Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Nov 2024

Project Reference Number

NIA_WWU_02_68

Project Registration

Project Title

Accelerating Progress

Project Reference Number

NIA_WWU_02_68

Project Licensee(s)

Wales & West Utilities

Project Start

November 2024

Project Duration

0 years and 4 months

Nominated Project Contact(s)

Matt Hindle

Project Budget

£125,773.00

Summary

This project will identify potential options for reducing emissions from gas transmission, distribution and usage and develop a framework to analyse the cost, benefits and impacts of these options under different scenarios.

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

The UK has challenging and legally binding targets to reach Net Zero greenhouse gas emissions by 2050. In response to this the UK Government issued “The Ten Point Plan for a Green Industrial Revolution” at the end of 2020 to demonstrate its commitment to tackling greenhouse gas emissions. This set the UK’s ambition to be amongst the leading countries investigating the use of hydrogen for industry, transport and home heating. This was followed by a dedicated Hydrogen Strategy in 2021 which set firm commitments around low carbon hydrogen production and trials. Meanwhile, the use of biomethane is continuing to expand with well over 100 production sites connected to the gas transmission and distribution system across Britain, and the Iron Mains Risk Reduction Programme is continuing to reduce both risk and methane emissions from the gas system.

The Climate Change Act 2008 requires UK Government to set five year statutory ‘carbon budgets’ at least 12 years in advance, consistent with the overall Net Zero target to 2050. The fifth carbon budget (2028-32) requires a 52% reduction on 1990 emissions, and the subsequent sixth carbon budget (2033-37) requires reductions of 78% by the end of its period. The Government is expected to legislate on the seventh carbon budget (2038-42) in 2025. The Committee on Climate Change has already signalled concern about these targets, stating that its “assessment is that the previous Government’s policies and plans were insufficient to achieve the UK’s targets in the 2030s.”

Method(s)

The project is seeking to understand how the gas networks can increase their contribution to emissions reductions targets and what policy and regulatory changes could enable the acceleration of these contributions. The method used to undertake this will be commercial and regulatory analysis. The project will achieve this by investigating:

- How networks can reduce gas system emissions
- How networks can use gas to facilitate wider decarbonisation
- And options for decarbonising gas use

Data & Measurement quality statement

This project will not involve the use of large-scale datasets or complex modelling. However, we will use spreadsheet modelling to estimate the potential carbon savings of different interventions, over different parts of the value chain for gas, under different scenarios.

Ensuring data accuracy

Where possible, we will draw on reputable and established sources such as FES. However, many of the inputs will be highly uncertain as they relate to future scenarios. Where possible we will triangulate between multiple sources and will ensure that all assumptions (including these uncertainties) are logged in a DESNZ-style assumptions log which sets out sources.

Ensuring data is easily accessed and usable

The primary output from this project will be a report. However, in order to ensure that WWU has full access to the underlying data and assumptions, we will share the model spreadsheet at the end of the project. WWU will own all intellectual property associated with this spreadsheet and so can share with other stakeholders. The spreadsheet will be in Excel format.

The project is rated low in the common assessment framework detailed in the ENIP document after assessing the total project value, the progression through the TRL levels, the number of project delivery partners and the high level of data assumptions. No additional peer review is required for this project.

Scope

Task 1: Identify feasible technical options for the contribution of the gas system to reducing emissions

To understand how the gas system might contribute to decarbonisation of the energy system, it is helpful to consider the drivers of greenhouse gas emissions at each stage of the value chain.

Frontier will identify relevant drivers of emissions, levers for reducing emissions at each stage of the value chain and the extent to which these levers ("abatement options") may already be incorporated in existing scenario projections. In doing so, they will draw on existing sources (e.g. CCC analysis, FES 2024, policies and initiatives in other countries, previous network innovation projects, evidence base listed in Overview Scope Document) and on engagement with WWU and other gas networks. They will also check what actions gas networks in other European countries may be taken, leveraging the expertise across their network of European offices.

The repurposing of networks to hydrogen will be considered as part of this project. Clearly, enabling the hydrogen transition will be an important part of the gas sector's contribution to decarbonisation. However, the main focus of the study will be options that can be taken on the remaining methane grid – under different scenarios for its potential development (informed by FES 2024 projections for methane demand).

Having generated a long list of technical options, Frontier will filter out any options that can be ruled out or de-prioritised at this stage (for example, due to a lack of technical readiness or inconsistency with long-term term decarbonisation goals). If more than 10 options remain following this filtering, they will filter further to select those that are likely to have the biggest abatement potential, based on the Task 2 analysis.

The output of Task 1 will be a shortlist of technically feasible abatement options, categorised by stage of the gas value chain. Any uncertainties regarding the deliverability of options might suggest areas for future research – this will form an input to Task 4.

Task 2: Framework to analyse costs, benefits and impacts of these options

The key metrics of relevance will be the scale of emissions reductions that can be achieved from each abatement option and the associated (net) cost (per tonne of CO_2 saved). Frontier will calculate indicative values for each, drawing on published evidence where available and any additional evidence WWU and/or other gas networks are able to provide.

Once counterfactual is established, Frontier will proceed to quantifying emissions reductions potentials:

- In some cases, it may be possible to directly infer emissions reductions potential (e.g. based on observing the change between FES 2024 scenarios)
- In other cases, where abatement options do not feature in FES 2024, additional calculations may be required, while ensuring consistency with FES 2024 to the extent practicable. In these cases, Frontier will set out where the scale of emissions reductions may vary depending on the outlook for the methane system (e.g. according to FES 2024 scenario).
- The mapping exercise undertaken as part of Task 1 will allow Frontier to identify possible overlaps and interactions between abatement options and avoid double-counting of emissions savings across options. The ordering in which options are assumed to be introduced will affect the calculations of savings from each option - we will clearly set out our assumptions.

Some additional qualitative analysis may be required to give a fuller picture for each option

- Non-monetised impacts: It may not be feasible to monetise all relevant costs or cost savings associated with each option, especially given the timescales for this work. Where non-monetised impacts (such as security of supply impacts, health benefits or wider environmental impacts other than greenhouse gas emissions reductions) are likely to be significant, Frontier will ensure this is clearly set out.
- Potential to contribute in early 2030s: Frontier will also distinguish between options that have greater potential to deliver emissions reductions in the early 2030
- Uncertainty: It will be important to flag where there is uncertainty regarding the scale or cost of emissions reductions.

Task 3: Identify specific policy and regulatory changes to facilitate options

Having mapped relevant technical options for decarbonisation to the relevant parts of the value chain it will be easier to identify relevant policy and regulatory interventions. For example:

- options involving action at network level may require solutions related to network regulation;
- for options involving customers downstream switching technologies, the relevant policy levers may sit with Government; and
- in some cases, a given abatement option may require co-ordination between several actors.

Many of the above may already be covered by existing policies and. Frontier will summarise their assessment of how the current landscape maps to technical options identified.

Frontier will identify abatement options not covered by existing policies. The output from this task would be a specific identification of policies that would be appropriate to address the remaining gaps.

The economics toolkit provides an appropriate framework for identifying relevant policy and regulatory tools to address gaps. The intervention should be matched to the relevant market failure or barrier that is preventing a given abatement option from being deployed, and consider which entity is best placed to deliver the abatement option. For example, in the case of gas network improvements that reduce shrinkage, the benefits accrue to stakeholders that do not bear the costs – so models are required that either internalise benefits or support efficient cost recovery. In the case of CCUS, one barrier to further uptake may be the need for policy and regulatory co-ordination in respect of CO2 transport and storage infrastructure.

Frontier will provide qualitative (e.g. RAG-style) ratings for each of the above criteria which, when viewed alongside the quantitative analysis, can be used to inform a judgement regarding each option (for example, whether certain options should be viewed as “sure bets” or as high potential, but with higher risk attached).

Task 4: Identify areas for further research and innovation

Based on the work carried out during Tasks 1 to 3, Frontier will have identified key evidence gaps in relation to the technical feasibility of abatement options, the policies required to enable them, and the costs and benefits associated with them. Starting from this, they will distil a list of research questions regarding the abatement options with the most significant potential (and therefore likely to be higher priority)

There is a lot of ongoing work to identify the most effective route to meet net zero in the UK and this project is one of many projects which will assist in this area.

Objective(s)

To understand what policy and regulatory changes could enable the acceleration of emission reductions targets

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

An assessment of distributional impacts (technical, financial and wellbeing related) for this project has been carried out using a

bespoke assessment tool, which assesses the project as having a positive, negative or neutral effect on consumers in vulnerable situations. To help inform the assessment, this tool considers the categories of consumers identified in the Priority Services Register.

This project has been assessed as having a neutral impact on customers in vulnerable situations

Success Criteria

Success would mean that WWU would have a summary of potential options and specific changes which would enable the reduction in our emissions targets.

Project Partners and External Funding

The project partners for this project are Frontier Economics. The project will be wholly funded via NIA.

Potential for New Learning

The project will have identified key evidence gaps in relation to the technical feasibility of abatement options, the policies required to enable them and the costs and benefits associated with them.

Scale of Project

This is a desktop study, which is the correct scale for this project. It enables WWU to review all options available to us to reduce emissions and make strategic decisions on what our next steps should be.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

As this is a desktop study it is not specific to a certain location. Work will be carried out by Frontier at their offices.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

External: £94,330

Internal: £31,443

Total: £125,773

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

The UK has challenging and legally binding targets to reach Net Zero greenhouse gas emissions by 2050. In response to this the UK Government issued “The Ten Point Plan for a Green Industrial Revolution” at the end of 2020 to demonstrate its commitment to tackling greenhouse gas emissions. This set the UK’s ambition to be amongst the leading countries investigating the use of hydrogen for industry, transport and home heating. This was followed by a dedicated Hydrogen Strategy in 2021 which set firm commitments around low carbon hydrogen production and trials. Meanwhile, the use of biomethane is continuing to expand with well over 100 production sites connected to the gas transmission and distribution system across Britain, and the Iron Mains Risk Reduction Programme is continuing to reduce both risk and methane emissions from the gas system.

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How the Project has potential to benefit consumer in vulnerable situations:

n/a

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter’s and/or Electricity Transmission or Electricity Distribution licensee’s network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

N/A

Please provide a calculation of the expected benefits the Solution

There is a lot of ongoing work to identify the most effective route to meet net zero in the UK and this project is one of many projects which will assist in this area, however there are no direct financial benefits upon completion of the project.

Please provide an estimate of how replicable the Method is across GB

The findings from the project will be fully replicable across GB networks

Please provide an outline of the costs of rolling out the Method across GB.

There are no roll out costs for this project

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).

☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)

☐ A specific novel operational practice directly related to the operation of the Network Licensees system

☐ A specific novel commercial arrangement

RIIO-2 Projects

☐ A specific piece of new equipment (including monitoring, control and communications systems and software)

☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven

☑ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)

☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology

☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution

☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

All networks will have emissions targets that they must meet, so the report can be used to inform next steps for all network licenses.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

n/a

Is the default IPR position being applied?

☑ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

All networks have been made aware of this project and no concerns of duplication have been raised

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

N/A

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

The project aims to develop new approaches to enable faster progress towards decarbonisation and the energy system transition. As such it will build on learning from other projects, including previous network innovation work, and seek to understand how this could be practically delivered and accelerated through policy changes

Relevant Foreground IPR

The report produced as part of the project will for the relevant foreground IP.

Data Access Details

Data for this project and all other projects funded under the Network Innovation Allowance (NIA), Network Innovation Competition (NIC) or the new Strategic Innovation Fund (SIF) can be found or requested in a number of ways:

- A request for information via the Smarter Networks Portal at https://smarter.energynetworks.org, to contact select a project and click 'Contact Lead Network'. WWU already publishes much of the data arising from our innovation projects here so you may wish to check this website before making an application.
- Via our Innovation website here
- Via our managed mailbox innovation@wwutilities.co.uk
- Details on the terms on which such data will be made available by Wales & West Utilities can be found in our publicly available "Data sharing policy relating to NIC/NIA projects" here

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

The project is considering activity which is outside of business as usual, as it would require or reflect policy changes and/or potentially involve net zero delivery investment which is not funded in base allowances

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

As this project is considering activity which is outside of business as usual for the gas networks, there are commercial and regulatory risks which mean it requires NIA support. Technical and commercial risks may also be involved depending on the proposals which the project develops

This project has been approved by a senior member of staff

☑ Yes