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

Mar 2023

Project Reference Number

NIA_WWU_2_18

Project Registration

Project Title

European Hydrogen Distribution Insights

Project Reference Number

NIA_WWU_2_18

Project Licensee(s)

Wales & West Utilities

Project Start

April 2023

Project Duration

0 years and 3 months

Nominated Project Contact(s)

Matt Hindle

Project Budget

£140,000.00

Summary

Wales and West Utilities are seeking to learn from innovation activities carried out by gas distribution networks across Europe focused on the transition from methane to hydrogen. This will include some “best practice” examples of pilots or other projects that WWU can specifically learn from and potentially adopt as part of its future innovation agenda.

Third Party Collaborators

Guidehouse

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

The UK government has committed to reducing greenhouse gas emissions to net zero by 2050 with the Scottish government targeting net zero by 2045. All future energy modelling identifies a key role for hydrogen in providing decarbonised energy for heat, transport, industry, and power generation. Significant decisions on the future of UK heat policy are expected from the UK government in 2026 so the need for further evidence to influence these decisions is of critical importance.

Wales and West Utilities are seeking to learn from innovation activities carried out by gas distribution networks across Europe focused on the transition from methane to hydrogen. This will include some “best practice” examples of pilots or other projects that WWU can specifically learn from and potentially adopt as part of its future innovation agenda. WWU would look to leverage the work done by other gas distribution network companies across Europe, learn from existing work and deploy some of the priority initiatives across WWU assets to accelerate the hydrogen transition. It is noted that there are some European gas distribution companies that are more advanced in some areas of innovation and net zero transition that could help advance the interests of UK customers.

Method(s)

WWU are seeking to learn from innovation activities carried out by gas distribution networks across Europe focused on the transition from methane to hydrogen. This will include some “best practice” examples of pilots or other projects that WWU can specifically learn from and potentially adopt as part of its future innovation agenda.

As ambition and expectation for the role of hydrogen continue to advance in the UK and globally, there is a clear opportunity for local innovation to be well informed by the success and challenges faced in other markets. European gas networks are amongst the world leaders in their focus on hydrogen, which presents WWU with the chance to assess the learning from their work to date and analyse what can be applied here.

This project focuses on what is new and cutting edge in the way that hydrogen business models are evolving for gas distribution networks. By definition, it seeks to explore the latest international innovations and ways of testing the boundaries for how hydrogen can develop as an effective, low carbon, replacement for methane. The project is a research project – analysing progress on EU distribution network hydrogen innovation and what lessons can be taken on in the UK and applied to gas networks here. This would naturally lead to local development or demonstration activities as follow-on stages.

The project looks to cover:

- European Hydrogen Distribution market analysis, including case studies and project identification
- Deeper dive analysis of three specific case studies with potential applicability in the UK
- Summary of hydrogen distribution best practice observed and recommendations for WWU

The case studies will be selected based on the strategy and execution imperatives, transparency of project details and timeline, support from relevant stakeholders, integration across the hydrogen value chain, and project scale. Applicability of the project ideas to the UK and the GB gas networks is also of primary importance.

Consumers will benefit from this project through WWU learning from best practice in other EU countries, which avoids “reinvention” and enables cost effective acceleration of WWU hydrogen initiatives.

Scope

H2 Distribution Market Analysis

- Overview of hydrogen DSO value chain and background context
- Drivers and barriers to DSO-level hydrogen adoption
- Overview of Gap analysis in UK’s H2 Distribution infrastructure
- Project longlist

Best practice case studies: Deep-Dive of project case studies:

- Three case studies selected according to multiple criteria
  - Case studies will be selected based on the strategy and execution imperatives, transparency of project details and timeline, support from relevant stakeholders, integration across the hydrogen value chain, project scale, and complementarity with developments at WWU
- Summary of best practices across each project
- Project recommendations

Recommendations: Summarize hydrogen best practices:

- Final report and case studies.

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 to evidence the major or minor role hydrogen will have in different scenarios. Repurposing the UK gas networks with hydrogen to support the challenge of the climate change act has the potential to save £millions with minimal gas customer disruption verses alternative decarbonisation solutions.

Objective(s)

To perform a comprehensive research and evaluation of evidence from across Europe in relation to hydrogen transportation and delivery.

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

A successful project will see the production of a report detailing the findings of the research, as well as three detailed best practice case studies.

Project Partners and External Funding

The project will be delivered by Guidehouse, with the project fully funded by the NIA.

Potential for New Learning

The project is fully focused on new learning, recognising that other countries are taking steps that we in Great Britain can readily learn from and potentially apply in areas of our hydrogen development and innovation.

Scale of Project

The scale of the project is appropriate at this stage. It is a desktop study, to help gain understanding in learnings from hydrogen work taking place in Europe.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL4 Bench Scale Research

Geographical Area

The project is not confined to one geographical location. As this is a research project, work will take place at Guidehouse offices.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

External Cost: £105k

Internal Cost: £35k

Total Cost: £140k

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:

Learning from this project will benefit the transition of the GB energy system towards an effective hydrogen future as part of a more resilient whole system approach.

By learning from work already completed networks are able to make informed decisions on the direction of travel in relation to a hydrogen switchover.

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 to evidence the major or minor role hydrogen will have in different scenarios. Repurposing the UK gas networks with hydrogen to support the challenge of the climate change act has the potential to save £millions with minimal gas customer disruption verses alternative decarbonisation solutions.

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

The learnings from the project will be replicable across the entire network.

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

There are no roll out costs relating to the project directly.

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

The learnings will be replicable across each network. The report will be published on the ENA portal, for all networks to access.

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 were made aware of the is project and no concerns on duplication were 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

This project focuses on what is new and cutting edge in the way hydrogen business models are evolving for gas distribution networks. By definition, it seeks to explore the latest international innovations and ways of testing the boundaries for how hydrogen can develop as an effective, low carbon, replacement for methane.

Relevant Foreground IPR

The report will form the relevant foreground IPR.

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

Ofgem published its final determinations which included a variety of provisions to enable necessary development work on Net Zero projects but also to ensure vulnerable customers are thought about in any decision making. This project has the potential to facilitate the energy system transition, while also keeping vulnerable customers front and centre of our thinking and is therefore eligible to use the NIA funding mechanism.

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

The project would only be undertaken with support from NIA funding, it is in the interests of gas customers, the regulator and the UK government and the realisation of any benefits are outside the control of the gas networks. There is no allowance in BAU business plans for this type of work and there is a risk that if hydrogen is not accepted as a means to heat homes in 2050 that this work is no longer valid.

This project has been approved by a senior member of staff

☑ Yes