

Evaluation of the Reformed Renewable Heat Incentive Scheme





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Contents

Applicant topic guide	4
Stakeholder topic guides	
Stakeholder introduction	27
Anaerobic digestion plant owner	35
Financier	40
Landowner	47
Feedstock supplier	50
Digestate user	53
Biomethane purchaser	55
Technology supplier	
Gas network operator	59
Stakeholder close	62

Applicant topic guide

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
General guidance and resource	S		
	 Protocol if interviewee is located in 'sub-optimum' location Includes any situation in which the location of the interviewee is likely to result in sub-optimum interview (e.g. because of distractions or other interference). This will include situations when an interviewee is: outside, driving, or inside but in a distracting environment (e.g. due to significant noise). In these cases, our plan is to: Ask if the interviewee can move to a quiet location, if possible (if driving, we will ask if they are able to pull over for the duration of the interview) If they are not able to do this, then we will ask if we can reschedule the interview Our rationale for postponing is that it is better to risk the interviewee opting-out (i.e. not being available for a rearranged interview), than conducting an 	Sources of advice for applicant complaints All complaints relating to the RHI should be directed toward Ofgem. If you capture any details about their complaint it would be useful to pass that info on to the BEIS team (anonymised if necessary).	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	interview which doesn't give us the opportunity to collect the data we need.		
Introduction			
Aim: To introduce the research	n, ensure the interviewee is aware of and set the context	t for the proceeding discussion	5

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Keep the intro as brief as possible to leave room for the interview proper	 Introduce yourself and CAG Consultants [very brief] State that the evaluation has been commissioned by BEIS [no need to provide more detail than this] Introduce the study: Overall objective of the research is to understand the role that the RHI plays in the business case for biomethane installations, and the impact of the recent reforms on the decsion making process Findings will inform government policy development about support for biomethane going forward Talk through key points about the interview: Length of interview [estimated 50-60 minutes] 		
	 Data handling, privacy, recording Tell respondent that the Interview data will be stored securely in accordance with the GDPR Check they received information regarding the privacy notice Explain that we would like to record the interview and explain that the recording, transcription and notes will not be shared outside of the research consortium, without their explicit consent Check that they consent to you recording the 		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	interview [if they don't, still go ahead with interview, just take notes]		
	- Read out the following:		
	"To support the analysis of the interview data we may share extracts or summaries of your interview transcript with the Department for Business, Energy and Industrial Strategy. We will also share a small sample of interview recordings with BEIS to allow them to carry out quality assurance of the research. Are you happy for your information to be shared with BEIS for these purposes?"		
	[record whether the participant's answer is yes or no]		
	[if they are hesitant, you could also reassure them that: the full transcript of the interview will not be shared with the Department for Business, Energy and Industrial Strategy. And we will endeavour to ensure that interview participants are not able to be identified, although we cannot guarantee this will be the case. Interview information will not be shared beyond BEIS. We will also check with them again at the end of the interview]		
	[if the participant says they would prefer for any element of the transcript not to be shared with BEIS,		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	record this, tell them that we will respect this wish, and proceed with interview anyway]		
Equipment for biomethane producers will include the following: - Anaerobic digester - Upgrade plant - Blender/odorant equipment - Grid entry unit So it is possible that there will be different owners for these, and different decision makers	 Before you begin: Confirm that they were the principal decision- maker regarding the installation or a significant part of it (where ownership is shared) Emphasise that there are no wrong or right answers. We want to hear their experiences and views. We want to hear what they have to say, in their own words Ask the interviewee if they have questions before they start 		
1. Application background		I	
Aim: to help research participan	ts 'warm-up' and to confirm and ascertain key backgrou	ind information	5
It is particularly important to understand the development	Collate or confirm key details about the installation that was the subject of the application:		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
stage as this will have an impact on the approach to the remaining questions. You may need to explain what you mean by the reforms, i.e the introduction of feedstock rules and the introduction of tariff guarantees	Name and address of installation	Remind interviewee that we would like the interview to focus on this plant/application in particular (although we understand that this application may have been made within the context of a wider number of applications)	
Prior to the interview, check if this is an application which we have selected on the basis that it has been subject to two- stage commissioning (i,e, a pre-reform application with tariff secured but not yet fully commissioned) so that the reasons for this can be explored. There may be other reasons, e.g. an early test of the equipment or a technical fault which led to the installation being shelved.	Type of feedstock (actual or proposed)	Our understanding is that feedstocks can be categorised as follows: - farm waste - energy crops - sewage waste - manufacturing/industrial waste - municipal food waste	
	Type of grid connection (actual or proposed)	We understand that some installations have 'non-standard' grid connections, e.g. a single injection point for multiple plants; low pressure connection. We also understand that the injection set-up may change over time, particularly for projects doing two-stage commissioning. Where this is the case, it would be good to highlight it and understand the changes.	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Development stage	 Ask interviewee which stage they think the development of their plant is at. In their own words at first and then based on their response clarify which of the categories below they fit in. 1) pre-reform application with tariff secured but not yet fully commissioned 2) pre-reform application and either complete or commenced construction 3) post-reform application awaiting tariff guarantee 4) post-reform application with tariff guarantee but not yet commenced construction 5) post-reform application with tariff guarantee and either complete or commenced construction 6) other, e.g. constructed or partially constructed but then ceased because of technical problems If they are in category 3), what stage are they at in their application for a tariff guarantee? At this point, it may become clear that the installation is unlikely to proceed to commissioning. Where this is the case, 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		you may want to jump ahead to row 42 before jumping back again.	
2. Building an understanding of	the business model		
Aim: to establish the fundament being pursued	als of the business model for this installation and the de	ecision-making which led to this model	10
These topics are intended to build our understanding of the nature of the business model for the installation and the people and organisations involved	Installation type	Ask interviewee which broad category of installation type they think they fall into. Our understanding is that most applicants will fall into one of the following categories: 1) farmer (who supplies at least a percentage of the feedstock and owns	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		 the plant) 2) water company (with their own sewage waste as the feedstock) 3) manufacturer (with their own manufacturing waste as the feedstock) 4) developer (with feedtstock purchased) If none of the above, ask them to explain how they would describe their installation in terms of feedstock source 	
	Explore which other organisations are involved, and how the relationships between them were formed	Through this topic we need to build an understanding of the different organisations involved in different types of installations - landowners, feedstock providers, developers, financiers, owners of the different parts of the plant, digestate users etc - and how the relationships between them were formed: - at what stage of the business planning process were the different relationships formed? - who approached who? - how were the approaches made? (e.g. is there an introduction service	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		being run by consultants?) We understand that some (under- performing) installations have been bought out by new operators. It would be good to identify these cases where they appear in our sample	
	Establish the key players in decision-making relating to this installation	What is their position within the organisation and who are the other key decision makers (in relation to plant's development) either within the main applicant organisation or others. Try to understand the structure, who has the final say etc.	
You may have already explored this to some extent in discussing the type of business model but we would like to pin down the principal drivers behind their business model	Explore what the applicant sees as being the principal benefits of their business model (even if this is now hypothetical because the installation will not proceed)	Prompts: - What was it about their circumstances in particular that led them to pursue this installation? Probes: - was it related to having their own feedstock? If so, what would they have done with this feedstock otherwise? - was it part of a solution to dealing with a waste product that they had? If	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		so, what other options did they consider? What were they doing with it previously? - was it about other valuable outputs, e.g. carbon sequestration? - was it purely a financial investment? - was it related to plant technology that they manufacture? - were they prompted by an adviser/investor/developer? - is it a plant that they have bought after it was commissioned? If so, why?	
Biogas and anaerobic digestion may have been alternatives. NEED TO CONFIRM Some applicants may have had a choice between different types of feedstock.	Explore the extent to which other approaches to the installation were considered	Find out if they considered any other technologies or feedstocks If so, establish what the factors were that which led to the decision to pursue this particular approach	
3. The business case for the bio	methane installation		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Purpose: to explore, in-depth, that informed this reasoning	he reasons why the applicant felt there was a viable bus	iness case for their plant and the factors	15
	Explain that, now you have explored the development process for their plant, you would like to explore the reasons why you concluded there was a viable business case for this installation at the time of your application for the RHI		
	Can you describe the most significant elements of the business case for this particular biomethane installation, i.e. what factors does (or did) the business case for this installation most depend on?	Ask them to identify the most significant elements behind the business case for the installation. Allow responses to be offered without probing initially, then probe for ALL of the following:	
		 availability of RHI funding availability of other income streams/subsidies (such as Renewable Fuel Transport Certificates, green gas certificates) gas price avoided costs (e.g. landfill tax or incineration costs) income from digestate sale 	
		 own use of biogas availability/cost of finance availability/price/quality of feedstock 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		 availability/price of suitable technology availlability of site for plant and injection point other non-financial factors 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Spend time to fully explore this	Explain that you would like to go into more detail about the elements they have referred to as being particularly important in their business case.	Keep prompting and probing so that they explain their reasoning in full (i.e. keeping asking why)	
	Go through each element they identified, one-by- one, and explore in as much depth as possible the factors that influenced the respondents' reasoning. Use the probes to aide this exploration (but also use your own probes where relevant)	Probe each factor in detail: - ask them to explain in detail what it was about the factor that influenced their decision, how significant each factor was (the scale of its impact on their retrun on investment) and what was it about this particular installation that influenced that level of significance, e.g.: * if availability of other funding streams was key, which other funding streams and how significant were they? * if availability of finance was mentioned, ask them to explain this in more detail: was it the terms of the finance, the nature of the lender etc? * if feedstock supply was key, was it about the guarantee of supply, the price, the quality?; * if the technology was key, was it just about the price or was a particular technological solution required and if so why? * if the site was key, what about the site was important - absence of	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		planning/permitting constraints, suitable injection point?	
		 explore whether any of the factors were/are more elastic than others, e.g. were numerous suitable finance, feedstock and technology options available, were numerous sites available? how sensitive was/is the business case to fluctuations in the prices of the different elements identified, e.g. feedstock, technology, site? how significant were they in terms of the impact on returns on investment? 	
Clearly this is critical so spend time to fully explore this	 whether RHI was mentioned in the previous question or not, spend some time now to explore its significance: - could the installation go ahead without it? - If so, how would it differ in the absence of RHI, e.g. in size, nature of feedstock? - If not, what would have happened instead, e.g. a different technology? 	If there is time, ask about the impacts of RHI on the wider supply chain as they relate to this installation, e.g. impacts on feedstock supply and prices, costs of technology etc.	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	- how sensitive was the business case to fluctuations in the tariff?		
4. The role of the RHI reforms in	the business case for the biomethane installation		
Aim: to test the theory regarding	the role of the RHI reforms in the demand for biomethe	ane	15
We are particularly interested in the extent to which the applicant made a choice between applying to the RHI prior to the reforms becoming effective (May 2018) or after the reforms became effective. The data indicates that the reforms were a significant factor in determining the timing of applications but some may not have had the option to choose, e.g. it may not have been possible for some post- reform applications to be made earlier	Explore the reasons for the timing of the RHI application	What role did the RHI reforms or other aspects of the RHI (e.g. tariff degressions) play alongside other factors, if any?	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
All of the applicants we spoke to will have submitted their applications after the reforms were announced. In the previous question, you will have explored the extent to which the applicant exercised choice with regard to the pre- or post-reform timing of the application. Now we would like to explore the impact of each of the key reforms.	Explore the impact of the each of the RHI reforms on the biomethane installation	Go through each of the key biomethane-related reforms in turn and explore whether and in what way they influenced the biomethane installation, e.g. in terms of the timing of the application, size, feedstock, technology type etc. - changes to feedstock rules - if applying between Dec 16 and May 18 did they opt-in to the higher tariff with feedstock restriction or opt-out of the higher tariff to have greater flexibility with feedstock? - uplift in tariffs - see above. if they opted in, what difference did this make to the viability/attractiveness of the scheme - availability of tariff guarantees from May 2018 - removal of two-stage commissioning in June 2018(not all will be aware of this) We are particularly interested in the extent to which the reforms impacted on the business case for the	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		installation, which we will then seek to characterise in the next question	
Having explored the previous topics, it is hoped that you will now be in a position to understand which of the CMOs in our candidate theory best apply in this case.	Seek to characterise the nature and significance of the RHI in the business case for this installation	Try to establish which, if any, of the CMOs best fits the applicant: •CMO1a – Reformed RHI contributed to a viable business case for this proposed biomethane installation - not viable without the reformed RHI •CMO1b – Pre-reform RHI contributed to a viable business case for this proposed biomethane installation - not viable post-reform •CMO1c – RHI contributed to a viable business case for this proposed biomethane installation – not viable without the RHI, but the reforms were not a major influence •CMO3 – Irrespective of RHI, there was a viable business case for this	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		proposed biomethane installation – RHI was a windfall •CMO4 – Pre- or post-reform RHI improved the business case for this proposed biomethane installation but it might have been viable anyway (i.e. a mix of CMO1 and CMO3) •CMO5 (may be observed alongside any of the other CMOs) – The technology choice, feedstock choice, scale or investment timing of this proposed biomethane installation was influenced by the pre- or post-reform RHI •CMO6b – the business case for this proposed biomethane investment is still not viable, despite being approved for pre-reform RHI, and it's unlikely to go ahead If none of the above, how does the role of the RHI differ in this case?	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Some applications may not be considered to have viable business cases. Others may not proceed for other reasons, which we would like to understand better. So, for all installations that have not yet been commissioned, we would like to explore the likelihood of them being commissioned and the factors behind this	For installations that have not yet been commissioned: How likely is it that this installation will be completed and commissioned? What factors might prevent it proceeding?	 Where relevant, probe for: failure to secure necessary finance other schemes being more attractive/profitable (for applicants with multiple schemes) planning issues (difficulties in securing the necessary permissions or being given restrictive planning conditions) permitting issues issues in securing a Tariff Guarantee feedstock supply issues grid connection issues commissioning not feasible before tariff guarantee deadline problems with cost or reliability of proposed technology We need to be able to link any factors identified to the contexts, i.e. what is it about this particular installation that means these factors are significant? would they be less significant in a different context? E.g. is everyone struggling to get finance or permits or planning permission or is it particular types of installations? 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Interview close and thank you			
			5
	Ask if interviewee would like to say anything else about their experienes in relattion to the RHI and biomethane		
	 Explain that we will be selecting a small number of applications for more in-depth research, through conducting further interviews with others inviolved in the decision-making process. If this application, try to establish who the other most significant stakeholders in or influencers of the decision-making process for the plant in question. Get names and contact details for those mentioned if possible, or arrange to gather this via follow-up email. 	You will already have established other key organisations involved (row 27) so gather contact info for them and ask about any others, for example: • Other decision-makers within the applicant organization • Other equity partners in the plant • Feedstock supplier (where this is different from the applicant) • Installer • Plant manufacturer • Consultant/adviser • Investor/finance stakeholder • Gas Network Operator • Recipient of digestates • Users of biogas • Environment Agency • Planning Authority	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Explain that for those selected for more in-depth research, we would like to review key documentation relating to the installation and ask if this would be possible and what type of documentation could be made available	 We are particularly interested in documentation which provides information on the business case for the installation. This might include: business plans planning applications All documentation would be referenced without any attribution so that it could not be associated with any particular application or organisation. 	
	Thank the participant for their time. Reiterate that their anonymity will protected in our reporting. Tell them they are welcome to contact members of the study team to ask questions at a later date if they wish		
	If they agreed to the recording potentially being shared with BEIS, check again that they are still happy for this to happen.		
	Check if they are happy to be contacted for future research on renewable heat		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	END INTERVIEW		

Stakeholder topic guides

The stakeholder topic guides are structured with generic stakeholder introduction and close sections, then with topic guides specific to each stakeholder type.

Stakeholder introduction

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
General guidance and resources			
	How to use the topic guides This sheet contains the introduction section, which will be common to all interviews. The remainder of the workbook contains a 'menu' of other topic areas. Based on the information in the stakeholder map and further exploration of the interviewee's role (see below) you can then decide which of the other topics to cover in the interview.		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	 Protocol if interviewee is located in 'sub-optimum' location Includes any situation in which the location of the interviewee is likely to result in sub-optimum interview (e.g. because of distractions or other interference). This will include situations when an interviewee is: outside, driving, or inside but in a distracting environment (e.g. due to significant noise). In these cases, our plan is to: Ask if the interviewee can move to a quiet location, if possible (if driving, we will ask if they are able to pull over for the duration of the interview) If they are not able to do this, then we will ask if we can reschedule the interview Our rationale for postponing is that it is better to risk the interviewe), than conducting an interview which doesn't give us the opportunity to collect the data we need. 	Sources of advice for applicant complaints All complaints relating to the RHI should be directed toward Ofgem. If you capture any details about their complaint it would be useful to pass that info on to the BEIS team (anonymised if necessary).	
Introduction			
Aim: To introduce th	e research, ensure the interviewee is aware of and set the cor	text for the proceeding discussion	5

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Keep the intro as brief as possible to leave room for the interview proper	 Introduce yourself and CAG Consultants [very brief] State that the evaluation has been commissioned by BEIS [no need to provide more detail than this] Introduce the study: Overall objective of the research is to understand the role that the RHI plays in the business case for biomethane installations, and the impact of the recent reforms on the decsion making process of applicants and the wider supply chain Findings will inform government policy development about support for biomethane going forward Talk through key points about the interview: Length of interview [estimated 30-45 minutes] 		
	 Data handling, privacy, recording Tell respondent that the Interview data will be stored securely in accordance with the GDPR Check they received information regarding the privacy notice Explain that we would like to record the interview and explain that the recording, transcription and notes will not be shared outside of the research consortium, without their explicit consent Check that they consent to you recording the interview, lift they don't, still go ahead with interview, 		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	 just take notes] Read out the following: "To support the analysis of the interview data we may share extracts or summaries of your interview transcript with the Department for Business, Energy and Industrial Strategy. We will also share a small sample of interview recordings with BEIS to allow them to carry out quality assurance of the research. Are you happy for your information to be shared with BEIS for these purposes?" [record whether the participant's answer is yes or no] [if they are hesitant, you could also reassure them that: the full transcript of the interview will not be shared with the Department for Business, Energy and Industrial Strategy. And we will endeavour to ensure that interview participants are not able to be identified, although we cannot guarantee this will be the case. Interview information will not be shared beyond BEIS. We will also check with them again at the end of the interview] [if the participant says they would prefer for any element of the transcript not to be shared with BEIS, 		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	record this, tell them that we will respect this wish, and proceed with interview anyway]		
	Before you begin: - Emphasise that there are no wrong or right answers. We want to hear their experiences and views. We want to hear what they have to say, in their own words - Ask the interviewee if they have questions before they start		
Application background	b b b b b b b b b b b b b b b b b b b		
Aim: to help research participants 'warm-up', confirm and ascertain key background information particularly in relation to their role in the supply chain			5

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Their role in the supply chain	Start by asking an open question about their role in the biomethane supply chain, probing for as much detail as possible. Then move to seeking to establish which sets of topics to explore. You may need to prioritise - focus on the role identified in the stakeholder map if this is appropriate. In order to decide which further topics to explore, we need to know if they do or will: - own AD plant supplying biogas to biomethane installations - supply feedstocks - finance installations - own land on which installation(s) are sited - buy and/or use digestate - buy and/or use biomethane - act as a consultant or adviser on the development of biomethane installations - operate the gas network which plants inject to	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Which other organisations in the supply chain do they have a relationship with and how were they formed?	 Through this topic we need to build an understanding of the different organisations involved in different aspects of the supply chain: what is their relationship with RHI applicant organisations? which other organisations involved in biomethane installations do they have a relationship with? which other organisations do they have a relationship with in order to carry out their role in relation to biomethane installations, e.g. if they supply feedstock, do they purchase or collect any of this from others? If they buy/use/collect digestate, do they supply this to others? etc and how the relationships between them were formed: at what point did they get involved in biomethane? who approached who, and did RHI play any role, e.g. did the availability of RHI trigger the approach and divert them for other related activity? did the reforms play a role, e.g. feedstock rules leading to new 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		feedstock suppliers being needed? - how were the approaches made?	
	Explore the nature of the relationship with those other organisations	 Are contracts in place? Over what period? Fixed or variable fee/cost (where applicable)? If long-term contracts are not in place, e.g. for feedstock supply, how sensitive is the relationship to fluctuations in prices/costs? For plants that have not yet been commissioned, such contracts may not yet be finalised so this may be a somewhat hypothetical discussion in some cases. 	
	Explore what the interviewee sees as the principal benefits of their involvement in biomethane installations	 Prompts: What was it about their circumstances in particular that led them to get involved in biomethane installations? Probes: was it purely financial? are there other benefits, e.g. 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		environmental? - does it address a problem/cost, e.g. dealing with a waste product, making use of a redundant site?	

Anaerobic digestion plant owner

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Questions for owners of AD pla	nt supplying biogas to biomethane	e installations	
Purpose: to explore, in-depth, the impact of RHI-supported biomethane installations on the development and operation of AD plants or other linked plants such as Thermal Hydrolysis plants in the water sector		15	

For ease, the topics and questions in this section are phrased as if the biomethane installation has already been built. Where this is not the case, phrasing will need to be adjusted	Did your AD plants exist prior to biomethane installations being added? Or have you built them specifically to supply biogas to biomethane installations, or both?	If existed prior: - what uses was the biogas put to? - what income streams were associated with those uses? - will any of those prior uses and income streams continue? - what will happen to any redundant plant associated with those previous uses? If built specifically to supply the biomethane installation: - will the biogas be put to any other uses? - will there be any income streams associated with those uses? - has the plant owner had direct interaction with Ofgem and/or BEIS? Either in relation to the scheme or more generally, e.g. lobbying, making complaints etc.	
	Can you describe the most significant elements of the business case for your AD plant(s)	Ask them to identify the most significant elements behind the business case for the AD plants which supply biomethane installation: - income from selling biogas to the biomethane installation(s) - FiTs/ROs for electricity from CHP - other income streams/subsidies - avoided costs (e.g. landfill tax or incineration costs) - income from digestate sale - own use of biogas (possibly including RHI)	

		 availability/cost of finance availability/price/quality of feedstock availability/price of suitable technology availlability of site for plant other non-financial factors
Spend time to fully explore this	Explain that you would like to go into more detail about the elements they have referred to as being particularly important in their business case. Go through each element they identified, one- by-one, and explore in as much depth as possible the factors that influenced the respondents' reasoning. Use the probes to aide this exploration (but also use your own probes where relevant) The factors may vary between plants, so it may be worth asking them to talk about a typical plant.	 Keep prompting and probing so that they explain their reasoning in full (i.e. keeping asking why) - how significant was each factor? - explore whether any of the factors were/are more elastic than others, e.g. were numerous suitable finance, feedstock and technology options available, were numerous sites available? - how sensitive were/are the business cases to fluctuations in the prices of the different elements identified, e.g. feedstock, technology, site? how significant were they in terms of the impact on returns on investment?

Clearly this is critical so spend time to fully explore this	Spend some time now to explore the significance of the associated biomethane installation(s): - to what extent was/were the business cases for the AD plant and biomethane plant dependent on each other? (please explain) - would they have proceeded with the AD plant if the biomethane plant had not gone ahead? - If so, how would it differ e.g. in size, nature of feedstock, likely return on investment? - If not, what would have happened instead, e.g. a different renewable technology, a different use of the land altogether?	It is possible that some plants would have gone ahead on the basis of producing biogas for CHP. Need to explore this. Whay was the RHI tariff for biogas CHP not chosen? what other technologies were considered? what would have happened in the absence of the RHI? If there is time: - ask about the impacts of RHI on the wider supply chain as they relate to this installation, e.g. impacts on feedstock supply and prices, costs of technology etc. - ask about the perceived significance of biomethane for the future of the AD market
	Explore whether the RHI reforms impacted on their AD plant(s)	Go through each of the key biomethane/biogas-related reforms in turn and explore whether and in what way they influenced the AD plant(s) and (to the extent that they know) associated biomethane installation(s), e.g. in terms of the timing of the development, size, feedstock, technology type etc. - changes to feedstock rules - did these impact on planned feedstock? or on planned uses for the digestate? - uplift in tariffs - if they opted in, what difference did this make to the

		viability/attractiveness of the scheme overall? do they think this impacted on the price they were able to charge for the biogas? - availability of tariff guarantees from May 2018 (wouldn't have affected them directly but do they think this was important for the biomethane installatiosn) - removal of two-stage commissioning in June 2018 (not all will be aware of this) - removal of digestate drying as an eligible heat use for biogas installations may have impacted on their plans for the digestate	
	Explore wider impacts on the AD plant(s)	Did other policy or funding changes have an impact? What barriers had to be overcome? And what solutions to these barriers were critical to being able to develop the plant and to establishing a viable business case?	
Having explored the previous topics, it is hoped that you will now be in a position to understand which of the CMOs in our candidate theory best apply in this case.	Seek to characterise the nature and significance of the RHI in the business case for a typical AD plant?	Try to establish which, if any, of the CMOs best fits the applicant: •CMO1a – Reformed RHI contributed to a viable business case - not viable without the reformed RHI •CMO1b – Pre-reform RHI contributed to a viable business case - not viable post- reform •CMO1c – RHI contributed to a viable business case – not viable without the RHI,	

	but the reforms were not a major influence •CMO3 – Irrespective of RHI, there was a viable business case – RHI was a windfall •CMO4 – Pre- or post-reform RHI improved the business case but it might have been viable anyway (i.e. a mix of CMO1 and CMO3) •CMO5 (may be observed alongside any of the other CMOs) – The technology choice, feedstock choice, scale or investment timing was influenced by the pre- or post-reform RHI •CMO6b – the business case for this proposed investment is still not viable, despite being approved for pre-reform RHI, and it's unlikely to go ahead
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Financier

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Questions for financiers of bion	nethane installations		
Purpose: to explore, in-depth, t	he impact of the RHI on the	business case for biomethane installations	20

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Explore the type of finance company that they are and the pattern of their investment in biomethane	For example do they only invest in renewable energy, or have that remit from their backers? Or are they general investors looking for the best return on investment across a number of sectors. This relates to the funds available as well – is there a big pot of money with 'biomethane' written on it waiting to be spent, or is the money coming out of renewables pot, or a general pot.	
	Can you describe the most significant elements of the business case for a typical biomethane installation, i.e. what factors does (or did) the business case typically most depend on?	Ask them to identify the most significant elements behind the business case for a typical biomethane installation. Allow responses to be offered without probing initially, then probe for ALL of the following:	
	How do these differ between installations?	 availability of RHI funding for biomethane RHI for biogas FiTs for electricity from CHP other income streams/subsidies (such as Renewable Fuel Transport Certificates, green gas certificates) gas price income from sale of carbon dioxide avoided costs (e.g. landfill tax or incineration costs) income from digestate sale own use of biogas availability/cost of finance 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		 availability/price/quality of feedstock availability/price of suitable technology availlability of site for plant and injection point other non-financial factors 	
Spend time to fully explore this	Explain that you would like to go into more detail about the elements they have referred to as being particularly important in their business case. Go through each element they identified, one- by-one, and explore in as much depth as possible the factors that influenced the respondents' reasoning. Use the probes to aide this exploration (but also use your own probes where relevant)	 what is the relative significance of each factor? explore whether any of the factors were/are more elastic than others, e.g. were numerous suitable finance, feedstock and technology options available, were numerous sites available? how sensitive was/is the business case to fluctuations in the prices of the different elements identified, e.g. feedstock, 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		technology, site? how significant were they in terms of the impact on returns on investment?	
Clearly this is critical so spend time to fully explore this	 whether RHI was mentioned in the previous question or not, spend some time now to explore its significance: could any installations go ahead without it? If so, how would they differ in the absence of RHI, e.g. in size, nature of feedstock? how sensitive are business cases to fluctuations in the tariff? 		
	More generally, how does RHI influence potential financing for biomethane plants?	 what rate of return do they generally look for on this type of investment? how does this vary according to the perceived riskiness of the investment? how risky is biomethane investment, from their perspective, and why? how does the RHI affect the riskiness and attractiveness of the investment (probe for different elements e.g. fixed tariff, 20 year timeframe, tariff guarantee, level of tariff etc)? how does the riskiness of biomethane 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		 investment compare to biogas CHP or other non-RHI technologies? how has the riskiness of biomethane investments changed in recent years, and why? how do they perceive the riskiness of biomethane investments going forward, and why? how significant are other non-RHI factors, e.g. long term expectations for the market, or long term expectations for the wider policy landscape (like waste management)? 	
	Explore the impact of the each of the RHI reforms on the biomethane market	 Go through each of the key biomethane-related reforms in turn and explore whether and in what way they influenced the biomethane market, e.g. in terms of the timing of applications, size, feedstock, technology type etc. changes to feedstock rules - to what extent did this constrain the market? uplift in tariffs - what difference did this make to the viability/attractiveness of schemes? availability of tariff guarantees from May 2018 removal of two-stage commissioning in June 2018(not all will be aware of this) removal of digestate drying as an eligible 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		heat use for biogas installations may also have impacted decisions	
	Seek to characterise the nature and significance of the RHI in a typical business case for a biomethane installation	 Try to establish which, if any, of the CMOs best fits a typical case: •CMO1a – Reformed RHI contributed to a viable business case for this proposed biomethane installation - not viable without the reformed RHI •CMO1b – Pre-reform RHI contributed to a viable business case for this proposed biomethane installation - not viable postreform •CMO1c – RHI contributed to a viable business case for this proposed biomethane installation - not viable postreform •CMO1c – RHI contributed to a viable business case for this proposed biomethane installation - not viable without the RHI, but the reforms were not a major influence •CMO3 – Irrespective of RHI, there was a viable business case for this proposed biomethane installation – RHI was a windfall •CMO4 – Pre- or post-reform RHI improved the business case for this proposed 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		biomethane installation but it might have been viable anyway (i.e. a mix of CMO1 and CMO3) •CMO5 (may be observed alongside any of the other CMOs) – The technology choice, feedstock choice, scale or investment timing of this proposed biomethane installation was influenced by the pre- or post-reform RHI •CMO6b – the business case for this proposed biomethane investment is still not viable, despite being approved for pre-reform RHI, and it's unlikely to go ahead How many of these CMOs apply in the market?	
Ask if they are involved in any installations which have not yet been commissioned	For installations that have not yet been commissioned: How likely is it that the installation will be completed and commissioned? How pivotal is their role as financier? (is the finance agreed or is the installation still dependent on their decision? Is the applicant likely to have other finance options?) What factors might prevent it proceeding? What happens from the finance perspective if	 Where relevant, probe for: failure to secure necessary finance other schemes being more attractive/profitable (for financiers looking at multiple schemes) planning issues (difficulties in securing the necessary permissions or being given restrictive planning conditions) permitting issues issues in securing a Tariff Guarantee feedstock supply issues grid connection issues commissioning not feasible before tariff 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	the installation does not proceed? How much investment has already been made, and is there a mechanism for recouping this?	guarantee deadline - problems with cost or reliability of proposed technology We need to be able to link any factors identified to the contexts, i.e. what is it about this particular installation that means these factors are significant? would they be less significant in a different context? E.g. is everyone struggling to get finance or permits or planning permission or is it particular types of installations?	

Landowner

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Questions for landowners of sites with biomethane installations (note that where the landowner is a farmer, you may need to cover feedstock and/or digestate questions as well)			
Purpose: to explore the impact	of the RHI-supported biometh	nane installation on the development of this site	15

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Further explore the relationship with the applicant organisation	Are they simply leasing land, or were they involved in putting together the plans for the plant? Have they had direct interaction wiith Ofgem and/or BEIS? Either in relation to the scheme or more generally, e.g. lobbying, making complaints etc.	
For ease, the topics and questions in this section are phrased as if the biomethane installation has already been built. Where this is not the case, phrasing will need to be adjusted	Previous use of the site	What was the site used for prior to the biomethane installation?	
	Selection of the site	 Why was this site considered suitable for the biomethane installation? There may be multiple reasons worth exploring here, such as: availability/cost proximity of feedstock (who may be the landowner) proximity of gas network 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		- proximity of digestate user (who may be the landowner)	
	Alternative uses	 What would the site most likely be used for if there were not a biomethane installation? Did they have other options/offers, e.g. other renewables? What would have been the benefits of these other uses? Why was the biomethane option chosen? Was it simply the most attractive option financially or were there other benefits? 	
	IF THE LANDOWNER IS A FARMER, explore the wider impacts of AD and biomethane on feedstocks or other aspects of their farming?	Do they see any impact of the RHI and the reforms (feedstock rules in particular) on the demand for, and prices of, straw and crops? What is the impact of more animal slurry being utilised for biogas production?	

Feedstock supplier

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Questions for feedstock supplier	rs of biomethane installations		
Purpose: to explore the impact of	of RHI-supported biomethane installations on the	e feedstock supply and vice versa	15
We understand that some feedstock supplier are able to charge for their feedstock, whilst others pay a gate fee for 'disposing' of their feedstock.	Source of feedstock	This may be very straightforward, e.g. a single farmer supplying their own crops/slurry/other farm waste, or more complex, e.g. a company collecting food waste from multiple sources.	
	Pre-treatment of feedstock	Is the feedstock pre-treated in any way? (we know that some feedstocks go through a hydrolosis process to increase gas yield) If so, who does this - feedstock supplier or AD plant owner? If so, how does this impact on gate fees or prices?	
	Quality of feedstock	Is the quality/composition of the feedstock variable? Does this have implications for the AD process or for their contract?	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Previous use of the feedstock	Is the feedstock being diverted from a previous use? What was this? What price/fee did they previously pay/get and how does this compare? Are there any wider benefits/disbenefits of feedstock being diverted from this use (e.g. environmental, soil improvement)?	
	Alternative uses/crops	Where would the feedstock go if not used in biomethane plants? What alternative price/fee would they get? Are there any other factors (e.g. environmental) that would be different in this case?	
		Or (for crop-based feedstocks) would they produce something else if they weren't producing this crop for feedstock purposes? What implications would this have (financially/environmentally)?	
		Or (for local authority food waste) would they still collect food waste if they did not have a contract for purchase by an AD or biomethane plant? If so, what would they do with food waste if not used by this plant?	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Benefits of supplying the installation	What are the benefits of supplying feedstock to biomethane plants? Are they purely financial, e.g. higher prices or lower gate fees than previous use? Are there other benefits, e.g. environmental? Please gather as much financial information on prices/gate fees as possible.	
	Impacts of the RHI on feedstock supply more generally	Is the interviewee aware of any wider impacts of the RHI on feedstock supply? E.g. higher prices/lower gate fees For example, are there cumulative impacts in their area of multiple plants coming onstream? Any other future issues (e.g. more food waste becoming available through increased local authority collections?)	

Digestate user

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Questions for users or collectors	s digestate from biomethane installations		
Purpose: to explore the impact o	of RHI-supported biomethane installations on dig	gestate use and vice versa	15
We understand that some installations are able to charge for their digestate, whilst others pay for it to be collected.	Use and treatment of digestate	Some plants simply pass the digestate to the landowner for use locally. In other cases it is collected by a contractor as part of a wider distribution chain. This is partly dependent on the feedstock type. It would be good to clarify if this is the case. Probe for an understanding of how and where the digestate is used and what determines how it is used - why does some digestate have value whilst others not? Is it processed prior to this use? If so, what is the nature of the processing and who carries it out? What is the impact of this processing on the nature of its eventual use and/or its value? How do uses/volumes/quality compare to digestate from a normal AD plant (one that does not include upgrading to biomethane)?	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Benefits of using the digestate	 What are the benefits of using the digestate from biomethane installations Are they purely financial? E.g. free or cheap soil conditioner for use or sale Are there other benefits, e.g. environmental? How do the benefits/payments/risks compare to the use of digestate from a normal AD plant (one that does not include upgrading to biomethane)? Please gather as much financial information on prices/fees as possible. 	
	Impacts of the RHI on digestate supply more generally	Is the interviewee aware of any wider impacts of the RHI on digestate supply? E.g. on price or availability, number of operators in the market etc	
	Wider impacts on digestate supply and usage	What other regulatory/policy/other factors influence what they can do with the digestate, e.g. we know that air quality is being discussed across the industry, so how would that affect them?	

Biomethane purchaser

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Questions for purchasers of b	iomethane (gas shippers)		
Purpose: to explore the impac	ct of the RHI on the biomethane market		15
	Their role in relation to biomethane installations	 This will have been explored, to some extent, in the intro section but it would be good to get as much detail as possible regarding how their role works. How many installations do they buy from? Who do they sell to? What is the nature of their relationship with the gas network operator? Do they have any direct interaction with Ofgem or BEIS in relation to this installation or more generally? 	
	How the price for gas varies between installations	 Is there a significant difference between the price paid for gas from different installations? How are prices agreed? What factors determine the price paid? To what extent do prices vary over time? What factors determine this? 	

	What is the relationship between the prices they offer biomethane producers and the availability and pricing of RTFCs and green gas certificates? (who gets the revenue from these - the shipper or the producer)?	
Impacts of the RHI on biomethane supply more generally	Is the interviewee aware of any wider impacts of the RHI on biomethane supply? E.g. on price levels. On gas quality/content? What are the other key factors which are impacting on supply and demand at the moment? E.g. availability of capacity within different regions of the gas network; tolerance of variations to gas quality arising from increased biomethane injection; quality requirements of the national gas network; organisational capacity of local gas network operators to authorise gas injection plants; future development of renewable gas market (e.g. RTFC, green gas certificates); other?	
Grid-related issues and level of awareness of them amongst biomethane plant developers	 What grid-related constraints/pressures are there which impact on biomethane plants? How aware of these issues do biomethane developers tend to be? To what extent do they engage with the developers in advance of plants being developed? Is the flurry of new biomethane development, and the deadline for TG-installations (31 Jan 2020) causing any problems? What is the 	

	extent of these problems? Are any moves being made to overcome them?	
Propsects for the future of the market	What is the longer term strategic significance of biomethane? How can Government work better with industry to support biomethane injection?	

Technology supplier

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)	
Questions for biomethane teo	chnology suppliers			
Purpose: to explore the impa	Purpose: to explore the impact of the RHI on the biomethane market			
	Their role in relation to biomethane installations	What aspects of biomethane technology do they supply? Do they also play a role in installation or operation of the plants? Do they ever take a financial stake in a plant?		
		Do they have any direct interaction with		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		Ofgem or BEIS in relation to specific installations or more generally?	
	Impacts of the RHI (including the reforms) on their business	To what extent has the RHI impacted on the market for their technologies? Has it significantly affected demand?	
		Has it led to increased competition in the market? If so, who from?	
		Has it impacted on the price they charge for their products?	
		Have there been any significant product innovations in recent years? Has the RHI played any role in this?	
		What impact did the reform announcements (Dec 16) and the main reform implementation (May 18) have on their business? Which aspects of the reforms in particular played a role?	
	Issues relating to plants not yet commissioned	Are they involved in supplying plant to installations which have not yet been commissioned?	
		Is the flurry of new biomethane development,	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		and the deadline for TG-installations (31 Jan 2020) causing any problems? What is the extent of these problems? Are any moves being made to overcome them?	
	Propsects for the future of the market	What is the longer term strategic significance of biomethane in the UK? What are the prospects beyond the current RHI? What are their plans for adjusting to this change? How can Government work better with industry to support biomethane injection?	

Gas network operator

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Questions for gas network ope	erators		
Purpose: to explore the impact of the RHI on the biomethane market			15

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	Their role in relation to biomethane installations	 This will have been explored, to some extent, in the intro section but it would be good to get as much detail as possible regarding how their role works. What steps does a biomethane plant have to go through to get permission to inject gas into their network, and who is involved within their organisation? Do they dictate where gas is needed and only install or open access to injection points where is suits them? Or will they take any gas available as long as it is economically viable to do so? What dictates the costs they charge for connections? 	
	How many biomethane projects are they involved in?	 How many biomethane installations are already connected to their network? How many applications for biomethane injection are they currently processing? Does their network have the gas capacity to handle these proposed sources of biomethane, and if not, why not? Do they have the organisational capacity to 	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		handle these applications, and if not, why not?	
	Impacts of the RHI on biomethane supply and local gas networks more generally	Are there any wider issues arising from increased applications for gas injection from biomethane plants, in their local area or other parts of the gas grid?	
	Grid-related issues and level of awareness of them amongst biomethane plant developers	 What grid-related constraints/pressures are there which impact on biomethane plants? How aware of these issues do biomethane developers tend to be? To what extent do they engage with the developers in advance of plants being developed? Is the flurry of new biomethane development, and the deadline for TG-installations (31 Jan 2020) causing any problems? What is the extent of these problems? Are any moves being made to overcome them? 	
	Propsects for the future of the biomethane market	What is the longer term strategic significance of biomethane?	

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
		How can Government work better with industry to support biomethane injection?	

Stakeholder close

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
Interview close and thank you			
			2
	Ask if interviewee would like to say anything else about their experienes in relation to the RHI and biomethane		
	Thank the participant for their time. Reiterate that their anonymity will protected in our reporting. Tell them they are welcome to contact members of the study team to ask questions at a later date if they wish		

Guidance for interviewer	Sub-topics	Prompts and probes	Indicative timing (mins)
	If they agreed to the recording potentially being shared with BEIS, check again that they are still happy for this to happen.		
	Check if they are happy to be contacted for future research on renewable heat		
	END INTERVIEW		

This publication is available from: www.gov.uk/government/publications/rhi-evaluation-evidence-report-biomethane-installations

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