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

Jan 2023

Project Reference Number

NIA_WWU_2_17

Project Registration

Project Title

Lessons from the Past: What can we learn from past energy transitions in the Gas Industry

Project Reference Number

NIA_WWU_2_17

Project Licensee(s)

Wales & West Utilities

Project Start

January 2023

Project Duration

0 years and 8 months

Nominated Project Contact(s)

Lewis Garvey

Project Budget

£78,666.00

Summary

The industry has undertaken many projects to look at the potential implications from a switch to hydrogen to the gas infrastructure, but it has not attempted to initiate any projects which could extract useful learning from its considerable long operational history, in particular the changes that occurred after World War Two and through to the conversion to natural gas. The industry is lucky that it has a very well recorded history; many documents were written at this time, describing the changes that occurred and the reasoning behind them. Many of these documents survive in obscure archives but are available to be viewed and in some cases be copied.

This project seeks to provide learning from past energy transitions made by the gas industry, with a particular focus on the conversion program where the British Gas Industry transitioned from Town Gas to Natural Gas, and the important decisions that led to this.

Third Party Collaborators

WSP UK Limited

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.

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This project seeks to provide learning from past energy transitions made by the gas industry, with a particular focus on the conversion program where the British Gas Industry transitioned from Town Gas to Natural Gas, and the important decisions that led to this.

Method(s)

The project will review the challenges that faced the British Gas industry from the point of nationalisation in 1949, through the many changes that were required for the industry to become more efficient and produce gas more cost effectively, so that it could compete with its main rival: the electricity industry. These changes were multifaceted across the industry from the feedstocks used in gas making to the structure of the industry itself.

The information will be obtained through undertaking a deep dive into the published literature of the time, sourced from books published on the subject matter in question, industry reports, journals and transaction, and the wider media such as newspapers, films, and television (where they survive). These would be obtained from some of the specialist public and private archives; these archives contain over 30,000 documents and will provide a rich level of detail for the project. The research will investigate items covering the following areas:

- How the gas industry and its infrastructure were reorganised in 1949;
- How the industry managed the inevitable turbulence and change which occurred in the move from the high-quality gas coals it had been dependent on for so long, to look to new ways of producing or obtaining gas and the different avenue explored.
- How new feedstocks or gases were introduced to move away from coal;
- How natural gas was first obtained and utilised;
- The decision for converting to natural gas;
- Lessons learned from Regional Trials
- How the industry restructured itself to enable it to undertake the conversion programme to natural gas;
- The training of staff and importance of Research and Development
- Conversion of gas appliances;
- Communications and Public Relations during Conversion;
- Safety and regulatory influences on the Conversion Programme;
- Collaborative working during Conversion;
- Customer Journey during Conversion;
- How the conversion programme was financed and what it cost.

The collated information will be compiled into a high-level draft report, the findings of which will then be discussed with those current and former gas industry employees active in the industry in the run up to, and during the time of, the conversion programme to gauge whether it resounds with their own recollection of the events. The report would then be completed including any further information provided by those interviewed.

The findings of the research will be used to inform the GDN's and wider gas industry of the processes employed and the reasoning for the decisions taken through a time of great turmoil which eventually led to a bigger and more successful gas industry. The key points will be compiled within a lessons learned section.

A film will also be produced detailing the findings, containing archive footage and interviews. This will be produced by an independent production company.

Data Quality Statement

The Report will use information and data published from known and verifiable sources, this would include books published on the subject matter in question, industry reports, journals and transaction and newspapers, industry films and television programmes (where they survive. Any accounts given by those who worked in the gas industry during previous conversion to natural gas, will be provided as a written notes of the conversation.

Where relevant data will be stored for future access

The sources of information will be referenced within the report bibliography, with the names of the documents and articles obtained, the publisher and date (where relevant) and the Archive from which they were obtained.

Measurement Quality Statement
Information will only be used if it is from (or able to be traced back to) a verifiable published source as described in the Data Quality Statement. If information fails this test then it won't be used.

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 low level of data assumptions. No additional peer review is required for this project.

Scope

Obtain and Review Key Information Sources: The first activity is to obtain from specialist gas archives relevant information sources concerning those areas identified in the scope and would include information from, but not limited to; books, journals, transaction, technical reports, and newspaper TV/films. This task involves sifting through archives containing many thousand documents, benefit will be made of electronic indexes where they exists and the specialist knowledge of the subject area of those working on the project. These information sources would then the be read and the key information extracted for use in the next work package.

Present the Findings as a Draft Report: Once the key documents have been obtained and the relevant information extracted it will be used to produce a short (≈60 page), focused report to ensure this project builds on what is already known.

Compare the Written Account with the Actual Experience of those who worked on the Conversion Programme: This activity will involve speaking to those who were involved in the conversion process to establish whether the information we have obtained provides an account which concurs with their own experience.

Conclude report: The additional information obtained in WP4 will be included within the report and the report will be finalised.

Dissemination: A short film produced detailing the findings, containing archive footage and interviews. This will be produced by an independent production company.

Objective(s)

To produce and disseminate a report and film with a focus on two key areas. Firstly, the period running up to the conversion programme from the World War II, which led the industry through a wide-ranging restructure to enable the gas industry to become more efficient, and then through the 1950's and early 1960's where the industry had to look to new ways to produce gas. The second phase would be to look at the conversion programme from Town Gas to Natural Gas.

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 completed review of the challenges which faced the British Gas industry from the point of nationalisation in 1949 and what lessons can be learnt for any conversion of the network today.

Project Partners and External Funding

Project Partners: WSP. The project will be wholly funded via NIA.

Potential for New Learning

The project will help networks understand the lessons learnt from the previous switchover of the gas network. The learning generated will help networks with the future switch to Hydrogen.

Scale of Project

This will be a desktop study, which is the appropriate scale for this project as no further work is anticipated in this area.

Technology Readiness at Start

Technology Readiness at End

TRL3 Proof of Concept	TRL4 Bench Scale Research

Geographical Area

The project will cover the entire GB network.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

WWU External: £29,500
WWU Internal: 9,833

NGN External: £29,500

NGN Internal: 9,833

Total: £78,666

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 industry has undertaken many projects to look at the potential implications from a switch to hydrogen to the gas infrastructure, but it has not attempted to initiate any projects which could extract useful learning from its considerable long operational history, in particular the changes which occurred after World War Two and through to the conversion to natural gas. By learning lessons from previous conversions, networks are able to ensure any transition is as smooth as possible.

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

Research project

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

This will be fully replicable across all networks.

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

There are no roll out costs at present, as this is a research 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 are looking to decarbonise the network and switch to an alternative energy source, this project will provide valuable insight to networks on the steps taken during the previous switch over.

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 the project and no concerns were raised with duplication.

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 industry has undertaken many projects to look at the potential implications from a switch to hydrogen to the gas infrastructure, but it has not attempted to initiate any projects which could extract useful learning from its considerable long operational history.

Relevant Foreground IPR

The project will produce a report which form the 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