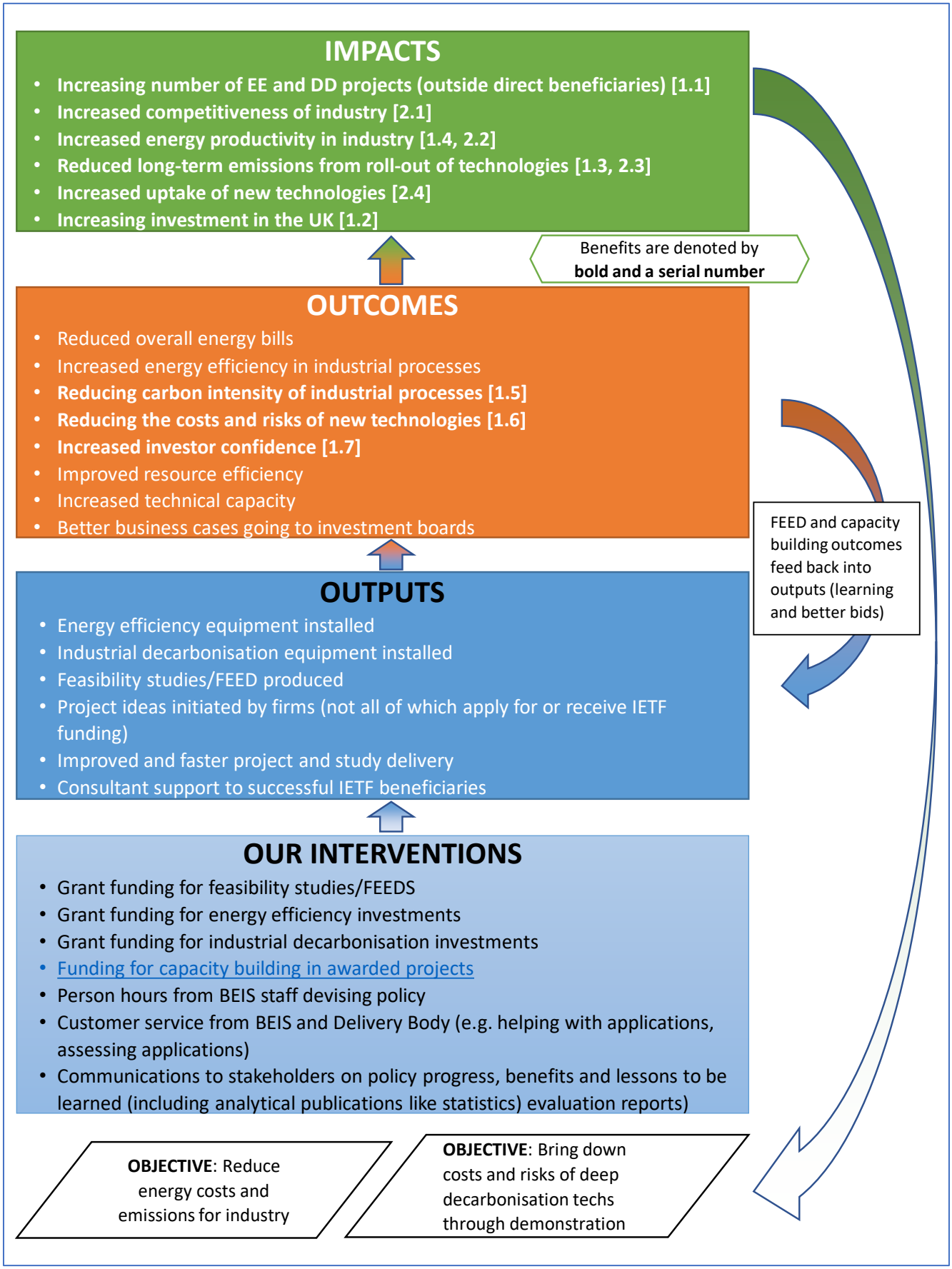
- Reflected the IETF as it was intended it would operate; there had been some evolution in the detail since its conceptualisation in 2019.
- Was fit-for-purpose in providing the foundations of a strong and robust monitoring and evaluation framework regime; this requiring a higher level of detail and specificity than might be required for early-stage policy thinking; and
- Anticipated the IETF's Phase 2 launch in Autumn 2021, which extends IETF's scope to include deployment of decarbonisation technologies.

Drawing directly from BEIS' Monitoring and Evaluation Framework[22], this development work was framed around eight logic components: Context; Rationale; Objectives; Inputs; Activities; Outputs; Outcomes; and Impacts. We facilitated a Theory of Change workshop on 22 January 2021, attended by IETF policy and analytical staff, IHRS policy staff; and our subcontractors Arthur D Little and JBA Consulting.

Our inputs to the workshop were informed by our early fieldwork, in particular the 'Scoping' and 'Wave 1a' interview activities. Based on the evidence collected, and a review of the 'fitness for purpose' of the existing Theory of Change, we made the following recommendations at the Theory of Change workshop:

[22] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/947722/beis-monitoring-evaluation-framework.pdf

Figure **1**: The IETF's Theory of Change (original version)



Source: BEIS, 2019

- The Theory of Change should be expanded to include sections on context and rationale, and including an options element should be considered. This would allow the ToC to state explicitly the market and other failures being addressed by the intervention, and how the proposed activities address these failures. It would also set the policy to in the context of other relevant national policies and strategies at a broader level, helping to ensure strategic fit and alignment, and to identify spillover effects and/or unintended consequences.
- That the IETF Team should consider expanding the objectives to include additional factors such as spillover benefits and changes in behaviour (both highlighted by stakeholder consultations), and to ensure that all objectives were tightly specified and 'SMART' (Specific, Measurable, Actionable, Realistic and Timely) and linked clearly to clearly defined and measurable outcomes, as required by good-practice in drafting objectives (such as BEIS' Monitoring and Evaluation Framework, and paragraph 4.9 et seq in HM Treasury's Green Book[23]). The IETF Team carefully considered these recommendations, but chose ultimately to retain the objectives as originally drafted; and
- Additional detail (such as, for example, the lack of supply-side expertise and the need to correct this, the importance of payback periods in firm decision-making, and the role of consultants in spreading knowledge) should be included at relevant points in the Theory of Change. This would ensure the Theory of Change reflected BEIS stakeholders' current understanding of the policy environment, to a level of detail not available when the IETF Team originally developed the Theory of Change.

Revised Theory of Change

Figure 2 shows the revised Theory of Change for the IETF, resulting from the review and discussions outlined above. The revised ToC, with its clear mapping of programme objectives, inputs, activities and outcomes, now lays the foundations for the fund's activities, potentially informing the fund's monitoring and evaluation plan. It articulates all the activities/events which are expected to occur for the IETF to deliver its objectives and achieve its outcomes. This is especially important as the IETF is expected to deliver impacts over a long timeframe. The monitoring of outputs and outcomes can give intermediate indications of the likelihood that the programme will deliver its objectives later. It can also help identify areas where the programme is not performing as planned, so changes can be made to the intervention in real time.

[23] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2020.pdf

Figure **2**: A revised Theory of Change for the IETF, March 2021 (EE = Energy Efficiency, DD = Deep Decarbonisation)

Output-Level Risks

- Delay in agreeing and balancing objectives.
- Project doesn't meet overall timetable or key milestones
- Inadequate internal capacity or capability to deliver the project
- Insufficient quantity or quality of industry projects that apply for the scheme
- Brexit and/or Covid-19 prevent companies from investing (e.g. due to uncertainty, financial insecurity or distracting attention/resources)
- Delivery Partner failure
- Government changes the programme…
  - …pulls budget from the IETF programme
  - …initiates other programmes with similar objectives
- Commodity price falls (oil, gas or electricity), making energy efficiency investment less attractive
- Conference of Parties results in signals that discourage investment
- State Aid regulation prevents BEIS from awarding funding
- IETF timeframe is too short to coincide with firms' investment timeframe or replacement cycle of capital'
- Larger number of applications than expected which complicate delivery'
- Insufficient demand for deep decarbonisation projects due to IETF supporting capex only

Outcome-Level Risks

- Beneficiaries commission supported intervention late (missed deadlines)
- Brexit/Covid-19 prevent beneficiaries from delivering funded projects
- Feasibility and/or FEED studies fail to prove case for investment (especially for DD)
- Fraud, error or gaming by beneficiaries
- New technology fails to deliver results or is unreliable
- Lack of appropriate follow-on support by BEIS
- Beneficiaries go bust
- Beneficiaries do not monitor benefits of intervention
- Unforeseen costs of intervention supported
- Supply chain providers increase their prices
- Supply chain providers do not adequately support provision of supported interventions
- There are bottlenecks in skills or procurement
- "First mover" disadvantage for non-beneficiaries
- DD projects including biomass lead to reduced air quality.
- DD projects increase energy costs
- No effective support for ongoing opex costs due to HMG opex support still being developed leads to project failure.
- Value for money ambition not achieved if Fund is undersubscribed.

Impact-Level Risks

- Market for EE or DD isn't sustainable without government funding
- IETF may not be sufficiently joined up with other BEIS policies in this area, resulting in an incoherent package of support to business
- Public opinion goes against a technology (or technologies) that we have supported
- Technological lock-in for beneficiaries or other firms delays or prevent transition to more large scale decarbonisation needed to achieve net-zero by 2050
- Unforeseen environmental impacts (e.g. air or water quality, increased water use)
- Cultural lack of interest (even if intervention works for beneficiaries)
- Beneficiaries move abroad, resulting in "carbon leakage"
- "Subsidy war" between states to attract investment
- Better solutions than technologies supported by the IETF are devised between the mid-2020s and 2050
- Job losses resulting from intervention
- Feasibility study benefits are too beneficiary-specific, resulting in a lack of wider learning
- Inadequate communication confines benefits to beneficiaries
- An entire sector or sectors supported by the scheme becomes obsolete
- Consumer demand in market falls
- Exchange rate changes dis-incentivise investing in the UK

1. https://www.gov.uk/government/publications/department-for-business-energy-and-industrial-strategy-single-departmental-plan/department-for-business-energy-and-industrial-strategy-single-departmental-plan-june-2019
2. This is an internal document focussed on leading the recover post COVID-19. BEIS are reviewing departmental objectives for external publication.
3. https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution
4. https://www.gov.uk/government/publications/industrial-decarbonisation-strategy (March 2021)
5. The IETF is not designed to support competitiveness, however, we will look to measure it in our scheme impacts as an indirect benefit.
6. See Table 1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/838309/ietf-finalising-design-consultation.pdf

Source: BEIS and Steer-ED, 2021

Learning from Elsewhere

As highlighted in the Introduction, a desk-top review of nine funding programmes (three from the UK, and six international) with energy efficiency and decarbonisation foci was undertaken. The purpose in so doing was to identify lessons which could inform the IETF's ongoing design and development. This work is reported fully in the Appendix.

Whilst the comparator programmes reviewed operate in differing contexts and employ different funding mechanisms, insights of relevance to the IETF include:

- Ensuring applicant firms invest sufficient resource in project development activity. Potentially, this might point to the need for greater IETF pre-application support;
- Committing to longer-term funding programmes, so they can become established and known in the market; where these are developed, they should be monitored, reviewed, and evaluated continually;
- Exploring the case for targeting firms where support is likely to have the greatest impact;
- Considering process options for accessing the hardest-to-reach parts of the target beneficiary segment through, for example, tiered application process, targeted awareness-raising workshops, and similar;
- Achieving a balance in application, monitoring, and audit processes, which minimise the potential for fraud with overly-burdensome processes for applicants and grantees;
- Recognising SMEs generally require greater incentivisation than larger firms to engage with government programmes, and are more likely to be constrained by capacity and capability constraints;
- Whilst the building of assessment of additionality into grant-recipient reporting is challenging, it can have benefits in being able to demonstrate in real time the value that the intervention is providing, both to funder and applicant;
- Unintended positive consequences are likely to be generated, such as the wider benefits around firms' improved energy monitoring processes and the visibility of decarbonisation as a key issue within businesses;
- System-focused funding mechanisms, such as carbon credits and voluntary agreements, are likely to deliver market impacts for the longer-term, whereas grant funding mechanisms targeted at individual firms tend to operate to shorter timelines. The desk review of comparator programmes highlights both approaches are valid.

Overall Assessment & Key Findings for this Evaluation Aspect

In light of the above, and the evidence which has been reviewed in assessing this, our assessment of Evaluation Aspect 1A (Programme Design & Governance – Case & Justification) is as follows:

- The process for developing the conceptual basis and design of the IETF appears to have worked well and inclusively. The parts of the strategic case we have been given access to show a clear and evidenced understanding of the operating context and presents a sound rationale for intervention. However, we note that building supply-side capacity and capability (for example, the provision of finance/expertise by market actors) was not explicitly addressed in the Strategic Case. We judge this should be part of any response to a market failure; we are advised that policy leads in the IETF Team are now addressing this issue;
- The latest version of the ToC for the IETF provides a strong summary of what the IETF is seeking to achieve. Market failures are drawn explicitly in the rationale section, as is the role of the IETF in building the supply-side capacity. The objectives for the policy are coherent, communicable, and comprehensive, although they, and the outcomes they link to, still need further significant work to specify timing and quantification detail. This should be included in the next iteration of the ToC;
- We recommend that the ToC be reviewed by BEIS on a six-month cycle to iterate new thinking and operational experience back into the logic chain. As a 'living document' it will maintain the intervention's focus and help steer forward development. We assess that the current ToC is compliant with BEIS' guidance on Monitoring and Evaluation Frameworks[24], and (with objective and outcome timing and quantification detail to be added) will be an important resource for tracking IETF's benefits and impacts;
- The IETF's strategic fit and alignment with other policy is set out in the strategic case of the IETF full business case. The strategic case makes clear that the policy environment for decarbonisation is busy and fast-moving. Recognising this, it is important that the IETF's model for implementation remains open to linking and working together with adjacent policy areas; and
- Our review of internal BEIS documents found good evidence that existing learning, stakeholder consultation evidence, and published external research on 'what works' for grant funding programmes has been incorporated. Ensuring these sources continue to shape and influence the IETF as it evolves should be maintained;
- Our interviews with 'Wider Stakeholders' found that interested parties are generally supportive and recognise the IETF as important and necessary.

We assess there is a case for the ToC to include the potential qualitative effects of the fund, above and beyond its straight numeric targets. To resolve this, we recommend that the IETF Team should consider adding four types of qualitative outcome or Strategic Added Value[25] that it is likely the IETF will give rise to:

[24] https://www.gov.uk/government/publications/beis-monitoring-and-evaluation-framework
[25] 'Strategic Added Value' is s concept developed as part of the National Evaluation of the English Regional Development Agencies (RDAs) to reflect the qualitative outputs and outcomes that public sector actors and interventions give rise to. See p72, https://www.sqw.co.uk/files/4813/8712/1417/149.pdf

Strategic Leadership and Catalyst – IETF involvement can help drive real strategic change in firms' thinking with respect to decarbonisation, and helping to demonstrate to shareholders/employees that such change is underway;

Engagement – with IETF involvement helping to stimulate sector, network, and supply chain thinking around the imperative for decarbonisation;

Synergy – using IETF's organisational capacity, knowledge, and expertise to improve information exchange and knowledge transfer between within and between firms and government; and

Leverage – with IETF helping to point applicants on to technology, networking, and other resources relevant to decarbonisation, not just providing grant funding.

Key Findings

The IETF is high profile, and successful high-quality delivery is vital to building industry confidence in the Government's ability to deliver Net-Zero commitments.

The IETF's design aligns well with the Net-Zero imperative defined in UK (and international) policy, and the specific challenges of deep-decarbonisation and energy efficiency in private sector energy-intensive firms. In the IETF's Strategic Case, the Context demonstrates a strong understanding of the issues faced by industry, and the Rationale for intervention is sound. Wider stakeholders are supportive and recognise the IETF as important and necessary. Good foundations have been laid.

The IETF's initial Theory of Change has been iterated and developed since 2019. Refinements include adding Context and Rationale, and specifying a fuller set of Outputs, Outcomes and Impacts with a clear logical connection to the fund's Objectives. This has brought the Theory of Change into line with the BEIS Monitoring and Evaluation Framework.

The Strategic Case, stakeholder consultations, and our own work with the IETF Team to revise the Theory of Change provide good evidence that the IETF's design and early implementation has adjusted to incorporate learning from experience and elsewhere. Going forward, the IETF' strategic and tactical development needs to continue to reflect on experience from elsewhere.

Recommendations

EA1A-1: The Objectives and Outcomes in the Theory of Change should have timing and quantification detail added to them as a priority. This would complete the integrity of the Theory of Change. Action: IETF Team;

EA1A-2: We propose adding a four-fold typology of ‘strategic added value’ (SAV) to the Theory of Change to incorporate the fund’s role in delivering; Strategic Leadership and Catalysis, Engagement, Synergy, and Leverage regarding national decarbonisation and energy efficiency. Benefits reporting should include qualitative effects alongside formal quantified Output/Outcome metrics; the combination of qualitative and quantitative effects will comprise the IETF’s long-term legacy. Action: IETF Team;

EA1A-3: The Theory of Change should operate as a ‘living document’ to support the IETF’s management, being reviewed explicitly and formally on a regularised six-monthly cycle; this can build on the review work which the IETF Team reports is now occurring. Action: IETF Team;

EA1A-4: The decarbonisation landscape is busy and noisy. The IETF’s ongoing implementation should remain alert to, and aligned with, adjacent policy areas, with the IETF Team making links with these, when/wherever possible. Action: IETF Team, adjacent policy makers, and key IETF stakeholders; and

EA1A-5: Similar and current industrial energy efficiency and decarbonisation schemes implemented in the UK and internationally will continue to provide useful lessons for the IETF. The IETF’ strategic and tactical development should continue to reflect on this substantial evaluative research resource, so that when necessary the IETF can deploy purposefully relevant practice. Action: IETF Team and key IETF stakeholders.

Chapter 3: Evaluation Aspect 1B: Programme Design & Governance – in Operation

Purpose

In this chapter, we focus on the operation and governance of the IETF in practice, building on the findings from Evaluation Aspect 1A which considered the IETF's design and governance from policy case and justification perspectives. The chapter is structured with three parts:

- What was intended, and then implemented;
- What the associated process evidence gathered by the evaluation shows; and
- Our overall assessment of this assessment aspect of the IETF.

Intended and Implemented Processes

IETF Design

This sub-section includes details of informal and formal consultations on the design of the fund conducted by the IETF Team prior to its introduction, and how these informed the final fund details. The following subsection, setting out our evaluation findings, focuses on feedback from applicants, non-applicants and 'Wider Stakeholders' regarding the fund's design.

The IETF launched formally in June 2020, with the 'Phase 1 Summer 2020 Application Window' running from 20 July to 28 October 2020. For this first competition, £30 million was made available to provide grants to industry via a competitive process in support of two types of activity:

- Projects deploying technologies which improve the energy efficiency of industrial processes (Deployment Projects); and
- Feasibility/Engineering Studies into energy efficiency and deep decarbonisation measures for industrial processes.

The IETF Phase 1 Summer 2020 was open to applications from firms in England, Northern Ireland, and Wales. Scotland chose to opt-out of the UK-wide IETF and has implemented its own version of the intervention.

Match funding was required for both deployment projects and feasibility/engineering studies. Applicants with studies could receive up to 70% funding for small/micro-organisations, 60% for medium-sized organisations and 50% for large organisations. For deployment projects, grant funding was capped at 50% for micro/small organisations, 40% for medium-sized

organisations, and 30% for large organisations. These proportions relate to only 'eligible costs' under scheme rules.

Midway through this application window the Department agreed that, if the window was oversubscribed, additional funding could be allocated to any quality application which passed the assessment stage. This provided a further stimulus to industry then suffering from the impacts of the COVID-19 Pandemic. This change was advertised across communications channels to encourage additional bids to the IETF.

The design of the IETF was informed by a formal consultation held in Autumn 2019 'The Industrial Energy Transformation Fund: Supporting industry on the path to Net-Zero'[26], which was preceded by an informal consultation earlier in the same year. Responses to both consultations welcomed grant funding as the support mechanism for the IETF, as did other evidence gathered by BEIS (such as stakeholders' views on barriers to progress).

The formal consultation received 88 responses, half of which were from manufacturing industry representatives, with the remainder submitted by trade associations, local government, academics, and non-governmental organisations (NGOs). The IETF Team also held six consultation events across the UK, attended by 131 delegates, which achieved a satisfaction rating of over 80 per cent. BEIS published a summary of the responses, and implications for the final design of the IETF, in 2020[27].

On the IETF's funding mechanism, responses to the formal consultation generated the following insights:

- Grants were reported to be the preferred funding mechanism for energy efficiency projects by the majority of respondents;
- Loans, guarantees, and equity all received little support (not entirely surprising given that they are not 'free cash' instruments); and
- Around 25 per cent of respondents (n=88) supported other funding mechanisms for energy efficiency projects, these including tax breaks, a revenue-support mechanism to fund project operations, and interestingly combinations of grant and loans (as opposed to one or the other).

While Phase 1 was originally intended to be delivered as one application window in Summer 2020, it was decided to run a second window in Spring 2021 due to demand, the recognition that external pressures related to COVID-19 may have left some companies unable to apply in 2020, and as part of the government's 'green recovery' effort.

[26] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/838309/ietf-finalising-design-consultation.pdf
[27] https://www.gov.uk/government/consultations/industrial-energy-transformation-fund-finalising-the-design

Eligibility Rules

The IETF's eligibility requirements – organisational and project – were set out in online guidance[28]. These requirements are summarised below, together with reflections on how these were refined in response to the preceding public consultations.

Project Eligibility – Technology

To qualify as a Deployment Project or Feasibility/Engineering Study into Energy Efficiency, applicant projects needed to evidence energy savings at site level and involve the deployment of a proven technology, or technology which was qualified through test-and-demonstration (i.e. at Technology Readiness Level (TRL) 8 or above).

Deep decarbonisation studies had different eligibility requirements in that studies needed to lead to a significant reduction in the greenhouse gas emissions of an industrial process, although this might not necessarily deliver an energy efficiency benefit. Deep decarbonisation studies were required to focus on technology that had either been proven to work or was at prototype stage (i.e. TRL 7 or above).

Projects improving the energy efficiency of buildings or transport were ineligible for funding.

The majority of respondents to the public Consultation agreed that the IETF should support deep decarbonisation projects and energy efficiency technologies which improve industrial process energy efficiency, and those that reduce energy demand across systems. Most respondents were supportive that the IETF should be open to a wide range of technologies, and the majority of respondents supported the proposal that the IETF should support deep decarbonisation technologies which are relatively mature (i.e. at TRL 7 or higher).

Some respondents noted that many alternative technologies and their application were excluded (or were perceived to be excluded) from the IETF. These included:

- Heating and cooling of buildings;
- Waste heat recovery technologies;
- Energy Storage;
- Technologies within SIC codes 34-38; and
- Power generation projects (other than electricity generation projects using waste heat, waste pressure, waste process gas, waste process liquid not suitable for transport use or eligible CHP fuel switching projects), which divided opinion among respondents.

Project Eligibility – Grant Size

The minimum and maximum levels of grant that firms could receive for deployment projects were £250k and £14m, respectively. The minimum grant level of £250k was reduced from the

[28] https://www.gov.uk/government/publications/industrial-energy-transformation-fund-ietf-phase-1-how-to-apply

initially proposed £1m, in response to the formal Consultation where 55% of respondents considered the minimum grant level of £1m to be too high.

The total eligible costs for Feasibility Studies (energy efficiency and deep decarbonisation) had to be at least £60k, and for Engineering Studies at least £100k. The maximum grant award possible was set at £7m for Feasibility Studies and £14m for Engineering Studies.

Project Eligibility – Multiple Sites

Almost 40% of respondents to the public Consultation supported the inclusion of bundled projects operating on different sites. However, the IETF Team decided that multi-site projects should not be included due to the logistical challenges for firms monitoring multiple projects on different sites, which could undermine the cost-efficiencies of aggregating projects across sites.

Organisation Eligibility

Eligibility for the Phase 1 Summer 2020 Application Window was restricted to organisations within the manufacturing SIC Codes 10-33 and data centres classified as SIC 63. The public Consultation had identified clear concerns regarding the restriction to specific SIC codes, with respondents proposing that the IETF should focus on maximising energy and emissions reductions in the round, rather than setting sectoral boundaries. This was particularly true for some respondents who expressed the view that all Energy-Intensive Industries (EIIs, and including Oil, Gas, Water Agriculture, and Logistics) should be eligible for the IETF, regardless of sector, if they could demonstrate a solution that could make a significant contribution to energy and emissions reductions.

After consideration, the IETF Team retained the proposed sectoral scope for Phase 1, on the basis that broadening the scope would make it challenging to deliver the objectives of the IETF (due to the diversity of the processes considered), and/or would create duplication in government support. Data centres were included due to the opportunities for waste heat recovery and increased energy efficiency. Sector eligibility is being reviewed for Phase 2.

Governance

Strategic Oversight

The governance of the IETF involves a dedicated Project Board. The Board is responsible for considering the strategic implications of the IETF's policy and project decisions, and the fund's strategic alignment with other Departmental policies and objectives. The Board provides oversight, challenge, and scrutiny of the IETF policy and programme, and is charged with approving and escalating recommendations and decisions to Ministers at key approval points in the IETF's life cycle.

Phase 1 Delivery

A delivery agreement operates between BEIS and Innovate UK, the partner appointed (non-competitively) to oversee the IETF's delivery for the Summer 2020 Application Window. The

agreement specifies that BEIS retains overall accountability for the IETF's delivery, including responsibility for the budget, via BEIS' Senior Responsible Owner (SRO).

Innovate UK is responsible for delivery activities, such as promotion, application support, application assessment, grant award, near term compliance monitoring, and all aspects of project risk management; the latter includes creating and maintaining a Risk Register, which is reported to BEIS on a monthly basis. Detail regarding these elements is set out in Chapter 4 (Awareness Raising, and Pre-Application Support) and Chapter 5 (Application, Assessment, and Award).

The arrangement has flexibility to continue until 31 March 2029, reflecting the expectation that IETF projects are completed by 31 March 2023 and then monitored for a period of five years thereafter.

The IETF's dedicated PMO has developed an Integrated Assurance and Approvals Plan (IAAP) as part of the Five Case Business Case (FBC) to help the programme achieve a consistent and quality approach to Assurance and Approvals. This follows BEIS' best practice. The IETF's PMO also plans further Assurance Reviews when required, which will include Critical Friend Reviews and 'Project Deep Dives' for specific aspects of the fund, these being supported by the Industrial Energy Project Delivery Team.

Evaluation of Process Evidence

IETF's Design

Overall

The design of the IETF was informed clearly by the findings of the formal public consultation held in 2019. A summary of responses to the consultation was published[29], along with feedback from BEIS detailing how the fund would be refined as a result of the consultation. On this basis, it is clear the conceptualisation and design of the IETF was inclusive and broadly-based, and that responses from the public consultation were taken into account in the final design of the fund.

Our interviews with 'Wider Stakeholders' uncovered consistent support for the IETF's aims, recognising that it intended to provide capital funding to support energy efficiency and decarbonisation by supporting manufacturing industry. These stakeholders expressed concerns about the potential missed opportunity for providing revenue support, rather than capital, and the need for investment in underlying infrastructures to support decarbonisation. In addition, stakeholders viewed the IETF as being focused towards primarily large organisations given the grant values on offer, so was unlikely to attract and support many SMEs which comprise the majority of the UK's business base.

[29] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/895759/ietf-finalising-design-summary-of-responses.pdf

The interviews that we conducted with applicants as part of this evaluation identified clear support for a grant programme, including the requirement for match funding. Companies do not want debt. For accounting reasons, many firms will not debt-finance capital spend, even if there is a business case, and reducing payback periods was a key driver for the fund, as detailed in Chapter 2.

Application Windows and Commitment

Our interviews with applicants and non-applications revealed several issues with regards to the timing and length of the Summer 2020 Application Window and the need for commitment to leverage match funding. Specifically:

- Capital planning typically happens on an annual basis, and strategic investments may be agreed years in advance. Investment cycles tend to follow manufacturing seasons rather than traditional financial years, and so differ for every firm. Deviating from timelines can be very difficult for firms, and hurdles to securing finance in multinational/large firms with strict business planning processes are high; and
- Frequently, firms prefer a firm offer of government commitment before investments can be signed-off internally. Whilst some firms said a Letter of Intent can help in Board decision-making, most would require a formal Grant Offer to be in place. This could be particularly challenging in partnerships when firms have differing requirements.

Importantly, interviews with applicants revealed a desire for longer Application Windows for both Deployment Projects and Feasibility/Engineering Studies. This reflected the significant lead-in times for such major capital spends, requiring considerable investment in project development as well as securing match funding from internal resources. One applicant highlighted this issue in relation to the need for shut down periods to install new equipment:

> *'With major plants that have fixed shut down periods, there are only limited time windows when new projects can be deployed. The firm has considered future IETF grant window opportunities, but we are very constrained by plant shut-downs planned for 2023 and 2027. This will likely prevent us from being able to deliver other deployment opportunities.'*

The IETF's Team's Post-Application Survey was inconclusive as to whether the Summer 2020 Application Window was long enough to prepare a good-quality application and take it through internal approval processes. Some respondents judged that the timescales from Initial Correspondence to Application Closure were too short, meaning that applications were rushed; this may be a quality risk for future IETF application rounds.

'Wider Stakeholders' also commented that the limited (in time terms) Application Windows may not coincide well with business' own investment cycles. The IETF Team has responded by introducing rolling Application Windows for Phase 2. This should help address the concern, as long as the Window periods are well-publicised.

Project Eligibility – Grant Size

Our interviews with non-applicants revealed that some (SMEs and larger firms) had not applied to IETF as the minimum funding thresholds for the Summer 2020 Application Window were too high. These firms' typical levels of capital expenditure were too low to be able to provide the match funding, or make the type of investment required. Our interviews with 'Wider Stakeholders' also raised concerns that the minimum grant level was too high for SMEs to consider seeking funding from IETF, with others clearly claiming that this is a fund targeted at large firms. The minimum threshold for funding was reduced for the Summer 2021 Application Window.

Project Eligibility – Technologies In Scope

Our 'Wider Stakeholder' interviews revealed concerns that transformational opportunities, such as Carbon Capture and Fuel Switching to Hydrogen, were not an easy fit with the scope of the IETF.

Similarly, interviews with non-applicants who had not applied due to their project ideas being ineligible, made the following comments in relation to technology eligibility:

- Several expressed their frustration that on-site energy generation is not eligible, except for waste heat, especially where the intention was to generate renewable electricity. Some commented that this contradicted the fund's intention to reduce the carbon intensity of energy used by industry; and
- Project eligibility around the heating and cooling of buildings was identified as a concern by some non-applicant firms that we interviewed. Firms highlighted that maintaining the temperature of their facilities represented a significant part of their energy footprint (such as, for example, data centres, pharmaceutical manufacturing plants, and cold storage facilities) and considered that the project eligibility rules on heating and cooling in IETF Guidance were ambiguous. It is important that perceived grey areas regarding eligibility are clarified.

Project Eligibility – Multiple Sites

As previously mentioned, the IETF is only available to projects operating from a single site. Our interviews with non-applicants identified that several firms with projects that would facilitate energy savings across multiple sites had decided not to apply, as they would not be successful on eligibility grounds.

Organisational Eligibility

With regards to organisational eligibility, applicant and non-applicant firms reported that SIC code eligibility had prevented them from applying. Whilst in the main this was intentional to ensure the focus on manufacturing and data centre firms, in some cases it had prevented firms wanting to reduce their energy use from doing so. For example, a telecoms firm reported that while its data centre sites were eligible to apply, these sites were minimal energy users compared with other parts of its operations, which fell out-of-scope due to the business having a Telecoms SIC code.

Eligibility Guidance

The Technological Scope Guidance documents for the Summer 2020 Application Window[30] provided very limited detail, especially considering the complexity surrounding energy efficiency and decarbonisation and the substantial sums of public funding involved. The guidance for both Deployment Projects and Feasibility/Engineering Studies provided a brief explanation of the eligibility requirements followed by a list of projects that were out of scope and exceptions to these projects that were in scope. The updated Technological Scope Guidance for the Spring 2021 Application Window[31] provided increased detail with an explanation for, and description of, each of the technologies and project types that are in and out of scope, providing much improved clarity.

On a related point, the Technological Scope Guidance for Energy Efficiency studies could have been drafted more clearly. The opening sentence: 'To qualify as an energy efficiency study, the potential deployment project will need to show kWh energy savings . . .'. risks confusion between the two different foci of the fund - Deployment Projects and Feasibility/ Engineering Studies. These have different eligibility criteria, and applying for the wrong element could result in rejection.

One unsuccessful applicant interviewed as part of the study stated that they had accidentally submitted their application to the wrong part of the fund and could not rectify this mistake post submission. This appeared to have been a technical issue related to the application portal rather than being confused by the guidance.

In general, both applicant and non-applicant firm interviewees had a reasonable level of understanding of the IETF. Most understood the objectives and remit of the IETF, and could see how it aligned with their own Net-Zero intentions. However, we noted some minor misunderstandings about the fund from applicant and non-applicant interviewees alike:

- One (applicant) interviewee did not realise that multiple/subsequent applications could be made to the IETF, and was not aware that the Feasibility Study applied for could, if successful, be followed with an application for a Deployment Project;
- One (non-applicant) interviewee was not aware that the project minimum grant threshold for Deployment projects was £250k, rather than £1 million as proposed in the 2019 Consultation; and,
- One (non-applicant) interviewee was under the impression that Phase 1 was for Feasibility Studies only.

The IETF Market Intelligence Team gathers information about fund interest and take-up via direct approaches from potential applicants for information, and through dialogue with Innovate UK. Our review of early feedback from this source identified recommendations for improvement relating to the ambiguous wording in application documents, specifically

[30] https://www.gov.uk/government/publications/industrial-energy-transformation-fund-ietf-phase-1-how-to-apply
[31] https://www.gov.uk/government/publications/industrial-energy-transformation-fund-ietf-phase-1-spring-2021-how-to-apply

regarding data centre eligibility, the need for improved guidance on calculating counterfactuals, and further clarity on SIC Code eligibility.

In response, the IETF Team committed to make a clarifying adjustment to the fund's guidance, review eligibility criteria to eliminate confusion for future applicants, and promote Innovate UK's Eligibility Check Service to potential applicants.

Governance

Our assessment is that the developed governance arrangements for the IETF are sound, with a clear division of responsibilities between the IETF Team and Innovate UK, and explicit accountability held by BEIS. The details of the agreement between BEIS and Innovate UK are comprehensive and unambiguous, providing a transparent platform for delivery, and appear to have been largely delivered as expected up until this point.

Although the IETF is not within the Government Major Projects Portfolio (GMPP), it has adopted the GMPP assurance requirements following BEIS' good practice, which should ensure a 'strong' programme delivery approach.

Fieldwork conducted in this first phase of process evaluation focused on the experience of applicants rather than the internal workings of the scheme and did not investigate the governance of the fund which should be addressed in further detail in future stages of the process evaluation.

Overall Assessment & Key Findings for this Evaluation Aspect

Our assessment of Evaluation Aspect 1B (Programme Design & Governance – in Operation) is as follows:

Design

Informed by meaningful public consultation, the overall design of the IETF as a grant fund aligns with the identified market and other failures, particularly in relation to barriers to private sector investment. The intervention focuses clearly on specific SIC codes relating to manufacturing industries and data centres, with a good evidence assessment set out in the IETF's Strategic Case. The clear focus on energy efficiency and decarbonisation within industry is reflected in the programme's guidance.

Focusing eligibility on manufacturing firms and data centres (which tend to be energy-intensive) supports the overall objectives of the IETF, although there is a grey area regarding energy generation on-site. The support for Deployment Projects enables firms to implement energy efficiency and decarbonisation projects to support the national effort towards Net-Zero. Feasibility/Engineering Studies are crucial in enabling exploratory work to inform future interventions.

On the funding instrument, recognising the failures in play, including under-developed provision of expertise and finance from the market (the so-called 'supply-side' issue), our

assessment, based on primary research (interviews with applicants, non-applicants and 'Wider Stakeholders') along with the response to the public consultation is that grant funding was and, at this stage, continues to be the most appropriate mechanism for funding the project and firm types targeted by IETF. Reducing payback periods and de-risking investments were the types of reasons highlighted in the consultation and by applicants, non-applicants and 'Wider Stakeholders' for favouring the grant mechanism.

In February 2021, it was announced that thresholds for the Spring 2021 Application Window had been lowered further from £250k to £100k for Deployment Projects. The threshold for Studies was also reduced, from £60k to £30k for Feasibility Studies and £100k to £50k for Engineering ones. This reflects concerns set out in the public consultation and via applicants, non-applicants and 'Wider Stakeholders' that the minimum grant level was too high for SMEs in particular.

Our interviews found that applicants and non-applicants supported strongly introducing longer Application Windows. In response to this, the IETF Team has decided to implement a rolling-window for Phase 2[32]. This process flexibility is positive, but the relatively short duration of Application Windows remains an issue for applicants and will need to be watched carefully.

Overall, this first-stage Process Evaluation finds the IETF's design process to have been inclusive, iterative, and open to the evidenced need for modification.

Governance

From the evaluation of documentation and discussions with the IETF Team and Innovate UK, we conclude that the defined roles and responsibilities of BEIS and Innovate UK are clear, with a sound communications protocol and reporting system in place. The decision to use Innovate UK as the initial delivery body was appropriate due to its experience in running other grant fund schemes. Assurance Reviews put in place by the IETF Team exceed the requirements of a grant fund of this scale and were held ahead of the launch of both the Summer 2020 and Spring 2021 Windows, demonstrating good practice.

Key Findings

The IETF's design has been iterated with substantial market input – consultation has been serious and substantive. This is positive and helpful in trying to de-risk as many of the operating and process issues as possible.

In operation the IETF's design has, so far, been able to flex promptly and responsibly to necessary feedback, be this from consultation, wider feedback, or the operating experience of the first funding window. The model now has a stable and certain core, which needs to be maintained going forward to create confidence and familiarity in the market. At the same time, delivery needs to continue to be agile, so the fund remains

[32] Innovate UK Phase 1 Update and Lessons for Future Windows – Report to IETF Project Board (November 2020)

capable of adopting to new energy technologies/challenges as they emerge, and critically as the programme itself looks to transition into a second phase of activity.

Clarity regarding organisational and technology eligibility was a significant weakness in the guidance for the Summer 2020 Application Window and has since been addressed for the Spring 2021 Window. Feedback from Summer 2021 applicants (and non-applicants) on the revised guidance would be beneficial for future stages of the fund.

Governance arrangements are sound and resilient; there is a clear split between strategic oversight (the Project Board) and execution (the IETF Team). The governance structure reflects good practice and provides a solid foundation for a strong and robustly led and executed programme.

The decision to use existing delivery expertise from Innovate UK was appropriate, benefitting from its previous grant fund management experience to 'quick-start' delivery activity. BEIS is now building its own internal delivery capability for the longer term. This evolution of delivery arrangements represents an effective mix of the need for an early pragmatic solution and building longer term direct responsibility.

Recommendations

EA1B-1: The inclusive and agile approach which the early phase of the IETF has demonstrated should continue; it is important that this is not driven out by the 'routine' of fund operation. Action: IETF Team, Innovate UK, and wider IETF stakeholders.

EA1B-2: With two full rounds completed, the IETF is maturing into a more stable and certain energy efficiency intervention, building confidence in the applicant base. Whilst ensuring this certainty, the IETF Team should at the same time remain open to further policy design and delivery changes, particularly as new technologies and sector opportunities emerge. Action: IETF Team.

EA1B-3: Improvements made to the eligibility guidance in the Summer 2021 Application Window should be reviewed against applicant feedback to inform future phases of the fund. Action: IETF Team.

Chapter 4: Evaluation Aspect 2: Awareness Raising & Pre-Application Support

Purpose

This chapter focuses on Awareness Raising and the Pre-Application Support provided to interested parties and ultimate applicants to IETF, prior to application submission. Again, this chapter is structured with three parts:

- What was intended, and then implemented;
- What the associated evidence gathered by the evaluation shows; and
- Our overall assessment of this Evaluation Aspect of the IETF.

Intended and Implemented Process

Intention

The delivery agreement between BEIS and Innovate UK required the latter to organise and deliver a series of six stakeholder workshops across the UK, including at least one in each Devolved Administration area, to promote the IETF to potential applicants, explain how the application process would work, and provide advice and guidance to attendees.

Innovate UK was also required to make its standard 'support service' available to IETF applicants; this included the provision of advice and responses to potential applicants and their queries about the fund, as well as providing an IETF 'eligibility checking' service. Throughout Phase 1, KTN was contracted to conduct promotional activities[33]. The IETF Team, including those working on Market Intelligence, was also involved in supporting stakeholder-facing services.

As well as publicising the IETF directly to the market, it was anticipated that BEIS, Innovate UK, and KTN would seek to promote the fund to the UK's network of business multiplier organisations through their routine working links with Trade Associations, Sector/Cluster groups, and similar.

Implementation

In preparing for the IETF's launch, BEIS publicised the fund though its networks, and wider publicity was provided via multiple information channels including KTN, cluster and sector bodies, and the IETF Market Intelligence Team.

[33] KTN is a network partner of Innovate UK and seeks to link new ideas and opportunities with expertise, markets and finance through their network of businesses, universities, funders and investors.

Innovate UK set up its support service to handle enquiries about the IETF, including the 'eligibility checking' service. The Briefing Workshops anticipated above were delivered as online webinars, aligning with then COVID-19 restrictions on travel and social distancing.

The IETF Team was also available to applicants asking questions on more policy-related aspects, such as detailed eligibility questions regarding the technical aspects of potential projects.

Evaluation of Process Evidence

Awareness-Raising

Following the launch of the IETF, Innovate UK received a higher-than-expected level of enquiries, implying that publicity regarding the fund had been successful in building awareness and/or that the IETF Team/Innovate UK had not appreciated the degree of latent demand. Due to resource constraints caused by COVID-19, the Innovate UK support service did not meet its agreed KPI to 'Provide a response to requests within 48 hours of receipt' for at least two months of the Summer 2020 Application Window. This was addressed and resolved by allocating additional resource within Innovate UK to IETF activity.

Applicants and non-applicants interviewed for this study first heard about the IETF from a range of different sources, with some being informed by multiple sources. These channels included:

- Via industry trade bodies, sector/cluster groups, or similar organisations;
- Directly from BEIS, where there was an existing relationship;
- An approach from a consultant with whom the firm had an existing relationship (for example, an energy specialist who had already been working on efficiency measures with them);
- Email alerts received from Innovate UK, and/or www.gov.uk;
- Marketing presentations/webinars from BEIS, Innovate UK, and KTN;
- Internet searching, where for example the firm concerned had been looking for suitable grant funding sources to support a potential project;
- Seeking actively funding opportunities from BEIS, based on past experience of receiving grants from previous schemes (such as the Industrial Heat Recovery Support programme (IHRS)), and;
- Via a direct approach from us, when they were asked to participate in this study's research.

Applicants and non-applicants identified, in particular, the importance of Management and Engineering Consultants in the distribution of information about opportunities such as IETF. In our Focus Group work, consultants reported they had made themselves available to assist firms with applications to the fund where possible.

Applicant and non-applicant firms who had not heard of the IETF until being asked to participate in this study's research identified the following communication routes as those most likely to attract their attention for the future:

- LinkedIn promotions;
- Via the firm's network of consultants and other advisors;
- Direct emails from, for example, Innovate UK; and,
- For data centres, via TechUK and its annual Sector Conference.

Firms who had not been aware of IETF offered a range of explanations as to why this had been so. These included the general overload of business information received from various sources (which can result in important opportunities getting lost), having no dedicated internal resource to seek-out and chase-down funding opportunities (such as IETF), and/or a reliance on peers/advisors to bring opportunities to their attention. For example, firms interviewed for this study reported:

> *'I hadn't heard of IETF until a consultant informed me. But why would I? There's a billion things out there . . . I might even have been emailed about it. But without my network, I wouldn't have heard about it.'*

> *'I knew nothing about this until two or three weeks ago. But we started talking to Innovate UK, searching, looking to see what was out there . . . a general process of discovery to get ourselves familiar with the options available to us. That's how we found IETF.'*

'Wider Stakeholders' reported that the IETF had been publicised well though multiple channels, which were likely to reach most of the larger organisations within energy-intensive industries. However, they also reported that there had been no dedicated effort to engage SMEs, and it was judged unlikely that many eligible SMEs would have heard of the IETF. This is important to bear in mind for the future.

Pre-Application Support

Feedback from BEIS' 2019 Consultation on the IETF's design revealed that the majority of respondents supported having an Application Development Service, or similar, to support potential applications, with detailed advice and support to help develop projects. The Innovate UK 'support service' and KTN application review service were drawn-in to respond to this.

Interviews with both successful and unsuccessful firm applicants revealed that they appreciated the support and feedback given by the IETF Team, Innovate UK, and KTN, who answered key questions to support application activity. Some firms reported being in touch with support organisations up to six times, and receiving helpful feedback; others talked about 'iterating their application with KTN', with KTN showing a considerable level of support and involvement, whilst another highlighted that Clarification Questions were answered quickly, including some close to the submission deadline date.

The greatest area of uncertainty amongst applicant and non-applicant firms at the pre-application stage was around project eligibility. One responding firm, a successful applicant, summarised their position as follows:

> *'There are a number of ways that you could talk yourself in or talk yourself out of being eligible. In that regard, IETF isn't as clearly defined as other grant funding programmes we've come across. In some ways that's good because it means a wide range of projects/firms can apply. But on the other hand, it's a challenge because you need to check and check whether you're really eligible.'*

In this context, the Innovate UK eligibility screening service was particularly welcomed by applicant firms who were interviewed, with the service giving clarity and certainty to the application process. Generally, Innovate UK was prompt to reply to clarifications, although in some instances more technical-based questions around project eligibility[34] took longer to clear. One interviewed firm reported that the service had been closed - this appears to have been a straight misunderstanding on that firm's part.

More widely, applicant interviews with successful applicant firms (from Wave 1b) highlighted the following areas where additional support and advice would have been welcomed:

- Reflecting the substantial investment required to submit an application, it would have been useful if more guidance was provided on (i) the likelihood of application success and (ii) expected payback periods. Applicants proposed a two-stage application process to address the first of these points – screening could prevent organisations from investing significant resources in an application with no guarantee of success;
- Access to case studies of other successful projects, shared either through seminars or individual engagement, would provide useful extra guidance and context for those developing bids. For the Summer 2020 Application Window, such support was not available as no projects had been funded, but this should be a helpful resource as funding-round experience builds; and
- Early-stage technical feedback on developing proposals would be welcomed. Some of the most challenging parts of the Application Form related to providing detailed funding and item costings, which are often difficult to predict in the early stages of project development.

In one of the 'Wider Stakeholder' interviews, the interviewee highlighted that as the IETF evolved and changes of scope/eligibility were introduced, it was vital that firms were informed and did not hold-on to outdated views of the fund. The interviewee considered that some potential applicants may have written-off the IETF as unattractive or inappropriate based on an earlier version of the fund's design, and therefore will no longer be 'listening' when new communications were released. This highlights the ever-present need for repeated, clear, communicable, and consistent messaging for the IETF.

[34] For example, one consultee enquired as to whether a switch from solid/liquid fuel to off-grid gas could be considered an in-scope project, and it took some time to answer this question.

The IETF Market Intelligence Team identified lessons learned from market engagement and applicant support during the early stages of the Summer 2020 Application Window:

- The IETF Team and delivery partners should provide applicants with better access to clear information ahead of future windows;
- Due to some firms encountering difficulties around collaborating on applications for new projects, the IETF Team proposed taking measures to encourage collaboration between applicants and partners earlier in the process; and,
- Consistency of messaging and rapid responses was important in encouraging prospective applicants to pursue an application, or to avoid timewasting on ineligible applications.

A post-application survey conducted by the IETF Team reveals that applicants thought communication from BEIS and Innovate UK prior to applications opening was useful. This suggests that the resources and support on-hand to help applicants navigate the application process were largely sufficient and appropriate. Respondents to the survey also felt that Innovate UK provided useful and timely support through the application process.

The majority of respondents did not use a consultant when completing their IETF application. For those who did, the majority 'Agreed' that the consultant's support was a significant factor in delivering the application.

Application Incentives

Interviewees with applicants identified their motivations for applying to the IETF. Their responses all fell within one or more of the following four themes:

Shortening payback periods – several firms mentioned that IETF funding would allow the firm to invest in projects that it could not without the grant support, due to the length of payback period. Two to three years was cited as the maximum allowable payback period for an investment. One interviewed firm reported:

> *'Our main motivation for applying was to receive funding for the project which otherwise would not proceed due to the capital expenditure thresholds defined by the firm, making the return on investment unviable in the payback period'.*

Lowering project risk – several firms highlighted that IETF funding would enable higher-risk and disruptive projects, which were unlikely to gain internal approval without external funding support, to go ahead;

Alignment with firms' strategic goals around Net-Zero – firms highlighted the strategic importance of decarbonisation to their corporate goals, with several having their own Net-Zero commitments. One firm highlighted how moving to a lower carbon operating environment, together with greater automation, would also support Health and Safety;

> *'The firm is committed to moving towards a more automated and carbon neutral approach. Long-term, we want to change the working environment so that many*

> *of the current manual jobs are replaced by robots. This will allow for better control, lower carbon emissions, and fewer Health and Safety issues'.*

Facilitating progress – several firms stated that IETF funding would enable the implementation of projects that would substantively reduce carbon emissions, but could not be justified in a capital-constrained environment where investment was focused on activities that were 'urgent' or necessary for continued plant operations.

Application Disincentives

The primary reasons given by non-applicant interviewees for not applying to the fund for the Summer 2020 Application Window fell into one or more of the following categories:

- Unaware of the IETF;
- Company activities – in terms of SIC Code – not eligible;
- Proposed project not eligible;
- Timing issues – too early or too late, (in relation to the stage of project development and/capital funding cycles), and/or the IETF's Application Window was too narrow time-wise;
- The minimum grant threshold was too high; the non-applicants who did not apply for this reason demonstrated knowledge of the fund and the grant minimum threshold, so their decision was based on actual threshold values;
- Insufficient resources for developing a project suitable for application; and
- Wider misunderstanding about the fund.

Secondary reasons included:

- Insufficient knowledge/expertise to apply;
- Application process perceived to be too burdensome;
- Management did not give support to proceed with an application; and,
- Insufficient information about the fund.

Interviews with non-applicants that do not plan to apply for future rounds of IETF funding gave one or more of the following three justifications for their decision:

Project/firm eligibility – this was a challenge for several interested firms, in terms of both organisational (SIC code) and project eligibility. For example, some firms wanted to apply for projects that would facilitate energy savings across multiple sites, which would not be eligible for funding from IETF;

Funding thresholds – several firms, of different sizes, considered the minimum grant threshold was too high for their project ideas and their ability to raise sufficient match;

Internal resourcing – a manufacturing firm reported that its internal resourcing capacity for preparing bid applications, and handling the associated administrative burden, was very low,

and that this was prohibitive in making applications to IETF at present and for the foreseeable future.

Some non-applicant interviewees were undecided about whether they would apply to future rounds and typically identified similar concerns to those listed above. Project and application development for the sort of projects that IETF supports require considerable investment for firms, and the more uncertain about the outcome, the less likely they are to apply.

Conversely, several non-applicant interviewees firmly intend to apply to a future round of the IETF. They had not applied to the Summer 2020 Application Window because of a lack of awareness of the IETF, misunderstanding eligibility (since resolved), disruption created by the COVID-19 Pandemic (now resolving), and/or wider timing issues/constraints.

> *'We are putting projects forward into our capital programme for IETF Round 2, but it does depend on the detail of the fund – for example eligibility. The projects we've put forward we think will likely be eligible, but we can't be sure. Our financial situation is also a current issue, partly COVID-19 related, but something that we always face'.*

Timing issues for non-applicants related to the following three factors:

- Firms' project ideas were not sufficiently progressed to permit the development of an application at the level of detail required by the application deadline;
- Firms only became aware of the IETF close to, or at, the application deadline; and/or
- The timing of the IETF's Application Window did not align with firms' internal capital funding decision cycles, meaning internal match-funding could not be guaranteed. This was particularly an issue for large, sophisticated businesses, with disciplined internal decision and approval processes.

  'There's a very limited investment cycle – every three to five years or so. You can't approve the investment internally until the grant has been awarded . . . but then the grant funding has to be delivered within a certain time.'

COVID-19

Whilst several non-applicant interviewees identified COVID-19 disruption as contributing to their decision not to apply to the fund, in general it was not cited as the main reason. COVID-19 implications included short-term direct impacts, such as shortages of staff time due to furlough or redundancy, personnel being diverted to address COVID-19 consequences, and physical issues of site availability or contractors not being able to access the site to undertake project development work.

In general, firms saw these as constraints which were likely to fall away as the COVID-19 situation begins to ease. Longer-term, more fundamental issues caused by COVID-19 related to wider economic and financial uncertainty, both in firms and in markets. These long-term concerns were more often raised by firms who were less certain that they would apply to future IETF rounds.

Overall Assessment & Key Findings for this Evaluation Aspect

Our assessment of Evaluation Aspect 2 (Awareness Raising & Pre-Application Support) is as follows:

We found that significant consultation and prior engagement were undertaken in anticipation of the IETF's launch, which is consistent with best practice guidance provided by the Cabinet Office regarding market engagement prior to the launch of grant fund programmes[35]. Pre-application levels of interest were high, appropriate marketing and promotion channels were identified, and good early momentum was built.

Industry's understanding of eligibility criteria helped to ensure the Summer 2020 Application Window application process did not become clogged with ineligible or poor proposals, but lack of clarity regarding eligibility caused some frustration.

A clear motivation among applicants was reducing payback periods, thus overcoming some of the market and other failures identified in the Theory of Change. Key reasons for not applying were ineligibility or that the cost of application effort was not worth the grant benefit.

The timing for the Summer 2020 Application Window coincided with furlough periods resulting from COVID-19. Undoubtedly, this affected some firms' ability to submit an application. With hindsight, a longer first Application Window would have been helpful at the time, given the difficult circumstances under which many firms were then working. More generally, rolling application windows introduced for future IETF rounds should resolve some of the timing concerns which prevented some firms from applying to the Summer 2020 Application Window.

We found no substantive evidence of awareness-raising activity occurring with the supply-side (i.e. the provision of market-based expertise and funding sources to pick-up when IETF finishes), which is key to the rationale for intervention in the Theory of Change. This is understandable during this early launch stage, but going forward this should be progressed.

Key Findings from the Phase 1 first-stage Process Evaluation

Firms (both applicant and non-applicant) were generally well-informed about the IETF from a variety of sources. Reducing payback periods was identified as strong incentive for applying to the IETF, which aligns closely with the market failures identified in the fund's Theory of Change. For those who had not heard of the IETF until approached by this Process Evaluation, interviewees described issues such as being overwhelmed with information, not having dedicated resources to seek out funding opportunities, and/or a reliance on peers/advisors to bring opportunities to their attention.

[35] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896340/Grants-Standard-FIVE-Competition.pdf

Applicants identified that uncertainty over eligibility criteria was a common issue in deciding whether and what bids to make. Other common themes were the funding threshold and timing, both of which have been addressed with a reduced funding threshold for the Summer 2021 Application Window and a commitment for the remainder of the IETF to be implemented via rolling windows.

There is no evidence of activity yet to develop supply-side capability (i.e. market-based expertise and funding sources, which can pick-up when the IETF programme finishes). Building the supply-side is a key part of the rationale for the IETF, and should not be overlooked.

Recommendations

EA2-1: While interviewees mostly showed a good level of understanding of the IETF, there was evidence that some firms had not updated their understanding since early programme communications. As the IETF continues to evolve with each Phase, changes must be communicated clearly to the applicant base. Action: IETF Team and Delivery Function.

EA2-2: Dedicated effort should be given to ensuring that SMEs, in particular, are aware of the opportunities presented by the IETF and its application requirements. Action: IETF Team, Delivery Function, and Wider Stakeholders.

EA2-3: The timing of Application Windows, including their elapsed length, should be kept under review particularly with respect to the need to align with applicants long-term corporate capital cycles and the challenges for firms ‘fitting in’ with short windows. Action: IETF Team.

EA2-4: The IETF Team should think through how service providers in the market can be engaged more effectively as substantive partners in the IETF going forward, this as part of building an effective supply-side capability to provide expertise and finance once the IETF has run its course. Action: IETF Team, ‘Wider Stakeholders’, and key private sector partners.

Chapter 5: Evaluation Aspect 3: Application, Assessment, & Award

Purpose

This chapter evaluates IETF's process in relation to Application, Assessment, and Award processes. As in previous chapters, it first summarises the processes as they were intended, then reviews the reality of implementation by considering the evidence gathered during the Process Evaluation, and then provides our summary of this Evaluation Aspect.

Intended and Implemented Process

Application

The Phase 1 Summer 2020 Application Window was open to applications from 20 July 2020 to 28 October 2020. During this time, eligible lead applicants (those with an eligible SIC code and project type) were invited to submit applications via an online portal. Applicants were required to submit word-limited answers (with no hyperlinks permitted) to questions related to the themes listed in Table 1.

Table 1: IETF Phase 1 Summer 2020 Application Window - Application Information required

For Deployment Projects	For Engineering/Feasibility Studies
Project Scope	Project scope
Equality, Diversity, and Inclusion criteria	Equality, Diversity, and Inclusion criteria
Project overview and technical feasibility	Study overview
Deliverability	Technical feasibility
Risk assessment	Potential for carbon savings
Project costs	Costs and Value for Money
Added value	Replicability for the sector
Project benefits	
Measurement and verification	

Source: BEIS, 2020

Applications for deployment projects also required applicants to complete a project 'benefits calculator', which required details of the grant funding request, the project's lifespan, fuel types and their estimated savings, and greenhouse gas emission savings. Applicants could also submit appendices if desired.

Assessment

The delivery agreement between BEIS and Innovate UK identified the latter's responsibilities for assessment involved screening of applications for eligibility, appointing assessors (with at least three assessing each eligible application) and creating a shortlist - with portfolio recommendations to achieve a balanced shortlist. These were reviewed and final recommendations came from a BEIS-led Award Panel. These were then to be submitted to the Innovate UK's Funders Panel for approval, and finally BEIS Ministers for final sign-off.

From our discussions with BEIS, interview with Innovate UK and interviews with applicants, we are confident that the assessment process was conducted as expected. Applications were assessed using Innovate UK's national pool of qualified assessors with Assessor Guidance provided by Innovate UK, each application was assigned five assessors, including a specialist from BEIS, who independently gave scores and provided supporting written feedback on each element of the application. These scores were quality-assured internally by Innovate UK, and any scoring which was inconsistent with the fund's scoring guidance was disregarded. A final ranking was produced, based on the combined assessor scores, and Value for Money estimates derived from the project's benefits calculator.

Given the amount of funding available relative to the number of applicants to the Phase 1 Summer 2020 Application Window, all firms who 'passed' the assessment were recommended for funding. If the number of applications had been larger, the relative scores of assessments that 'passed' would have been used to allocate funds on a 'top-down' basis – from highest score to lowest, until the funding pot had been exhausted. It is also possible that should this situation have arisen, BEIS may have applied 'a portfolio approach' for a balanced distribution of awards against variables such as geography, technology, industrial sector, organisation size, and project size. Greater competitive 'tension' (wherein the highest scoring projects were funded, rather than supporting all that achieved the criteria) in future Application Windows could usefully apply upwards pressure on project quality. This should be considered in fund monitoring and evaluation processes.

Award

The Phase 1 Summer 2020 Application Window received 81 completed applications from 65 firms. Following assessment, 39 projects (across 33 firms) were approved for funding, subject to due diligence, for grants to a total value of £31 million.

Once the awards were decided via the assessment process above, Innovate UK conducted all necessary due diligence checks and then produced, signed, and distributed Grant Offer Letters (GOLs). Innovate UK contacted all unsuccessful applicants and full assessor feedback was provided to both successful and unsuccessful applicants.

Research and fieldwork for this Phase 1 process evaluation was conducted between November 2020 and March 2021 when grant awards were still going through the due diligence process. As such, the grant award experience will be investigated in the next stage of fieldwork and reported in the Final Report for the Process Evaluation.

Comparison of application, assessment, and award processes against good practice

The Application Form and Assessor Guidance provide clear instructions on requirements. We reviewed IETF against the Cabinet Office's Guidance for General Grants[36], specifically Minimum Requirement Five: Competition for Funding[37]. Results are summarised in Table 2.

Table **2**: Assessment of process against best practice

Requirement	Application	Assessment	Award
Define requirements clearly	✓	✓	
Publish Assessment Criteria		✓	
Publish Grant Terms and Conditions			✓
Set the rules of the process including timings and publicise	✓	✓	✓
Number of assessors is proportionate to the size of the grant scheme		✓	
Assessors selected on basis of abilities, skills and experience		✓	
Moderation of assessment scores via meeting		✓	
Assessors completed required practice regarding project confidentiality e.g., Conflict of Interest Forms etc		✓	
Assessment scores supported by evidence-based reasons		✓	
Results of the assessment used to provide feedback to successful and unsuccessful applicants		✓	

[36] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896334/Grants-Standards-Guidance-INTRO.pdf
[37] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896340/Grants-Standard-FIVE-Competition.pdf

The analysis in Table 2 reveals that all of the Application, Assessment, and Award Processes were conducted in line with good practice.

Evaluation of Process Evidence

Application

Eligible applicants to the Summer 2020 Application Window were spread across 12 of the 24 broad categories of eligible sectors. The IETF Market Intelligence Team found that:

- Food and Drink Manufacturers submitted the highest number of overall applications (16);
- Non-Metallic Mineral Products sector manufacturers, which includes Glass, Ceramics and Cement, submitted 12 applications and constituted the largest value (c. £13m) of grant applications; and
- Metals manufacturers, including Steel, submitted eight applications with a total value of £10m per sector.

Phase 1 received no applications from data centres; these were not in-scope in the original consultation of the fund, but were included from the outset of the Phase 1 Summer 2020 Application Window, which meant there would have been less time for application/project preparation. Feedback from non-applicant data centres (or their representatives) interviewed or taking part in a Focus Group as part of this research gave the following reasons for not applying to the fund:

- Limited awareness/visibility, as there were no direct announcements to the sector in England, Northern Ireland, and Wales (although there had been for the IETF in Scotland);
- It is relatively easy for data centres to access capital funding, and the funding amounts available via IETF are fairly modest compared with the type of investment data centres require. In addition, the data sector is very agile, requiring access to funding quickly, which is often not possible with government-led schemes;
- Many data centres are already using renewables because they are a cheaper fuel source, and help contribute towards Net-Zero targets (either directly for the data centre operator or the customers of their IT platforms);
- It is not clear from the guidance how IETF funding could be used to help increase the energy efficiency of data centres and facilitate their decarbonisation; and,
- As raised earlier, firms that are not listed under the data centre SIC code, such as Telecoms, may run data centres but are not eligible for IETF funding.

A summary of application types and outcomes to the Summer 2020 Application Window is given in Table 3. Among the applications received, 57 (70 per cent) were eligible for funding, and 24 (30 per cent) were judged to be ineligible. Deployment Projects accounted for two thirds of the number of eligible applications, with Feasibility/Engineering studies the remaining

one third. A further 200 applications were started on the online portal, but not completed. Whilst an eligibility screening service was in place, with almost a third of applications being ineligible, this is a clear area for improved advice and guidance.

It is important to note that following Award, applications are subjected to a due diligence scrutiny process (still ongoing for the Summer 2020 Application Window), which could result in the final number of awards differing from the numbers set out in this report.

Table 3: Applications to Phase 1 Summer 2020 Application Window, by type and outcome

Outcome	Deployment	Studies	Total
Successful	23	16	39
Ineligible	10	14	24
Unsuccessful (for reasons other than ineligibility)	15	3	18
Total	48	33	81

Source: BEIS, 2020

The 57 eligible projects (not all of which were subsequently successful) comprised a total project value of £126 million, and a combined grant funding ask of £47 million.

The reasons why projects were identified as ineligible are in the table below.

Table 4: Ineligible applications to Phase 1 Summer 2020 Application Window, by type and ineligibility reason

Reason for Ineligibility	Deployment	Studies	Total
Ineligible SIC code	2	6	8
Did not meet minimum grant level	5	0	5
Did not meet minimum cost level	0	1	1
Did not meet required project start date	1	0	1
Did not meet required project maturity level	2	2	4

Reason for Ineligibility	Deployment	Studies	Total
Did not meet required project duration	0	3	3
Did not meet required technological scope	0	2	2
Total	10	14	24

Source: BEIS, 2021

These tables reveal that ineligibility, rather than concerns about technical feasibility, deliverability, or benefits realisation, was the main reason for applications being rejected. However, this differed between applications for Deployment Projects and those for Studies. The success rate for Deployment applications was 48 per cent, with 43 per cent of the unsuccessful applications being rejected based on ineligibility. For Studies, the success rate for applications was also 48 per cent but in this case, 88 per cent of the unsuccessful projects were ineligible. This suggests that applicants for Studies were less clear on eligibility requirements.

On reasons for ineligibility, the main one was an ineligible SIC code, followed by the application not reaching the required grant or cost level, and then not reaching a sufficient project maturity level.

Applicants reported to us that they had invested considerable resource in submitting applications – the IETF Team's Post-Application Survey suggested 85 hours on average, and our interviews revealed around two to four weeks of full-time work, although a large range was reported. One application for a large Deployment Project took three people two months of full-time work. It is likely that firms included time invested in project development, rather than just application development, in these assessments. However, significant time is likely to have been invested by those firms that were not aware of IETF until the fund was launched. Most firms agreed that the amount of information required to complete the application was proportionate to the amount of IETF for which they were applying.

Positive Views on the Application Experience

Applicants who had prior experience of funding applications and/or were supported by consultants commented that the application process was clear and straightforward, that the requirements were in line with other Government funding schemes and proportionate to the amount of public funding being requested.

Most interviewees recognised that submitting an application required the provision of technical information that required inputs from either internal specialists or an external consultant. However, this was not highlighted as a concern, but rather more a necessary requirement for the subject matter and size of grant request.

Respondents to the IETF Team's Post-Application Survey gave very positive responses to their understanding of the Application Process, with a great majority 'Agreeing' that they understood the Guidance Documents and the Application Questions. Suggestions on how these materials could be improved included making clearer what needed to be included in applications and ensuring questions on the 'login page' correlated with questions on the application. Making sure options on the application matched the question being asked and making questions less repetitive were also identified as areas for improvement.

Some firms we interviewed welcomed the application portal, reporting that this provided a useful collaborative environment, allowing multiple colleagues to work on the application at the same time. This finding was reflected by respondents to the Post-Application Survey, in which nearly all respondents agreed that they liked working with the Online Application Portal, with only one respondent 'Neither Agreeing nor Disagreeing'. A separate respondent commented that their experience of the application portal was positive, but calculations on person-hours did not work until the application 'was closed' (we take this to mean when the page had been uploaded and refreshed); this is an area that may need reviewing. Respondents reported the portal had previously been unstable and could 'freeze', but there had been noticeable improvements in stability over time.

Overall, respondents had a positive view of the Overall Application Process with only one respondent 'Disagreeing'. The clarity of the process and the eventual quality of the online portal were identified as areas of strength of the Application Process.

Issues with the Application Experience

Applicants and non-applicants that we interviewed raised a number of specific issues related to the Application Form in particular. These included:

- Some elements appearing quite 'innovation focused', despite the IETF not being focussed primarily on innovation at this juncture;
- 'Added Value' questions which were judged to be quite vague, with more specific questions and phrasing on this aspect requested;
- Some noted repetition in the Application Form, with some sections seeming very similar to other ones; and
- Word counts reported as being restrictive, especially given the level of technical complexity in play and the level of detail sought.

Some interviewees reported issues with the user interface – one had mistakenly selected the wrong type of project (Deployment vs Study) and was disappointed to be advised that it was not permitted to rectify the mistake after the deadline. Another found it quite challenging to work in the interface when multiple organisations were involved, resulting in them downloading the application form, sharing it on the firm's own platform, and then pasting the final draft back onto the portal interface. Interestingly, this contradicts directly with a positive comment regarding the collaborative nature of the portal. In reviewing this feedback, it is important to remember the working context – a high probability of applicants working from home, with domestic connection speeds, and often on laptops without immediate IT support.

Some non-applicant firms expressed a view that the level of detail and effort required for the application process was high, and that the effort:reward ratio was not favourable, or in the words of one consultee 'not worth the hassle'. Related to this point, some argued that it would have been helpful for a consultant to be the Application Lead, which is not permitted, since they are not faced with the challenges of '*the day-to-day pressures of operating sites and managing the business'*. This was highlighted by both SMEs and larger organisations who did not have the experience and/or expertise to lead complex bid development.

On similar lines, several interviewees suggested that one way to alleviate concerns around the quantity of upfront work[38], which some were reluctant to take on given the unknown chances of winning, would be to move to a two-stage application process with a lighter-touch initial sifting stage. Consultees suggested that moving some of the administrative burden to after an award had been made (even if funding were provided with conditionality attached) could make the fund more attractive. However, this is likely to be challenging as the information is required upfront to inform the assessment.

Some firms considered that a lot of information was required over-and-above their usual internal Business Case scope, which necessitated additional project development. This was challenging for projects that were not yet fully conceptualised, and within the short timescale of the IETF's Application Window.

Firms also noted some uncertainty as to whether support partners could lead an application. These respondents commented that future funding rounds should provide clarification on how project leads and support partners should function as part of the application, and which partner was eligible to apply.

The Post-Application Survey also asked if the 'benefits calculator' used for determining bill and carbon savings benefits reflected fairly the benefits which applicants expected their projects to deliver. Responses varied with applicants agreeing, disagreeing and neither agreeing nor disagreeing to the statement. This suggests that some respondents did not know whether the calculator tool was reflecting benefits fairly. One respondent said that although the calculator was easy to use, it was rigid and did not explain 'improvement in energy per tonne of material used - it only allows input of total energy used regardless of output, which can vary . . . so is not a good comparison'. The calculator has been updated since the Summer 2020 Application Window to take production output into account.

Assessment

A range of issues were provided by applicants interviewed in relation to the assessment of applications:

- Some questioned the consistency of the assessment process. One successful applicant reported that four of the assessors provided very positive feedback, and one very negative. 'Positive' assessor comments were for example: '*Excellent proposal with clear*

[38] Note that while several non-applicant consultees mentioned the burden of the application process in general terms, none stated that this was the main reason that they did not apply, and only one mentioned it as a contributing factor.

and detailed thinking, planning, risk assessment'; while negative assessor comments on the same application reported '*Concern around some of the staff time/labour input assumptions […] The applicant does not offer sufficient information as to why this transposition [of characteristics from one furnace to another] is fair and reasonable'*;

- One successful applicant reported that on reviewing the assessors' comments, there appeared to have been some weight placed on elements that were not identified as criteria. For example, it was very clear that the hydrogen element of their project was not included within the fund's scope (and this was confirmed by the Innovate UK representatives), yet one of the assessors stated that more detail should have been provided on this. The applicant suggested that there should be greater transparency regarding the assessment process for future rounds with only published criteria being considered in scoring;
- One firm submitted three very similar applications and was concerned that the three projects appeared to have been judged inconsistently, with one assessor commenting '*there's another application from the same firm with almost the same proposal […] So this application is not recommended for funding'* and another questioning whether a cold store should be considered in scope or not. It also appears inconsistent that although the three applications were extremely similar, one was rejected for funding while the other two were not – especially given that the rejected application offered the additional opportunity of eliminating refrigerant gases, which has significant wider environmental benefits;
- A further applicant noted the inherent tension between 'innovation' and 'deliverability' – it is much harder to ensure reliable delivery of a novel project than one with a 'tried and tested' approach. The applicant felt that the assessors had understood this tension and achieved a good balance in their assessments. The applicant went on to mention, however, that with a scheme such as this (in which firms must compete to secure funding), it is not possible to know the chances of being awarded funding at the outset of the project - and therefore it is a harder decision to commit funding to developing an application to a fund of this type;
- Another had included hyperlinks amongst the application material provided, but did not realise that assessors were advised not to follow hyperlinks, and therefore the material could not be included as part of the application; and
- Some interviewees were uncertain about the level of technical expertise/familiarity the assessors would have, and therefore how to 'pitch' the application to best effect. Interviewees suggested that including scoring criteria would be a helpful addition for applicants to understand how assessments would be structured.

Finally, while most applicants described the assessor feedback – process and content – as helpful, thorough, and clear, one consultee was frustrated to find that the feedback received from assessors was not in line with earlier feedback provided by KTN on a draft application, which ultimately led to the application being rejected.

'Wider Stakeholders' to the IETF, some of whom were actively involved and others who were observing, were generally complimentary of the application process. They noted some initial

teething problems regarding the clarity of guidance but recognised that this had been updated for the Spring 2021 Application Window. There was a perception among 'Wider Stakeholders' of some variation in the assessor scoring, however, they also noted that the support provided to applicants by BEIS, the IETF Team, and Innovate UK was welcomed generally by applicants.

Awards

As detailed earlier, under the Summer 2020 Application Window, 39 projects (from 33 unique applicants) were approved for funding subject to due diligence checks for grants totalling £31 million. Conditions of grants include that the beneficiary firms are required to complete their projects within two years. Post-completion monitoring will continue for up to five years once they have completed the 'project delivery' phase.

In considering the effectiveness of the Award process, it is important to consider the degree to which the awards made are likely to contribute to achievement of the IETF's objectives i.e. the degree to which the process of delivery is likely to contribute to the achievement of impacts.

As identified in Chapter 4 (Awareness-raising and Pre-application Support), a key incentive for applying to the IETF was to reduce payback periods for investment in new technology and equipment. Reducing payback periods is identified in the Theory of Change as a key aspect that prevented firms investing in energy efficiency and decarbonisation projects. The following quotes were provided by successful applicants from manufacturing firms that were interviewed as part of the research:

> *'The costs of energy efficient technologies and the uncertainty of returns are current barriers to investment for the firm. Without support from the IETF, this study would not have gone ahead, or at least not within this timeframe'.*

> *'The project would not have gone ahead in its current form without IETF funding. Without the grant, the project would have exceeded the firm's corporate investment threshold, which specifies that for approval such investments must give a payback within a specific timespan.'*

> *'The project would likely have gone ahead without the IETF funding, but it would have been lower down the partnership's priority list due to the long payback period of the investment. Essentially, the grant enabled the business to move the project to the priority list for internal funding.'*

In relation to scalability, successful applicants identified how improvements to processes funded by IETF could be incorporated into other sites in the UK, and sometimes internationally. In addition, the results of Feasibility/Engineering Studies were often intended to provide evidence and thinking that could be shared across firms' wider structures and industry more generally, enabling helpful knowledge flows around emergent technologies that would enhance energy efficiency and support decarbonisation on a much larger scale than could be achieved through the beneficiary firm in isolation.

Not all successful applicants will choose to sign the grant agreement. This could arise because of being unable or unwilling to fulfil grant conditions, or due to issues arising from due diligence checks. The extent to which this occurs is a consideration for future process evaluation.

Early evidence of Strategic Added Value

Early evidence of wider qualitative outcomes (Strategic Added Value, Chapter 2) was identified from the case studies and applicant/non-applicant interviews. Self-evidently, these are early-stage observations on firms' IETF experiences, but as individual firms' project journeys continue, it will be important to capture these outcomes as evidence of the wider benefits of the IETF.

Both successful and unsuccessful applicant firms that were interviewed reported that applying to and (in the case of successful firms) securing funding from IETF had raised the profile of the decarbonisation agenda within assisted firms, serving as a demonstration to employees of corporate and government commitment to Net-Zero. Selected quotes from multinational manufacturing and energy firms summarise this outcome:

> *'The application/project development process has altered internal thinking on projects, bringing about greater support for the firm's Net-Zero strategy and a better understanding of the potential benefits of increasing energy efficiency and decarbonising industry for the company, the wider area, and the UK.'*

> *'The project provides an opportunity to demonstrate to employees how seriously the business takes the carbon reduction agenda. Younger employees are particularly keen to see these changes.'*

> *'Developing the project has had positive unintended consequences in highlighting the sustainability agenda. Securing support for such a transformational [IETF] project acts as a statement of intent by the company about achieving a more sustainable future. The IETF process provides reassurance to the company that it is heading in the right direction and reduces risk, enabling additional investment with a raft of further sustainable energy projects to be pursued'.*

Again from the case studies, positive outcomes were reported in relation to improved collaborative working/knowledge transfer within assisted firms on Net-Zero issues – the 'common agenda' effect. Specific comments related to the lessons learned from understanding and demonstrating how individual projects fit into wider decarbonisation goals and can have impacts beyond immediate processes, and also the potential for projects to act as demonstrators and leverage wider benefits, including employment attraction and retention.

> *Multinational Manufacturing Firm: 'The project is expected to serve as a 'demonstrator' for the company, and it is likely that other sites will make similar investments if this project is successful. The company has also employed a local company to conduct mechanical and engineering work, so this will have a positive jobs impact on the local area.'*

A related point raised was the deepening of existing relationships between firms, support partners, supply chains and networks. One successful firm highlighted how the consultants supporting their IETF application had strong links with their Foundation Industries, providing multiple opportunities for sharing learning between industries, whilst another identified how the IETF had catalysed and stimulated wider conversations within the organisation about decarbonisation effects.

For some firms, the IETF experience has led to more positive views of government funding, which has meant that it is more likely that they will apply to similar relevant schemes in the future, and some firms expect to achieve environment benefits such as enhanced air quality, which will have a broader positive impact and enhance the perception of the company in their local economies.

Overall Assessment & Key Findings for this Evaluation Aspect

Our assessment of Evaluation Aspect 3 (Application, Assessment and Award) is as follows:

From the evidence assembled in this chapter, we consider that the Assessment, Application and Award processes deployed by IETF over the period in view were broadly sound and embodied good practice.

A specific issue relates to the eligibility of applications, with a high proportion of unsuccessful applications being rejected for this reason (43 per cent of unsuccessful Deployment applications and 88 per cent of unsuccessful Study applications). We consider that the guidance in relation to SIC Code, minimum grant or cost level, and project maturity is clear. This said, a specific issue was raised in our interviews with applicants and non-applicants relating to technical eligibility criteria for Heating and Cooling measures. As detailed in Chapter 3, the IETF Team updated the IETF Technological Scope Guidance for the Spring 2021 Application Window to include more detail on the various organisation and project eligibility requirements.

Overall, the questions on the Application Form are comprehensive and the process fairly straightforward, with helpful support provided by Innovate UK and the IETF Team when sought. The assessment process is consistent with Cabinet Office guidance, using multiple assessors (proportionate to the size and complexity of funding), and consensus meetings.

In addition, whilst the reported time costs of applying may have been significant for some firms, it is important to note that these may include project development as well as application development time inputs. To minimise abortive work, a multi-stage application process should be considered and may potentially be more attractive to firms. However, some of the issues encountered likely reflect that this is the first round of IETF, where there is no information available about prior winners, the amounts of funding typically being awarded, and/or the types of projects most likely to succeed.

The IETF Team has improved clarity and wording to better support firms in their applications and reduce red tape and duplicate information requests. This is, again, evidence of the IETF looking to learn and make in-flight change as it progresses and matures.

Regarding concerns relating to minimum grant funding thresholds, we note that these were lowered for the Spring 2021 Application Window. This change had not been announced at the point this study's fieldwork was conducted, so it is not known whether the new funding thresholds are revised sufficiently for applicants that did not apply to the Summer 2020 Application Window to reconsider.

The assessment guidance and process is sound, although there appears to have been some inconsistency in applying this, with assessors providing different views on applications which has caused some concern to applicants. Further training of assessors may be required to ensure consistent approaches, particularly as some of the eligibility rules have changed since the Summer 2020 Application Window.

This report focuses on process rather than impact, but the contribution of the process to intended impact is important to consider, even at this early stage in the IETF's life cycle. IETF funding has enabled projects to progress by helping to address the market failures associated with high upfront costs and challenges with payback periods, highlighted in the Theory of Change. In addition, wider strategic benefits, such as enhancing the profile of the decarbonisation agenda, have been reported by successful and unsuccessful applicant firms.

Key Findings

Our research has identified that the Application, Assessment, and Award processes were largely sound. Most issues encountered have been addressed through improvements to the process for the Spring 2021 Application Window. Work is still needed to improve the consistency of assessment, notably additional training for assessors.

A clear focus on eligibility needs to be retained to ensure that firms are clear on whether both their organisation and project concept are in-scope, to avoid abortive work by applicants. Against this context, the IETF Team has demonstrated responsiveness and flexibility in responding to feedback by, for example, reducing the minimum grant threshold both for the Phase 1 Summer 2020 Application and Spring 2021 Application Windows.

Prospective applicants expressed a strong desire for more flexible fund timelines and Application Windows. The IETF Team has responded with future waves of funding to be conducted via a series of rolling Application Windows.

We assess, and interviewed applicants generally agreed, that the effort required to apply to the IETF is commensurate with, and proportionate to, the financial scale of IETF grant awards. Introducing a two-stage process (perhaps on a pilot basis) could help sift out ineligible projects earlier and minimise nugatory work, although many of the issues

applicants encountered in the Summer 2020 Application Window may be due to this being the first tranche of applications to a new scheme. Providing information about the types and nature of successful applications in preceding windows could help future applicants understand eligibility criteria.

Several issues highlighted in this Evaluation Aspect were addressed in time for the Spring 2021 Application Window, evidencing the responsiveness of the IETF Team and Innovate UK and their willingness to address concerns. This commitment to continuous development and improvement should be retained throughout the delivery of the IETF.

Recommendations

EA3-1: Further training for assessors should be incorporated into future funding rounds to reduce any inconsistency of application assessment. Action: IETF Team.

EA3-2: Changing to a two-stage assessment should be considered for future application windows, reflecting applicant feedback around minimising wasted effort on ineligible bids. Action: IETF Team.

Conclusions & Recommendations

This final chapter draws together findings from across the whole report to provide overarching conclusions against the evaluation objectives set out in the introduction. We present evidence as to what extent early processes and delivery are supporting IETF's objectives as set out in the Theory of Change. We conclude with recommendations to inform future IETF processes.

Understand the response from industry to Phase 1 of the IETF

This objective is concerned with understanding the extent to which the incentives offered by the Phase 1 Summer 2020 Application Window were understood and attractive to different industrial sectors. This involves assessing the stakeholder engagement activities, raising awareness of the fund, and pre-application support and guidance of the IETF Team and Innovate UK (the fund's initial Delivery Partner).

The key findings identified from desktop review and fieldwork of relevance to this objective are:

- Firms (both applicant and non-applicant) were generally well-informed about the IETF. They had heard about it from sources such as trade associations, direct contact with BEIS, consultants, email alerts from Innovate UK, KTN, GOV.UK, and internet searches;
- Some firms reported that they were aware of IETF well in advance of the Summer 2020 Application Window, and were developing projects to capitalise on the opportunity. Others found out about the funding via existing communication channels, and developed subsequent applications to access the funding;
- For those who had not heard of the IETF until approached to participate in an interview for this Process Evaluation, interviewees described issues such as being overwhelmed with information (meaning opportunities such as IETF got 'lost'), not having dedicated resources to seek out funding opportunities, and/or a reliance on peers/advisors to bring opportunities to their attention;
- Eligibility criteria were a recurring area of uncertainty for applicants as they considered whether or not to apply;
- Raising awareness of the IETF amongst SMEs is an area that needs more focus in future funding windows; and
- We found no evidence at this relatively early stage in the IETF process of significant outreach work with the supply-side (i.e. market-based expertise and funding sources, which can pick-up when the IETF programme finishes), to build long-term market capacity.

Understand how well the delivery of Phase 1 . . . supported the IETF's aims

This objective focuses on how well the delivery conducted by Innovate UK on behalf of BEIS supported the IETF's objectives and proposes improvements in the light of this. Key findings from Chapters 4 and 5 evidence how well the delivery of the Phase 1 Summer 2020 Application Window supported the overall aims. Specifically:

Chapter 4: Evaluation Aspect 2 - Awareness Raising and pre-Application Support

- The IETF was well publicised by Innovate UK and others, specifically BEIS and KTN, and sufficient fundable applications (across both Deployment and Studies categories) were received to exceed the £30 million allocated. Some flexibility had been introduced, meaning that more than the initial funding pot could be allocated, should applicant demand be in excess of the allocation;
- The main incentive for applying aligned with the aims of the IETF, in terms of bringing down the costs (by reducing payback periods) and risks of energy efficiency and decarbonisation technologies;

Chapter 5: Evaluation Aspect 3 - Application, Assessment, and Award

- Eligibility rules set for the IETF clearly focus on enabling those firms and project ideas most likely to achieve the aims of the IETF to be funded. There was some confusion regarding eligibility in the Summer 2020 Application Window, which has since been addressed through improved guidance for the Spring 2021 Application Windows;
- Application, Assessment, and Award processes are assessed to be largely sound, although some inconsistencies in assessment need addressing, potentially through assessor training;
- Prospective applicants expressed a strong desire for more flexibility with respect to IETF application timelines and application windows. Evidence that the IETF Team has been responsive to these requests is provided through the amendments to future waves of funding, which will be delivered via a series of rolling funding windows; and
- We assess that the effort required to apply to the IETF is commensurate with, and proportionate to, the scale of IETF grant awards on offer. A two-stage process (perhaps operated on a pilot basis) could assist in avoiding wasted work, although many of the issues encountered in the Spring 2020 Application Window may be due to this being the first tranche of applications as a new programme settles down. Some of the concerns expressed by firms may be addressed for future windows by providing access to demonstrator information about the types and nature of applications funded in the early IETF rounds.

In summary, at this early stage, we conclude that the delivery of the IETF has supported its objectives, with some tweaks required to future delivery to maximise the effectiveness of further delivery.

Examine the characteristics of Phase 1's design . . . and consider the extent to which these supported the IETF's objectives

Chapters 2 and 3, focussed on Evaluation Aspect 1: Governance and Programme Design at strategic and implementation levels, cover the characteristics of the Phase 1 Summer 2020's Application Window's design (e.g. timing, length of funding window, eligibility, and assessment criteria) and the extent to which this supported the IETF's objectives. The key findings are:

Policy Rationale and Justification

- The IETF is a high-profile policy, for which success in delivery is vital for building industry confidence in the Government's ability to deliver Net-Zero commitments;
- The IETF aligns well with the Net-Zero imperative defined in UK and international policy, and the specific challenges of deep-decarbonisation and energy efficiency in private sector energy-intensive firms. In the IETF's Strategic Case, the Context is well understood, and the Rationale set out is sound. 'Wider Stakeholders' recognise the IETF as important and necessary and are supportive. Good foundations have been laid.
- The initial Theory of Change developed by BEIS in 2019 has been developed constructively over time.

Policy Operations

- On the funding instrument, recognising the failures in play, including under-developed provision of expertise and finance from the market (the so-called 'supply-side' issue), our assessment, based on primary research (interviews with applicants, non-applicants and 'Wider Stakeholders') together with the response to the public consultation is that grant funding was and, at this stage, continues to be the most appropriate mechanism for funding the project and firm types targeted by IETF;
- The IETF's design has been iterated with substantial market input – consultation has been serious and substantive. This is positive and helpful in trying to de-risk as many of the operating and process issues as possible;
- In operation, the IETF's design has, so far, been able to flex promptly and responsibly to necessary feedback, be this from consultation, wider feedback, or the operating experience of the first funding window. The model now has a stable and certain core, which needs to be maintained going forward to create confidence and familiarity in the market. At the same time, delivery needs to continue to be agile, so the fund remains capable of adopting to new energy technologies/challenges as they emerge, and critically as the programme itself looks to transition to a second phase of activity; and
- Clarity regarding organisational and technology issues was a weakness in the guidance for the Summer 2020 Application Window and has since been addressed for the Spring 2021 Application Window. Feedback from Summer 2021 applicants (and non-

applicants) on the utility of revised guidance will be beneficial for future stages of the fund.

In addition, Chapter 4 highlights that the main motivation among firms that applied for IETF support was reducing payback periods, thus overcoming some of the market and other failures identified in the Theory of Change.

Finally Chapter 5 highlights that, whilst this report focuses on process rather than impact, the contribution of the process to intended impact is important to consider. IETF funding has enabled projects to progress by addressing market failures associated with high upfront costs and challenges with payback periods which is highlighted in the Theory of Change. In addition, wider strategic benefits, such as enhancing the profile of the decarbonisation agenda, have been reported by successful and unsuccessful applicant firms.

Describe the adaptations that occurred during the scheme's Phase 1 delivery cycle, and determine the extent to which the processes in practice matched the intention

The only major change that occurred during the Phase 1 Summer 2020 Application Window was a change to the eligibility criteria for energy efficiency measures related to heating and cooling, where it was confirmed in the Technological Scope Guidance document for Deployment on 13 July 2020 that this related specifically to buildings.

As a result of feedback following the Phase 1 Summer 2020 Application Window received by the IETF Market Intelligence team and Innovate UK, the following changes were made to the IETF for the Spring 2021 Application Window[39] and Phase 2. Specifically:

- In February 2021, it was announced that thresholds for the Phase 1 Spring 2021 Application Window had been lowered from £250k to £100k for Deployment Projects. The threshold was also reduced from £60k to £30k for Feasibility Studies, and from £100k to £50k for Engineering equivalents. This was in response to concerns from prospective applicants that minimum thresholds were too high, particularly for SMEs. This reduction was in addition to the reduction already made to the proposed IETF minimum thresholds in 2019 due to responses to the Consultation; and
- Based on feedback gathered during 2019's Consultation, added to by this study's fieldwork, the majority of respondents supported multiple Application Windows. In response to this, BEIS intends to implement a rolling-window for Phase 2[40]. This is supported by the findings from our research where numerous applicants and non-applicants highlighted Summer 2020's short application window as a challenge.

[39] In fact, the Spring Window was, itself, an adaptation that was introduced to maximise support for industry from the IETF, recognising the difficult circumstances that many firms faced in Summer 2020 at the height of the COVID-19 Pandemic.
[40] Innovate UK Phase 1 Update and Lessons for Future Windows – Report to IETF Project Board (November 2020)

Highlight short-term unintended consequences (positive or negative) of the policy

Informed by the desk review and study fieldwork, Chapter 5 (Evaluation Aspect 3: Application, Assessment, and Award) provides early insights into unintended consequences, both positive and negative, at this stage in the IETF's lifecycle. These consequences are mainly positive, covering the following:

- Raising the profile of the decarbonisation agenda within assisted firms, and serving as a demonstration to employees of corporate commitment to Net-Zero;
- Improved collaborative working/knowledge transfer within assisted firms on Net-Zero issues – the 'common agenda' effect;
- Deepening existing relationships between firms, support partners, supply chains and networks;
- Driving more positive views of government funding, and improving firms' likelihood to apply to similar relevant schemes in the future; and
- Driving environmental benefits around air quality and improvements to firms' surrounding areas.

These unintended consequences are important wider benefits that the IETF intervention is giving rise to, alongside the expected quantitative effects (e.g. reduced energy use, improved emissions performance) flowing directly from funded deployment and feasibility studies.

Identified negative unintended consequences related primarily to internal firm impacts, such as having to move resource from other areas to dedicate time to developing and progressing the application for the IETF funded project, the sharp learning curves required to deliver the project, and a requirement for new skills.

Understanding of how the IETF has changed the market for energy efficiency and deep decarbonisation technologies and relevant business decision-making

As only 33 firms have so far 'passed' assessment, and grants offers were only made earlier this year, there is not yet evidence that the IETF has influenced notable change in the market for energy efficiency and deep decarbonisation technologies and associated business decision-making. Unintended consequences identified above include the increased profile given to the Net-Zero agenda within firms and Government's commitment to the IETF (showing that it is serious in supporting, and is committed to achieving, Net-Zero), which is likely to help lead and encourage industry.

Test the scheme's Theory of Change against available evidence

As projects are at an early stage, it is too early to collect evidence of outputs (such as, for example, the successful implementation of projects, production of studies, and collection of project output information such as data, statistics costs/benefits and so on). Instead, at this point, we have reviewed the inputs and activities of the IETF, and the assumptions which connect these to outputs. The detailed assessment is in Appendix C, with our headline conclusions at this early stage as follows:

- The inputs and activities, from BEIS, Innovate UK, applicants and their support partners have all taken place at the levels and within the timings anticipated (See detail in table at Appendix C); and
- At this stage, almost all of the underpinning assumptions which translate inputs and activities into outputs have supporting evidence (See detail in Appendix C).

Generally, there is there is good evidence (from the Strategic Case, stakeholder consultations, and working with the IETF Team to advance the intervention's Theory of Change) that the fund's design and early implementation have drawn on elements of existing good practice, initial consultation feedback, and early operating experience. Going forward, the IETF' strategic and tactical development needs to maintain this reflective mindset, ensuring that this does not get squeezed-out by the pressures of the operating routine.

Provide timely process lessons before subsequent funding rounds open (to improve policy and processes economy, efficiency, and effectiveness).

The key recommendations identified in this Phase 1 first-stage Process evaluation are grouped by the Evaluation Aspect areas on which this report is built. These are drawn from the proceeding chapters in the main report, where their context and provenance are described fully.

Evaluation Aspect 1A: Governance and Programme Design – Case and Justification

Recommendations

EA1A-1: The Objectives and Outcomes in the Theory of Change should have timing and quantification detail added to them as a priority. This would complete the integrity of the Theory of Change. Action: IETF Team;

EA1A-2: We propose adding a four-fold typology of 'strategic added value' (SAV) to the Theory of Change to incorporate the fund's role in delivering; Strategic Leadership and Catalysis, Engagement, Synergy, and Leverage regarding national decarbonisation and energy efficiency. Benefits reporting should include qualitative effects alongside formal quantified Output/Outcome metrics; the combination of qualitative and quantitative effects will comprise the IETF's long-term legacy. Action: IETF Team;

EA1A-3: The Theory of Change should operate as a 'living document' to support the IETF's management, being reviewed explicitly and formally on a regularised six-monthly cycle; this can build on the review work which the IETF Team reports is now occurring. Action: IETF Team;

EA1A-4: The decarbonisation landscape is busy and noisy. The IETF's ongoing implementation should remain alert to, and aligned with, adjacent policy areas, with the IETF Team making links with these, when/wherever possible. Action: IETF Team, adjacent policy makers, and key IETF stakeholders; and

EA1A-5: Similar and current industrial energy efficiency and decarbonisation schemes implemented in the UK and internationally will continue to provide useful lessons for the IETF. The IETF' strategic and tactical development should continue to reflect on this substantial evaluative research resource, so that when necessary the IETF can deploy purposefully relevant practice. Action: IETF Team and key IETF stakeholders.

Evaluation Aspect 1B: Governance and Programme Design – Operations

Recommendations

EA1B-1: The inclusive and agile approach which the early phase of the IETF has demonstrated should continue; it is important that this is not driven out by the 'routine' of fund operation. Action: IETF Team, Innovate UK, and wider IETF stakeholders;

EA1B-2: With two full rounds completed, the IETF is maturing into a more stable and certain energy efficiency intervention, building confidence in the applicant base. Whilst ensuring this certainty, the IETF Team should at the same time remain open to further policy design and delivery changes, particularly as new technologies and sector opportunities emerge. Action: IETF Team; and

EA1B-3: Improvements made to the eligibility guidance in the Summer 2021 Application Window should be reviewed against applicant feedback to inform future phases of the fund. Action: IETF Team.

Evaluation Aspect 2: Awareness Raising and Pre-Application Support

Recommendations

EA2-1: While interviewees mostly showed a good level of understanding of the IETF, there was evidence that some firms had not updated their understanding since early programme communications. As the IETF continues to evolve with each Phase, changes must be communicated clearly to the applicant base. Action: IETF Team and Delivery Function;

EA2-2: Dedicated effort should be given to ensuring that SMEs, in particular, are aware of the opportunities presented by the IETF and its application requirements. Action: IETF Team, Delivery Function, and Wider Stakeholders;

EA2-3: The timing of Application Windows, including their elapsed length, should be kept under review particularly with respect to the need to align with applicants' long-term corporate capital cycles and the challenges for firms 'fitting in' with short windows. Action: IETF Team; and

EA2-4: The IETF Team should think through how service providers in the market can be engaged more effectively as substantive partners in the IETF going forward, this as part of building an effective supply-side capability to provide expertise and finance once the IETF has run its course. Action: IETF Team, 'Wider Stakeholders', and key private sector partners.

Evaluation Aspect 3: Application, Assessment, and Award

Recommendations

EA3-1: Further training for assessors should be incorporated into future funding rounds to reduce any inconsistency of application assessment. Action: IETF Team; and

EA3-2: Changing to a two-stage assessment should be considered for future application windows, reflecting applicant feedback around minimising wasted effort on ineligible bids. Action: IETF Team.

Appendices

A: Methodology

B: Detailed Fieldwork Research Tools

C: Assessment of Theory of Change against available evidence

D: Learning from Elsewhere

Appendix A: Methodology

Purpose

This Appendix sets out the detail of our methodology for the first-stage Process Evaluation. The table immediately below provides a summary of the method deployed overall, with subsequent sub-sections focusing on the underlying Approach Taken, the Sampling Processes used, Biases and Analysis Assurance, and Key Topics covered in interviews/focus groups with IETF-related firms.

Appendix Table 1: Summary of first-stage Process Evaluation Depth Interviews, Focus Groups, and Desk/Meta Reviews

Activity	Timing	Target group & Purpose	Fieldwork Target	Numbers achieved
1: Scoping Interviews	Nov 2020	BEIS stakeholders involved in design and implementation of the IETF Scoping Calls to identify issues for process evaluation to address	11 semi-structured depth interviews	11 semi-structured depth interviews
2: Desk-review of documents relating to the IETF's genesis and design	Nov 2020 - Mar 2021	No target group Desk-review of key relevant documents providing background to the IETF	Non defined	12 documents reviewed in detail
3: Wave 1a interviews	Nov 2020- Feb 2021	Non-applicants Understand motivations; level of interest in IETF; how they heard about IETF; why they did not apply; whether they plan to apply to future phases	20 semi-structured depth interviews, 2 focus groups	35 firms consulted: 21 semi-structured depth interviews and 2 Focus Groups (with a total of 14 focus group participants). Of the 35 interviewees, 23 were firms eligible to lead an application, and 12 were eligible support

Activity	Timing	Target group & Purpose	Fieldwork Target	Numbers achieved
				partners (such as technical consultants).
4: Wave 1b interviews	Feb-Mar 2021	Applicants (Successful and Unsuccessful) Understanding motivations; experience of the application process; projects and expected benefits; whether they plan to apply to future phases if unsuccessful	30 semi-structured depth interviews, 3 focus groups. Target of 2/3 successful applicants and 1/3 unsuccessful applicants.	22 semi-structured depth interviews: four unsuccessful applicants, 15 successful applicants, and 3 applicants with both successful and unsuccessful applications[41]. No Focus Groups.
5: 'Wider Stakeholders'	Feb-Jun 2021	Representatives from Wider Stakeholder groups interacting with the IETF Understanding of the wider context, perceptions of the IETF, and possible unintended consequences.	10 depth semi-structured interviews, using a topic guide	7 depth interviews, using semi-structure questionnaire, plus access to one Wider Stakeholder's response to the IETF Assurance Review
6: Learning from Elsewhere - meta-review of research on relevant comparator programmes	Nov 2020 - Mar 2021	No target group Desk-review of key publicly available evaluative research on programmes similar in design and intent to the IETF.	9 programmes reviewed	9 programmes reviewed

[41] These applicants made applications for multiple projects, some of which were accepted for funding, and some rejected.

Source: Steer-ED, 2021

Approach Taken

Interviews and Focus Groups (Activities 1, 3, 4, and 5 in Table above)

1: Scoping Interviews

Semi-structured interviews were conducted via telephone/MS Teams (the latter providing helpful visual cues) with a single interviewer from Steer-ED or JBA Consulting. Eleven interviews were undertaken, each lasting up to 60 minutes.

Working to a semi-structured aide memoire (see Appendix B), and lightly challenging respondents during interview for evidence to substantiate their statements, these interviews were noted fully at the level of individual interviewees, and added to a structured spreadsheet grid to permit cross-group analyses and help smooth-out biases.

The individual reports for the 11 interviewees, underpinned with the cross-group analysis from the spreadsheet, were then synthesised into a 'Summary of Scoping Interviews' report, which was forwarded to the client and used to help shape the evaluation's final method and work programme.

3: Wave 1a Interviews/Focus Groups

Semi-structured interviews were conducted via telephone/MS Teams (the latter providing helpful visual cues), each lasting up to 45 minutes with a single interviewer from Steer-ED or JBA Consulting. Firms were invited to bring multiple project team members to the consultation, if preferred. For Wave 1a interviews, potential lead applicants and potential support partners (consultants/technical specialists) were interviewed separately.

Focus Groups lasted up to 1.5 hours each and were jointly facilitated by two senior interviewers from Steer-ED, helping to smooth-out biases. One focus group, targeted at individuals with little or no familiarity with IETF, was co-hosted by representatives from BEIS, who presented information about the IETF and the then upcoming Phase 1: Spring 2021 Application Window. BEIS' representatives were not present for the discussion section of the focus group, to help ensure a candid and open discussion with participants.

All interviews and focus groups were recorded[42] and a detailed note taken, with appropriate challenging of respondents during interview for evidence to substantiate their statements. Notes of individual interviews, confirmed with interviewees, were then summarised in a structured spreadsheet grid to permit cross-group analyses, to which summaries of the focus group meetings were added, helping to smooth-out response biases. The recordings and non-anonymised notes were not made available to BEIS for reasons of confidentiality.

[42] With the exception of those where the interviewee did not give consent to be recorded, where technical reasons meant that a recording was not possible.

4: Wave 1b Interviews

Semi-structured interviews were conducted via telephone/MS Teams (the latter providing helpful visual cues), each lasting up to 45 minutes, with a single interviewer from Steer-ED or JBA Consulting. Firms were invited to bring multiple project team members to the consultation, if preferred. For Wave 1b interviews, support partners were invited to join the interview alongside lead applicants. No focus groups were undertaken as part of the Wave 1b interview activity, because of limited numbers of respondents to the issued invitation.

All interviews were again recorded[43], and a detailed note taken, with light challenging of respondents during interview for evidence to substantiate their statements. Notes of interviews, confirmed with interviewees, were then summarised in a structured spreadsheet grid to permit cross-group analyses across all interviewees, and smooth-out biases. The recordings and non-anonymised notes were not made available to BEIS for reasons of confidentiality.

5: Wider Stakeholder Interviews

Semi-structured interviews were conducted via telephone/MS Teams (the latter providing helpful visual cues), with a single interviewer from Steer-ED or JBA Consulting. Seven interviews were undertaken, each lasting up to 60 minutes, with respondents being lightly challenged during interview for evidence to substantiate their statements. An eighth interviewee declined to participate, but instead offered to provide access to their then recent response to the IETF Assurance Review.

Working to a client-approved topic guide, these interviews were recorded at the level of individual interviewees, with formal notes being sent to interviewees to check for fact and accuracy, with necessary changes being made. On receipt back, the content of all interview notes was added to a structured spreadsheet grid to permit cross-group analyses.

The headline findings from the eighth interviewee's response to the IETF Assurance Review were integrated alongside these interview responses. The resulting dataset was then analysed by Steer-ED, and sent through on an anonymised bases to the IETF Team for information, with the analysis from the spreadsheet then feeding into the development of this report.

Desk review/meta-review (Activities 2 and 6 in the Table above)

In progressing these two activities, a systematic approach to review was taken. This involved: triangulating potential documents/evidence across multiple sources, securing access to sensitive ones, maintaining document/evidence confidentiality, compiling those documents/evidence sets informed by their ability to help answer the study's objectives/research questions, understanding how/why/when documents/evidence were produced, determining document/evidence accuracy, and finally extracting and synthesising the information from the documents/evidence reviewed to help inform the evaluation's objectives.

[43] With the exception of those where the interviewee did not give consent to be recorded, where technical reasons meant that a recording was not possible.

Both reviews were conducted across multiple researchers, who could challenge biases in each other.

Sampling

In general, our approach to securing interviews was opportunistic. Except where otherwise explained below, this means that all members in our finalised sample frame for each element were invited to participate, but only those willing to be involved were interviewed. Our approach to both building and using the finalised sample frame for each research element was tailored to what would best answer the evaluation questions.

Scoping Interviews

The sample from which Scoping Interviews were drawn was provided by the IETF Team. This was not intended to be a statistically representative sample, but rather a purposive one from which meaningful insight to help inform the final form of the evaluation could be quickly drawn.

Wave 1a Interviews/Focus Groups

The sampling process to support the Wave 1a depth interviews and focus groups was as follows:

- The IETF Team's initial intent for the Wave 1a work with non-applicants to the fund had been to construct a sample representative of the population being targeted by the intervention. Accordingly, IETF analysts sought to create a sampling frame of firms by size (using % of UK turnover) from Table 5, C Manufacturing – (ONS, 2020) 'Business Population Estimates' and SIC code by using % of total emissions (for eligible IETF sectors) from Emissions – BEIS (2020), 'Supplementary tables: 2018 UK greenhouse gas emissions by Standard Industrial Classification';
- We then used this sampling frame to approach a representative sample from the IETF Team's internal market intelligence stakeholder list. However, this approach achieved a much lower response rate than expected, and the initial responses that were achieved from some 'types' of business provided limited evaluative insights, either due to low salience with our research topics (such as very small businesses, particularly with projects well below the IETF grant minima) or extremely high heterogeneity;
- Faced with this, our pragmatic response was to switch approach and attempt a more purposive sampling of eligible firms. We identified target 'types' of firms that would give the most valuable and in-depth responses to our interview questions (such as larger industrial firms). To achieve this we supplemented the list of 157 firms from the IETF Team's internal stakeholder list with our own contacts to explore the experiences of those who had not been in close contact with BEIS during Phase 1 Summer 2020 window. Arthur D Little reached out to their client of existing/former clients working in eligible sectors who may have an interest in IETF. Four of the 35 consultees ultimately participating in interview or focus group were sourced via this route; and
- To ensure further coverage of firms not already known to BEIS (and to therefore give a broader set of viewpoints and ensure that the research provided insight from firms not already in conversation with the Department), Steer-ED approached opportunistically by

email some 210 firms who had either (i) attended a relevant Knowledge Transfer Network[44] seminar; or (ii) were identified by Steer-ED as being medium or large-sized firms from similar sectors to IETF applicants. Pragmatically, the decision was made to focus on medium/large sized firms because the pointers from the Scoping Interviews and the experience of the Summer 2020 Application Window was that small firms were difficult to engage, and had low interest in IETF due to its large project threshold. Five of the 35 consultees were sourced via this Steer-ED led route.

Both lead applicants (eligible to apply for the IETF) and support partners (consultancy/technical specialists who help lead applicants develop their applications for the IETF) were approached as part of the sampling process described above. Support partners were targeted alongside applicants to understand any differences in experience between lead applicants and support partners, and also because support partners would be a key mechanism for disseminating IETF experience across firms over time. Twenty three of the 35 consultees for Wave 1a were lead applicants, and 12 were support partners.

Given the decision to switch to purposive sampling, it should be noted that analysis of this element is not and does not attempt to be fully representative of all businesses, and so care must be taken when generalising findings to other contexts.

Wave 1b Interviews

The sampling process for Wave 1b was as follows:

- All 63 lead applicants to the Summer 2020 Application Window were approached and asked to take part in semi-structured interviews (an attempted census). Following a low response rate from unsuccessful applicants, further emails were sent to encourage participation and explain why unsuccessful applicant interviews were of particular interest to us and BEIS;
- In total, 22 interviews (a response rate of 35 per cent) were conducted. Despite three follow-up emails over the course of three weeks, the response rate from unsuccessful applicants remained lower than expected. This will to some degree influence the generalisability of conclusions drawn from this data source due to unavoidable non-response bias, although it should be noted that a 35% response rate is typical for this type of research; and
- Given the relatively low number of applicants available for interview, it was agreed with the Client that all applicants should be consulted via depth interview, rather than focus group, to maximise the depth of insight collected.

Given the relative low response to participate in Wave 1b interviews from lead applicants to the Summer 2020 Application Window, there is some risk that our analysis is not fully representative, and care must be taken when generalising findings to other contexts.

[44] Established by Innovate UK, KTN helps people and firms reach the full potential of their innovative capabilities by connecting them with each other. Its members include large and small firms, government agencies and public funding bodies, (including BEIS), universities and research organisations, and tech hubs and start-ups

Interviews with 'Wider Stakeholders'

The sampling process for 'Wider Stakeholders' was again purposive, and conducted as follows:

- BEIS conducted an initial stakeholder mapping exercise, where IETF-related stakeholders were categorised according to their level of interest in, and level of power/influence over, the IETF;
- This generated a long-list of 26 stakeholders from which candidate organisations could be drawn. A short list of 10 organisations was selected, with whom depth interviews could be undertaken. In assembling the shortlist, care was taken to ensure a mix of the following variables of interest - interest in/power over the IETF, organisation types (such as public sector, trade associations, cluster organisations, and think tanks), and different interests (such as geographic or sectoral representation); and
- Seven depth interviews, undertaken to a client-approved topic guide, could be completed within the time window for this part of the evaluation. An eighth organisation declined formally to participate, given that they had provided recently a response to the IETF's Assurance Review. We were subsequently given access to this response material and brought it alongside the primary evidence we had assembled from the seven completed interviews.

Biases and Analysis Assurance

Biases

Biases are an ever-present issue for social research studies, and to the best of its efforts this study sought to anticipate these and design them out, wherever possible.

The interviewee and interviewer biases in play, and how these were mitigated, were as follows:

Appendix Table 2: Potential biases for the process evaluation of the IETF

Source of Bias	Bias	Mitigation
Participant biases	Acquiescence bias - occurs when the interviewee chooses to agree with the researcher, with some participants agreeing just to complete the interview rather than actively contribute.	Across all our research tools, we framed questions that, as far as possible, were open-ended to prevent participants from simply agreeing or disagreeing. We also lightly challenging respondents throughout all interviews and focus groups for evidence to substantiate their statements. Wherever possible, interviews were undertaken by videoconference in MS Teams, providing helpful visual cues.

Source of Bias	Bias	Mitigation
	Repetition bias - occurs when participants provide the same answers in response to similarly-worded questions.	Care was taken in designing all the study's research tools to ensure their content was focused clearly at answering systematically the specific issues relating to the study's purpose, drafted coherently, and easily communicable. Attention was also given to ensuring questions were posed engagingly.
	Sponsor bias - occurs if a participant is opinionated about the research sponsor's reputation or influence.	In all our interfaces with consultees and interviews, we worked to maintain neutrality so as to not influence participants' responses. We were clear that whilst the Process Evaluation had been commissioned by BEIS, we were acting as independent, objective, and professional specialist evaluators.
	Confirmation bias - this most common and highly-recognised bias occurs when a researcher interprets participant response data to support his/her hypothesis. Interviewers/researchers may also omit data that does not favour their hypothesis.	To guard against this, we ensured wherever possible that the delivery of research gathering, interview, and focus group activities were undertaken by multiple individuals drawn from across the study team working to standard scripts, so challenging any biases amongst team members. Wherever possible, interviews were undertaken by videoconference in MS Teams, providing helpful visual cues. Analyses of data were, to the greatest extent, undertaken by analysts separate to those individuals who had had gathered data, again helping to minimise confirmation basis. In reporting, we considered the breadth and depth of the study's research findings across the mix of methods which it comprised, continually revisiting impressions and responses, and ensuring that pre-existing assumptions were put to one side
	Question-order bias – earlier questions	We considered this potential bias when deigning our research tools, and ordered questions accordingly to

Source of Bias	Bias	Mitigation
Interviewer biases	may influence the responses to later ones.	minimise this. As a general principle, we asked general questions first, before moving on to specific or more detailed ones.
	Leading questions and wording bias - this bias is introduced when questions lead or prompt participants in the direction of probable outcomes, creating the risk of biased answers	Across the sweep of our research tools, drafts were prepared, which were separately quality-controlled by the Study's Project Director or Manager, and then reviewed independently by the client. This iterative process helped to ensure wording bias was minimised. Drafting was in 'plain English' with questions kept simple, and care taken to avoid words that could introduce bias or influence. Considerable care was taken to avoid using leading questions that could mean the participant responded with a favoured answer.
	Selection bias – arises particularly in the selection of evidence for literature and desk reviews	This was mitigated by agreeing strict parameters for evidence selection, tailored carefully to the research questions, and checked thoroughly with the client . Our view is that selection bias was mitigated effectively within the confines of the study's research question

Source: Steer-ED, 2021 (drawing on Shah, 2019, and others)

The biases above were largely within the control of the study, and as such mitigated with relative ease. What the study was not able to easily control for was the non-response encountered in the Wave 1a and Wave 1b interview activities, for the latter we attempted a census of applicants but only 35% responded. We mitigated this by chasing- up to three times and, while this response rate is typical for research, there will be some residual effects. This means some care needs to be taken when generalising responses.

Overall, our considered view is that these biases in the round are not sufficiently pronounced to compromise the findings or recommendations of this report. But in so saying we make the following observations:

- None of the fieldwork activities were, by dint of the number of observations undertaken, statistically robust of the independent variables in play. But, to a large degree, this is offset by the fact that this was a process evaluation with the emphasis primarily on qualitative and thematic review, rather than strong quantitative analysis;

- The study approached the evaluation of the IETF's process through a range of complementary research methods, and it is the synthesis of the research's work that the study's overall findings and conclusions drive from. This ‘mixed methods’ approach helps to reduce dependency on any single fieldwork activity and its associated biases; and
- Biases are inevitable and in qualitative studies such as this are best handled via interpretation, calibration and validation during analysis, not in quantitative sample selection per se.

Analysis Assurance

Alongside biases, high-quality assurance of analysis is a further prerequisite for ‘strong’ research methods. To assure analysis for this study, we:

- Developed and used to the maximum extent possible agreed and logical coding/survey frames (held in Excel) to drive the transparent and consistent coding and theming of the messages flowing from the fieldwork interviews, focus groups, and desk-top document review;
- All interview notes with individual firms were shared back with correspondents to assure the accuracy of our recording and the points being made. Scoping interviews were not calibrated with participants, given that the role of these was to inform the study method, rather than shape the research findings. Interview notes with ‘Wider Stakeholders’ were sent back to participants for calibration/sign-off;
- As far as possible logistically, the analyses and syntheses of findings were undertaken by staff who had not been involved in the associated process of gathering those findings. Interpretation of analysis and themes were then written-up by senior team members with the width of professional view and experience to bring value-adding interpretation. In providing interpretation, findings from the study’s activities in the round where pulled together, drawing on the range of mixed methods used;
- Discussed extensively amongst the study team the findings flowing from analyses and interpretation, and how these then fed into addressing the research questions set out in the study’s original Specification. This activity included formal peer review and challenge of each of the emerging chapters and sections of the report as it developed, so helping to address research/interpretational biases, with additional critique and feedback from BEIS as working drafts of the report were shared with the Department for comment.

Topics Covered

Standard Aides Memoire, designed to address fully with the biases in the table above, were fully in mind, used to conduct all interviews (Wave 1a, Wave 1b and Wider Stakeholder interviews), and are included in the next Appendix. The semi-structured nature of these tools allowed respondents to introduce points that we as researchers may not have thought to ask about, balanced against ensuring that we collected the information necessary to answer the research questions.

Key topics covered are summarised in tables below.

Appendix Table 3: Summary of Wave 1a Depth Interview Discussion Points

Section	Discussion Points
1. Company Background	An overview of the consultee's details, including location, nature of operations/business activities and products/services offered
2. Awareness of IETF and reason(s) for not applying	Discussion focussed on consultees': Awareness levels of the IETF, including channels of awareness and overall views of IETF Considerations undertaken in applying or not applying for IETF Main and additional barriers/reasons for not applying for IETF Views on the purpose of the IETF, their eligibility and applicability to the IETF, and the overall application process Considerations on applying for subsequent rounds of funding, including factors likely to enhance their interest in applying
3. Company energy usage and management	Discussion focussed on the consultees' current energy use and carbon emissions, including any existing and planned intentions/initiatives to reduce energy use and carbon emissions being undertaken or considered.

Source: Steer-ED, 2021

Appendix Table 4: Summary of Wave 1a Focus Groups Questions

Section	**Discussion Points**
1. IETF Awareness and communications	Familiarity with IETF How consultees heard about IETF Their preference/recommendation for how information about schemes like this should be communicated

Section	Discussion Points
2. Applying to the IETF [not asked in Focus group 2 – those with little/no prior awareness of IETF]	Whether the consultee considered applying to IETF For consultants, whether they were approached to work on IETF projects Why consultees chose not to apply to IETF (if relevant) Whether they plan to apply to a subsequent round.
3. Views on the IETF scheme's content	Eligibility criteria Level of funding available Types of project supported
4. Views on the IETF application process [not asked in Focus group 2 – those with little/no prior awareness of IETF]	Application process Information and support available
5. What makes funding schemes attractive	Other government schemes consultees can point to as 'best practice' What would tip the balance for consultees to apply?

Source: Steer-ED, 2021

Appendix Table 5: Summary of Wave 1b Depth Interview Discussion Points

Section	Discussion Points
1. Company Background	An overview of the consultee's details, including location, nature of operations/business activities and products/services offered
2. The IETF Application	Details of the application(s) Motivation for applying to the IETF Views on the assessment process

Section	Discussion Points
3. The Application Process	Views/experiences of the application process
4. Outcomes	The application outcome(s) Current status of the project(s) For successful applications: • Whether the firm would have progressed the project without IETF funding • Challenges and hurdles to realising benefits • How the firm will monitor benefits, for their own purposes • For unsuccessful projects: • Whether the project will go ahead (and if so, what changes might be made) • Whether the firm plans to apply again to IETF
5: Wider impacts	Wider/unintended benefits Wider/unintended dis-benefits

Source: Steer-ED, 2021

Discussion Points
Decarbonisation challenges faced by the UK
Role in design and promotion of the IETF
Views on the extent to which IETF supports the UK's decarbonisation challenges
Views on the communication, marketing and information available about the Fund
Views on the application requirements, and changes to these introduced for the Phase 1:
Spring 2021 Application Window

Discussion Points
Any feedback received on the application or assessment process. Which stakeholders are best served by IETF
Possible unexpected consequences
Lessons learned, recommendations for future windows
Overlap with other relevant schemes, and relevant lessons learned from other schemes; and
How to maximise strategic added value of IETF

Source: Steer-ED, 2021

Consultee Firm Types

Only limited detail can be provided about the participants in this research due to our obligations under research ethics to minimise the risk of disclosure. However, headline statistics include:

Wave 1a – 'depth' interviews

14 of the firms consulted with in Wave 1a were classified as large (over 250 staff FTEs), two as medium (50-250 staff FTEs) and five as micro/small (under 50 staff FTEs);

Wave 1b – 'depth' interviews

18 of the firms consulted with in Wave 1b were classified as large (over 250 staff FTEs), four as medium (50-250 staff FTEs) and none as micro/small (under 50 staff FTEs);

Focus Groups

Two focus groups were undertaken with Wave 1a firms. 14 firms participated, with nine classified as large (over 250 staff FTEs), two as medium (50-250 staff FTEs) and five as micro/small (under 50 staff FTEs).

Appendix B: Detailed Fieldwork Research Tools

Purpose

This Appendix presents the raw research tools used to support the interviews with Scoping Consultees, Wave 1a and 1b-related firms, and 'Wider Stakeholders' with IETF-related perspectives.

Instrument 1: IETF Process Evaluation: Aide Memoire for Scoping Interviews

Introduction to Interviewer

Steer-ED has been commissioned by BEIS to conduct a process evaluation of IETF Phase 1 delivery. The purpose of the evaluation, as set out in the project brief, is to:

- Understand the response from industry to Phase 1;
- Describe customer journeys and motivations for choosing to apply (or not) to the IETF;
- Understand how well Phase 1's delivery supported the scheme's objectives, and proposes improvements;
- Examine the characteristics of Phase 1 design (e.g. timing and length of funding window, eligibility and assessment criteria) and assess the extent to which these supported the scheme's objectives;
- Describe adaptations that occurred during scheme delivery and determine the extent to which the process in practice matched the intention
- Highlight short-term unintended consequences of the scheme (e.g. impact on other policies, changes to industry behaviour);
- Understand how IETF has changed the market for energy efficiency and deep decarbonisation technologies, and the decision-making of businesses;
- Test and refine the scheme's Theory of Change; and
- Provide lessons learned to support future funding rounds offered by the IETF.

In this first phase of work, Steer-ED would like to gather early perspectives and insights from those involved in the design and delivery of IETF Phase 1, taking their comments and thoughts on (i) where the evaluation might usefully focus (ii) the key contextual issues to be aware of, and (iii) the risks and challenges in progressing the evaluation work.

This discussion forms one of 12 Scoping Consultations, which will be used to guide the study. Your comments will only be shared on a non-attributable basis, with the key themes from this

(and the other conversations) being aggregated into a synthesis of Scoping Issues for the study to address.

This call should last no longer than 30 minutes.

Scoping Questions with Consultee

1. Please briefly outline your role in relation to IETF Phase 1.
2. [If involved in IETF design] What were the key considerations when designing IETF? What alternatives did you consider, and why were these rejected?
3. What does success look like (for the IETF), in your view? I.e. five/ten years down the line, what will a successful IETF have achieved? Do you just the Scheme's objectives to be appropriately 'SMART' (specific, measurable, actionable, relevant and time-bound)?
4. [If aware of the IETF Theory of Change] What are your views on the Theory of Change for IETF? Are there any gaps that need addressing?
5. What challenges or barriers have been encountered so far in IETF roll-out? And what successes?
6. Based on your perspective, what are the key aspects of the IETF's design, implementation and/or delivery that the evaluation should focus on?
7. What do you consider are the risks and challenges to this evaluation? How would you propose these could be overcome? What opportunities should be capitalised on?
8. Are you aware of any potential unintended consequences of IETF (positive or negative) that the evaluation should consider?
9. Are you aware of any key datasets, reports, assessments that the evaluation might usefully draw from (beyond what is being provided by the project team)?
10. In your view, which other stakeholders might usefully be consulted as part of this evaluation?
11. Are there any other issues that we, as evaluators, should be made aware of at this stage?

Steer-ED, 17 November 2020

Instrument 2: Wave 1a Depth Interviews: Aide Memoire

Points of Discussion

12. Check consent for recording and explain the processing/storage that will take place, including re-contacting interviewee to check transcript. If consent is given, begin recording. Start recording with verbal consent from interviewee.

Section 1: Company background (5 mins)

13. Brief background to the interviewee and their firm, to cover:

- The sector(s) the firm operates in (to be matched to attached list of relevant SIC codes)
- The main products/services offered
- The firm's regional location(s) in the UK
- Whether they operate internationally
- Who their main competitors are, domestically and internationally
- The size and ownership structure of the firm

Section 2: Awareness of IETF, and reason for not applying (15 mins)

14. Awareness of IETF, to cover:

- Whether they are aware of IETF, and how much they know about it
- How they heard about IETF
- Their views on IETF
- Whether they know others who have applied or considered applying, and what feedback they have heard from them
- What channels are normally used to receive information about government-funded technology programmes and initiatives; what is the level of trust/convenience attributed to these various channels

Whether they considered applying to IETF, whether they began an application, and why they ultimately did not apply. Prompts and suggested follow-ups listed below. Can record multiple reasons – look to identify the main barrier as well as any additional barriers:

Reason	Follow-up probe
Not aware of IETF	Would they seek out such a programme to help with energy usage and carbon emissions? What expertise would be required? Does IETF sound of interest?
Concerns relating to the content/purpose of the scheme	
Concerns/uncertainty around the policy environment (e.g. lack of clarity on long-term government strategy, carbon pricing)	Could additional support/information be of use? How could this be provided? What is the firm doing of its own accord, given this?
No eligible projects/not relevant to firm, or not viable for firm without further government support	How seriously did they consider? What activities did they undertake to test this? Did they consider hiring a consultant? Do they know where to get advice?

Reason	Follow-up probe
Other risks to firm (e.g. potential for impacts on product quality)	To what extent did they explore these risks? Did they consult experts/consultants?
Did not have available finance	Did they explore/would they consider a range of finance options (e.g. loans, finance)? Would a subsided loan be attractive? What would be the decision-making process?
Wary of government funded support	Why (e.g. previous bad experience)? Under what conditions might they consider government support, and what could government do to increase confidence?
Issues relating to the application process	
No internal resource to progress application, competing internal priorities, or other internal barriers	What internal barriers/resource issues were encountered? Might this change in the future? Is the process considered to be highly burdensome?
Application process too burdensome	Why? Is this an assumption, or based on experience? In what ways was it considered burdensome, and how could this be reduced? Did they consider making use of consultants? What additional help could BEIS provide?
Ran out of time to complete application	How far did they get towards completing an application? Did it take longer/more resource than expected? Is the Application Window long enough, given internal approvals processes etc.
Could not find a suitable partner	How did they search for a partner (e.g. KTN match making service, other)? Did they receive negative responses? What could help?
Disruption caused by COVID/BREXIT	How long is this expected to be an issue for (e.g. months/years?)

15. Whether they are considering applying to subsequent rounds, and what might make that more appealing, to cover:

- Which is more attractive – technology deployment or feasibility/engineering studies, and why.
- Factors around the content/purpose of the scheme (such as eligibility criteria, type of projects supported, amount of funding available)

- Factors around the process of the scheme (such as the application process, scheme information, support/guidance provided, timescales).
- Other schemes they can point to as best practice.
- Suggested changes to IETF to encourage them to apply in future. What would tip the balance to make them apply?

Section 3: Company energy usage and management (10 mins)

16. Energy use and carbon emissions information about the firm, to cover:

- Energy as a percentage of outgoings (or similar measure of energy intensity).
- Who in the organisation is accountable for energy use (e.g. energy manager?), and how energy is managed/monitored.
- What the firm has done (if anything) over the last 5 years to reduce energy usage and carbon emissions.
- What plans are in place to reduce energy usage and carbon emissions over the next 10/20 years.
- To what extent these plans are central to the firm strategy, and how they align/conflict with other firm priorities. How this compared to others in the sector (e.g. are they proactive/reactive, leader/follower).

17. Interviewer reflections/observations immediately following conversation.

Instrument 3: Wave 1b Depth Interviews: Aide Memoire

- Rows shaded in grey were pre-populated prior to commencing the interview via desk research. This included review of the firm's IETF application, assessor feedback, and other relevant information such as Companies House listing and the firm's website. These details were then confirmed with the interviewee.
- Rows shaded in red indicate closed survey questions, which were read aloud exactly to the consultee.

Question	Response
Interview Date	
Company Name	
Interviewee(s)	
Interviewee role in the application	E.g. Project manager, technical specialist etc.
Interviewer	
Interviewee consents to recording?	Choose an item.

Question	Response
Interviewee informed they will see the note and can comment before it goes to BEIS?	Choose an item.
SIC code of firm/site in question	[SELECT FROM LIST]
The main products/services offered	
The firm's regional location(s) across the UK	
Number of overseas sites	
Nationality of ownership (UK/foreign)	
Approximate number of employees and annual turnover	
Details of the application(s)	Total number of applications For each application: • Whether a deployable technology or engineering/feasibility study • Total project size (£k's) and financial contribution requested • Briefly, what the project involves (e.g. type of equipment, manufacturing process to be applied to). • Timescales for project delivery
Motivation for applying to the IETF	How they found out about IETF What motivated them to apply On initial consideration, anything which they found off-putting or could have stopped them (or others) from applying? Whether other sources of funding were considered alongside/prior to IETF, and if so what. Whether the investment was already planned/in the pipeline, prior to making the IETF application.
The application outcome(s)	For each application: Was the application eligible/ineligible and successful/unsuccessful Brief summary of reasons given (from assessor feedback)

Question	Response
Views on the assessment process. To what extent do you agree with the following statements?	[Interviewer to read each phrase exactly and select an option. Ask once for deployment, once for studies.] STUDIES (if applied for a study) The assessment criteria were transparent Choose an item. The weightings of the different assessment criteria were fair Choose an item. We are satisfied with the process by which our application was assessed Choose an item. DEPLOYMENT (if applied for a deployment project) The assessment criteria were transparent Choose an item. The weightings of the different assessment criteria were fair Choose an item. We are satisfied with the process by which our application was assessed Choose an item.
Please elaborate on the statements above	
To what extent do you agree with the following statements about the support available for your application?	[Interviewer to read each phrase exactly and select an option. Ask once for deployment, once for studies] STUDIES (if applied for a study) (If you used specialist consultant support). The consultant support was a significant factor in delivering our application Choose an item. The delivery body (Innovate UK) provided good support through the assessment process Choose an item. The feedback provided by the delivery body (Innovate UK) was helpful and informative enough to understand why we received the score we did Choose an item. DEPLOYMENT (if applied for a deployment project) (If you used specialist consultant support). The consultant support was a significant factor in delivering our application

Question	Response
	Choose an item. The delivery body (Innovate UK) provided good support through the assessment process Choose an item. The feedback provided by the delivery body (Innovate UK) was helpful and informative enough to understand why we received the score we did Choose an item.
Please elaborate on the statements above	
For the purposes of our analysis (e.g. to avoid double counting) - Did the interviewee complete the Innovate UK post-application survey?	Choose an item.
Views/experiences of the application process	Who provided support (BEIS, Innovate UK, KTN, consultants etc.), and at which points in the application process? How easy/difficult they found the application process (e.g. the questions asked, the user interface, the level of detail/depth required…), and why. Whether the application questions (and in particular the calculator) gave the opportunity to express all of the potential benefits of the project Approximately how much resource (time/investment) was invested in completing the application process, e.g. in hours of application time and/or £k's spent on consultant fees. Whether they faced internal hurdles such as approvals processes or senior management requirements in order to progress the application. Whether the timing of the window posed any difficulties. Feedback on any suggested changes to the application process.
Project outcomes	The expected benefits of the project/study How the firm expects to measure/report the benefits of the project/study
Current status of project	Have contracts been put in place with external suppliers? Why/why not? What is the lead time before work can begin?

Question	Response
	How long has been set aside for commissioning/installation/testing?
Would the firm have progressed the project/study in the same way without IETF funding, or would some changes have been made?	E.g.: Reduced scope? Slower timescales? Project would not have gone ahead?
Anticipated challenges of the study and potential hurdles to realising benefits	
Will the firm, for its own purposes, measure the benefits differently/additionally to what's reported on the application form?	E.g. what does success look like for you as a firm? And how will this be measured?
Project outcomes	The expected benefits of the project/study The proposed approach to measuring/reporting benefits
Please respond to the following: Do you have any plans to overcome your decarbonisation challenges in the absence of IETF funding?	[Interviewer to read phrases exactly and mark X for all that apply. Ask for each application.] We are not intending to fund any process energy efficiency measures We are planning to undertake the proposed project at a later date We are planning to undertake the proposed project at a reduced scale We are planning to undertake the proposed project at a different site We are planning to undertake a different energy efficiency project instead We are planning to do the proposed project anyway
Please elaborate on the statements above	
Do you intend to apply to a future round of the IETF or another scheme for funding? If you are considering another scheme, it would be useful to state which scheme.	

Question	Response
Follow-ups to the above:	If the project is not going ahead, why not? If they plan to apply to a future round of IETF, what modifications will be made (if any)?
Follow-ups if the project is going ahead anyway	Who will fill the IETF 'funding gap'? The challenges of the project/study and any potential hurdles to realising benefits. Whether the firm expects to measure the benefits of the project/study, and if so, how this will be achieved. Will the assessor feedback result in any modifications to the proposed project/study, and if so how/why?
Whether, and how, the IETF application process has resulted in (or may result in) any other benefits for the firm	E.g.: Increased knowledge/awareness of technologies available. How has this come about? Consideration of longer-term strategy within the firm around emissions/energy. Why/how? Exploratory conversations/new relationships with technology suppliers Any other potential wider benefits?
Whether there have been (or are expected to be) any wider dis-benefits for the firm	E.g.: De-prioritisation of other investments (if so, what?) Job losses due to new equipment automating processes Other displaced activity
Any other feedback/comments the interviewee would like to raise	
Happy to be contacted again for subsequent interviews?	Choose an item.
Happy to be contacted again for a case study (over next 2 months)?	Choose an item.

Source: Steer-ED, 2021

Instrument 4: Wider Stakeholder Interviews: Aide Memoire

- Interviewee name, organisation and role in relation to wider energy/decarbonisation/ Net-Zero agenda
- What do you consider the main challenges facing the reduction of energy usage and industrial decarbonisation for manufacturing industries and data centres in the UK?

- Did you have any role in the design of IETF? For example, provided advice to BEIS either informally or via formal consultation?
- What is your understanding of the main aim and objectives of the IETF?
- How well do you think the IETF's aim, objectives and design (e.g. eligibility criteria, maximum grant) will help address the challenges identified in 2.?
- Did you or your organisation promote the IETF (or SIETF) in any way? How was this process and what did you learn?
- Did you feel sufficiently informed of the IETF rules? If applicable, were you confident in providing advice to firms about the IETF?
- How well do you consider the IETF Summer 2020 Application Window was publicised in terms of both reach and the content of promotional material?
- From your knowledge (may be personal, or indirectly gathered from others that you represent or have spoken to), do you consider the application requirements (for Summer 2020 Application Window) were appropriate? (i.e. amount of detail required, type of questions, calculator etc)?
- Do you have a view on the scope changes introduced for the Spring 2021 Application Window – e.g. are these welcomed, do they address issues that you were aware of in the previous window?
- From contact with others, do you consider the assessment process was fair and transparent? (i.e. have you heard from unsuccessful applicants who did not understand why they were rejected, from successful or unsuccessful applicants that do not consider the assessor feedback to be fair/transparent/consistent etc.)?
- Are you aware of or do you consider there may be any unexpected consequences (negative or positive) from the IETF?
- Can you suggest any improvements for future Application Windows?
- From your experience of other grant programmes e.g. IHRS, UKRI IDC and Foundation Industries etc. is there any learning from these that should be applied to IETF?
- Is the IETF competing or overlapping with any other initiatives that you are aware of? If so, what impact has this had?
- Which stakeholders do you think are best served by the IETF and which are not well accommodated?
- How do you consider the strategic added value of IETF should be maximised in terms of knowledge transfer, funding leverage, industry coordination etc.?
- Is there anything else you would like to raise regarding the IETF?

Appendix C: Assessment of Theory of Change against available evidence

Appendix Table 6: Evidence that the fund's Inputs and Activities have taken place as planned

Theory of Change Input/Activity	Evidence Collected	Assessment
Government Inputs		
Grant funding BEIS costs (including staff) Delivery body cost (including staff) BEIS leadership role (e.g. using strategic influence networks, leverage, to ensure visibility and profile of fund)	Following the Phase 1 Summer 2020 Application Window, 39 applications were approved for funding (subject to due diligence checks), totalling approximately £31m in grant funding. This is consistent with the initial expectations of the IETF BEIS and Innovate UK staff time has been used as anticipated, however resourcing constraints caused by the COVID-19 Pandemic meant that Innovate UK query response times were not in line with expectation. There is evidence that BEIS' networks and communications procedures along with those of Innovate UK and KTN have been used to good effect to publicise the IETF	Inputs were broadly as expected, albeit with some disruption to staffing inputs caused by COVID-19. There were sufficient applications meeting the minimum thresholds to be able to achieve and indeed exceed the full £30m funding pot
Market Inputs		

Theory of Change Input/Activity	Evidence Collected	Assessment
Firm's resources developing projects (cash and in-kind) Consultant expertise/time developing projects	Firms have committed to match funding as part of their project applications. There was evidence of significant time inputs, from both firms and consultants, in developing project applications (around two to four weeks' full-time work on average). Many firms commented that the support provided by consultant partners was invaluable – often the lead applicant had first become aware of the IETF through consultants, who then helped to develop and submit the application.	Significant firm and support partner inputs were observed Scope to do more to build wider supply-side (that is the effective market provision of expertise and finance, once the IETF has run its course) as Phase 2 approaches
Activities		
Assistance with and assessment of applications Engagement, promotion, & communication exercises, including with stakeholders Administration to distribute grant funding Facilitation of knowledge sharing and brokerage of new relationships	The IETF was widely publicised and most consultees were well-informed, having heard about the IETF from multiple different sources. Some, however, were misinformed about certain elements of the Fund, suggesting a need for ongoing communications and update messaging. The Evaluators found no evidence of new relationships formed as a result of IETF. However, there was evidence of deepened relationships between firms and existing support partners, and enhanced knowledge sharing between these and within firms. Pre-application support and the assessment process were conducted smoothly, with firms generally commenting that they had received	Good evidence to suggest that, to date, the IETF's activities have been carried out as planned, both with BEIS and Innovate UK, and at the firm/consultant level. There is a potential gap around knowledge sharing and brokerage of new relationships, which may have occurred but was not identified as part of the evaluation

Theory of Change Input/Activity	Evidence Collected	Assessment
Firms & consultancies/technical providers work together to develop project applications	helpful support when required, and that the assessment process was fair. At time of writing, grant funding has not yet been distributed, however this process is underway.	

Source: Steer-ED, 2021

Appendix Table 7: Evidence that Theory of Change assumptions from inputs/activities to outputs are supported

Theory of Change Assumption	Evidence Collected	Assessment
Funding requirements incentivise projects of an appropriate scale; IETF budget and thresholds are suitably attractive to firms	High project thresholds for Phase 1: Summer 2020 meant that small firms were not attracted to applying. However, a good number of medium and large sized firms did apply, with a range of project sizes. The funding threshold has been lowered for Phase 1: Spring 2021, and it is expected that this will attract more projects from small firms. When consulted, firms described the overall size of the IETF and project thresholds to be attractive and a strong signal of the government's Net-Zero intentions.	Firms responded positively to the overall Fund size, and the level of grant funding available. Minimum thresholds in Phase 1: Summer 2020 were off-putting for small firms, but these has been adapted for Phase 1: Spring 2021.
Support from delivery partner is appropriate	Consultees commented that they received helpful and timely support from both Innovate UK and BEIS during the application process.	Good evidence of appropriate support.

Theory of Change Assumption	Evidence Collected	Assessment
Sufficient pipeline of projects at appropriate level of readiness	The number of projects approved for funding, which enabled the intended £30m funding pot to be spent, suggests that a satisfactory number of projects were available and ready for deployment. Interviews with non-applicants also suggests that there are further projects in development that will be put forward in future rounds.	Satisfactory evidence of a sufficient pipeline of projects for Phase 1: Summer 2020 and moving forward to Phase 1: Spring 2021.
Funding window aligns with firms' investment calendar; Application window timing/length is appropriate	Window timing and length was one of the significant factors which stopped some potential applicants from applying. The impacts of external disruption in 2020 (COVID-19 and EU Exit) meant that many firms were not in a good position to assemble a funding bid, and also faced longer-term financial and market instability. Some potential applicants have very fixed capital expenditure cycles, which cannot be easily aligned with a funding application.	Changes to Application Window timing may result in higher application rates in future. Funding windows should be widened and should be publicised far in advance so that firms can begin the internal project development and approvals process. Alignment with corporate capital investment cycles has been identified as a key blocker to application readiness.
Shortened payback is within the 'acceptable limit' for firms	Most consultees explained that the IETF facilitated shortening of payback period such that the investment became viable, whereas without funding it would not have been. There were a few exceptions where this was not the case, but the firm had chosen to go ahead with the funding anyway for strategic reasons and a desire to be involved in a government-led Net-Zero project.	Good evidence that the IETF has achieved its aim of shortening payback periods to permit projects to move forward.

Theory of Change Assumption	Evidence Collected	Assessment
Application process is clear, understandable, not overly burdensome	The application process was considered significant but proportionate by most. Consultees requested some changes to the application form, for example to enable inclusion of attachments and a clearer set of guidelines around what additional material should be submitted. Some found the word limits too restrictive and were not clear what level of technical detail to include.	Good evidence that the application process is fit for purpose, with some minor refinements suggested.
BEIS/delivery body have the resources to assess bids robustly	Bids were assessed by a panel of five independent assessors appointed by Innovate UK, and drawing on SICE expertise. Consultees generally described the assessment process as thorough and transparent, however significant concerns were raised around inconsistency between assessor comments, assessors taking into account criteria/factors beyond the published guidance, and assessors having insufficient familiarity or understanding of the Fund.	Area for improvement in terms of having clear assessor guidance which is strictly adhered to.
Successful collaboration with other schemes to avoid confusion	Consultees were in general well informed about the funding landscape, and there was no confusion with other schemes. Where confusion did arise, it was around the specific eligibility of a project for IETF.	No evidence of confusion with other schemes found. Some non-applicants mentioned information overload as a reason for not being aware of the IETF, but this related more to the general marketing spam that professionals receive in their inboxes rather than a glut of information about funding schemes.

Theory of Change Assumption	Evidence Collected	Assessment
Enough technical support in the market to support bids	The Evaluators did not collect any evidence that firms had not been able to find technical support for their bid. Indeed, several support partners reported that they had discussed applications with a number of clients but had struggled to find an eligible lead with the right project eligibility to be able to apply.	Evidence suggests plenty of technical support available for bids.

Source: Steer-ED, 2021

Appendix D: Learning from Elsewhere

Purpose

This Appendix sets out the findings from a desk-top review of nine funding programmes (three from the UK, and six international) with energy efficiency and decarbonisation foci, whose experience might provide lessons for the IETF's ongoing process.

Method

This exercise was undertaken as a desktop meta-review of selected existing evidence, rather than a detailed literature review. With the intent of identifying process lessons of value to the IETF, the following method was used:

The IETF Team, and our specialist energy sub-contractors (JBA Consulting and Arthur D Little), pooled initial ideas for relevant programmes to review, based on their operating knowledge and experience of potentially relevant energy efficiency interventions.

These initial ideas with then augmented by a structured Internet search, this to both triangulate further relevant programmes, but critically to identify publicly-available evaluative research on programmes, which could be used to drive the meta-review.

Shortlisting was then undertaken to identify 'reviewable' programmes, using the following criteria:

- Jurisdiction/location of the programme, so as to ensure relevance to the UK context;
- Energy technology/efficiency in view, to ensure relevance to the IETF's own technology and sector foci;
- Longevity of the programme's operating experience, so ensuring meaningful lessons were likely available; and
- The practical nature of programmes' interventions, using funding mechanism (grant, loan, tax relief etc), assistance values and intervention rates, and assistance durations as filters.

Each of the nine shortlisted programmes (was then assessed systematically against the four evaluation aspects underpinning this study:

- Evaluation Aspect 1: Programme Design and Governance
- Evaluation Aspect 2: Awareness Raising and Pre-Application Support
- Evaluation Aspect 3: Application, Assessment, and Award
- Evaluation Aspect 4: Monitoring, Evaluating, and Reporting.

Although the identified evaluative documents relating to the shortlisted scheme varied widely in their natures and structures, a systematic approach to meta-review was taken i.e. compiling those documents (informed by their ability to help answer the Evaluation Aspects set out above), understanding how/why/when documents were produced, determining document accuracy, and finally extracting and synthesising the information from the documents reviewed to help inform the evaluation's objectives.

Selection bias was mitigated by agreeing strict parameters for evidence selection, tailored carefully to the research questions, and checked thoroughly with the client. Our view is that selection bias was mitigated effectively within the confines of the study's research questions.

More widely, the research was conducted across multiple researchers who could challenge biases in each other.

Detail

Appendix Table 8 sets out a brief summary of the purpose of each programme reviewed, when it was in operation, its purpose and funding model, the type of review conducted, and the review's publication date. A synthesis of the findings emerging then follows after the table.

Appendix Table 8: UK and International Funding Programmes with energy efficiency and decarbonisation foci

Intervention	Purpose & Funding Model	Review
UK		
Heat Networks Improvement Project (HNIP) – England and Wales: 2019-2022 (Pilot 2016-2017)	The aim of the Heat Networks Investment Project is to increase the number of heat networks being built, deliver carbon saving, and create the conditions necessary for a sustainable heat market to develop. It provides funding to public, private and third sector organisations for commercially viable heat networks. Grant funding - £320m total funding pot. Maximum grants of 50% of the capital expenditure incurred for project construction, additionally corporate and project loans are available on favourable terms (repayments every 6 months at 0.01 per cent interest for corporate loans and 1 per cent for project loans).	Evaluation - 2018

Intervention	Purpose & Funding Model	Review
Industrial Heat Recovery Support programme (IHRS) – England and Wales: 2018-2022	The aim of the Industrial Heat Recovery Support programme is to increase industry confidence, to identify and invest in opportunities for recovering heat from industrial processes and increase the deployment of such the technologies in England and Wales. Grant funding - £18m total funding pot. The combined maximum grant allocation for each project's feasibility study, preliminary engineering, and detailed design is £290k. Subsequent capital investment is capped at £1.5m.	Case studies - 2020/21
Public Sector Energy Efficiency Loan Scheme – England and Wales: 2004 - ongoing	The programme provides interest-free loans to public sector bodies to support the installation of energy efficiency measures, so reducing energy consumption, greenhouse gas emissions and energy bills, contributing to meeting targets outlined in the Clean Growth Strategy (2017). Interest-free loans repaid within five years through energy bill savings. Also includes an additional Recycling Fund – a matched interest-free loan to be paid back within five years. Loan funds, once repaid, are recycled by the beneficiary to fund other eligible projects. £418m of loans provided to 3,470 projects at 564 applicant organisations.	Evaluation - 2018
International		
Energy Efficiency Fund (E2F)-Singapore: 2017 - ongoing	Supports industrial firms to design resource efficient facilities, conduct energy assessments to identify energy efficiency measures, and adopt energy efficient equipment or technologies. A grant-funded programme. Offers up to 50 per cent funding of project costs, or capped at specific levels for different types of interventions.	Lessons learned - 2019
Emissions Reduction Fund – Australia: 2015 - ongoing	A Carbon Credits Scheme aims to encourage businesses to implement new technologies or upgrade old equipment to reduce energy consumption and greenhouse gas emissions. Participants can earn Australian Carbon Credits Units (ACCUs) for emissions reductions. The ACCUS can then be	Expert Panel Review – 2020

Intervention	Purpose & Funding Model	Review
	sold to generate income either to the government through a carbon abatement contract, or on the secondary market.	ERF Review - 2020
Accelerated Capital Allowance Scheme – Ireland: 2008-2018	The scheme seeks to reduce energy consumption by encouraging investment in energy saving technology through progressive tax incentives. Allows sole traders, farmers, or firms which pay Corporation Tax in Ireland to deduct the full cost of the equipment from their profits in the year of purchase. The tax relief is provided up-front in the first year, providing a cash-flow benefit to the claimant. In 2017/18, the annual Exchequer Cost was €3.7m - this compares with €1.6m for 2008/09.	Internal Review - 2019
Italian Energy Efficiency White Certificate Scheme: 2005 - ongoing	The purpose of the programme is to promote energy efficiency among end-users, but other important objectives include strengthening the Energy Service Company (ESCO) market and permits for the accounting of the energy savings. White Certificates are used to certify the energy savings achieved, and obliged distributors can buy them from voluntary parties or obtain them directly. Voluntary parties include non-obliged distributors, ESCOs, organisations with a certified energy management system.	Case Study - 2018
Swedish Programme for Improving Energy Efficiency in Energy-Intensive Industry (PFE): 2005 - 2017	The programme is intended to increase energy efficiency in energy intensive industries by providing a tax rebate for energy intensive firms that implement an externally certified ISO 50001 energy management system and demonstrate an electrical efficiency improvement. Essentially a tax rebate intervention. Allows the waiver of €0.55 per MWh for energy-intensive industries if they implement an externally certified ISO 50001 energy management system and can demonstrate an electrical efficiency improvement.	Evaluation - 2012
Denmark's Voluntary Agreement	The objective of the VA scheme is twofold; first, to encourage energy efficiency in industry to reduce the CO2 emissions,	Evaluation - 2006

Intervention	Purpose & Funding Model	Review
Scheme: 1996 - ongoing	and second to ensure the competitiveness of Danish industry is not weakened by the increased green taxes. Provides subsidies for payment of tax. €4.1m was set aside per year (between 1996-2000).	

Source: Steer-ED, 2021

Findings relevant for IETF and its process are summarised as follows.

Evaluation Aspect 1: Programme Design and Governance

Effectiveness of different funding mechanisms

The focus within the Irish ACA scheme on energy efficient equipment led to an increase in awareness of such equipment, but the list of eligible equipment did not keep up-to-date with technological developments. Over time, this meant some of the most energy efficient equipment could not be covered by the scheme.

The Australian Emissions Reduction Fund (ERF), operated via carbon credit units, found that less than 3 per cent of the carbon credits issued had been in relation to transport or industrial carbon emission reductions/energy efficiency, and that a Safeguard Mechanism Credit approach (which bundled concessional loans with grants and tax incentives) was likely to be more successful.

As with IETF, it also identified the need to establish a goal-oriented abatement technology co-investment programme focusing on ‘hard-to-abate’ sectors, such as heavy industry, where capital costs of abatement were high and progress in driving-down costs had been slow. The reviewed evidence concluded that the ERF is not an effective mechanism to capture industrial sector opportunities because of a number of sub-optimal design features of the scheme, including the challenge of demonstrating that the replacement or upgrade of industrial equipment would not have occurred as part of business as usual.

Incentivisation for SMEs

The initial level of funding (up to 30 per cent of the project costs) by Singapore’s Energy Efficiency Fund did not provide sufficient incentive for SMEs to invest in energy efficient technology, resulting in this being raised to 50 per cent in 2019.

Feedback from SMEs on the measurement and verification requirements for standard retrofits, such as air conditioning and motors, led to the National Environment Agency making simplifications to the reporting requirements, and formal project proposal templates to make the application process more user-friendly for smaller organisations.

Continuous improvement and evolution

The longest running initiative, the Danish Voluntary Agreement (VA) scheme, has been in place since 1996. Over time, the scheme has been amended, mainly due to changes in national taxation structures and to conclusions of various evaluations of the scheme. Continual evaluation has enabled improvements in cost-efficiency and ensured that the relevance of the scheme has been sustained.

A rather dated evaluation (2006) noted that in 2000 almost all energy-intensive firms expected to apply for a VA had done so. By 2006, 98 per cent of energy use in heavy processes was covered by VAs.

The Heat Networks Improvement Project (HNIP) was piloted in England and Wales in 2016/17, recognising the inherent complexity of heat network schemes. The Pilot was used as an opportunity to generate learning, intended to maximise the smooth running, impact, and value for money of the intended main scheme. The Pilot provided an opportunity for key actors to engage with the programme and provide scheme validation, helping to build the confidence of key actors and decision-makers in the forthcoming main programme.

Evaluation Aspect 2: Application, Assessment, and Award

Project Development

Case studies conducted on the Industrial Heat Recovery Scheme (IHRS) programme (England and Wales) identified the need to invest sufficient engineering and technical resource at project's development phases. In addition, the scheme provided an opportunity for firms to secure investment in projects which had been put to one side.

Application Process and Guidance

Good practice highlighted in IHRS case studies included a comprehensive application workbook, which helped from the outset to refine projects, and a requirement for detailed project proposals (as with the IETF) to be assessed externally.

The HNIP Pilot identified that challenging timescales and related issues affected adversely the quality of applications received, particularly relating to the rigour and coverage of financial data. These issues exacerbated the challenges during the scheme's Assessment and Clarification process, resulting in many more clarifications than had been anticipated. It was noted by applicants and the BEIS Team that this resulted in process inefficiency. By contrast, the unchanged continuity of the membership of the Awards Panel (which made final funding decisions) was a key factor in ensuring consistency of approach over the duration of the Pilot.

The Internal Review of the Irish Accelerated Capital Allowances (ACA) for Energy Efficient Equipment Programme reviewed comparator schemes across the UK. It identified shared issues with the ACA, such as the challenges extending the reach of innovation programmes, inconsistent monitoring practices, and resourcing aftercare support. The Review also demonstrated the value of committing to longer-term programmes and proactively inviting projects with potential to apply for next stage funding to enable a 'ladder' of progression for

innovation ideas. Potential options for easing engagement with organisations less likely to take part in innovation programmes (such as SMEs) were identified from wider practice, resulting in a 'light touch' Expression of Interest stage and interactive preparatory workshops.

A review of the Italian Energy Efficiency White Certification Scheme in 2018 highlighted the need for a certain degree of complexity in the application process to prevent fraud. The adoption of procedures for energy savings assessment (based on metered savings) improved the quality of collected data, ensured more reliable statistics, and reduced the risk of fraudulent activity. Changes introduced in new scheme guidelines in 2017 improved the reliability of the energy efficiency projects presented under the programme and of the assessed savings, as well as reducing the risk of fraud. However, these administrative and monitoring burdens led to growing difficulty in attracting new projects, highlighting the balance that needs to be achieved between minimising fraud and placing overly burdensome requirements on applicants.

Additionality

The HNIP Pilot identified concerns amongst applicants that there may be a tension between being able to demonstrate a funding gap (to ensure additionality) and projects being at an advanced stage of preparation. It raised the prospect that additionality was not being maximised in the Pilot. Pilot applicants agreed that the application process followed a logical path, made use of a well-designed web-portal, and was well-supported typically by the HNIP teams in BEIS, the Heat Network Delivery Unit, and Salix (the HNIP Pilot delivery body). These teams worked well together, and were responsive to challenges that emerged during the pilot application and assessment period.

The review of the Italian scheme identified that a requirement for additionality had been built into project reporting. Whilst this made the presentation and evaluation of projects more complex, it allowed the programme's team to understand ex-ante additionality much more clearly than in other schemes, which typically evaluated it ex-post.

A survey of the Danish VA scheme in 1999 suggested that 34 per cent of the energy savings resulting from specific projects would have been realised without the VAs, although the scheme was able to point to significant time acceleration benefits because of its intervention.

Unintended Consequences

Positive unintended consequences identified by the IHRS programme's case studies included non-energy related benefits relating to production capacity, resulting from seeing the 'opportunity within the problem', improved site and employee awareness of energy efficiency, and improved employee engagement in energy-related matters.

The evaluation of the Italian Energy Efficiency White Certification Scheme identified how the consistent and large set of data collected and organised in the scheme's project database provided a wealth of valuable information, enabling a better understanding of technological developments and trends in the sectors covered by the intervention.

Relevant learning for the Phase 1 first-stage Process Evaluation

Whilst the comparator programmes reviewed for this Process Evaluation operate in differing contexts and employ different funding mechanisms, there are insights of relevance for the IETF. These include:

Ensuring applicant firms invest sufficient resource in project development activity – potentially, this might point to the need for greater IETF pre-application support;

Committing to longer-term funding programmes, so they can become established in the market; where these are developed, they should be monitored, reviewed, and evaluated continually;

Exploring the case for targeting firms where support is likely to have the greatest impact;

Considering process options for accessing the hardest-to-reach parts of the target beneficiary segment through, for example, tiered application process, targeted awareness-raising workshops, and similar;

Achieving a balance in application, monitoring, and audit processes which minimise the potential for fraud with overly-burdensome processes for applicants and grant recipients;

Recognising SMEs generally require greater incentivisation than larger firms to engage with government programmes, and are more likely to be constrained by capacity and capability constraints;

Building the assessment of additionality into grant-recipient reporting is challenging, but can have benefits in being able to demonstrate in real time the value that the intervention in view is providing, both to funder and applicant;

Unintended positive consequences are likely to be generated, such as, for example, benefits around improved energy monitoring and the awareness of decarbonisation). These can be built purposefully into scheme publicity materials used to attract applicants; and

System-focused funding mechanisms, such as carbon credits and Voluntary Agreements are likely to deliver market impacts for the longer-term, whereas grant funding mechanisms targeted at individual firms tend to operate to shorter impact timelines. This desk review of comparator programmes highlights that both approaches are valid.

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