

Delivering learning and accountability: experience from UK Government energy evaluations

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ABSTRACT

The UK Government has spent the last decade building evaluations, which help us understand what energy and carbon savings are being delivered and give us learning to improve policies. This paper describes the journey we have taken, our wide-ranging approaches to evaluation and our insights on how to design and deliver evaluations to maximise impact.

There are two main reasons for carrying out evaluation: learning and accountability. Learning helps to improve current energy policy to aid understanding of what works to deliver carbon savings and the evidence to inform policy development. Government also needs to be accountable for how it spends taxpayer's money. Our energy evaluations have tried to not just measure costs and benefits, but also to ensure the success of policies by providing learning on why and how an intervention is being delivered.

Key questions raised in this paper:

1. How does BEIS design proportionate evaluations that deliver accountability and learning?
2. What do policy makers want from these evaluations and how have they used the findings?
3. How can governments meet the challenges of energy transformation with their evaluations?

To meet the challenge of the depth of transformation required to get to Net Zero Carbon, our evaluations will need to continue to learn how all of the complex interactions within our society drive the responses to interventions and the take up of technologies. Focusing on using a wide range of appropriate methods; and making findings impactful and timely, we can ensure that we support the evidence needed for our future energy evaluations.

Introduction

In June 2019, the UK became the first major economy to pass laws “to end its contribution to global warming by 2050” (BEIS, 2019a). This ambition of Net Zero has been underpinned by evaluation and other analytical evidence. BEIS's policies are supporting the energy transition, and evaluating outcomes is vital to understanding how policies can successfully effect this transition. The UK Government has spent the last decade building evaluations, which help us understand what carbon savings are being delivered and to give us learning to improve policies. This paper sets out some notable lessons learned on evaluation from the Department for

Business, Energy and Industrial Strategy (BEIS) and its predecessors on how we have taken up the challenge of building energy evaluations that help us understand accountability and learning.

There are two main reasons for carrying out evaluation: learning and accountability. Learning helps to improve current energy policy, to gain a general understanding of what works to deliver energy and carbon savings, and to develop the evidence to inform future policy development. Learning also helps to manage risk and uncertainty and for policymakers to gain a general understanding of what types of policies work for whom and when. However, Government also needs to be accountable and transparent in how it spends taxpayers' money: evidence is needed to demonstrate an intervention's impact (e.g. energy or carbon savings achieved) and also the value for money of delivering that impact. Our energy evaluations have tried to not just measure costs and benefits but also to ensure the success of policies by providing learning on why and how the policy is being delivered.

Scope

This paper gives an overview of the types of energy evaluations the UK Government have carried out since 2008, the main methodologies used and how these have coalesced around multi-method, often theory-driven, evaluations. Although we are not going to discuss potential policy mixes to be used to reach Net Zero, this paper discusses how we have approached evaluating new and innovative policies, addressed evidence gaps and made findings impactful. We include case studies from some recent evaluations to bring this approach to life. This paper does not present the results of a particular evaluation or analysis, rather it is an overview paper of how we conceptualize our evaluations and what BEIS has learned over the years.

This approach to our energy and climate change evaluations is mirrored in the recently revised UK government guidance on evaluation (HMT, 2020) and for BEIS itself has been disseminated through our own monitoring and evaluation framework (BEIS, 2020).

An evaluation journey

The Department for Energy and Climate Change (DECC) was created in 2008 and led to new policies being developed. It was the recognition of the complexity of the energy policy landscape (dynamic, interdependent policies with multiple stakeholders) and innovative nature of the new policies (DECC, 2014) that drove the development of our evaluation capacity and expertise. It also led to the use of innovative evaluation methods to match this policy landscape. From early evaluations of a limited number of policy areas (e.g. Community energy and Energy supplier obligation policies, Smart Meters), the methodologies and number of evaluations have grown as the number of policies, and the demand for learning to support those new policies, has increased.

The current Department (BEIS¹) now has dozens of energy or climate change evaluations underway and a growing evaluation culture that sees evaluation planning develop alongside new policies. Dedicated analytical resource provides the design and delivery of programme evaluations, working closely with policymakers and operational colleagues from within BEIS. These evaluation analysts usually commission the evaluation from external contractors (usually private research organisations and academia) who deliver the work for the Department. Most substantial evaluations of a policy have an evaluation manager/adviser leading on the design and delivery with external contractors conducting data collection and evaluation analysis.

¹ BEIS was created in July 2016, including the previous department of DECC.

However, BEIS also take a proportionate approach to our evaluations: not all policies are evaluated (some would require only monitoring); some are not evaluated on a large scale; and not all policies require a mixed methods evaluation or, for example, the use of theory-based approaches. We have evaluation staff working alongside most of the energy and climate change policy teams within the Department. However, even with this level of staffing we still need to prioritise our resources. We do this by devoting our budgets, time and staff towards the highest priority interventions (as agreed between analysts and policymakers): those interventions that are high-risk, high-status, highly innovative or are piloting new policy approaches. These are also the policies which are more likely to require a large-scale evaluation and where we concentrate our resources.

Our evaluations cover a range of policy topics with evaluations focusing on smart energy; energy efficiency and heat in homes; business, industry and public sector energy use; energy generation, security and energy markets; international climate finance. More recently, we have increased the emphasis on evaluation and monitoring of the BEIS Energy Innovation Programme², which aims to accelerate the commercialisation of innovative cheap, clean, and reliable energy technologies by the mid-2020s and 2030s. Some notable evaluations, past and present, are set out in Appendix 1.

During 2020, two publications were published which support and summarise the evaluation approach taken by BEIS. Firstly, there is the revised Magenta Book (HMT,2020), which sets out the UK government guidance on conducting evaluations and now includes a much wider range of evaluation methods and approaches. Secondly, there is the BEIS monitoring and evaluation framework (BEIS, 2020) which builds on UK Government guidance to explain ‘BEIS’ vision for proportionate, good quality monitoring and evaluation of interventions across the department and its partner organisations’. Although BEIS have been developing energy evaluations which pre-date this guidance, these publications have given these approaches a wider audience both within BEIS and across government.

The challenges we have faced

Key for our policy areas has been the question of how to best meet the challenge of designing proportionate evaluations that deliver accountability and learning. We have built up a wide range of energy policies in terms of scale, policy designs and affected populations. Therefore, we have had to meet these varying evaluation needs and ensure resources had the most impact, by tailoring our evaluation work according to criteria such as the extent of government or society expenditure, the use of innovative policies or methods, legal requirements, or the need to fill strategic evidence gaps.

Policymakers want to understand what works to fit with policy appraisal and policy development but also to have findings that are timely and accessible. Therefore, our evaluators have recognised the importance of attributing impact to our policies; a deep understanding of policy contexts; and flexibility in delivery of useful, useable and relevant evidence to feed into the policy-making process. Having very new policies and a complex landscape has led to us emphasising the need for learning within our evaluations and often evaluations are phased in order to deliver some emerging learning as early as possible.

How have our evaluations met these challenges? Methods, approaches and delivery

In this section, we set out the common approaches and methods BEIS have used to address the challenges of monitoring and evaluating our policies. We draw on some brief overviews of our evaluations to

² <https://www.gov.uk/guidance/energy-innovation>

show how particular methods have been used. This section closes with a discussion of how we deliver and support our policies to meet the challenge of making findings impactful for policymakers.

There are three key ways that characterise the “BEIS approach” to evaluation of energy policies. It is (1) the use of mixed methodologies, underpinned by (2) an openness to use alternative ways to understand impact and gain learning, and (3) an evaluation culture that emphasises the need to make findings impactful for policymakers.

Effective monitoring as a starting point

Ensuring an effective and timely approach to monitoring has been an essential foundation for our policy evaluation. Monitoring is the minimum level of data collection we expect in BEIS. We use monitoring data to measure progress and inform evaluations. Moreover, evaluation findings can inform monitoring indicators. Monitoring can be used to support a number of elements of a policy, including an assessment of whether the policy has delivered target outputs; whether a policy is reaching its target population; and, to inform cost-benefit analysis and determine whether assumptions about policy implementation, such as cost and time, were correct. For more details about how BEIS approaches monitoring see (BEIS, 2020).

Use of mixed methods

Many of our evaluations have combined a variety of evaluation methods and approaches with the collection of multiple sources of qualitative and quantitative primary data (e.g. interview or survey data). Data is usually collected directly from participants, stakeholders and policy makers to understand different perspectives, behaviours and the wider contexts for schemes. Examples of the types of data collection methods used by BEIS include qualitative interviews, focus groups and case studies (to explore in more depth how and why individuals and organisations behave the way they do) and also surveys of scheme participants and stakeholders (to capture the scale of change in behaviours or attitudes that sit behind the success or failure of interventions)³. By collecting a wide range of data we can better understand impact (e.g. by supporting quasi-experimental or theory-based impact approaches), but also explore or test the response to policies.

As well as the theory-based analysis covered in the next section, our evaluations build in other types of analysis to assess the effectiveness of policies, their impact and value for money, including:

- Modelling: to understand total energy or carbon savings and any differences in scheme performance by subgroups. Modelling can be of different mixes of energy technologies or levels of energy use by segments of the population or within an individual scheme;
- Experimental or quasi-experimental analysis⁴: to establish the additionality of an intervention against a counterfactual or comparison group;
- Cost-benefit analysis: to understand the value for money of an intervention.

In this section of the paper we include a selection of examples of BEIS energy policy evaluations, including the current Contracts for Difference (CfD) and the Climate Change Agreement Scheme evaluations as well as the programme-level evaluation of the Smart Meters Implementation Programme (see Figures 1 to 3). By combining

³ The Magenta Book (HMT 2020) sets out in detail what should be considered when including different data collection methods in an evaluation.

⁴ Randomised Control Trials (RCTs) are not often used by our department, because BEIS are not the owners of for example energy data (e.g., electricity data are owned by energy companies). However, we have conducted some RCTs in combination with process or synthesis evaluations.

different methods, these evaluations have been able to help us understand behaviours in-depth; attribute or assess the contribution of these behaviours to interventions; and understand the extent of impact. Use of mixed methods also allows for the triangulation of evidence sources to support the quantification of impacts through quasi-experimental analysis and, by building in the comparison of evidence across workstreams, something greater than the sum of its parts is produced.

In the first case study (Figure 1), the Climate Change Agreements evaluation used modelling and macro/micro workstreams alongside contribution analysis to explain impacts. Similarly, the Contracts for Difference evaluation (Figure 2) is an example of using contribution analysis and a modelled counterfactual (to measure value for money). For both of these examples, the use of mixed methods allowed exploration of the different evidence needs. The Smart Metering Implementation Programme (SMIP) is an example of portfolio evaluation where multiple individual research and evaluation projects are synthesized to identify and develop continuous learning about the programme (Figure 3).

The Climate Change Agreements (CCA) scheme is a scheme based on voluntary agreements negotiated between 53 energy- and trade-intensive industry sectors and the UK Government to reduce energy use and carbon dioxide (CO₂) emissions. In return for setting these negotiated targets, industries receive a discount on the Climate Change Levy (CCL), a tax added to electricity and fuel bills.

The CCA evaluation was theory-based and used contribution analysis as the overarching method for assessing the contribution of the second CCA scheme with evidence and analysis from five main workstreams:

1. Analysis of scheme data (to assess how patterns of participation and performance differed between CCA sectors);
2. Micro-econometric analysis and data matching (to compare energy consumption and economic performance at CCA sites against equivalent non-participants)
3. Macro-economic modelling (to estimate the scale of CCA impact on key economic variables);
4. Survey of scheme participants (to understand participant behaviour and any differences between subgroups e.g., by size or length of scheme membership); and,
5. Qualitative research with participants and non-participants.

Contribution analysis aided in the assessment of additionality and attribution within the theory of change, drawing strongly on the results of the micro-econometric analysis and macro-economic modelling workstreams. Contribution stories were also developed for different types of CCA participants, to see where the CCA policy contributed to energy efficiency and competitiveness for them, relative to other policies and external influences. These stories were based on case-by-case analysis of qualitative interviews, supported by evidence from the quantitative survey and scheme data analysis.

Evaluation evidence has helped understanding of the energy savings attributed to the scheme but also provided learning on how, why and where the scheme has worked or where it has not, which is feeding into the development of a future scheme from 2025. In particular, the evaluation has provided evidence that will support the future scheme design, including on scheme eligibility; how targets and their baselines might be reframed; and scheme administration.

Publication: [Second Climate Change Agreements evaluation](#) (2020)

Figure 1: Climate Change Agreements evaluation: Mixed methods including contribution, micro-econometric and macro-economic analysis

The Contracts for Difference (CfD) scheme aims to give developers a higher level of confidence and certainty to invest in low carbon electricity generation, by agreeing to a fixed price for the sale of electricity over a 15-year contract.

The evaluation required a mix of impact, process and economic evaluation. The evaluation is theory-based, adopting principles of realist approaches to address questions around how differences in context influence how developers respond to the scheme. It combines qualitative interviews with scheme participants and non-participants, with quantitative data collection and analysis. A modelled counterfactual was developed to conduct economic cost-benefit analysis in order to address questions around whether the scheme presents good value for money.

Although not yet published, the evaluation findings are being used within BEIS to inform and evidence future strategy on support for renewable technologies.

Figure 2: Contracts for Difference evaluation: Mixed methods including counterfactual and theory-based approaches

Smart meters are the next generation of gas and electricity meters, offering a range of intelligent functions and providing consumers with more accurate information, while bringing an end to estimated billing.

The roll-out of currently 18 million meters (with an aim to upgrade 53 million) has an embedded programme of evaluation, that has underpinned policy activity to support the delivery of consumer benefits. An example of continuous learning is the Programme's early evaluation (the Early Learning Project). This used qualitative and survey data collection, quantitative analysis of energy consumption data, and international evidence to identify the role of consumer engagement in delivering household energy savings from smart meters. The evidence on consumer engagement supported the cost-benefit case for further developing the Programme.

As a result of the early evaluation, the policy and research teams then collaborated on a range of follow-up work to monitor and support the delivery of these benefits, including:

- An action research project (with customers, feedback experts and meter installers) to develop and test best practice energy efficiency advice.
- Mystery shopping of smart meter installation visits to measure compliance (with requirements to provide energy efficiency advice) and drive better performance.
- A series of trials of alternative ways of delivering energy feedback to assess their impact on energy consumption.

The programme has continued to build its evidence base through evaluation, for example, conducting research into non-domestic organisations to understand how consumer context and existing energy efficiency behaviours may affect the roll out of smart meters to around two million non-domestic sites.

Publication: [Smart metering early learning project](#) (2015). Other related publications are listed in Appendix 1.

Figure 3: Smart Meters Implementation Programme: applying a wide range of research, analysis and evaluation approaches to build a large, impactful evidence base

Adopting theory-based approaches, including realist evaluation

The starting point for our evaluations is a policy-specific theory of change to understand how interventions are meant to work and to identify key assumptions to be tested. Ideally, the theory of change is built into the policy development stage, helping policymakers to understand what the short-term and long-term outcomes and benefits will be. In all evaluations the theory of change is built on to help construct a framework for monitoring and evaluation: including research questions, evidence gaps, and data collection.

For many of our energy interventions the most appropriate approach has been to use theory-based evaluation methods. Theory-based methods are explicitly concerned about why change occurs: it aims to get inside the black-box of what happens between inputs and outcomes and how that is affected by wider contexts (Stern et al, 2012). We adopt theory-based methods because we want to understand not only the extent of impact of a scheme but also why it occurred and the context for any impacts. Our theories of change for all interventions allow us to rigorously examine these questions and test whether the underlying assumptions are supported by the available evidence. In addition, many of our evaluations have used a theory of change to support the development of data collection instruments (ensuring that key evidence gaps are identified and filled) and to enhance the synthesis process by grounding findings in the theory of the policy. Some of the types of methods we have used alongside our theory-based evaluations are set out in Table 1, drawn from the Magenta Book (HMT 2020).

Table 1. Quick guide to common theory-based impact evaluation methods used in BEIS evaluations

Evaluation Method	Description	Pros and Cons
Realist evaluation	Specific, hypothesised causal 'mechanisms' for an 'outcome' are articulated in 'context' and evidence gathered for each. The 'mechanism' explains why participants may take advantage of an opportunity or not depending on the 'context', and their understanding is key to causal inference.	Refines theory. Can identify causal mechanisms. Can inform impact if a counterfactual is not feasible. Time consuming, resource intensive and needs subject-matter expertise. Often difficult to communicate/interpret due to complexity. Does not often provide a quantitative effect size.
Contribution analysis	Step-by-step process used to examine if an intervention has contributed to an observed outcome by exploring a range of evidence for the Theory of Change. It gives an evidenced line of reasoning rather than definitive proof.	The contribution claim depends on the quality of thinking about the attribution problem and Theory of Change. Works on average effects – not to be used if there is large variability in implementation or outcomes.
Process tracing	A structured method examining a single case of change to test whether a hypothesised causal mechanism, such as that proposed by the Theory of Change, explains the outcome.	Can test causal hypotheses post-hoc. Must be used with rigour to prevent inferential errors; alternative explanations must be carefully considered. Support for one causal mechanism may not preclude others.
Qualitative Comparative Analysis	Used to compare multiple cases and systematically understand patterns of characteristics associated with desired or undesired outcomes based on qualitative knowledge. Can account for both complex causation (combinations of factors) and 'equifinality' (multiple causes of outcomes).	Can identify groups of causal factors in post-hoc evaluation. Systematically analyses case study evidence. Works best with 10-50 cases. Needs consistent data about how those factors affect outcomes and assessment of which are the more successful across case studies.

Source: Extract reproduced from Table 3.2 in The Magenta Book (HMT, 2020). Only methods and approaches used multiple times in BEIS energy evaluations are shown in this table.

Realist evaluation designs try to understand interventions by asking the question “what works for whom, why and under what circumstances” (Pawson and Tilley, 1997). It explicitly sets out at the design stage what mechanisms will generate which outcomes and which aspects of the context will affect whether those mechanisms work. The evaluation is then designed to test the elements of that programme theory. This is often more detailed and rigorous than other theory-based evaluation methods. For example, as in Figure 4, the evaluation of the Transitional Arrangements for demand side response (TA) used realist methods to understand not only whether the policy contributed to the main outcomes but also to rigorously examine the design and execution of the scheme, and test the assumptions in the policy theory against available evidence. By developing hypotheses, putting the policy in context, and identifying causal mechanisms on how different organisations would behave in face of the intervention, the evaluation helped to explain what outcomes occurred for whom and under what circumstances; the extent to which outcomes could be attributed to the TA and through which levers and causal mechanisms it did so. Figure 5 is another example of a theory-based realist evaluation from our International Climate Finance portfolio of programmes, where the evaluation identified how and for whom demonstration effects work to mobilise private finance.

The Transitional Arrangements (TA) auctions aimed to encourage the development of Demand Side Response (DSR) to balance supply and demand in a decarbonised electricity grid.

The evaluation was designed to answer five high-level questions including: What outcomes can be attributed to the TA and were they as intended by BEIS? What outcomes occurred for whom and under what circumstances?

The approach to the evaluation was realist and theory-based. The realist approach emphasised the importance of understanding not only whether a policy contributes to outcomes (which may be intended or unintended) but how, for whom and in what circumstances. The development of a ‘theory’ of the TA was central to implementing a realist evaluation as it allowed the rigorous examination of the design and execution of the scheme, and test policy assumptions against available evidence. An initial theoretical framework was developed, setting out the realist hypotheses to be tested.

Evidence was gathered to test and revise the initial theoretical framework. This involved in-depth telephone interviews with representatives of organisations; an email survey on cost information; and case study research.

The evaluation findings have increased knowledge of the characteristics of DSR and have been effectively used to support policy decisions.

Publication link: [Evaluation of the Transitional Arrangements for demand side response \(Phase 3\)](#) (2018).

Figure 4: The Transitional Arrangements for Demand Side Response evaluation: Applying realist evaluation to understand how, for whom and in which contexts

International Climate Finance (ICF) is a core component of the United Kingdom's contribution to the developed countries' shared goal of mobilising US\$100 billion of public and private climate finance a year by 2020 (UNFCCC 2010 and Paris Agreement 2015). A theory-based, realist evaluation was conducted to seek to establish whether private investors are influenced by evidence from the UK ICF-supported projects (i.e. by demonstration effects) into investing in Low Carbon Climate Resilient projects, without or with less development finance, directly and/or through funds.

The evaluation identified six types of demonstration effects and four types of investors. Each effect for each type of investor was assessed as 'convincing', 'plausible' or 'tentative' depending on the strength of evidence for the contribution of demonstration effects to the mobilisation of private finance. The learning from the evaluation informed the future strategy for ICF, for example, better understanding of short, medium and longer-term impacts.

Publication: [Mobilising private finance through demonstration effects](#) (2019)

Figure 5: International Climate Finance Portfolio Evaluation: Using theory-based, realist evaluation to understand mobilisation of private finance

Making findings impactful to policymakers

The third element to the development of our evaluations is in the way our evaluators engage a range of audiences in order to have impact. In common with many UK Government departments, our analysts work closely with policymakers to understand their needs; sometimes being integrated or embedded into their teams. Therefore, we can be part of policy design by building evaluation into policies, e.g. by enhancing data accessibility and delivery methods, as well as improving the links between evaluation findings and policy development. This means we have an evaluation community who are close to evaluation findings and have a good understanding of the topic area and have knowledge that builds up through being present in policy discussions. This enables us to learn and, in turn, share this learning through our evaluations. We have also gone some way towards developing a broader evaluation culture in our part of government, with greater understanding of the benefits of evaluation beyond our community. For example, policy business cases need to demonstrate that there are well developed plans and resources for monitoring and evaluation.

What our policymakers want are timely, accessible and relevant, actionable findings. To do this we have had to work flexibly, building in forward-looking evaluation questions, seeking transferable evidence (e.g. for policy tools, thematic topics or population groups) and producing interim outputs for early understanding. One example (in Figure 6), is the Renewable Heat Incentive evaluation which has taken a flexible approach to data collection to support the creation of an impactful evidence base. More generally, outputs also need to be policy relevant (including where the policy has evolved since starting the evaluation), using accessible language rather than jargon or highly technical language to engage policymakers and make findings impactful.

Timeliness is also important for pilot interventions. During a pilot, the learning on how an intervention works is even more vital because it helps with changing and adapting that intervention to increase effectiveness during any rollout. For example, the Heat Networks Investment Project (HNIP, see figure 7) pilot scheme produced process evaluation evidence and accessible key learning at an early stage that was used in developing the main HNIP programme.

The Renewable Heat Incentive (RHI) provides financial incentives to consumers to encourage the installation of renewable heating systems instead of fossil fuel systems. There are numerous types of consumers and market stakeholders who are influenced by the policy.

Realist methods were perfectly suited to evaluating this complex policy, they recognise that the same intervention is unlikely to have the same outcome for different stakeholders in different contexts. The Realist approach allows the evaluation to focus on understanding the decision-making processes undertaken by consumers, including the role that the RHI played in this. This approach not only evidences scheme impacts but also builds an evidence base on consumer and stakeholder decision making, which informs future policy making.

The evaluation supports wider policy making by taking a flexible approach to evidence collection. Over the life of the evaluation, evidence is needed across the scheme, but the timing of each workstream can be amended to provide the evidence when it is most needed for upcoming policy making. As an example, interviews with biomethane applicants and stakeholders were delivered alongside development of RHI-successor policies. The interviews used a realist framework to identify how barriers were experienced by applicants in different contexts. The findings showed that biomethane producers come from a complex mix of backgrounds with a range of barriers and enablers, all of which influence how they choose to fund and operate their plant. Future policy decisions have sought to reflect this complexity to ensure that future funding is able to maximise the deployment of biomethane in a way that supports wider government objectives.

Publication: [Renewable Heat Incentive evaluation of the 2017 and 2018 reforms](#) (2020)

Figure 6: Renewable Heat Incentive evaluation: Impactful realist evaluation

The Heat Network Investment Project (HNIP) provides capital support for the commercialisation and construction of new heat networks in England and Wales as well as for the improvement of existing heat networks. One of the primary objectives of HNIP is to help create the conditions necessary for a sustainable heat network market to develop. The primary objective of the HNIP Pilot was to provide learning to be used to maximise the smooth running, impact and value-for-money of the planned main scheme.

BEIS commissioned a five-year suite of independent, process and impact evaluation activities relating to the entire HNIP scheme. Overall, this follows the principles of realist evaluation, focusing on contextual questions of “what works, for whom, under what circumstances?” It uses an evolving Theory of Change to show the theory for how HNIP will achieve its intended outcomes. The first evaluation undertaken was a process evaluation of the HNIP pilot scheme, with the objective of offering ‘lessons learned’ to inform development of the planned main scheme and any future similar schemes as well as providing contextual knowledge for the overall realist approach.

Using a combination of qualitative interviews, document analysis, and analysis of scheme data, the evaluation made a number of recommendations covering the administrative design, publicity and engagement, the application process, assessment and scoring, and post funding decision processes. These recommendations provided key insight and helped to inform the development of the HNIP main scheme to maximise the impact and value-for-money of the scheme.

Publication: [Heat Networks Investment Project pilot scheme](#)

Figure 7: Heat Network Investment Project Pilot process evaluation: Timely insight to inform new policies

Other factors that support the quality of our evaluations

Our approach to evaluation sits within a wider government and academic context and an extensive range of analytical work informing UK energy policy. This work involves both policy analysis and research, working to develop new policies, and strategic analysis that gives us the wider understanding of how energy policies and society are interacting, for example, statistics and modelling of carbon savings. Our evaluation teams work

closely with a wide range of analytical professions to ensure that we can ask the right questions during our evaluations. We also draw on expertise external to government, for example research contractors and academics, to bring a level of challenge and rigour to delivering and quality assuring evaluations.

We are also privileged to have access to a large amount of data, without which much of the modelling, quasi-experimental and quantitative analysis could not be conducted. Data sources include the National Energy Efficiency Data-Framework (NEED) on energy use and energy efficiency in domestic and non-domestic buildings (BEIS, 2019b); scheme data such as Energy Performance Certificates, and other data provided directly from energy suppliers. BEIS are also taking forward work to develop sources of data to support future evaluations, including collaborations with academia.

Lessons learned from our evaluation journey

So what have we learned over the last few years and across our evaluation journey? We have recognised that you need multiple perspectives and evidence sources to fully evaluate policies within the complex energy landscape. Just focusing on quantitative impacts delivered by micro-econometric or other modelling evidence alone will not give you the understanding of how individuals and organisations have engaged with policies and how systems operate. Creating holistic evaluation plans with multiple opportunities for evidence gathering and types of data collection will better meet the needs of developing policies. You also have to be flexible about changing those evaluation plans when needed to suit changes in policy direction. However, we are also keenly aware that to effectively deliver these methods requires time and money, for example, data collection can be costly and the evaluation synthesis process requires iteration and combined thinking that takes time to bring evaluation findings together. Therefore, we have had to prioritise those policies that require this level of evaluation resource.

We have had to work closely with the policymakers within BEIS to ensure that we understood their needs and to convince them of the value of our evaluation findings. One of our evaluators described this as very much a “shared endeavour” and it is this close working that has helped embed our findings into policy development. However, we also maintain the independence of our evaluations from policymakers and our evaluations and policies receive external scrutiny, for example, from UK parliamentary committees, the National Audit Office and the Independent Commission for Aid Impact. Timeliness of our evidence is important, which means we have had to think about how to build in interim outputs to our evaluations and change course to add additional research questions or re-analyse existing evidence. Finally, we have learned that we should make the most of our relationships, casting the net wide for internal and external input into our evaluations both for robustness (e.g. through internal or academic peer review) and wider evidence (e.g. taking a multi-disciplinary approach to our teams, working across government and making use of the widest sources of data available).

Conclusions

As shown by the Committee on Climate Change report which recommended the UK’s net zero targets (CCC, 2019), meeting the challenge of net zero emissions in the UK will require new policies to promote transformational changes in behaviour and attitudes by individuals and organisations, the reformation of markets and supply chains, and the extensive adoption of new technologies. Energy evaluations can inform what we currently know about how our policies are meeting this challenge, which mechanisms are most effective at promoting transformational change and help to shape future policies. Furthermore, to be successful our evaluations need to monitor the extent to which BEIS interventions are contributing to reaching the net zero target and provide timely learning to adapt and improve policies as they are being delivered.

This paper has set out how BEIS has expanded the number of energy evaluations we conduct; supporting more policies and building a cadre of evaluation professionals and examples of successful evaluations. For evaluation to support the challenges faced by energy transformation, we will continue to practice some of the key elements identified in this paper. We deliver proportionate, needs-driven evaluations. We start with a theory of change as a foundation to design our evaluations, adopting the most appropriate approaches and methodologies. We do all of this by working closely with our policy colleagues, delivery partners and other analysts, to deliver timely and impactful evidence, by ensuring our evaluations ask the right questions and making our evidence transferable across programmes.

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Appendix 1. Notable DECC or BEIS energy evaluations published since 2013

This appendix includes some of the main evaluations we have published by policy topic. See individual evaluations for an explanation of the methods used.

Policy topic	Evaluations
Smart energy	Smart meters research, trials and evaluations (2013 – present), including: Smart Meter Early Learning Project (2015) Smart metering in non-domestic premises early research findings (2017) Smart Meter Consumer Experience Study (2017 and 2018) Alternatives to smart meter In-Home Displays (IHDs): trials and conclusions (2019) Non-domestic Smart Energy Management Innovation Competition (NDSEMIC, 2019 and 2020)
Heat	Renewable Heat Incentive evaluations (2014 to present) Renewable Heat Premium Payment Scheme (2015) Heat Networks Delivery Unit (2018) Heat Networks Investment Project pilot scheme (2018 to 2020) Electrification of Heat Demonstration Project (ongoing)
Homes and communities	Green Deal Assessment research (2013) Carbon Emissions Reduction Target and Community Energy Saving Programme (2014) Green Deal and Energy Company Obligation research (2014 – 2017) Warm Home Discount (2018) Domestic Private Rental Sector Minimum Energy Efficiency Standards (2020, ongoing)
Business, industry and public sector	CRC Energy Efficiency Scheme (2015) Public Sector Energy Efficiency Loans Scheme (2017, ongoing) Energy Savings Opportunity Scheme (2017) Energy audits and reporting, including the Energy Savings Opportunity Scheme (2020) Second Climate Change Agreements evaluation (2020)
Energy security and energy markets	Transitional Arrangements for Demand-Side Response (2018) Contracts for Difference (ongoing)
International climate finance	Global Climate Partnership Fund Evaluation (2017) Renewable Energy Partnership Programme (2018) Mobilising private finance through demonstration effects (2019) Support for policy change (2020)
Energy innovation	Energy Entrepreneurs Fund (ongoing) Hy4Heat (www.Hy4heat.info , ongoing) Boosting access for SMEs to energy efficiency (BASEE, ongoing).

Note: Year(s) in brackets relate to the publication date of individual findings reports. Where multiple reports were published these are shown as a range from the first publication date to the last. Where only interim findings have been published to date, these are shown as ongoing.