Department for Energy Security & Net Zero

Green Gas Support Scheme and Green Gas Levy Evaluation

Second Annual Interim Report: Annexes

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Contents

Annex 1: Evaluation Questions 4
GGSS Process Evaluation Questions 4
GGSS Impact Evaluation Questions 4
GGL Process Evaluation Questions 5
GGL Impact Evaluation Questions 6
Annex 2: Theory of Change 7
GGSS Theory of Change 7
GGSS Theory of Change: Assumptions and Risks 11
GGL Theory of Change 12
GGL Theory of Change: Assumptions and Risks 15
Annex 3: Research Tools 16
Annex 4: Application Data Analysis 28
Annex 5: Qualitative Thematic Analysis 30
Annex 6: Interim Contribution Analysis 36
GGSS Contribution Claim 1 37
GGSS Contribution Claim 2 41
GGSS Contribution Claim 3 43
GGSS Contribution Claim 4 46
GGSS Contribution Claim 5 49
GGSS Contribution Claim 6 52
GGSS Contribution Claim 7 55
GGSS Contribution Claim 8 59
GGL Contribution Claim 1 61
GGL Contribution Claim 2 65
GGL Contribution Claim 3 66

Annex 1: Evaluation Questions

This Annex lists the evaluation questions that were under investigation in this evaluation report. It is a subset of the list agreed with the Department for the full evaluation of the GGSS and GGL.

GGSS Process Evaluation Questions

1. How effective has the implementation and delivery of the scheme been?

    a. What has been the experience of the administration of the scheme (by Ofgem), including payments processes by applicants? Has it created an unnecessary applicant burden or any barriers to further deployment under the scheme?

    b. What problems have applicants faced during the application process?

2. How has the GGSS budget management (budget caps / Annual Tariff Reviews / degressions) affected the schemes attractiveness?

3. How has interaction between the GGSS and other directly linked policies, such as the Renewable Transport Fuel Obligation (RTFO) and Defra's Simpler Recycling policy, impacted applications and participants?

GGSS Impact Evaluation Questions

4. Has the scheme achieved its intended impacts?

    a. Including:
    i: increasing deployment of renewable heat;
    ii: reducing GHG emissions through decarbonising homes and businesses;
    iii: delivering expected carbon savings;
    iv: increasing investment in the AD sector in the UK.
    b. To what extent can the achievement of objectives be attributed to the scheme, in comparison to other policies or market factors?

5. What other impacts has the scheme had?

    a. Has the GGSS contributed to the maintenance/ creation of employment opportunities in the AD sector?
    b. To what extent has the scheme impacted areas including air quality?
    c. What has been the typical feedstock mix of a biomethane plants deployed under the scheme?

6. How has the GGSS encouraged the development of a more robust and independent market in the AD sector?

a. In what ways, and to what extent, has the scheme impacted the longer-term direction and prospects for the AD industry in the UK?
b. Has the GGSS supported the AD industry to be ready for potential future support using a market- based mechanism?
c. What are the implications of findings for future schemes/ delivery or rollout to other settings?

7. How has the design of the scheme (including tariff levels, tiering, degression, ATRs, and eligibility requirements) supported achievement of the scheme objectives?

a. To what extent has the scheme design supported the industry to deploy AD plants?
b. What impact has the GGSS had on AD deployment and efficiency of production?
c. How has the overall subsidy mechanism (15-year, three-tiered tariff) influenced the achievement of the identified impacts?
d. In what ways (through which mechanisms) has the scheme altered (or not) the decision making, activities or investments of stakeholders? What impacts have these changes contributed to?
e. What other factors (e.g. Defra's Simpler Recycling policy, RTFOs) have influenced the scale and nature of deployment and how have they interacted with the scheme?
f. In respect of RTFOs, has interaction between the GGSS and RTFO's led to changes in producer flexibility or production levels?
g. Has the scheme encouraged or stifled innovation? What lessons can be learnt from the scheme to support future policy design?

GGL Process Evaluation Questions

9. How effective has the implementation of the GGL been?

a. Are gas suppliers satisfied with the performance of Ofgem administering the GGL, such as in collecting levy payments, chasing non-compliance etc.?
b. Can the Department do anything to support Ofgem to improve its performance?
c. Have the costs/burdens imposed on gas suppliers due to administrative processes been proportionate to the size of the levy/expectations?
d. What opportunities exist for reducing the administrative burden of the levy?

10. Have the administrative processes been sufficient to collect funds in the expected manner?

a. Were the compliance and enforcement measures effective in mitigating against non-compliance and in addressing non-compliance when it arose?
b. Were the administration timings suitable, giving gas suppliers enough time to pay levy, lodge credit cover, pay mutualisation costs, pay penalties?

GGL Impact Evaluation Questions

11. What have the impacts of the levy been, and how did they fit with the Department's expectations?

c. Did the GGL cover the costs of the GGSS?
d. Is it compatible with existing industry processes?
e. Have the financial management systems been implemented within the GGSS implementation time scales?
f. Were there instances of gas supplier non-compliance? Was this deliberate or accidental?

12. What burden has the levy imposed on gas suppliers?

g. Did the levy lead to high time and cost burden for Ofgem to administer the levy?
h. Were the administrative costs for gas suppliers as expected? Were there any unforeseen costs?

13. How has the design of the levy supported the achievement of the GGL objectives?

i. How has the overall levy design, including the meter point design, budget and financial management, and enforcement & compliance, influenced the achievement of the objectives?
j. What challenges to meeting the objectives arose during the length of the levy, affecting its success and effectiveness?

Annex 2: Theory of Change

This Annex outlines the rationale for using theories of change in policy evaluation and presents the GGSS and GGL ToCs developed in this study, as well as the assumptions and risks associated with each stage outlined in the respective ToCs.

A ToC is a tool to cohesively understand the complexities of a policy by setting out the steps through which it is expected to lead to its desired outcomes. Its aim is to explain how a certain intervention leads to a chain of results that are intended or are observed. It is produced through the synthesis of any existing evidence of causal pathways. A ToC is an important tool in policy evaluation as it provides an opportunity to develop core evaluation questions, to identify key indicators for monitoring and identifying gaps in available data, and to provide a structure for data analysis and reporting.

GGSS Theory of Change

In the scoping stage of the evaluation, the ex-ante ToC for the GGSS was refined following a detailed document review, scoping interviews with the relevant department policy team, and a theory-building workshop event. The ToC diagram developed for the evaluation is presented in Figure 5, and the associated assumptions and risks are listed on the subsequent pages. Below is a narrative overview of the GGSS ToC.

Context

Items included as part of the context of the ToC can be divided into enablers and barriers to realisation of benefits, and are colour coded accordingly:

- The enabling contexts identified include the current AD biomethane context of high capital and operating costs compared to a gas counterfactual, the need to meet near-term carbon budgets and concern on the impact on the uptake of biomethane production in the absence of support post-ND RHI. Other contexts include wider supportive policies to support biomethane generation and feedstock availability.
- Barriers include supply chain challenges, constraints with feedstock availability, planning permission delays and the inflationary context, with the expectation that these would influence applicant decision making and the ability to apply.

Inputs

Inputs are divided by government inputs and enabling inputs from the market inputs:

- Government inputs include the cost of tariffs (funded by the GGL) and costs to operate and design policy, as well as wider enabling policy and support.
- Applicants have inputs including preparing applications (including attracting investment, progressing planning) and the wider inputs include feedstock availability, and the wider biomethane industry have provided a source of evidence on costs to support policy design.

Activities

Activities are divided by Ofgem's role and the Department's role:

- For Ofgem, activities are focused on the application assessments, validating and calculating quarterly participant periodic data, ensuring compliance and enabling payments to suppliers.
- The Department's role focuses on budget management, stakeholder engagement and monitoring and evaluation.

Outputs

Outputs relate to the direct results of the GGSS, and the following outputs have been identified for plant deployment, the environment, the market, policy and wider outputs:

- For plant deployment, the payments based on the Tariff Guarantee are expected to improve the rate of return for investors to leverage investment and encourage capital development, and the scheme will drive applications to signal to the market continuity of government support for biomethane from the ND RHI.
- Environmental outputs relate to ensuring biomethane is sustainable, meeting requirements and is driven by compliance activities and sustainability guidelines.
- Policy outputs relate to the increased visibility of the government in the market as well as capturing additional evidence on the market as it progresses towards self-sustenance. This is driven primarily by monitoring and analysis, as well as the Mid-Scheme Review, drawing out key learning on the policy.
- Market outputs derive from the stakeholder engagement activities, driving awareness of the benefits and applications of biomethane (e.g. to new applicants).
- Finally, the flexibility of the scheme to support other outputs contributes towards increased biomethane deployed on the RTFO and for combined heat and power CHP electricity generation (through a CHP-boiler utilising unclaimed biomethane).

Outcomes

Outcomes are similarly divided broadly by deployment, environmental, market and other outcomes, and also capture the disbenefits of the programme:

- AD plant construction will mean more AD plants in the UK are operational and producing biomethane. Outcomes of this vary, including the environmental benefits of displacing natural gas and utilise waste. However, additional plants will mean that land-use may be directed towards supporting energy crops for AD (for the non-waste portion of plant feedstock mix) displacing other social benefits, and natural carbon storage.
- Through increased biomethane used for transport and electricity, the GGSS will contribute towards these sector decarbonisation strategies, and, ultimately, incremental increases in system decarbonisation.
- Environmental outcomes include the increase in waste feedstocks utilisation, and limits on lifetime emissions of the biomethane produced as a consequence of compliance with the sustainability requirements. These outcomes contribute towards avoided upstream

and downstream carbon emissions. However, digestate production and deployment may lead to increased ammonia emissions.

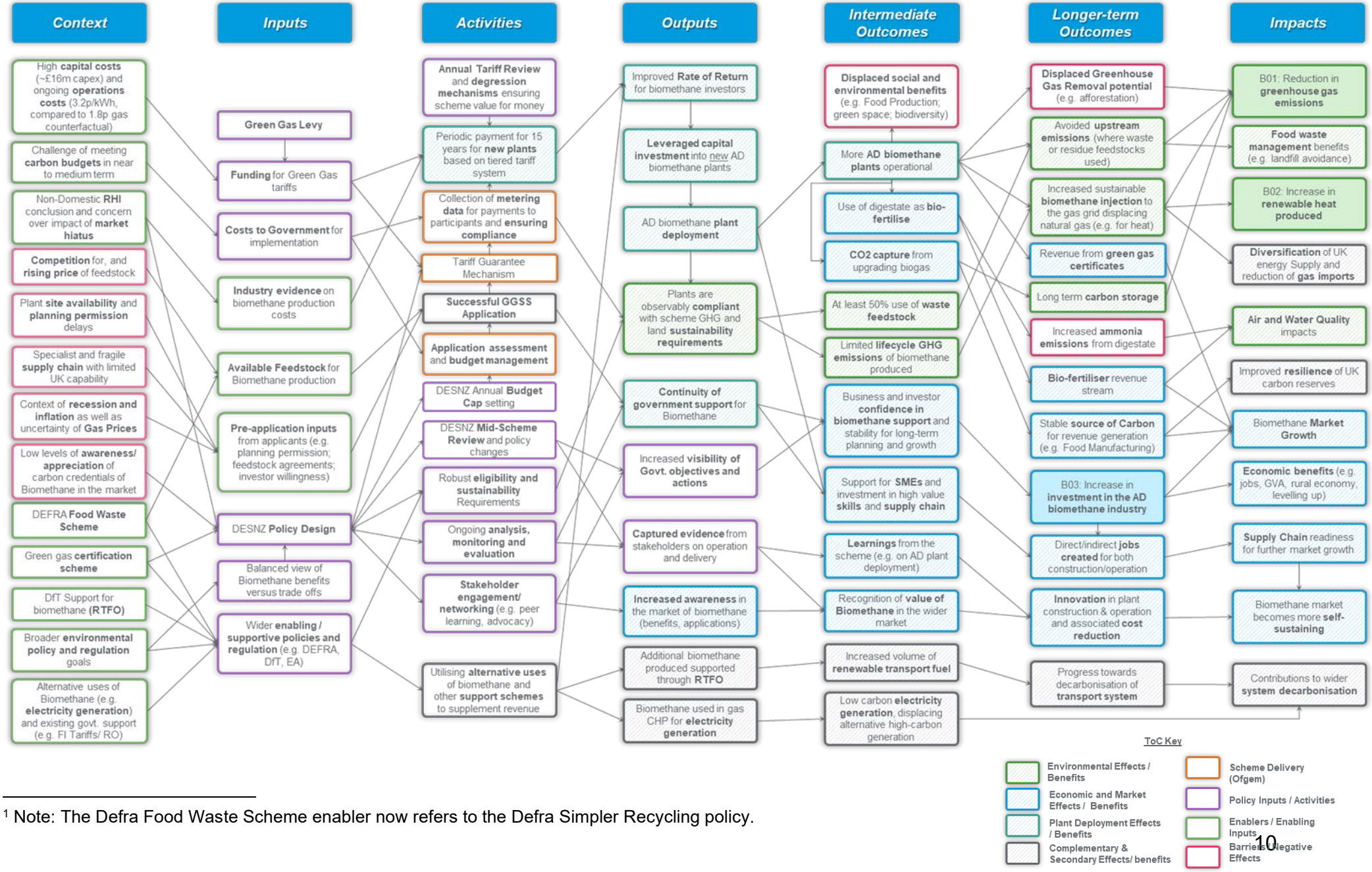
- The market outcomes are broad: increased AD plant deployment and operation leads to increased by-products (e.g. digestate for fertiliser, carbon captured) and revenue streams (e.g. green gas certificates). These each provide additional revenue streams for AD plant developers / investors, which is expected to help improve financial viability (and investment potential). Government support for the biomethane market is also expected to lead to increased confidence from investors and businesses, again supporting investment in the market. Opportunities for small and medium-sized enterprises (protecting skills and jobs) and innovative business models (to increase returns) are also anticipated to lead to market development and growth.

Impacts

The impacts are structured by the three core objectives of the GGSS (labelled B01, B02, and B03, respectively) and are subdivided into environmental, economic/market, and secondary effects.

- **B01** is a reduction in greenhouse gas emissions as a result of displacing natural gas with biomethane in the gas grid, as well as avoiding upstream emissions, meaning organic waste no longer ends up in landfill (where it will decompose and release CO_2 or methane into the atmosphere).
- **B02** is an increase in renewable heat as a consequence of increased biomethane injection, directly replacing natural gas used for heating.
- Other environmental benefits of increased biomethane generation include better food-waste management; although, they also include the costs of air and water quality issues from potential increases in ammonia emissions.
- **B03** is an increase in investment in the AD Biomethane industry are impacts on the wider biomethane market, including expected growth from increased new plant deployment, improved UK supply chain to meet further growth, economic benefits for rural economies.

Figure 1: GGSS Theory of Change Diagram[1]



[1] Note: The Defra Food Waste Scheme enabler now refers to the Defra Simpler Recycling policy.

GGSS Theory of Change: Assumptions and Risks

A key aspect of a ToC is profiling the assumptions that are made about the expected causal linkages, and the associated risks of inadequate assumptions. We have profiled the assumptions and risks made at different points of the overall Theory of Change.

Context and Inputs

Assumptions

- There is sufficient demand for the scheme from applicants.
- Feedstock is available and at a financially viable price.
- Defra's Simpler Recycling policy provide the incentive to apply.

Risks

- Risk of fraud from plants.
- Scheme uptake is low.
- Budget cap constrains deployable plants.
- Supply chain issues constrain deployment.
- Delays to Defra's Simpler Recycling policy.

Activities and Outputs

Assumptions

- New plants will not be deployed without intervention.
- Confidence in support/business model leverages sufficient capital.
- Annual tariffs appropriately set to incentivise deployment and ensure value for money.

Risks

- Plants are overcompensated (e.g. double subsidy with RTFO, high tariff rates, high gas prices).
- Construction prices impact financial viability.
- Ofgem unable to effectively deliver scheme (i.e. compliance, tariff guarantee mechanism, application assessment, and budget management).
- Plants are unable to deploy within their stated injection start date, plus the 182-day grace period.
- Tariff rates do not incentivise applications.

Outcomes and Impacts

Assumptions

- Gas Network has sufficient capacity / connection quality.
- Sufficient waste feedstock can be accessed.
- Increased deployment of plants leads to wider supply chain and market growth.
- Sustainability requirements are adhered to.
- Plants connect to low-pressure gas network, therefore contributing to heat decarbonisation.

Risks

- AD plants may be outcompeted for non-waste feedstock (e.g. increasing demand for bioenergy with carbon capture and storage (BECCS); improved financial viability of land-based greenhouse gas removal (e.g. through carbon pricing)).
- Green gas injection is lower than expected.
- Negative carbon impacts in biomethane production (e.g. leakage).

GGL Theory of Change

The ToC for the GGL evaluation was developed 'bottom up' by the evaluation team, through detailed document review, scoping interviews with the relevant department policy team, and a theory-building workshop event. It is presented in Figure 6, and the associated assumptions and risks are listed on the subsequent page.

Context

As in the GGSS ToC, the GGL ToC context section includes both barriers and enablers to the implementation of the GGL.

- The enablers and contextual factors driving the GGL include a need to fund the GGSS biomethane injection from sources beyond that of the Treasury, which held the position that biomethane funding would not be from the Exchequer, post the closure of the RHI. With examples of legislation in place and levies enacted for electricity supply, these also supported the development of the GGL.
- On barriers, the ToC highlights the context of financial pressures amongst gas suppliers, driven by wholesale gas price rises at the time of developing the ToC. This context saw a number of UK suppliers failing (in 2021 and 2022). Added to this context is the wider economic context of inflation and recession, expected to also have an impact on gas supplier stability.

Inputs

Inputs cover levy design, policy inputs, and inputs relating to deliver.

- On levy design, the ToC highlights how the GGL design phase brought together evidence from previous levies, expert opinions, and a set of principles for the new levy. Inputs also included understanding the market processes, an understanding of the

number of meter points in the market and an understanding of the level of green gas delivered by suppliers (to help set up the exemption).

- On policy inputs, the GGL draws on the GGSS deployment estimates (and resulting budget cap) to help with the setting of the levy rate. The Annual Budget for the GGSS will have headroom built in (based on the amount of risk that policymakers are willing to take) to provide the annual Overall Scheme Expenditure Budget cap, which informs the levy rate.
- Finally included in the input is the actual cost of administering the levy (by Ofgem) and the systems to enable the administration.

Activities

Activities broadly divide into setting an appropriate levy rate, collecting payments (as well as ensuring compliance), and gathering evidence.

- The ToC highlights how the levy rate estimated is confirmed with the Treasury ahead of the levy rate confirmation for the financial year (occurring a quarter before the financial year commences). It also highlights the actions of the Department, Ofgem and the Treasury in holding over any surplus levy collected (due to lower payments on the GGSS) to inform the next year's levy.
- The activities for Ofgem/gas suppliers in calculating levy amounts due for each supplier, ensuring payment and compliance is also highlighted. The ToC shows the process where suppliers pay the levy rate per gas meter they serve, per day, and also details the process of ensuring compliance (lodging credit cover to cover payments) and the measures taken to ensure compliance (communication and more punitive measures e.g. naming non-compliant suppliers).
- Finally, the levy is subject to ongoing monitoring and evaluation to capture evidence.

Outputs

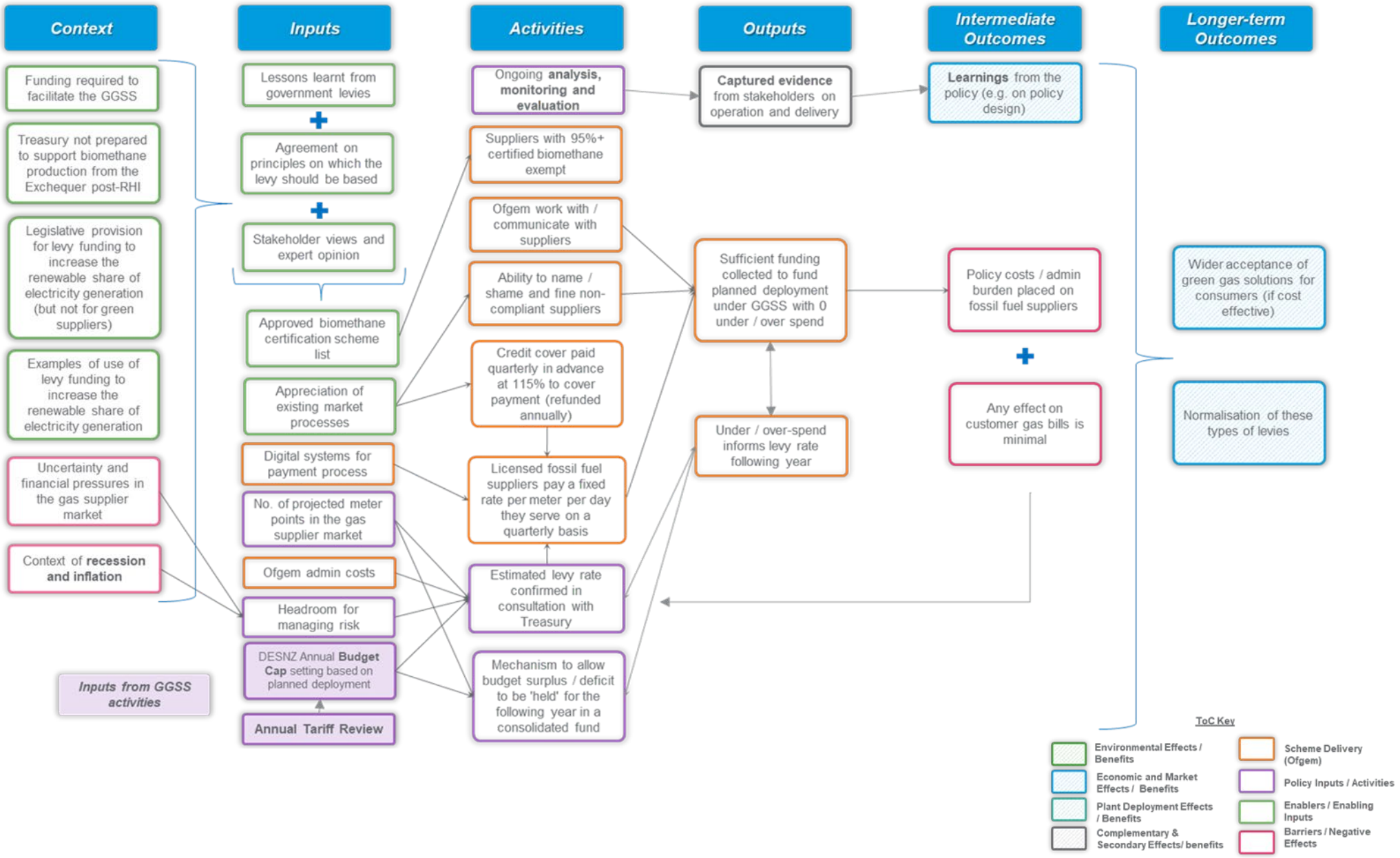
Given the sole objective of the GGL is to fund the GGSS, there are few outputs from activities beyond the GGL covering GGSS costs (plus scheme administration costs) and minimising the risk of over or underspend. This is driven by the levy setting process and supplier compliance with payments. Any over or underspend that does occur is fed back into the levy setting process for the following year. The only other outcome relates to the monitoring activities, which lead to new evidence on operation and delivery of the levy.

Outcomes

Finally, the ToC includes a number of intermediate, and longer-term outcomes.

- In the shorter term, the outcomes of the levy are generally negative, in that the cost of administration is placed on suppliers and are likely to feed into consumer bills. Although one more positive outcome is the learning from GGL on levy policy design.
- In the longer term, it is assumed that the levy may drive wider acceptance of these sort of solutions, as well as normalise green levies on gas.

Figure 2: Green Gas Levy Theory of Change



GGL Theory of Change: Assumptions and Risks

Context, Inputs and Activities

Assumptions

- Sufficient lead time to ensure gas suppliers can prepare for payment of the levy.
- Levy funds the full costs of the scheme, including all payments to participants, Ofgem administration costs, and to cover overspend and under-collection risks.
- Policy design minimises non-compliance.
- Ofgem systems effective to minimise deficits and delays.
- Relatively low proportion of the market are exempt from levy.

Risks

- Budget deficit.
- Budget surplus.
- Levy is not paid in the instance a supplier becomes insolvent.
- Ofgem have insufficient money to pay GGSS.

Output and Outcomes

Assumptions

- Policy costs / admin burden placed on fossil fuel suppliers is minimal and comfortably tolerated.
- Increased gas bill for customers is minimal and comfortably tolerated.
- Costs are passed onto customers (cost currently met by government as it is factored into energy price guarantee).

Risks

- Fuel poverty and specific impacts contained within the Small and Micro Business Assessment.

Annex 3: Research Tools

This Annex presents the topic guides used as part of the second GGSS process evaluation.

Topic guides were developed and used to structure the qualitative stakeholder interviews. The topic guides translate the evaluation questions into interview questions structured around ToC elements relevant to the workstream and stakeholder group concerned. This section includes the topic guides that were used for the GGSS Ongoing applicants (including a prompt for Unsuccessful applicants), Successful, and Non-Applicants.

Each topic guide began with an introduction to the programme, privacy notice alongside data and confidentiality note, and consent to transcription. Only the interview questions and prompts are presented in this Annex.

Ongoing Applicant

Note for interviewers – throughout, where an applicant says they aren't sure because they aren't yet injecting, if appropriate to the question, probe why they haven't made plans or are still uncertain.

Experience of the Application Process

0. **[Tweaked Question[2]] To start us off, can you give a little bit of background as to your current status in the GGSS application process?**

   Note to interviewer: To confirm that our information on projects is correct and future questions are phrased appropriately.

   What stage are you at now and how long have you been at that stage? How does this compare to what was planned?

1. **a) [Existing Question] What was your experience of providing the inputs required at Stage 1 and 2 of the GGSS application process?**

   b) Were any specific requirements of the application particularly burdensome or difficult to obtain?

   Prompt for: [New prompt] The timings of certain request for information and how that impacted the ease of application

   [New Question] Have you been able to progress through the GGSS application at the pace that you expected?

   Prompt: [for those that have experienced delays] Could you elaborate on the factors or circumstances that may have contributed to the delays in finalising the GGSS application and registration process?

   Prompt: Specific challenges / constraints

[2] 'Existing Question' refers to the questions that directly correspond to the Evaluation Questions. 'Tweaked Question' refers to the questions that are slightly amended versions of those that directly correspond to the Evaluation Question. 'New Question' refers to the questions that are additional to those that directly correspond to the Evaluation Questions.

Prompt: To what extent did the GHG emissions calculator[3] have a bearing on your ability to progress your application as you anticipated? Would any improvements or guidance have made this element of the application more straightforward.

[New Question] Have you submitted your stage three application yet? If so, can you describe your experience of submitting this.

a) [New Question] To what extent, if at all, have you made use of Ofgem's application guidance?

b) [New Question – follow up] What aspects of this have been useful or less useful?

5. What, if anything, would you change about the application process?

Unsuccessful Application (for applicants who were unsuccessful initially only)

Note to interviewer: *Interviewer will need to determine ahead of time if this is a repeat applicant or not. If not. Do not ask.* ***Script:*** *As we understand, your initial application to the GGSS was not successful. We wish to explore your experience of receiving feedback on your application and your subsequent reapplication.*

6. What feedback did you receive on your application?

- Prompt for: Was it clear to you why the application was unsuccessful?
- Prompt for: How did they action feedback for their re-application?

Wider Context and Barriers to application

a) [New Question] In your experience, have you encountered any challenges with the AD plant supply chain?

Prompt: Specific issues with the supply chain and how these can be overcome/ reasons for supply chain issues.

Prompt: Whether this has had any impact on their ability to apply/ the timing of application, and/or the expected impact on the wider market.

b) [New Question – Follow up for those that have identified any challenges] With the challenges that you referenced, have you seen any indication of improvements with regard these challenges?

a) [New Question] Are you aware that Defra has recently published their response to the Simpler Recycling consultation?

Note for interviewer: This includes reference to legislation that waste collection authorities in England must arrange weekly separate food waste collection, highlighting the government's preference that this be used of AD.

b) [New Question – Follow up] In your opinion, what, if any, impact do you expect this will have on the biomethane injection market?

Prompt: Likely impact on applications to the scheme?

Mid-Scheme Review

[3] This was referred to as the 'emissions savings calculator' in interviews because of how it was known, generally, to respondents.

9. **a) [New Question] In the past year, the Department have completed and published their response to the Mid-Scheme Review. Have you engaged with any part of the Mid-Scheme Review response?**

   b) [New Question – follow up] If you have, what do you think were the positive and negative aspects of the process?

   Prompt: What, if any, changes would have improved the process.

   Prompt: Feedback on timings of process, response, alignment with Defra Simpler Recycling Policy.

10. **A) [New Question] The Mid-Scheme Review identified a number of changes to the GGSS regulations which came into force on the 4th of June. Are you aware of the changes that have been/are being made to the regulations?**

    Note for interviewer: changes include extending the closing date of the scheme for new applications to March 2028 and encouraging the use of heat pumps for the production of biomethane by exempting from heat deductions

    b) [New Question – follow up] As an organisation. what are your opinions on these changes to the regulations?

    Prompt: Do you think this is likely to lead to improved ease of application or more applications?

    Prompt: Any other benefits?

Experiences of GGSS budget management mechanisms

11. **a) [New Question] The 2023 Annual Tariff Review led to an increase in the Tier 3 tariff rates, with Tiers 1 and 2 remaining the same as the previous years. Are you aware of the increase in tariff rates?**

    b) [Tweaked Question] How effective are the new tariff tier rates to ensure a fair return for biomethane injected?

    Prompt: *[For those that received their tariff guarantee before 1st October 2023]* Are you likely to take any steps to enable your organisation to benefit from tier three tariff increases? (for example, applying for additional capacity?)

    Prompt: *[For those applying after 1st Oct]* To what extent, if at all, did the tier three tariff increase influence the capacity that you applied for?

    Prompt: Will these changes have any impact on your decision making around biomethane production / how much you will inject?

    Prompt: Will these changes have any impact on your decision to claim biomethane under the RTFO instead of the GGSS

12. **a) [New Question] Have you engaged with the Annual Tariff Review Process?**

    Prompt: [for those that have not engaged] What are the reasons that you haven't engaged in the Annual Tariff Review process?

    b) [New Question- follow up] Do you have a sense of what works well and what works less well in the Annual Tariff Review process?

    Prompt: Are there any improvements that could be made? / Are there any additional factors which should be considered in relation to the annual tariff review?

13. **[Tweaked Question] In your opinion, how well do you think the GGSS budget management processes, such as the Annual Tariff Review, Budget Caps, and degression work to manage AD plant deployment onto the GGSS?**

    - Prompt for: Did aspects of budget management (such as budget caps) influence your view of the scheme prior to application?

    - Prompt for: Are budget management mechanisms likely to pose a barrier to other organisations considering a GGSS application?

    [New Question] How, if at all, are you made aware of changes made from the budget management processes outlined above?

    Prompt: Source of communications, perceptions on availability of information.

GGSS Outcomes (Testing the ToC)

15. **[New Question] If your plant progresses to register onto the GGSS, do you expect to be able to achieve the level of biomethane injection as set out in your application?**

    Prompt: Why / why not?

16. **[New Question] Have you sought to monetise any by-products from the production of biomethane?**

    Prompt: e.g., digestate for fertiliser, carbon captured and stored

    Prompt: How significant / important is this as part of the overall revenue generation?

    Prompt: for those who are uncertain on plans regarding bi-products, probe why there is still uncertainty or why they haven't planned for this?

17. **[New Question] To what extent, if at all, have you/your organisation been able to innovate with regard to biomethane production?**

    Prompt: Business models, efficiencies, accessing feedstocks, technological innovation (e.g., injection, sustainability)

18. **[New Question] From your perspective, have there been opportunities facilitated by the GGSS to share learning and experience across applicants/participants in relation to biomethane production and plant commissioning?**

    Prompt: How, if at all, have you benefited from this?

    Prompt: Has the GGSS played a role in facilitating learning and knowledge sharing, beyond the role played by existing industry bodies to share learning.

    [New Question] From your perspective, what factors have enabled or mitigated how the GGSS has affected the biomethane market?

    Prompt: In relation to jobs and skills, supply chain growth, improved confidence, improved perceptions of biomethane

    Prompt for: Why/why not, and the causal pathways leading to these impacts?

    Prompt for: Extent to which biomethane market is moving closer towards becoming self-sufficient / sustainable.

Interaction between the GGSS and other policies / schemes

20. **[New Question] Assuming you successfully register onto the scheme and start producing biomethane, do you anticipate utilising any additional government policies or non-government schemes ?**

    - Prompt for: e.g., RTFO, RGGO
    - Prompt for: Why / why not?
    - Prompt for: Are there other policy signals from government relating to biomethane support that would provide additional market confidence / impetus to apply?

21. **[New Question] Are you aware of any other challenges in relation to the wider available support for biomethane production?**

    - Prompt: Any challenges with the fact that the operation of the RGGO sits within one organisation, the Renewable Energy Assurance Limited
    - Prompt: Concerns relating to registering certifications in European markets (EU database issue)

Final remarks

22. **[Existing Question] Are there any other points that you would like to raise**

Successful Applicant

Introduction / Overview

1. **[New Question] To start us off, before we get into specific questions, can you give a little bit of background as to your current status regarding biomethane production on the GGSS?**

   Note to interviewer: To confirm that our information on projects is correct and future questions are phrased appropriately.

   - Prompt: Are you now producing and injecting biomethane? For how long have you been injecting?

Mid-Scheme Review

2. **a) [New Question] In the past year, the Department have completed and published their response to the Mid-Scheme Review. Have you engaged with any part of the Mid-Scheme Review response?**

   b) [New question – follow up] If you have, what do you think were the positive and negative aspects of the process?

   - Prompt: What, if any, changes would have improved the process?
   - Prompt: Feedback on timings of process, response, alignment with Defra Simpler Recycling Policy.

3. **a) [New Question] The Mid-Scheme Review identified a number of changes to the GGSS regulations which came into force on the 4th of June. Are you aware of the changes that have been/are being made to the regulations?**

   Note for interviewer: changes include extending the closing date of the scheme for new applications to March 2028 and encouraging the use of heat pumps for the production of biomethane by exempting from heat deductions

b) [New Question – follow up] As an organisation, what are your opinions on these changes to the regulations?

- Prompt: Do you think this is likely to lead to improved ease of application or more applications?

Wider Context

[New Question] Over the past year, what has been your experience of securing a supply of waste feedstock?

- Prompt: Any observed trends or changes?
- Prompt: Type of feedstock
- Prompt: If haven't experienced challenges themselves, ask for their views on the market overall and if there have been any changes / shifts?

a) [New Question] Are you aware that Defra has recently published their response to the Simpler Recycling consultation?

Note for interviewer: This includes reference to legislation that waste collection authorities in England must arrange weekly separate food waste collection, highlighting the government's preference that this be used of AD.

b) [New Question – Follow up] In your opinion, what, if any, impact do you expect this will have on the biomethane injection market?

- Prompt: Likely impact on applications to the scheme?

a) [New Question] In your experience, have you encountered any challenges with the AD plant supply chain?

- Prompt: Tweak based on plant experience. Some successful plants won't have had the same supply chain challenges as others.
- Prompt: Specific issues with the supply chain?
- Prompt: How might government best resolve these issues?

b) [New question – Follow up for those that have identified any challenges] With the challenges that you referenced, have you seen any indication of improvements with regard these challenges?

Experience of application processes

[New Question] Reflecting briefly on the GGSS application process, where you able to progress through this process at the pace that you expected?

- Prompt: [for those that experienced delays] Could you elaborate on the factors or circumstances that may have contributed to the delays in finalising the GGSS application and registration process?
- Prompt: To what extent did the emissions saving calculator have a bearing on your ability to progress your application as you anticipated? Would any improvements or guidance have made this element of the application more straightforward?

Experience of Post-Award Processes

8. **[Existing Question] Have the processes of metering data collection and tariff payment been straightforward? Have there been any challenges or issues in this process?**

Note to interviewer: Ensure participants are clear on whether their feedback relates to metering data collection or payment processes

- Prompt for: changes over time. I.e., any improvements from early in the scheme to now?
- Prompt for: Have you found the digital systems to support such payment processes to be easy to use?
- Prompt for: Are there any ways in which these processes could be improved / made more efficient?

9. **[Existing Question] How would you describe the effort and cost associated with meeting ongoing reporting requirements (e.g., metering, sustainability audit reporting, site visits)?**

- Prompt for: What monitoring data is requested? How accessible is this data to you?
- Prompt for: Were you able to use pre-existing data to meet reporting requirements or do you undertake additional data-gathering processes to gather evidence required?
- Prompt for: Does the level of effort and cost required to provide such data match the expectations you had prior to your application?
- Prompt for: Do you have any reflections on the site audits that Ofgem carry out?

10. **[Tweaked Question] What has your experience been of meeting GGSS sustainability requirements?**

Note for interviewer: this includes Greenhouse gas criteria, ensuring lifecycle emissions are less than or equal to 24gCO2 per MJ biomethane; the land criteria, where non-waste feedstocks are used, the must be sourced sustainably. Also, to note, the Department are producing a GHG calculator[4] to support applicants in reporting emissions, but this may or may not be published at the time of interview.

- Prompt for: Challenges faced/anticipated.
- Prompt for: Challenges or views on annual sustainability audit reports

11. **[Existing Question] Are there any additional elements of the administration of the scheme that could be improved?**

- Prompt for: Communications; data collection; monitoring and reporting; administrative burden

Experiences of GGSS budget management mechanisms

12. **a) [New Question] The 2023 Annual Tariff Review led to an increase in the Tier 3 tariff rates, with Tiers 1 and 2 remaining the same as the previous years. Are you aware of the increase in tariff rates?**

b) [Tweaked question] How effective are the new tariff tier rates to ensure a fair return for biomethane injected?

Prompt: *[For those that received their tariff guarantee before 1st October 2023]* Are you likely to take any steps to enable your organisation to benefit from tier three tariff increases? (for example, applying for additional capacity?)

Prompt: *[For those applying after 1st Oct]* To what extent, if at all, did the tier three tariff increase influence the capacity that you applied for?

Prompt: Will these changes have any impact on your decision making around biomethane production / how much you will inject?

[4] At the time of the interviews, it was generally believed by respondents that Ofgem were producing the GHG emissions calculator.

Prompt: Will these changes have any impact on your decision to claim biomethane under the RTFO instead of the GGSS

13. **a) [New Question] Have you engaged with the Annual Tariff Review Process?**

    Prompt: [for those that have not engaged] What are the reasons that you haven't engaged in the Annual Tariff Review process?

    b) [New Question- follow up] Do you have a sense of what works well and what works less well in the Annual Tariff Review process?

    Prompt: Are there any improvements that could be made? / Are there any additional factors which should be considered in relation to the Annual Tariff Review?

14. **[Tweaked Question] In your opinion, how well do you think the GGSS budget management processes, such as the Annual Tariff Review, Budget Caps, and degression work to manage AD plant deployment onto the GGSS?**

    - Prompt for: Did aspects of budget management (such as budget caps) influence your view of the scheme prior to application?

    - Prompt for: Are budget management mechanisms likely to pose a barrier to other organisations considering a GGSS application?

    [New Question] How, if at all, are you made aware of changes made from the budget management processes outlined above?

    Prompt: Source of communications, perceptions on availability of information.

GGSS Outcomes (Testing the ToC)

16. **[New Question] To what extent have you been able to meet the level of biomethane injection that was anticipated in your application?**

    - Prompt: Why / why not?

    - Prompt for: Any issues encountered and potential ways to resolve these issues.

17. **[New Question] Have you sought to monetise any by-products from the production of biomethane?**

    - Prompt: e.g., digestate for fertiliser, carbon captured and stored

    - Prompt: How significant / important is this as part of the overall revenue generation?

18. **[New Question] To what extent, if at all, have you/your organisation been able to innovate with regard to biomethane production?**

    - Prompt: Business models, efficiencies, accessing feedstocks, technological innovation (e.g., injection, sustainability)

19. **[New Question] From your perspective, have there been opportunities facilitated by the GGSS to share learning and experience across applicants/participants in relation to biomethane production and plant commissioning?**

    - Prompt: How, if at all, have you benefited from this?

    - Prompt: Has the GGSS played a role in facilitating learning and knowledge sharing, beyond the role played by existing industry bodies to share learning.

    [New Question] From your perspective, what factors have enabled or mitigated the how the GGSS has affected the biomethane market?

- Prompt: In relation to jobs and skills, supply chain growth, improved confidence, improved perceptions of biomethane
- Prompt for: Why/why not, and what factors have enabled or mitigated the market effects of the GGSS?
- Prompt for: To what extent do you believe the biomethane market is moving closer towards becoming self-sufficient / sustainable?

Interaction between the GGSS and other policies / schemes

21. **[New Question] As you have been producing and injecting biomethane, have any other government policies or non-government schemes supported/incentivised your production and injection activity?**

    Note to interviewer: Check ahead of time status, to confirm if they have been injecting. If not, reframe to intend to use other policies.

    - Prompt for: e.g., RTFO, RGGO
    - Prompt for: Why / why not?
    - Prompt for: Are there other policy signals from government relating to biomethane support that would provide additional market confidence / impetus to apply?
    - Prompt for: Awareness of the Call for Evidence on future biomethane?

22. **[New Question] Are you aware of any other challenges in relation to the wider available support for biomethane production?**

    - Prompt: Any challenges with the fact that the operation of the RGGO sits within one organisation, the Renewable Energy Assurance Limited
    - Prompt: Concerns relating to registering certifications in European markets (EU database issue)

23. **[Existing Question] From your experience with other programs or policies, are there any insights or efficiencies that you believe could be beneficial to GGSS?,**

    - Prompt for: Concrete examples

Final remarks

24. **[Existing Question] Are there any other points that you would like to raise?**

Non-Applicants

Background

1. **[Tweaked Question] Can you provide some background information to your organisation and any current involvement with biomethane production?**

    - Prompt for: Are you currently involved in AD biomethane production, or are you considering investing in a Digestor?

Reasons for Non-Application

[New Question] Can you briefly explain your position with regard to the GGSS?

Prompt: Have you considered an application or are you intending to apply to the GGSS?

[New Question] What are the key reasons that have meant you / your organisation have decided not to apply for the GGSS [so far]?

- Prompt for: Are factors more related to GGSS scheme design (including budget management regime, eligibility and sustainability requirements, tariff tiers, application window) or external context (current macroeconomic climate, supply chain issues, feedstock, siting and planning, uncertainty of future industry support)

4. **[Existing Question] What changes to GGSS scheme design would make the GGSS a more attractive option to apply for?**

GGSS Application

5. **[Existing Question] Did you engage to any extent with the GGSS (e.g., attend events, express interest, access application documents, begin an application) prior to a decision not to apply? How did these contribute to this decision?**

   [For those who did engage] Prompt for: What barriers did you identify at this stage that contributed to a decision not to apply to the GGSS

6. **[Existing Question]** [For applicants who made a decision not to apply to the GGSS] **Did the GGSS eligibility requirements influence your decision to not apply to the GGSS scheme (e.g., feedstock requirements, sustainability requirements)?**

   - Prompt for: What changes to the eligibility and sustainability criteria might have improved the attractiveness of the GGSS scheme?

Wider Context

7. **[Existing Question] Did you experience any challenges or barriers in your decision not to apply, related to external or contextual factors (i.e., not directly related to scheme processes)?**

   - Prompt for: awareness/appreciation of carbon credentials of biomethane in the market; the current macroeconomic climate (i.e., recession concerns, high inflation, high interest rate); supply chain issues and/or changing prices in UK wholesale gas sales, digestate sales?

[New Question] In your experience, have you encountered any challenges or difficulties with the AD plant supply chain?

Prompt: If yes, to what extent did these have an impact on your decision to not apply?

Prompt: Specific issues with the supply chain and how these can be overcome / reasons for supply chain issues.

Prompt: For those that identify challenges: Have you seen any indication that these are easing? If so, is this likely to impact on your decision to apply?

[New Question] To what extent has the availability of sufficient waste feedstocks had an impact on your decision to apply?

Prompt: Whether this has had any impact on their ability to apply / the timing of application.

Prompt: Impact of the Defra Simpler Recycling policy announcements on their decision to apply

Prompt: Any innovative solutions to feedstock availability

Prompt: type of feedstock

Mid-Scheme Review

10. a) [New Question] In the past year, the Department have completed and published their response to the Mid-Scheme Review. Have you engaged with any part of the Mid-Scheme Review response?

b) [New question – follow up] If you have, what do you think were the positive and negative aspects of the process?

Prompt: What, if any, changes would have improved the process.

Prompt: feedback on timings of process, response, alignment with Defra Simpler Recycling Policy.

11. a) [New Question] The Mid-Scheme Review identified a number of changes to the GGSS regulations which came into force on the 4th of June. Are you aware of the changes that have been/are being made to the regulations?

Note for interviewer: changes include extending the closing date of the scheme for new applications to March 2028 and encouraging the use of heat pumps for the production of biomethane by exempting from heat deductions

b) How do you think these changes might impact your decision making around applying to the scheme?

Prompt: If more likely to apply, what were the key changes that made this possible?

Experiences of GGSS budget management mechanisms

12. a) [New Question] The 2023 Annual Tariff Review led to an increase in the Tier 3 tariff rates, with Tiers 1 and 2 remaining the same as the previous years. Are you aware of the increase in tariff rates?

b) [New Question] To what extent are the tariff tier rates a factor in your decision not to apply?

Prompt: If a factor, what rate would make the GGSS sufficiently attractive to your organisation to encourage you to apply?

13. [Tweaked Question] In your opinion, how well do you think the GGSS budget management processes, such as the Annual Tariff Review, Budget caps, and degression work to manage deployment onto the GGSS?

- Prompt for: Did aspects of budget management (such as budget caps) influence your view of the scheme prior to application?

- Prompt for: Are budget management mechanisms likely to pose a barrier to other organisations considering a GGSS application?

[New Question] How, if at all, are you made aware of changes made from the budget management processes outlined above?

Prompt: Source of communications, perceptions on availability of information.

GGSS Outcomes (Testing the ToC)

[New Question] [For those that don't plan to apply to GGSS] Do you have any intention to produce biomethane and/or inject biomethane into the grid in the future?

Prompt: How do you anticipate funding this / ensuring that the plant economics are viable?

[New Question] [For those citing exclusion of existing plants AND on existing subsidies] What do you anticipate will happen with your existing AD plant once its current subsidy regime ends given, you have not been able to apply to the GGSS?

Prompt for the reasons why?

Prompt: There has been some anecdotal suggestions (although no actual instances) that existing plants have considered decommissioning and rebuilding plants to try and meet the GGSS criteria. Is this something that you have considered or are aware of others considering?

Interaction between the GGSS and other policies / schemes

[New Question] The GGSS provides flexibility for plants to benefit from other policies and non-government supports (e.g., RTFO, RGGO). To what extent, if at all, does this improve the attractiveness of the GGSS?

- Prompt for: Why / why not?
- Prompt for: Are there other policy signals from government relating to biomethane support that would provide additional market confidence / impetus to apply?

Final remarks

18. [Existing Question] Are there any other points that you would like to raise?

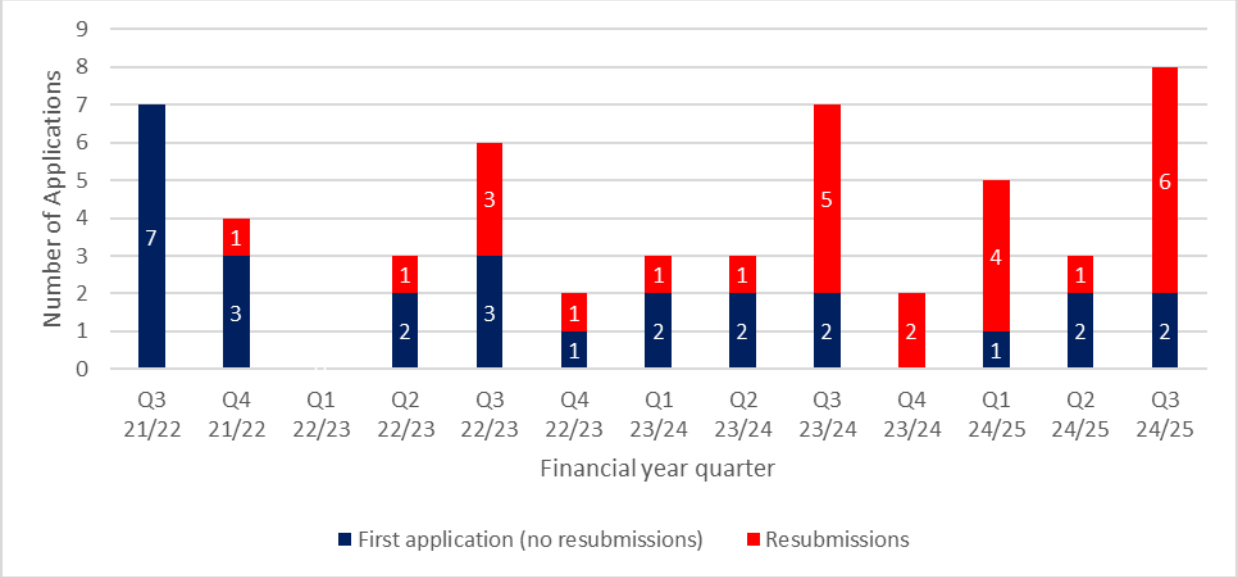
Annex 4: Application Data Analysis

This Annex presents the summary data tables, analysis and visualisation of scheme performance indicators, and application and monitoring data for the market. It focuses on all applicants to the GGSS, and, therefore, extends beyond the interviewed sample.

The analysis in the body is of the sample interviewed as part of the second process evaluation report. This Annex recreates the analysis with the population to showcase the market.

As at December 2024, the GGSS received 27 unique applications.[5] One plant has successfully progressed through the entire application process and fully registered. The plant owner has participated in both process evaluations for the Department. Including resubmissions, one applicant is under review in Stage 1, nine are approved in Stage 2 but have not submitted a Stage 3 application, and nine are under review in Stage 3. As illustrated in Figure 7, the majority of unique applications were received in the GGSS's first six months (ten).

Figure 3: Number of Applications[6]

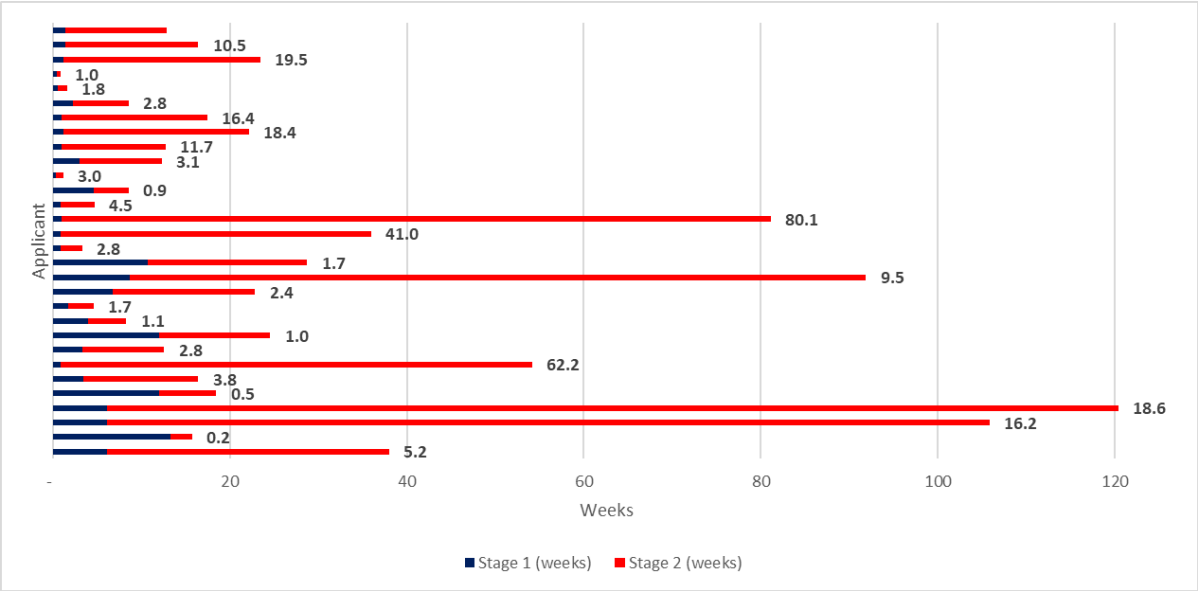


Every third quarter, the GGSS receives between six and eight applications, including resubmissions. This highlights interest in the GGSS.

Of all Stage 1 applications in the sample, the average length of time to progress from submission to decision was 4 weeks. Of those Stage 2 applications that were successful, the average length of time to progress from submission to decision was 20 weeks (compared to 9 weeks for those interviewed). Figure 8 depicts the number of weeks each applicant spent in Stage 1 and Stage 2 before a decision was made.

Figure 4: Number of Weeks in Stage 1 and Stage 2

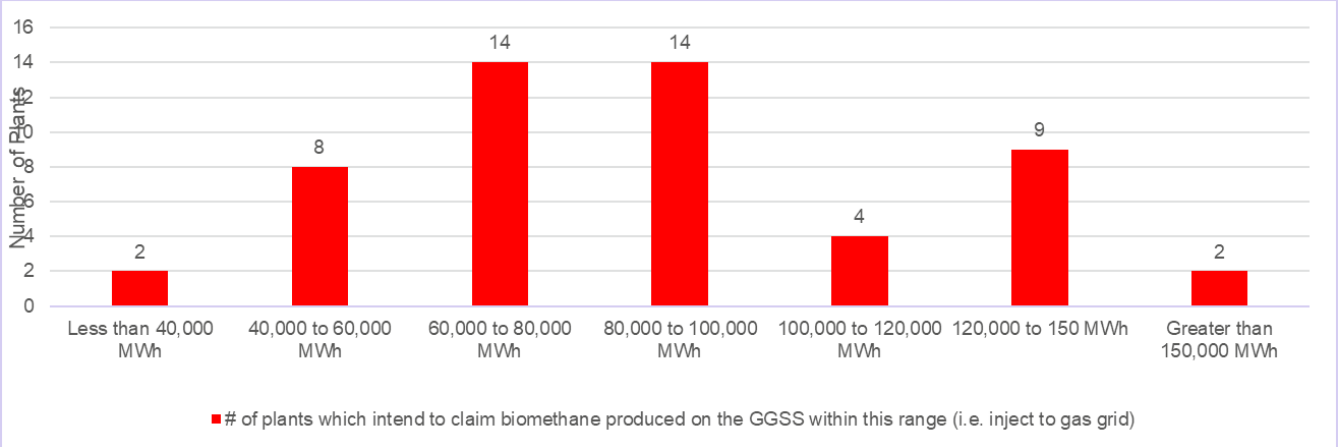
[5] There were 26 resubmissions, so the GGSS had received 53 applications in total.
[6] This figure shows multiple resubmissions by the same applicant.



All but three applicants spent more time in Stage 2 than in Stage 1. The applicant who spent their longest time in Stage 2 did so at 18.6 times the time they spent in Stage 1. Excluding outliers, the average ratio of time spent in Stage 2 to Stage 1 was almost a third (2.8). Note that this figure shows only those who progressed from Stage 1 to Stage 2 (i.e. applications that were not withdrawn, revoked, rejected, or cancelled).

Figure 9 depicts the applicants who have not been unsuccessful. It shows the number of applicants by the size of the plant which they proposed to commission in their application, as well as the size band in which they intend to inject as part of the GGSS.[7] The majority of plants (14) intend to inject between 80,000 and 100,000 MWh. These plants will receive Tier 1 tariff rates for the first 60,000 MWh of biomethane injected with the remaining volume (up to 40,000 MWh) receiving Tier 2 tariff rates (in total, 28 plants would receive some portion of Tier 2 rates). Four would receive Tier 1 tariffs. Only 15 plants are larger, and expect to inject more, than 100,000 MWh and less than 250,000 MWh and, thus, receive Tier 3 tariffs.

Figure 5: Plant Size of Unique, Ongoing/Successful Applicants



[7] Stage 1 applications request information on the expected maximum initial capacity as well as the expected volume of eligible biomethane to be injected each year.

Annex 5: Qualitative Thematic Analysis

This Annex details the thematic findings from interviews conducted with stakeholders and beneficiaries of the GGSS.

The interviews with GGSS applicants reveal insights into the effectiveness of the scheme's implementation, the impact of budget management, and how GGSS intersects with other policies like the RTFO and Defra's Simpler Recycling policy. The responses highlight both the strengths of the scheme and the significant challenges applicants faced in application, documentation, and alignment with regulatory guidance.

Effectiveness of Scheme Implementation and Delivery

The application process for the GGSS was largely seen as structured and supported, especially in the initial stages. Applicants frequently referenced the clear guidance and responsive support from Ofgem, which facilitated progress through Stages 1 and 2. One applicant noted:

> *"Ofgem's team was very responsive, and their guidance was clear, especially in the early stages. We had frequent discussions that aligned our expectations."*

However, there were notable challenges regarding the depth of documentation and the time-intensive nature of some stages, particularly Stage 3. Stage 3 proved notably challenging, as applicants encountered documentation requirements that were both precise and difficult to meet. One applicant described the laborious process of obtaining the necessary certifications and documents:

> *"There have been delays in Stage 3 due to not having the correct documentation…documents were rejected by Ofgem as the date of commissioning did not exactly match the date at which we went gas to grid."*

Several applicants faced technical barriers, such as coordinating meter readings or adjusting documentation to meet exact GGSS standards. An applicant described the process as:

> *"When we reached Stage 3, we were surprised by the amount of documentation needed. It felt like we were going back and forth, and that slowed down the process significantly."*

Applicants highlighted both the helpful aspects and the shortcomings of Ofgem's guidance. One participant noted, "We have not used the guidance," relying instead on external consultancy firms for clarification and application preparation. The guidance's complexity appeared to discourage some users from engaging with it directly, preferring to outsource the technical aspects to consultants who were familiar with GGSS expectations. Some applicants opted for external consultants to help navigate the process, reflecting gaps in the clarity of the GGSS guidance. As one applicant stated:

> *"We found it easier to work with consultants who could provide industry-specific expertise. The guidance was helpful but not always straightforward for some of the technical aspects."*

One applicant appreciated the "simple contact with the staff" who could "answer the majority of our questions quickly on the phone." Another noted a particular frustration with the need to sift through extensive documentation: "If Ofgem condensed it…this makes the process more straightforward".

For those who did use the guidance, reviews were positive:

> *"Yes, we reviewed that guidance a lot of times and yeah that was quite clear."*

> *"That was very useful. It was online, fairly detailed, so both Stage 1 and 2 will use that a lot."*

> *"I think the guidance was essential for a reference point as to what was needed."*

> *"Well, the guidance was pretty clear I think."*

The application process for GGSS posed notable challenges for applicants juggling financial timelines and stringent documentation requirements. For instance, applicants felt pressured by deadlines that did not align with typical timelines for obtaining financial information:

> *"Four weeks isn't long enough… when you're dealing with banks and finance houses, they've run at the wrong pace."*

This mismatch between GGSS's strict deadlines and the slower pace of financial institutions imposed stress and risk of missed deadlines for applicants, further inhibiting deployment.

Many participants described the GGSS application as multifaceted, often presenting logistical hurdles, particularly in aligning funding and application stages. For instance, one participant mentioned:

> *"Stage 2 is financial close, isn't it? Yes. So it's a bit of a chicken and egg scenario, so we still need to go to FID [financial investment decision] for that, but to go to FID, we need Stage 2."*

This illustrates the challenge applicants face when stages require commitments or approvals that, in turn, necessitate funding assurances. Another interviewee echoed this sentiment, describing their experience as dependent on third-party timings, which made the process more arduous:

> *"There have been delays… resulting in a lot of backwards and forwards correspondence… An example is the likes of [third-party] not including the correct project number on certain documents, which Ofgem then did not accept as valid evidence. These parties then needed to amend the documents and resend them back to us."*

These comments reflect applicants' frustrations with the inflexible timelines imposed by the GGSS, which frequently do not align with the slower, more deliberate processes of funding bodies.

In terms of the wider context, feedstock supply chain and planning permission were noted as dominating factors over the application process as being barriers. One applicant stated:

> *"So if you imagine that we can't order any equipment until we've got the GGSS tariff confirmed. And we can't do that until we've got planning permission. And then NEA [Network Entry Agreement] and everything. Then this is why the extension of the timeline is so important."*

One Unsuccessful applicant stated:

> *"We plan to follow through with this and apply for the GGSS. However, there's nothing really going to be built for at least 18 months the way things are going in terms of planning permission, strategy, etcetera."*

Respondents consistently highlighted rising feedstock costs as a significant barrier to financial sustainability and growth in the biomethane sector. Feedstock, often sourced from agricultural waste, food waste, or other organic material, has become more expensive due to factors like inflation, and supply chain constraints due to sustainability rules and location. One respondent shared:

> *"Geographic areas where the AD plants are into other areas of the world where nutrients are needed… and you can do that and make it a zero-sum game, or maybe a small margin, that would get more AD plants in the UK to operate."*

The situation affects overall economic viability of AD plants, as increased feedstock prices directly impact profitability.

The quality and consistency of feedstock are crucial to ensuring predictable biomethane production. One participant explained:

> *"Since AD is a biological process, then you don't get the same outputs if the inputs and conditions are not the same which you often observe for a petrochemical process."*

Variability in feedstock quality can therefore disrupt production processes and increase operational costs, making it difficult to achieve efficiency gains.

Respondents expressed concerns about future availability of feedstock. One respondent surmised:

> *"The key issue with the supply chain is in the sourcing of feedstock, the price of feedstock, its price variability, and the quality of the feedstock itself. In practical day-to-day terms, you can buy feedstock, it arrives, and it's not what you think it is."*

Without diversified or guaranteed feedstock sources, biomethane producers face ongoing risks that impact their capacity to meet production goals and scale their operations.

Impact of GGSS Budget Management on Scheme Attractiveness

Budget management through the GGSS's ATR and budget caps provided a predictable framework that applicants found beneficial for planning. However, inflexibility in adjusting tariff rates for unexpected costs posed challenges, particularly for smaller operators who had to manage cash flow during lengthy application review times.

Budget management factors, including budget caps, ATRs, and degressions, have influenced the scheme's attractiveness, particularly when applicants faced delays. For some, budget caps added pressure, as they were required to reapply if they exceeded certain deadlines. One applicant expressed frustration at needing to reapply in subsequent budget periods due to missed deadlines, noting:

> *"There wasn't a simple way of extending the deadline per se…"*

This increased both the financial and administrative burden for their projects.

Despite these challenges, applicants generally saw value in the GGSS's stability. The tariff rates and budget controls were appreciated by most, with applicants acknowledging that GGSS provided a more reliable and appealing funding pathway than alternatives. One participant compared GGSS favourably to the RTFO, mentioning that GGSS is "a more stable long-term support mechanism" that helps justify the capital costs of biomethane projects better than the RTFO does due to fluctuating RTFO prices. This feedback suggests that, while budget management features like caps and deadlines can limit flexibility, GGSS's stability remains a strong incentive for applicants to participate in the scheme.

The ATR and budget cap mechanisms were generally seen as beneficial, as one applicant explained,

> *"The Annual Tariff Review was helpful for our financial planning. Knowing the budget cap gave us clear limits to work within."*

A key challenge was the inability to adapt budgets to unforeseen expenses, often related to supply chain delays. An applicant shared:

> *"It's difficult when there's no room to adjust for unexpected costs. We had to absorb additional expenses without support, which was tough on cash flow."*

Smaller applicants often struggled with cash flow due to delays in project commissioning. As one small operator noted:

> *"With the delays, our cash flow suffered. Larger companies might be able to manage, but we don't have the reserves to go months without revenue."*

Introducing budget flexibility within the ATR could help applicants adjust to unexpected costs, potentially easing the financial burden on smaller operators and ensuring broader participation in the scheme.

Impact of GGSS Interaction with Linked Policies on Applications and Participants

The GGSS's alignment with complementary policies, such as the RTFO, was generally positive and added value to the programme. However, applicants faced procedural complexities with certain certifications, and uncertainty regarding alignment with EU standards hindered confidence for those aiming to expand into European markets.

The interviews reveal that the GGSS's more stable funding model holds a competitive advantage over the RTFO, which some applicants perceived as unpredictable. As one applicant explained:

"RTFO has fluctuated significantly recently," leading them to favour GGSS as the more attractive, reliable option for biomethane projects.

Applicants appreciated the RTFO as a beneficial policy that provided additional revenue opportunities. One participant remarked,

> *"The RTFO has been very helpful. It complements the GGSS well, giving us a solid additional revenue stream."*

While some plant owners remain open to the RTFO if pricing becomes more favourable, they expressed a preference for GGSS's consistent support. This stability has made GGSS a more attractive choice for businesses seeking reliable revenue streams and predictable returns on investments, especially for projects with large capital requirements.

Misalignments in certification processes between GGSS and the RGGO[8] created procedural hurdles. One applicant described,

> *"The RGGO requirements didn't always match up with GGSS standards, which complicated things. It felt like we were meeting different sets of rules for the same project."*

Some applicants were concerned about the GGSS's compatibility with EU standards, which affected their confidence in exporting renewable gas certificates. As one respondent noted,

> *"We're unsure about how GGSS aligns with EU policies, which makes us hesitant to invest heavily in the European market."*

Although GGSS applicants generally viewed food waste collection policies as potentially valuable, they were cautious regarding their practical benefits. Most participants reported that their plants operated on feedstocks like poultry manure or industrial waste, rather than food waste. One applicant observed:

"Food collection… doesn't happen particularly well in the UK," and further highlighted the complexities of processing food waste compared to their primary feedstocks.

[8] RGGO are certificates issued by the Green Gas Certificate Scheme. Some respondents expressed an interest for a link between the RGGO and the GGSS to allow potential long-term benefits.

Nevertheless, there is recognition that improvements in food waste availability could enhance feedstock diversity in the future and potentially impact financial viability in the broader biomethane sector, though, for now, the direct impact on GGSS participants is limited.

Addressing alignment issues, particularly with EU standards, could improve the GGSS's appeal to applicants interested in exporting to the EU, providing a broader market base and additional revenue potential.

Market Conditions

Market conditions presented both challenges and opportunities. On the one hand, applicants were impacted by global supply chain disruptions and volatile energy prices, which affected project timelines and profitability. On the other hand, increased demand for by-products like CO_2 and digestate provided valuable supplementary revenue, helping applicants diversify income sources.

Delays due to COVID-19 and the Ukraine conflict affected many applicants, increasing project costs and timelines. One applicant shared:

> *"Supply chain delays were a major issue. We had to wait months for equipment, which pushed back our timeline and raised costs unexpectedly."*

Fluctuating energy prices created uncertainty in revenue projections. As one respondent noted:

> *"The volatility in gas prices has made it difficult to predict revenue. We've had to reassess our profitability more than once."*

Despite challenges, by-products such as CO_2 capture and digestate sales helped diversify revenue, with some applicants reporting that by-products contributed up to 10% of their income. One participant mentioned:

> *"The revenue from CO_2 and digestate has been a huge help. It's a way to stabilise income, especially when the main product prices fluctuate."*

Supporting by-product revenue could enhance financial resilience for biomethane projects, while adaptive strategies may be needed to mitigate the impact of market volatility and supply chain disruptions.

Annex 6: Interim Contribution Analysis

This annex provides the detail of the process tracing tests applied to each contribution claim for the GGSS and GGL to conduct contribution analysis. For each hypothesis tested, there is a table that covers the tests applied, the evidence expected (and source), the evaluation evidence gathered, and the outcome of the test. Through testing of causal and alternative hypotheses, a summary narrative of hypothesis and strength of evidence to support/reject their contentions is provided. This evidence is limited to two rounds of GGSS process evaluation interviews and one round of GGL process evaluation interviews. Therefore, the contribution analysis is referred to as being 'interim'.

Contribution analysis is a method used to understand the likelihood the intervention has contributed to an outcome observed, or not[9] (a contribution claim). It does so by theorising how chain of causation could have occurred as a result of the intervention (causal hypothesis) and alternative plausible explanations of how the outcome may have occurred apart from the intervention, and then testing the strength of the causal and alternative hypotheses through evidence gathering.

The Contribution Analysis methodology does not prescribe a specific approach for testing the strength of evidence. Process Tracing tests are frequently used for this, as they provide a structured approach to testing evidence and interpreting the implications of these evidence tests on the strength of hypotheses.

A key part of the Process Tracing methodology are four evidence tests, which are based on the extent to which the evidence is sufficient and necessary to establish causation. In doing so, it ensures that evidence is evaluated based on its implication for causal inference. The four tests and what they mean in terms of accepting or rejecting the hypothesis being tested is summarised in the table below.

Table 1: Process Tracing Evidence Tests[10]

Evidence Test	Explanation
Straw-in-the-wind *(neither confirmatory nor disconfirmatory)*	If the evidence is observed, this is not sufficient to confirm the hypothesis. If the evidence is not observed, this is not sufficient to reject the hypothesis.
Hoop Test *(disconfirmatory)*	If the evidence is not observed, the hypothesis is rejected. If the evidence is observed, the hypothesis is not rejected (it 'goes through the hoop', passes the test), but it is not confirmed either.

[9] HM Treasury Magenta Book.
[10] Befani, B. and Sredman-Byrce, G. (2016). Process tracing and Bayesian updating for impact evaluation. Sage Journals.

Smoking Gun *(confirmatory)*	If the evidence is observed, the hypothesis is confirmed. If the evidence is not observed, the hypothesis is not confirmed, but it is not rejected either.
Doubly Decisive *(both confirmatory and disconfirmatory)*	If the evidence is observed, the hypothesis is confirmed. If the evidence is not observed, the hypothesis is rejected.

GGSS Contribution Claim 1

Evaluation Question:

4aiii. Has the scheme achieved its intended impacts, including delivering expected carbon savings?

Impact in the ToC: B01: Reduction in Greenhouse Gas Emissions

Causal Hypothesis: Guaranteeing the revenue stream of AD plants for 15 years incentivises their deployment and operation. This in turn increases the volume of new biomethane coming online (to at least the lower range of expected deployment in the Impact Assessment) to effectively contribute to carbon budget targets and provide cost-effective decarbonisation.

Table 2: GGSS CC1 Process Tracing Test

PT Test	Evidence Expected[11]	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-Wind	There has been demand for the scheme amongst new AD plants	Programme application numbers	Up to October 2024, the GGSS has attracted 53 total applications for provisional tariff guarantee (stage 1) of which 27 of these are unique. For comparison, in the first four years of ND RHI, 51 total applications were received for biomethane injection. There were no upfront targets for the number of applications expected on GGSS, so it is up for discussion if this represents a sufficient level of demand, thus the level of demand is not tested. For scheme closure for new applicants (FY27/28) there is 41.8% of the budget	Passed (weak evidence)

[11] This refers to the evidence that is expected to be available and the relevant process tracing test to which this evidence is aligned. https://www.ofgem.gov.uk/environmental-and-social-schemes/green-gas-support-scheme-and-green-gas-levy/applicants

			yet unallocated (as of data from the January 2025).[12] As of the latest figures, the allocated budget for this current FY(24/25) 88.8% .	
Straw-in-the-Wind	No new AD plants deploying without GGSS support	Impact evaluation interviews (e.g. with Non-Applicants, sector bodies) / available secondary data	Interviews with Non-Applicants were unanimous that without GGSS support, new AD plants would not be constructed. It was explained that without grant support, the projects are not financially viable, particularly given challenges in selling green gas certificates in Europe, drop in RTFO profitability, limited market for digestate and increasingly expensive feedstock.	Inconclusive but supportive evidence
Hoop Test	GGSS supported AD plants inject biomethane into the gas grid	Scheme monitoring data	The low scenario in the Impact Assessment estimated biomethane injection to be at least 200 GWh in SY2, and 500 in SY3. Injection in SY2 saw 1% of this low scenario reached and 3.4% in SY3. (It should be noted that supply chain challenges have meant that the registration process has been slower than anticipated).	Inconclusive, as too soon to tell
Smoking Gun	Findings from interviews with plants provides consensus that plants would not have deployed without presence of GGSS	Impact evaluation interviews with plants (also with the Department and sector bodies)	This will be tested in impact evaluation interviews. Note, findings should be split out by stakeholder group.	Not yet tested
Doubly Decisive	Findings from QCA confirms the necessity of GGSS as a causal factor in AD plant deployment	Impact evaluation QCA	The QCA workstream has not yet commenced.	Not yet tested

[12] Note: This will differ from the data illustrated in Figure 2, as the contribution analysis updated the data to the point at which the second GGSS process evaluation began.

Alternative Hypothesis: Movement in relative energy prices and industry appetite leads to increased AD plant deployment and biomethane injection, leading to gas grid decarbonisation.

Table 3: GGSS CC1 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Consensus from interviews (with applicants and Aon-applicants) that the market is favourable for AD plant deployment	Process interviews with applicants and non-applicants	The majority of respondents highlighted significant challenges in AD plant deployment, including supply chain issues, feedstock prices, planning permission, lack of investor confidence and inflation. The evidence suggests that without subsidy the AD market would not be self-sufficient or an attractive a market place. Overwhelming majority of respondents believe that the AD market is not close to self-sufficiency/sustainability. Despite the challenges, there was a high level of general enthusiasm and optimism in the sector, but this is not being met by suppliers' scaling which has led to supply-chain issues for all Ongoing applicants. This was attributed to some different factors (War in Europe, high demand everywhere, issues with UK-based suppliers). recent interviews with Non-Applicants on the state of the biomethane market highlighted a difficult picture for deployment, with 1. High feedstock prices 2. Slow supply chains 3. Planning permission and grid access challenges 4. Challenges with RTFO and GGCS (and lack of inclusion in UK ETS) 5. Limited market for digestate. The first three make developing a plant more difficult and time consuming and the later three mean that margins are tighter / there are less viable revenue streams beyond injection.	Failed – strong evidence

Straw-in-the-wind	Systematic evidence of new AD plants deploying without tariff guarantee from the GGSS	Process interviews with Non-Applicants and impact interviews policy	The evaluation spoke to 9 Non-Applicants across two waves of process interviews. Of these, 2 were not interested in developing new plants, but the remaining 7 all had some interest / plan to develop new AD plants, and in all cases bar 1, it was felt that new AD plants would not be able to come online without GGSS (and the remaining one based their business model on RTFO, which to our understanding has seen a large drop in price from when the interview took place).	Failed – strong evidence that did not support the alternative hypothesis was observed.
Smoking Gun	Consensus from Non-Applicants that have deployed that it was the market conditions that incentivised their deployment	Impact interviews with Non-Applicants	There was no evidence from interviews with Non-Applicants of deployment outside the GGSS. However, Non-Applicants noted market conditions as a barrier to deploying.	Failed – moderate evidence

Summary Narrative: Based on the evaluation evidence to date, it is not possible to establish a causal connection between the GGSS and cost-effective decarbonisation. The evaluation data gathering has highlighted a moderate level of demand for the scheme and has provided some evidence that there was not systematic evidence of deployment outside the scheme, each of which suggest some support for the causal hypothesis. However, actual evidence of significant levels of biomethane injection into the grid was absent. This is largely a timing issue, given the fact that the majority of plants with tariff guarantee are still in the process of registering. Therefore, as more plants register onto the scheme and begin injecting, it is expected that the available evidence may become more supportive.

Significantly, there is strong evidence to reject the alternative hypotheses that the market, rather than GGSS was the key incentive for deployment and injection. No clear supportive evidence was highlighted for this hypothesis. Evidence was mixed for the second alternative hypothesis that highlighted feedstock availability as a potential constraint for the scheme. The correlates with process findings to date that highlighted different experiences in access to waste feedstock, with some applicants finding it more and less challenging.

GGSS Contribution Claim 2

Evaluation Question:

4aii. Has the scheme achieved its intended impacts, including reducing GHG emissions through decarbonising homes and businesses?

Impact in the ToC: B01: Reduction in Greenhouse Gas Emissions.

Causal Hypothesis: The GGSS policy design is sufficient to ensure compliance on lifecycle emissions requirements, meaning that any emissions reduction benefits are not offset through emissions in biomethane production.

Table 4: GGSS CC2 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Consensus across stakeholders that plants have complied with sustainability requirements	Process / impact interviews	No conclusions can be drawn from the process interviews. Reduction of plant emissions was not generally discussed during interviews (as most where not at this stage of their project development). All Ongoing applicants had enthusiasm for renewable and low-carbon technology as a whole.	Inconclusive
Hoop Test	Data on emissions from biomethane production shows that level of emissions is below the acceptable threshold	Monitoring data	As above.	Inconclusive
Hoop Test	Policy measures to ensure sustainability are successfully applied by Ofgem	Process interviews with participant and interviews with Ofgem	As above.	Inconclusive

Smoking gun	Data on emissions from biomethane production shows that level of emissions is below the acceptable threshold	Air quality analysis or any Ofgem data	Air quality analysis will be conducted as part of the impact evaluation	Not yet tested
Smoking gun	Consensus from qualitative interviews with plants that sustainability measures and monitoring was mainly driven by GGSS policy design	Impact interviews with participating plants	Impact workstream yet to occur.	Not yet tested

Alternative Hypothesis: Given environmental ambitions of the organisation, or need to comply with wider regulations and requirements, projects seek to ensure high levels of sustainability in production regardless of specific rules in place.

Table 5: GGSS CC2 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Plants or organisations have sustainability goals / targets	Impact interviews	Will be tested in impact interviews.	Not yet tested
Hoop Test	Plants actively monitor / report on sustainability metrics	Impact interviews (to note, interviews should explore why plants monitor this data)	Will be tested in impact interviews.	Not yet tested

Smoking Gun	Plants are going beyond GGSS-mandated sustainability standards	Impact interviews with AD plants / any data from Ofgem on sustainability	Will be tested in impact interviews.	Not yet tested

Summary Narrative: There has not been sufficient evidence gathered to date to demonstrate a causal connection between GGSS policy design and sustainable practices with regard biomethane production. It is noted that applicants have indicated a general enthusiasm for renewable energy and low-carbon technology, but due to the early stages of project development, conclusive data on lifecycle emissions compliance is not yet available. Therefore, further evidence will be required from the ongoing and future impact evaluation phases to confirm or reject this hypothesis. Similarly, the alternative hypothesis has not yet been tested given the stage that the evaluation is at. Impact interviews will be necessary to explore whether plants are actively monitoring sustainability metrics or adopting practices.

GGSS Contribution Claim 3

Evaluation Questions:

4aii. Has the scheme achieved its intended impacts, including delivering expected carbon savings?

5c. What other impacts has the scheme had? What has been the typical feedstock mix of a biomethane plants deployed under the scheme?

Impact in the ToC: B01: Reduction in Greenhouse Gas Emissions.

Causal hypothesis: Where plants have access to and utilise waste feedstocks, GGSS requirements of at least 50% waste feedstocks to be eligible to receive GGSS tariff, mean that waste and residues are utilised within new AD plants as they become operational. As a result, potential upstream emissions (e.g. through landfill and therefore methane release) are avoided.

Table 6: GGSS CC3 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Evidence of a significant number of non-supported plants	Impact interviews with policy stakeholders and Non-	The pulse survey highlighted for 2 non-GGSS supported plants, one was 100% waste and another 100% energy crops. Some anecdotal evidence from GGSS process interviews that utilising waste	Inconclusive – evidence mixed, but more supportive.

	using only non-waste feedstock	Applicants. Pulse check survey.	feedstock is the direction that the market is heading more broadly but as different organisations have different models, there were found to be a range of preferences to waste/non-waste outside of GGSS supported plants. This will be tested more in impact interviews.	
Hoop test	GGSS AD Plants are found to be compliant with 50% waste feedstock thresholds	Interviews with plants and with Ofgem & Pulse check survey	To be eligible to claim, projects must demonstrate 50% waste feedstock as per the regulations. From the pulse survey, 2 GGSS plants responded on their 22/23 feedstock mix, with one plant reporting use of only 35% non-waste but another at 71% non-waste (presumably not claimed on GGSS). Although not conclusive evidence, there are 17 plants that currently hold tariff guarantees (at different stages of the registration process) indicating that a significant number of plants do anticipate being able to meet the 50% threshold.	Inconclusive – evidence but more supportive.
Hoop test	Supportive evidence that waste utilised would otherwise have been sent to landfill	Interviews with plants, Ofgem, the Department and sector bodies	No evidence gathered to date.	Not yet tested
Smoking Gun	Consensus from stakeholder interviews that GGSS policy design and requirements were the key reason why their plant utilises more than 50% waste feedstock	Impact interviews	Impact interviews not yet conducted	Not yet tested

Alternative Hypothesis: Utilising waste feedstock proves more profitable for GGSS plants and therefore plants exceed the 50% threshold of waste feedstock as a result of market conditions.

Table 7: GGSS CC3 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Stakeholders report good availability / are able to secure gate fees for waste feedstock	Process interviews	A majority of respondents reported good availability of feedstocks, although there were a small number of respondents who identified some sector specific constraints. There is some evidence to suggest that gate fees are no longer possible for food waste, and there is now competition for feedstocks which now come at a price and do not command a gate fee. Gate fees paid to AD plants were uncommon among applicants, with many agreeing with local waste producers to exchange waste and digestate products for no charge.	Failed – but mixed evidence
Hoop Test	Plants are found to be utilising a significantly higher proportion of waste feedstock than non-waste	Pulse survey	Although based on a small sample (4 plants, 2 on GGSS and 2 not on GGSS) on average, these plants utilised 51% energy crops, 12% 'other' which was undefined, and 37% a mix of waste/residue feedstocks.	Failed – limited evidence base
Smoking Gun	Consensus from interviews that market conditions make waste feedstock more favourable than non-waste feedstocks	Stakeholder interviews	No evidence to support or challenge this test and will be covered further in impact interviews.	Inconclusive

Summary Narrative: The available evidence is inconclusive in its support of the causal hypothesis that the GGSS design has improved waste feedstock uptake, although some evidence gathered does offer weak support. Preliminary evidence from the pulse survey suggests that non-GGSS-supported plants demonstrate varied practices, with one using 100% waste feedstock and another relying entirely on energy crops. Some anecdotal evidence from process interviews suggests that the broader market is shifting towards greater utilisation of waste feedstock, but this trend varies significantly depending on organisational models. Among GGSS supported plants, it is too early to provide a conclusive view on whether plants have

complied with (or exceeded) the 50% waste feedstock threshold. Importantly, 17 plants with tariff guarantees are still in various stages of registration, suggesting potential compliance once operational.

The evidence to date does not support the alternative hypothesis that market conditions alone incentivise GGSS plants to exceed the 50% waste feedstock threshold. The challenging market conditions (such as limited waste feedstock availability in some cases, and high competition and challenges securing gate fees for food waste) provide some level of indicative evidence that the market alone is unlikely to support greater adoption of waste feedstocks. Pulse survey data, although limited, also was indicative of a continued reliance on non-waste feedstocks. Further impact interviews are needed to clarify these dynamics.

GGSS Contribution Claim 4

Evaluation Questions:

4aiv. Has the scheme achieved its intended impacts, including increasing investment in the AD sector in the UK?

4aii. Has the scheme achieved its intended impacts, including delivering expected carbon savings?

Impact in ToC: B02: Increase in renewable heat produced.

Casual Hypothesis: The GGSS enables new AD plants (where they have secured feedstock supply, a suitable site, and the ability to build a plant) by supporting the case for investment, enabling plants to become operational and therefore inject biomethane into low-pressure distribution networks used for home and business heating, and thus contributing toward renewable heat generation in the UK.

Table 8: GGSS CC4 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Expected biomethane injection ramp up meets at least the minimum expected deployment levels at peak deployment	Programme application and monitoring data	For FY24/25, estimated deployment based on application data suggests that scheme injection will meet 94% of the low scenario in the impact assessment. However, given delays to projects commissioning, it is likely that the actual figures for injection will be lower. For peak deployment, estimates based on applications reach 69% of low scenario estimates. It should also be noted that the analysis on which this is derived was	Inconclusive, although evidence supportive

			undertaken in Spring 2024, and has not been updated since, given it was agreed that the Department would provide biomethane ramp up data.	
Hoop Test	High proportion of biomethane produced is claimed under the scheme (as opposed to other schemes)	Scheme monitoring data / pulse survey data	Although a small sample, the pulse survey found that no GGSS plants were participating in other schemes to claim their biomethane for other purposes.	Passed – although based on limited evidence
Smoking Gun	Findings from interviews with plants provides consensus that plants would not have injected biomethane into the gas grid without presence of GGSS	Impact evaluation interviews	Will be tested in impact interviews, although anecdotally from process interviews, evidence would suggest GGSS essential to enable biomethane injection.	Inconclusive, although evidence supportive

Alternative Hypothesis: Alternative biomethane uses mean large amounts of green gas is used for transport and electricity decarbonisation.

Table 9: GGSS CC4 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Evidence from stakeholders that their application to GGSS was primarily driven by the opportunity of participation on other schemes, rather than GGSS tariff	Process interviews	There was little evidence that respondents applied to GGSS with their primary aim being to participate in other schemes such as the RTFO, largely down to price plus the need for additional investment costs. A small number were monitoring the pricing of RTFO with 1 planning to enter this market in due course. 1 respondent had been involved with RTFO but had stopped because of the decrease in price. Very small number of applicants reported using CHP in	Failed – moderate evidence

	payments for injection		current systems or plans to introduce it to new plants.	
Hoop test	High proportion of plants report utilising RTFO and/or CHP generation	Process interviews and pulse survey	From pulse survey, although a small sample, the pulse survey found that no GGSS plants were participating in other schemes to claim their biomethane for other purposes.	Failed, but limited evidence
Smoking gun	Significantly higher proportion of biomethane produced by GGSS plants claimed on RTFO than expected in their application	Pulse survey and application data	Limited biomethane injection to date, but based on available evidence, no RTFO claimed from GGSS plants.	Failed, but limited evidence

Summary Narrative: The evidence available to date is not sufficient to support the causal hypothesis that the GGSS is increasing renewable heat generation in the UK. However, neither is the evidence sufficient to reject this hypothesis. Evidence was found that was supportive that the scheme had a moderate level of demand, and anecdotally that it was required to enable plant deployment. It was also found that the level of biomethane produced but not used on the GGSS was low and is therefore focused on renewable heat generation (although this is based on only one participating plant). In time, it is expected that evidence will be available that will lend greater support to the causal hypothesis, but this has not yet been gathered.

Evidence for the alternative hypothesis is weak. Interviews and pulse surveys show limited motivation for applicants to use GGSS for non-heating schemes like the RTFO or CHP generation. Most respondents indicate GGSS was their main driver, with only a few respondents tracking RTFO pricing for possible future use. No evidence has emerged to indicate that a significant proportion of biomethane produced by GGSS plants is claimed under other schemes.

GGSS Contribution Claim 5

Evaluation Questions:

4ai. Has the scheme achieved its intended impacts, including increasing deployment of renewable heat?

7a. How has the design of the scheme (including tariff levels, tiering, degression, ATRs, and eligibility requirements) supported achievement of the scheme objectives? To what extent has the scheme design supported the industry to deploy AD plants?

7d. How has the design of the scheme (including tariff levels, tiering, degression, ATRs, and eligibility requirements) supported achievement of the scheme objectives? In what ways (through which mechanisms) has the scheme altered (or not) the decision making, activities or investments of stakeholders? What impacts have these changes contributed to?

Impact in the ToC: B03: Increase in investment in the AD biomethane industry.

Causal Hypothesis: GGSS tariff rates are set and monitored to enable prospective AD plant developers to implement a business model that provides an appropriate rate of return to secure private investment in AD plant construction, leading to new AD plants deploying.

Table 10: GGSS CC5 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Interviews with Ofgem/policy stakeholders provide consensus that the GGSS did not overcompensate AD plants	Impact interviews	This will be tested more fully in impact interviews, but suggestion anecdotally is that this is not the case (particularly given decision to raise Tier 3 levels and challenges highlighted by participants in making this economical).	Inconclusive, but evidence supportive
Hoop Test	Demand for the GGSS scheme has been high and the scheme has reached its annual budget caps for the subsequent 18 months (est.	Scheme application and monitoring data	Up to October 2024, the GGSS has attracted 53 total applications for provisional tariff guarantee (Stage 1) of which 27 of these are unique. For comparison, in the first four years of ND RHI, 51 total applications were received for biomethane injection. There were no upfront targets for the number of applications expected on GGSS, so it is up for discussion if this represents a	Passed – moderate evidence

	lead team of AD plants)		good level of demand. As of data from the January 2025, the current FY(24/25) has 11.2% unallocated, and the following FY(25/26) 14.7% unallocated. From Non-Applicant interviews, suggestion that there is an additional pipeline still planning to apply.	
Smoking Gun	Interview evidence from AD plants provides consensus that the tariff rates were set at an appropriate level to give sufficient returns to secure investment	Process evaluation interviews	There was consensus that the GGSS and the associated tariff rates were fundamental in securing investment. All unsuccessful applicants would not build AD plants without GGSS support. Ongoing applicants also echoed this: "without GGSS we would not be developing projects." Four respondents in the GGSS first process evaluation qual analysis articulated the point that the level of subsidy was the key determinant in the size of plant to be developed. Four respondents in the GGSS first process evaluation qual analysis agreed that the GGSS increases the size of plants that can be built. Six respondents in the GGSS first process evaluation qual analysis cited that the current tier 1 level was enough to make plants viable and that the economics were predictable over the full GGSS period. Non-Applicant respondents were highly supportive of the change in tier 3 rates, and said that it had influenced their decision making.	Passed – strong evidence

Alternative hypothesis: Scheme mechanism design fails to appropriately set tariff rates as technical, or business model innovation means biomethane can be produced at lower cost, leading to over-subsidising biomethane.

Table 11: GGSS CC5 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Demand for the scheme exceeds budget capacity	Scheme application and monitoring data	It is the case that for scheme closure for new applicants (FY27/28) there is 41.8% of the budget yet unallocated (as of data from the January 2025) with this current FY (24/25) 11.2% unallocated.	Failed – strong evidence
Hoop Test	Stakeholder consensus from interviews that they have been able to innovate and achieve significant cost savings	Process interviews	The majority of applicants reported plans to innovate at individual sites, although a small number reported not intending to innovate and use conventional technology and processes. Many applicants reported the innovation involving feedstock/plant management. It was not clear from the evidence if the innovation was supporting cost savings.	Inconclusive
Smoking Gun	Consensus from operators that the innovation has meant that the cost of production is low and they would have deployed regardless of tariff rate	Impact interviews	Will be tested in impact interviews. Non-Applicant interviews / those with a view of the market suggest this is not the case.	Failed

Summary Narrative: There is strong evidence to support the causal hypothesis that GGSS tariff rates have driven investment in AD plants. Interviews consistently highlighted that the tariff rates were fundamental in securing private investment, with both successful and unsuccessful applicants indicating they would not develop AD plants without GGSS support. Many applicants cited the subsidy level as a key determinant of plant size, with tiered rates providing predictable returns over the scheme's duration. Application data also reflects steady demand for the scheme, with 53 applications received by mid-2024, and additional pipeline projects expected to apply.

Furthermore, there is strong evidence to reject the alternative hypothesis that tariff rates have led to over-subsidisation. Despite innovation being reported by several applicants, these innovations were typically site-specific and not shown to reduce costs broadly across the sector. Furthermore, application data indicates a portion of the budget remain unallocated for both FY24/25 (11.2%) and FY25/26 (14.7%), demonstrating that demand has not exceeded

the scheme's capacity. Interviews further suggest that cost savings from innovation have not been sufficient to make AD projects viable without GGSS support.

GGSS Contribution Claim 6

Evaluation Questions:

4aiv. Has the scheme achieved its intended impacts, including increasing investment in the AD sector in the UK?

5a. What other impacts has the scheme had? Has the GGSS contributed to the maintenance/ creation of employment opportunities in the AD sector?

6a. How has the GGSS encouraged the development of a more robust and independent market in the AD sector? In what ways, and to what extent, has the scheme impacted the longer-term direction and prospects for the AD industry in the UK?

Impact in the ToC: B03: Increase in investment in the AD biomethane industry.

Causal Hypothesis: In affirming the government's supportive position through continued funding for biomethane production and injection, as well as increased visibility of the benefits from biomethane more broadly, developers and investors within the sector have the confidence to continue operating in the sector on a long-term basis and others have the confidence to enter, growing the market.

Table 12: GGSS CC6 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Evidence of awareness of government policy positions regarding biomethane production amongst plant developers	Process/impact interviews	Almost all applicants were aware of the Mid-Scheme Review and policy changes. Interviews were not conclusive on the interest in future biomethane policy, although a number of respondents across the two process interview waves referenced queries on future support.	Passed – weak evidence
Hoop test	Evidence of existing biomethane market players remaining in (and new entrants entering) the	Process/impact interviews	It was not possible to determine the status of all applicants. Some new, but most had previous involvement in RHI. A small number were new to the UK market, but previously active in other markets.	Inconclusive

	market that have not yet been involved in the production of biomethane			
Smoking Gun	Consensus from stakeholders of confidence in the longer-term future of the biomethane market	Impact interviews	This will be tested in impact interviews.	Not yet tested
Smoking Gun	There is evidence of a clear indication of a strong pipeline of projects from GGSS participants	Impact interviews	This will be tested in impact interviews.	Not yet tested

Alternative Hypothesis 1: Policy signals on future support for biomethane beyond GGSS act as the key driver of market confidence.

Table 13: GGSS CC6 Alternative Hypothesis 1 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Hoop test	AD plants aware / interested in future biomethane policy developments	Process / impact interviews	A number of Non-Applicants referenced decisions around future support as important considerations for their plans (it was mentioned in the context that prior to the scheme extension, they planned to wait until they had clarity on future support before making plans for more AD plants.)	Passed – limited evidence
Smoking Gun	Consensus from investors that investment case for AD plants does not yet	Impact interviews	This will be tested in impact interviews.	Not yet tested

	stack up without future support			
Doubly Decisive	Consensus that AD plants are awaiting confirmation on future support before taking a decision on new AD plant development	Impact interviews	This will be tested in impact interviews.	Not yet tested

Alternative Hypothesis 2: Rise in green financing & ESG investing leads to biomethane market growth.

Table 14: GGSS CC6 Alternative Hypothesis 2 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Evidence of increased demand for green gas guarantees of origin	Impact interviews / pulse survey data	Evidence from pulse survey that no GGSS plants were using RGGOs. Interview responses also highlighted challenges in integration with European market negatively impacting profitability.	Inconclusive but suggest that evidence is not supportive
Hoop test	Evidence from Non-Applicants that they could secure project financing that would not previously have been available	Pulse survey / impact interviews	Not directly tested, but anecdotal evidence from interviews with Non-Applicants suggests this is not the case, and the economics do not support AD Plant investment without a tariff guarantee	Inconclusive but suggest that evidence is not supportive
Smoking Gun	Consensus from interviews that market trends were the key reason for investment in AD plants	Impact Interviews with industry bodies and investors	This will be tested in impact interviews.	Not yet tested

Summary Narrative: The evidence collected to date is not sufficient to establish a causal connection between the GGSS and greater confidence in the AD biomethane market. The only evidence gathered in favour of this hypothesis was suggestive of a causal link, but not sufficient to establish one. It should be noted that much of the evidence expected to conduct the process tracing tests will only be done so as part of the impact evaluation workstreams which are yet to occur, and therefore this contribution claim has been largely untested. Similarly, the hypothesis that wider policy signals are a key driver of market confidence, passes only the hoop test, but further evidence is required to make a determination on this alternative hypothesis.

There is inconclusive, but unsupportive evidence of the alternative hypothesis that green financing and ESG trends alone are driving market growth. Pulse survey responses and interviews suggest limited reliance on RGGOs, with respondents highlighting challenges in integrating with European markets. Furthermore, anecdotal evidence from Non-Applicants indicates that investment decisions are unlikely without tariff guarantees, undermining the argument that green financing alone is sufficient.

GGSS Contribution Claim 7

Evaluation Questions:

5a. What other impacts has the scheme had? Has the GGSS contributed to the maintenance/ creation of employment opportunities in the AD sector?

6a. How has the GGSS encouraged the development of a more robust and independent market in the AD sector? In what ways, and to what extent, has the scheme impacted the longer-term direction and prospects for the AD industry in the UK?

Impact in the ToC: B03: Increase in investment in the AD biomethane industry.

Causal Hypothesis: By ensuring continued government support for biomethane production, AD plant supply chains (e.g. components) and AD plant developers maintain the confidence to continue in the market and grow to meet opportunity. In turn, the UK AD sector retains and grows the required skills and expertise, meaning that required resources are in place (and at a reduced cost due to competition) to enable wider market growth.

Table 15: GGSS CC7 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Evidence from interviews of local/UK supply chains as the main source of expertise/components	Process interviews	There was little in the interview responses to confirm, or not, that local or UK support chains are main source of plant development skills. However, local/UK jobs and skill development were seen as something that would increase as a result of the deployment of AD plants. There was evidence to suggest that AD plants rely on international supply chains. A high number of respondents referenced international issues when discussing supply chain challenges, e.g. impact of Russo-Ukraine war, high global demand in the supply chain.	Inconclusive
Hoop Test	Growth in the biomethane market by way of new jobs and new businesses	Pulse survey	Of the nine GGSS applicant respondents, two had employees on 31 March 2023. Out of the remaining seven of these respondents, five plants were not operational at that point and therefore presumably the reason why they did not have employees. One respondent did not know how many employees they had, and one respondent did not answer.	Inconclusive
Smoking Gun	Consensus from interviews with stakeholders of a strengthened UK AD supply chain as a result of GGSS	Impact interviews with industry bodies and supply chain	This will be tested in impact interviews.	Not yet tested
Doubly decisive	Consensus from interview respondents that any positive changes in the supply chain capacity are a direct result of GGSS	Impact interviews with industry bodies and supply chain	This will be tested in impact interviews.	Not yet tested

Alternative Hypothesis: A supportive market for biomethane injection means that demand for AD plant construction and operation skills and supply chains is high even without government support.

Table 16: GGSS CC7 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Consensus from interviews that the market is favourable for new AD plant deployment	Process interviews with applicants and non-applicants	The majority of respondents highlighted significant challenges in AD plant deployment, including supply chain issues, feedstock prices, planning permission, lack of investor confidence and inflation. The evidence suggests that without subsidy the AD market would not be self-sufficient or as attractive a marketplace. Overwhelming majority of respondents believe that the AD market is not close to self-sufficiency/sustainability. Despite the challenges, there was a high level of general enthusiasm and optimism in the sector, but this is not being met by suppliers' scaling which has led to supply-chain issues for all Ongoing applicants. This was attributed to some different factors (War in Europe, high demand everywhere, issues with UK-based suppliers); recent interviews with Non-Applicants on the state of the biomethane market highlighted a difficult picture for deployment, with 1. High feedstock prices 2. Slow supply chains 3. Planning permission and grid access challenges 4. Challenges with RTFO and GGCS (and lack of inclusion in UK ETS) 5. Limited market for digestate. The first three make developing a plant more difficult and time consuming and the later three mean that margins are tighter / there are less viable revenue streams beyond injection.	Failed – strong evidence

Hoop Test	Systematic evidence of new AD plants deploying without tariff guarantee from the GGSS	Process interviews with Non-Applicants and impact interviews policy	The evaluation spoke to 9 Non-Applicants across two waves of process interviews. Of these, 2 were not interested in developing new plants, but the remaining 7 all had some interest / plan to develop new AD plants, and in all cases bar 1, it was felt that new AD plants would not be able to come online without GGSS (and the remaining one based their business model on RTFO, which to our understanding has seen a large drop in price from when the interview took place.	Failed – strong evidence
Smoking Gun	Consensus from UK supply chain and industry bodies that they would have remained and invested in the market regardless of GGSS	Supply chain interviews	This will be tested in impact interviews.	Not yet tested
Doubly decisive	Systematic evidence of AD plant suppliers working on UK projects that have not received GGSS funding	Supply chain interviews	This will be tested in impact interviews.	Not yet tested

Summary Narrative: The evidence gathered on the causal hypothesis that GGSS has provided stability to the UK AD supply chain and workforce is inconclusive and the hypothesis is neither confirmed nor rejected. This again is in part due to the timing of evidence collection, with further evidence to be gathered through the impact evaluation. Interviews highlighted that while local and UK supply chains are expected to benefit from AD plant deployment, many projects continue to rely heavily on international supply chains. Respondents frequently referenced global challenges, such as the Russo-Ukraine war and high demand across international markets, as factors contributing to supply chain issues. While GGSS is anticipated to strengthen local skills and expertise over time, further evidence is needed to confirm the scheme's long-term impact on the UK supply chain.

There is strong evidence to reject the alternative hypothesis that market conditions alone are sufficient to sustain the AD supply chain and workforce. Respondents frequently highlighted significant barriers to market growth without GGSS support, including high feedstock prices, slow supply chains, and limited investor confidence. These challenges suggest that the sector would struggle to grow without the financial and structural support provided by GGSS.

GGSS Contribution Claim 8

Evaluation Questions:

7b. How has the design of the scheme (including tariff levels, tiering, degression, ATRs, and eligibility requirements) supported achievement of the scheme objectives? What impact has the GGSS had on AD deployment and efficiency of production?

7c. How has the design of the scheme (including tariff levels, tiering, degression, ATRs, and eligibility requirements) supported achievement of the scheme objectives? How has the overall subsidy mechanism (15-year, three-tiered tariff) influenced the achievement of the identified impacts?

Impact in the ToC: B03: Increase in investment in the AD biomethane industry.

Causal Hypothesis: The design of tariff tiers and the limited availability (and increasing cost) of feedstock encourages developers to test business models to provide greater efficiencies and revenues. This practice, facilitated by knowledge sharing, leads to cost savings in biomethane production and improved returns, and therefore a less subsidy-dependent market.

Table 17: GGSS CC8 Process Tracing Test

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Hoop Test	Consensus from interviews that they have been able to reduce the costs in producing biomethane	Impact evaluation interviews	To be tested in impact interviews	Not yet tested
Smoking gun	Consensus from interviews that they have been able to reduce the costs in producing biomethane	Impact evaluation interviews	Most applicants gave examples of innovation at individual sites – cost savings associated with this not explicitly stated but could be assumed. Many applicants reported the innovation involves feedstock/plant management. Unclear if the tariff rates were the driving factor for innovation	Inconclusive

Alternative Hypothesis: Biomethane production is already heterogeneous and innovative approaches that improve financial viability occur through market forces**.**

Table 18: GGSS CC8 Alternative Hypothesis Process Tracing Test

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Consensus from interviews with participant AD plants that the scheme has not been the key factor in driving innovation	Process interviews	Almost all applicants reported some level of innovation to increase the value of the site. This was varied in scope, but only 1 applicant reported using “conventional and typical” AD plant systems for operation.	Inconclusive
Hoop test	Consensus that innovations and cost reductions are occurring across both GGSS and non-GGSS plants, indicating broader market forces at play	Interviews with non-GGSS applicants	Evidence of non-supported applicants taking innovative approaches (e.g. virtual pipeline, innovation with feedstock) to accommodate a more challenging market.	Inconclusive

Summary Narrative: Given the stage of evaluation research, the causal hypothesis has not been fully tested and the causal link between the GGSS and innovation in the sector has not been established. Interviews indicate that many applicants have adopted site-specific innovations, particularly in feedstock and plant management, which could contribute to improved efficiencies. However, cost savings linked directly to these innovations have not been explicitly stated, and it remains unclear whether the tariff rates themselves were the primary driver of these efforts.

Similarly, the alternative hypothesis is inconclusive. While some non-GGSS-supported plants reported innovative approaches, these efforts were typical responses to specific challenges rather than evidence of broader market-driven cost reductions. Additionally, most respondents indicated that conventional and typical systems remain prevalent, suggesting that widespread innovation is unlikely without targeted incentives like those provided by GGSS.

GGL Contribution Claim 1

Evaluation Questions

11. What have the impacts of the levy been, and how did they fit with the Department's expectations?

a. Did the GGL cover the costs of the GGSS?
b. Is it compatible with existing industry processes?
c. Have the financial management systems been implemented within the GGSS implementation time scales?
d. Were there instances of gas supplier non-compliance? Was this deliberate or accidental?

Impact in the ToC: Sufficient funding collected to fund planned deployment under GGSS with minimal under / over spend.

Causal Hypothesis: The GGL is appropriately designed to fund the GGSS.

Table 19: GGL CC1 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Fossil fuel gas suppliers are charged a levy point per meter each supplier serves in line with guidance from the Department	GGL process evaluation interviews	In the process evaluation interviews, the eight gas fossil fuel gas suppliers interviewed described the levy charge and the way it worked. This was in line with published guidance from the Department on levy rates and exemptions and Ofgem on scheme administration. Two suppliers specifically commended the clarity with which the levy is communicated and said the levy has been easy to understand.	Passed
Straw-in-the-wind	All gas suppliers comply with their GGL obligations	GGL impact evaluation monitoring	In the process evaluation interviews, Ofgem cite some, but minor, non-compliance. In the process evaluation interviews, the view from Ofgem respondents on compliance was there have been minimal issues with compliance, involving only a small number of slightly late payments from suppliers, and in all cases, quickly and easily dealt with. One respondent pointed out that at the beginning of schemes of	Inconclusive

			this nature, some non-compliance is expected as levy payers get to grips with the requirement, and therefore the low level of non-compliance is a positive of the levy.	
Hoop Test	Appropriate mechanisms are used by the Department to determine the levy that fossil fuel gas suppliers are charged per meter point to meet the costs of the GGSS	GGL process evaluation interviews	In GGL process evaluation interviews, both Ofgem and the Department stakeholders saw the key success of the levy as fulfilling its main policy aim, collecting sufficient funds to make payments to biomethane producers on the GGSS. Stakeholders emphasised that the levy has collected the level of funding that it intended to, and although the amount collected exceeds the payments made, this imbalance is not evidence that the levy did not work as intended. In GGL process evaluation interviews, the consistent view across all the Department respondents was that the process to set the levy each year worked well, and the steps to set the levy were clear and easily repeatable year-on-year. Department stakeholders also expressed confidence that the levy would do what it was intended to do, in terms of sufficiently funding the GGSS. Respondents described the risk analysis that is undertaken and the processes for building in headroom for unexpected applicants and fewer meter points than expected.	Passed
Hoop Test	The design and operation of the GGL is regularly reviewed with no changes made	GGL impact evaluation interviews: to be reflected in method	Although the Department keep the design of the GGL under review, it would be premature conclude that all evidence tests are ‘passed’ given timing of process evaluation interviews relative to length of the scheme. Evidence should be sustained.	Inconclusive
Smoking Gun	There are sufficient funds available from	GGL process evaluation interviews	For scheme closure to the new applicants (FY27/28) there is 41.8% of the budget yet unallocated (as of data	Failed (suggest re-exploring in

	the GGL to fund the GGSS with no under- or over- spend.		from the January 2025) with this current FY (24/25) 11.2% unallocated, and the previous FY (23/24) 58.0% unallocated. GGL monitoring data (to be received and analysed as part of the GGL monitoring data) will tie funds raised through GGL with budget for GGSS.	GGL impact evaluation to see if and how position has changed / is changing)

Alternative Hypothesis: Additional mechanisms are required to cover the costs of the GGSS

Table 20: GGL CC1 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	The Department explore changes to the design and operation of the GGL because the GGL is not working	GGL process interviews and GGL impact evaluation interview	In GGL process evaluation interviews, the consistent view across all the Department respondents was that the process to set the levy each year worked well, and the steps to set the levy were clear and easily repeatable year-on-year. Department stakeholders also expressed confidence that the levy would do what it was intended to do, in terms of sufficiently funding the GGSS. Respondents described the risk analysis that is undertaken and the processes for building in headroom for unexpected applicants and fewer meter points than expected.	Inconclusive
Hoop	The Department explore alternatives to the GGL for funding GGSS because the GGL is not working	GGL process interviews and GGL impact evaluation interview	This will be tested in impact interviews.	Inconclusive
Smoking Gun	Mechanisms are used to fund GGSS in addition to the GGL	GGL process evaluation interviews	For scheme closure for new applicants (FY27/28) there is 41.8% of the budget yet unallocated (as of data from the January 2025) with this current FY (24/25) 11.2% unallocated, and the previous FY (23/24) 58.0% unallocated.	Failed

			GGL monitoring data (to be received and analysed as part of the GGL monitoring data) will tie funds raised through GGL with budget for GGSS.	
Doubly Decisive	Mechanisms are used to fund GGSS in addition to the GGL because funding from the GGL is not sufficient	GGL process evaluation interviews	In GGL process evaluation interviews, both Ofgem and the Department stakeholders saw the key success of the levy as fulfilling its main policy aim, collecting sufficient funds to make payments to biomethane producers on the GGSS. Stakeholders emphasised that the levy has collected the level of funding that it intended to, and although the amount collected exceeds the payments made, this imbalance is not evidence that the levy did not work as intended.	Failed

Summary Narrative: At this interim stage the evaluation evidence is supportive of the fact that the GGL is appropriately designed to fund the GGSS, but weak. Interim evidence that the alternative hypothesis has failed is supportive, but also weak. This is largely down to timing given the levy had not been fully tested when the GGL process evaluation was conducted. Therefore, further evidence is required as part of the GGL impact evaluation (both monitoring data and interviews).

There is evidence from the process evaluation that the GGL is working as intended, including qualitative feedback it's meeting its policy aim, collecting sufficient funds to make payments to biomethane producers on the GGSS. Qualitative feedback emphasised that the levy has collected the level of funding that it intended to, and although the amount collected exceeds the payments made, this imbalance is not evidence that the levy did not work as intended. The consistent view across all the Department respondents was that the process to set the levy each year worked well, and the steps to set the levy were clear and easily repeatable year-on-year. Department stakeholders also expressed confidence that the levy would do what it was intended to do, in terms of sufficiently funding the GGSS. Respondents described the risk analysis that is undertaken and the processes for building in headroom for unexpected applicants and fewer meter points than expected.

GGL Contribution Claim 2

Evaluation Questions

12. What burden has the levy imposed on gas suppliers?
    a. Did the levy lead to high time and cost burden for Ofgem to administer the levy?
    b. Were the administrative costs for gas suppliers as expected? Were there any unforeseen costs?

Impact in the ToC: Any effect on customer gas bills is minimal

Causal Hypothesis: By managing the available budget for the GGSS through annual caps, after which applicants are placed in a queue, the total impact of the GGL on consumer gas bills is kept to an acceptable level while still enabling the GGSS to be fully funded.

Table 21: GGL CC2 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Fossil fuel gas suppliers are paying a levy per meter each supplier serves in line with guidance from the Department	GGL process evaluation interviews	In the process evaluation interviews, the eight gas fossil fuel gas suppliers interviewed described the levy charge and the way it worked. This was in line with published guidance from the Department on levy rates and exemptions and Ofgem on scheme administration. Two suppliers specifically commended the clarity with which the levy is communicated and said the levy has been easy to understand. In process evaluation interviews, it was mentioned by two suppliers that the scale of the costs to individual customers is generally not noticeable, and therefore the way by which costs are passed through are unlikely to incite any challenge. Further evidence on the impact on consumer bills to collected in GGL evaluation interviews.	Passed
Hoop	Mechanisms are deployed in the operation of the GGL to manage the impact on consumer gas bills	GGL process evaluation interviews: with gas suppliers	This will be tested in impact interviews.	Not yet tested

Smoking Gun	There are no challenges to the levy rate on the basis of the impact on consumer bills	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews.	Not yet tested

Alternative Hypothesis: The Green Gas Levy requires redesign and / or additional mechanisms are required to cover the costs of the GGSS.

Table 22: GGL CC2 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	The Department explore changes to the design and operation of the GGL	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews	Not yet tested
Hoop	The Department explore alternatives to the GGL for funding GGSS	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews	Not yet tested
Smoking Gun	The Department make changes to the design and operation of the GGL	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews	Not yet tested

Summary Narrative: Overall, it is too early to say whether or not the causal hypothesis is supported. There is weak evidence to support the hypothesis from process findings, but further time is required to fully test the operation and effect of the GGL from when evidence was collected.

GGL Contribution Claim 3

Evaluation Questions

13. How has the design of the levy supported the achievement of the GGL objectives?

    a. How has the overall levy design, including the meter point design, budget and financial management, and enforcement & compliance, influenced the achievement of the objectives?

b. What challenges to meeting the objectives arose during the length of the levy, affecting its success and effectiveness?

Impact in the ToC: Learnings from the policy (e.g. on policy design).

Causal Hypothesis: The experience of the GGL normalises levies on fossil fuel gas suppliers and provides the Department with the necessary experience to design and develop further levies on gas suppliers in the future.

Table 23: GGL CC3 Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	The Department are considering where gas levies could additionally be applied	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews.	Not yet tested
Hoop	The Department are actively designing and developing a further gas levy	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews.	Not yet tested
Smoking Gun	The Department design and develop a further gas levy	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews.	Not yet tested

Alternative Hypothesis: HM Treasury need to fund initiatives to reduce Greenhouse Gas Emissions.

Table 24: GGL CC3 Alternative Hypothesis Process Tracing Tests

PT Test	Evidence Expected	Evidence Source	Evidence Summary	Test Outcome
Straw-in-the-wind	Mechanisms are used to fund GGSS in addition to the GGL because funding from the GGL is not sufficient	GGL process evaluation interviews	In GGL process evaluation interviews, both Ofgem and the Department stakeholders saw the key success of the levy as fulfilling its main policy aim, collecting sufficient funds to make payments to biomethane producers on the GGSS. Stakeholders emphasised that the levy has collected the level of	Failed

			funding that it intended to, and although the amount collected exceeds the payments made, this imbalance is not evidence that the levy did not work as intended. For scheme closure for new applicants (FY27/28) there is 41.8% of the budget yet unallocated (as of data from the January 2025) with this current FY (24/25) 11.2% unallocated, and the previous FY (23/24) 58.0% unallocated. GGL monitoring data (to be received and analysed as part of the GGL monitoring data) will tie funds raised through GGL with budget for GGSS.	
Smoking Gun	Businesses cases reflect Treasury as the sole funder of initiatives to reduce Greenhouse Gas Emissions	GGL impact evaluation interviews: to be reflected in method	This will be tested in impact interviews.	Not yet tested

Summary Narrative: Overall, it is too early to say whether or not the causal hypothesis is supported. There is weak evidence to reject the alternative hypothesis from process findings, but further time is required to fully test the operation and performance of the GGL from when evidence was collected.

This publication is available from: www.gov.uk/government/publications/green-gas-support-scheme-ggss-and-green-gas-levy-ggl-interim-evaluation-2025

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