SIF Discovery Round 2 Project Registration

Date of Submission

Apr 2023

Project Reference Number

10054930

Project Registration

Project Title

Hy-Fair

Project Reference Number

10054930

Project Licensee(s)

SGN

Project Start

Apr 2023

Project Duration

2 Months

Nominated Project Contact(s)

stuart.sherlock@sgn.co.uk

Project Budget

£124,644.00

Funding Mechanism

SIF Discovery - Round 2

SIF Funding

£111,854.00

Strategy Theme

Supporting consumers in vulnerable situations

Challenge Area

Supporting a just energy transition

Lead Sector

Gas Distribution

Other Related Sectors

Funding Licensees

Lead Funding Licensee

SGN - Southern England (inc South London)

Collaborating Networks

SGN

Technology Areas

Carbon Emission Reduction Technologies, Community Schemes, Gas Distribution Networks, Green Gas, Hydrogen

Equality, Diversity And InclusionSurvey

Yes

Project Summary

Switching our homes and businesses from carbon-emitting natural gas to hydrogen is one of the ways we can decarbonise our energy system. However, consumers will be affected in different ways by the change-over to hydrogen, with some domestic consumers and small businesses being at greater risk and more vulnerable to the change than others.

Hy-Fair will identify and quantify the needs for more tailored support, and then develop and trial the innovative social and technological solutions required to make the hydrogen transition work for everyone.

The project will pave the way for an inclusive hydrogen transition. In doing so, the delivery of hydrogen infrastructure will work for everyone first-time, avoiding expensive rework and helping businesses invest in required process and technology changes ahead of time.

The project will incorporate a novel approach to direct engagement with potential hydrogen consumers via a Community Impact Panel (CIP) which will provide Customers in Vulnerable Situations (CIVS) and businesses an opportunity to present their needs to ensure requirements are captured.

The project will also deliver novel solutions to community engagement, including digital engagement tools, and uncover previously unknown areas for future innovation that the hydrogen transition will need to consider when supporting marginalized sections of society.

Project Description

Switching from carbon-emitting natural gas to hydrogen gas is one way we can decarbonise our energy system and offer customers a low cost, low disruption solution to heating their homes, while fighting climate change.
However, consumers will be affected in different ways by the change to hydrogen, with Customers in Vulnerable Situations (CIVS) and small businesses more at risk. 24 million people display a form of vulnerability (FCA) and 70% of businesses that seek support consider themselves vulnerable (Citizen's Advice Bureau). For CIVS, the process of switching to hydrogen may present challenges before during and after the change. And for vulnerable businesses, new hydrogen appliances, boilers, meters, change in pipes and additional ventilation may be required.
Hy-Fair will identify and quantify the needs for more tailored support, and then develop and trial the innovative social and technological solutions required to make the hydrogen transition work for everyone.
The project will pave the way for an inclusive hydrogen transition. In doing so, the delivery of hydrogen infrastructure will work for everyone first-time, avoiding expensive rework and helping businesses invest in required process and technology changes ahead of time.

Hy-Fair will benefit the whole of society, creating new business opportunities and helping accelerate the nation's journey towards an inclusive, Net Zero energy system.
The project will incorporate a novel approach to direct engagement with potential hydrogen consumers via a Community Impact Panel (CIP) which will provide CIVS and businesses an opportunity to present their needs to ensure all customer requirements are captured.
The project will deliver novel solutions to community engagement, including digital engagement tools, and uncover previously unknown areas for future innovation that the hydrogen transition will need to consider when supporting marginalized sections of society.

Third Party Collaborators

CEE

Fife Council

Frazer-Nash Consultancy

Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

Project Description And Benefits

Applicants Location (not scored)

Southern Gas Networks (Lead): St Lawrence House, Station Approach, Horley, England, RH6 9HJ.
Centre for Energy Equality (Partner): 10 Farndon Close, Northwich, Cheshire, CW8 2QH.
Fife Council (Partner): Fife House, North Street, Glenrothes, KY7 5LT.
Frazer-Nash Consultancy Ltd (Subcontractor): Hill Park Court, Springfield Drive, Leatherhead, Surrey, KT22 7NL.

Project Short Description (not scored)

Hy-Fair; leaving no one behind in the transition to green energy.

Video description

www.youtube.com/watch?v=SzYPYwoW3GE

Innovation justification

The problem: Decarbonising gas will make a huge impact on net zero because heating is responsible for a third of the UK's greenhouse gases. Switching from carbon-emitting natural gas to hydrogen gas is one way we can decarbonise our energy system and offer customers a low cost, low disruption solution to heating their homes, while fighting climate change.

However, consumers will be affected in different ways by the change to hydrogen, with CIVS and small businesses more at risk. 24 million people display a form of vulnerability (FCA) and 70% of businesses that seek support consider themselves vulnerable (Citizen's Advice Bureau).

For CIVS, the process of switching to hydrogen may present challenges before during and after the change. And for vulnerable businesses, new hydrogen appliances, boilers, meters, change in pipes and additional ventilation may be required.

Innovation: There is little research into how CIVS and businesses will adapt to the introduction of hydrogen gas (See Appendix). Hy-Fair will deliver novel solutions enabling a smoother hydrogen transition by:

- Utilising the CIP for consumer research to understand consumer needs.
- Fill knowledge gaps of acceptability criteria for varying demographics.
- Understand where / when investment needs to be made.
- Develop communication and education tools for engagement with all customer architypes.
- Develop technical innovations to support consumers throughout the transition.

Gaps in current work: Whilst there has been engineering work to understand the transition to hydrogen gas, consumer research is limited. There is a need to understand the impact of transitioning to hydrogen, recognizing societal needs. Some research that has taken place includes:

- SGN's Omnibus project consulted 1500 consumers to understand awareness of low carbon replacements for gas.
- An NIA project investigating safeguarding during the switchover to hydrogen gas.

The project will incorporate this research to avoid duplication.

Value: Hy-Fair will deliver value against the current counterfactual by:

- Paving the way for an inclusive hydrogen transition ensuring hydrogen gas works for everyone.
- Avoiding consumer opposition and expensive rework.
- Helping businesses invest in process and technology changes.
- Creating new 'green' business opportunities.
- Avoiding breakdowns of equipment leading to economic and health impacts.

The Discovery project will quantify the economic and sustainability benefits to enable prioritization of solutions in later phases.

Funding justification: The hydrogen transition remains uncertain. However, if new policy involves a roll-out of hydrogen gas, networks and wider stakeholders will need to be prepared to tackle the challenges being addressed in this project.

Benefits Part 1

Environmental - carbon reduction – direct CO2 savings per annum against a business-as-usual counterfactual
Environmental - carbon reduction – indirect CO2 savings per annum against a business-as-usual counterfactual
New to market – products, processes, and services

Benefits Part 2

Consumer Benefits: Solutions developed through Hy-Fair will positively impact consumers through a range of financial and social benefits.

- Savings: Question 5 highlighted routes by which Hy-Fair can deliver cost savings to customers.
- Business opportunities: A 'green' label on business activities can allow businesses to charge more for their services - a transition to a hydrogen gas supply opens these pathways for some businesses.
- Social and psychological wellbeing: Major changes to home heating can cause significant distress, particularly for CIVS. Hy-Fair will help develop appropriate communication methods to reach CIVS, facilitating the transparency and openness required to minimize the adverse impacts of change on CIVS. This will deliver significant social benefit through reducing anxiety surrounding the hydrogen gas transition.
- Contribution to Net Zero: By engaging with a wide variety of consumer groups, a feeling of contribution shall be generated, which adds significant social value and supports well-being. Marginalized parts of society often experience feelings of isolation from societal trends such as low carbon/net zero -- this project would enable contribution to this agenda.
- Health: The impact on urban and domestic air quality of burning hydrogen gas in the home will need careful assessment. People who are acutely vulnerable to nitrogen oxide levels might have concerns about the impact of the transition. Hy-Fair will assist in identifying the scale of this problem and making the case for tight regulation on hydrogen burner design to mitigate these problems.

Metrics: Hy-Fair will develop solutions that will pave the way for a smoother hydrogen gas transition for CIVS and businesses. Solutions shall be developed that support consumers before, during and following the transition. Metrics for assessing the effectiveness of the project on an ongoing basis shall be developed as follows:

- Projected benefits: The Discovery phase shall conduct a high-level financial and social cost benefit analysis to understand the benefits based on different hydrogen adoption scenarios.
- Solutions Assessment: The solutions to be established in Discovery and trialled in later phases shall be assessed as to capability of contributing to the projected benefits.
- Validation: During Alpha/Beta trials the solutions assessment effectiveness shall be validated considering technical capability and ongoing consumer feedback. These trials shall be aligned with existing early adoption projects including H100 Fife.

BAU Metrics: In Beta and beyond, metrics shall be put in place to continue to assess Hy-Fair solutions effectiveness so that they can be adapted if necessary, including a framework for continuous improvement.

Project Plans And Milestones

Project Plan and Milestones

Approach: An Agile approach will be adopted enabling the scope to be adapted as new information is uncovered, therefore allowing tailored solutions to be developed that will have the largest impact. All partners shall be involved in delivery throughout as outlined below and in the Project management template.

WP1: Geographic Analysis & Desktop Research (30% expenditure, CEE Lead & All partners contributing)

A geographic analysis of the types of businesses and consumer architypes that are most prevalent in areas that are likely to transition to hydrogen first shall be carried out, including specific research withing Levenmouth, Fife. This shall be combined with a literature review to understand current best practice in supporting small businesses and CIVS with low carbon transitions, including to hydrogen.

WP2: Customer Engagement (35% expenditure, CEE Lead, FC Support)

Structured panel sessions and interviews utilising the CIP and FC and SGNs contacts to engage with consumers and businesses with a range of vulnerable characteristics. For CIVS a panel session with diverse representation will be delivered regarding the hydrogen transition with a follow-on survey carried out. Several focused interviews with businesses with heavy reliance on combustible fuels shall also take place.

WP3: Solution Roadmap and Benefits Analysis (35% expenditure, SGN/FNC Lead, All support)

An analysis of WP 1&2 shall be conducted to understand the consumer groups and businesses most at risk in relation to the hydrogen transition and the key barriers to uptake. An analysis of do-nothing costs will be produced. We will identify necessary and appropriate solutions and communication strategies to employ when engaging with CIVS, to integrate the most apposite modes of communication in the future stages. A roadmap for addressing these challenges shall be developed, informed by a socio-economic benefits analysis of our proposed solutions that will account for both financial and social return on investment.

Deliverables & Success Criteria:

- Reporting showing challenges before, during and following a transition to hydrogen gas.
- Prioritisation based on those most in need of additional support.
- Solutions shortlist and cost benefit analysis showing key solutions from within the roadmap to be developed and trialled in later phases.

Risks/Constraints: Project risks include the availability of stakeholders and CIP members for their contributions as well as overall project delivery within timeframe. Overall project impact links to the speed and scale of future hydrogen gas roll-out. All other significant risks and constraints are outlined in the Project Management Template (see Question 12).

Regulatory Barriers (not scored)

At present SGN and the project team, are confident the proposed concept would not provoke any regulatory barriers that could affect or hinder delivery of either the Alpha or Beta phases.

The project team will also be working closely with internal SGN stakeholders including Policy, Customer Care, Energy Futures and Hydrogen teams, to help consider any policy and procedural impact. As the project develops through the different phases, we will also be making use of a suitable accredited Technical Consultant to help add further industry understanding.

This project is not seeking to influence policy or regulatory decision making in relation to hydrogen gas. However, the benefits associated with the finding will increase exponentially based on the level of uptake of hydrogen gas by homes and small businesses in the future which does have dependencies on government and local policy. It is, however, the view of the project team that this work should not be delayed given the potential benefits the resulting innovations could have if hydrogen gas is taken up rapidly and at scale.

Commercials

Route To Market

All partners are dedicated to making the future energy system fairer than it is today and therefore are committed to making this project successful and sharing the learning to all stakeholders that will be impacted by the hydrogen gas transition.

BAU adoption: The outcomes will be applicable to all networks and consumers that are involved with distributing or converting to hydrogen gas (including domestic and small business). We will ensure that the research and later the tools and methodologies are shared across all UK networks by creating concise summary documentation in various media forms, as well as presenting findings at events.

Competition: This project is about ensuring equal input and therefore inclusive access to decarbonization and will have little to no impact on competitive markets in Discovery. However, if new tools, hardware or methodologies are developed during later phases, we will follow relevant procurement procedures so to not provide advantage to certain suppliers.

Responsibility for innovation: We have engaged across our business with the following departments; innovation, customer service, marketing and communications, strategy and engineering. We have identified several leads from each area to support the outcomes, with our Customer Services team taking the lead as this project is about improving outcomes for our CIVS.

Customer segment: This project will primarily create a toolkit and methodologies to enable networks and other stakeholders effectively engage and improve hydrogen gas transition outcomes for vulnerable customers and small businesses. Therefore, the tools/methods will most likely be used by gas distribution networks as well as through collaborating with wider stakeholders such as local authorities, charities and consumer groups.

Value proposition: Hy-Fair will make sure that all views and requirements of vulnerable end users of hydrogen gas are considered fairly and proportionately. By doing this, it is highly likely that significant efficiencies (outlined in Benefits 1) and a far improved customer experience and positive social impact (outlined in Benefits 2) will be generated. Taking the examples outlined in Benefits 1 alone, this could result in very large savings.

Funding strategy: Our funding strategy will be led by the cost benefit analysis that will take place during Discovery. We anticipate that the findings will result in great efficiencies and customer outcomes (outlined above) and shall therefore justify any additional spend relating to the technology, tools and methods to be uncovered. We therefore anticipated embedding the findings into BAU and proposing in future business plans.

Intellectual property rights (not scored)

For SIF projects, each Project Partner shall own all Foreground IPR that it independently creates as part of the Project, or where it is created jointly then it shall be owned in shares that are in proportion to the work done in its creation. The exact allocation of Foreground IPR ownership will be determined during the contractual negotiations with the Project Partners on the agreement for the project.

SGN intend to ensure each Project Partner will comply with Chapter 9 SIF Governance Document through the contractual terms governing the project. However, precisely how this is done will be subject to contractual negotiations with the Project Partners on the agreement for the project.

The initial Discovery project aims to identify and prioritise future solutions to be developed in later phases, therefore it is not likely that significant IP will be generated until these stages.

Costs and value for money

Cost: The overall project cost is £124,644. A total project contribution of 10.3% has been made meaning total SIF funding requested is £111,854.

Balance of Costs: The lead delivery partners will be SGN (including subcontractor Frazer-Nash Consultancy) and Centre for Energy Equality, the majority of SIF expenditure is allocated to these partners. Fife Council shall have less involvement in the project delivery but shall act as key facilitators providing expert domain and local knowledge, project reviews, coordinating local stakeholders and delivering smaller work packages.

Subcontractor Involvement: Frazer-Nash's involvement is key to project delivery as they bring expertise and broad experience of assessment and identification of energy-system-related social cost and benefits and of engagement with consumers in vulnerable

circumstances. This will be provided through their experienced techno-economic assessment and behavioural psychology teams.

Partner Costs: A summary of each partners costs and contributions are outlined below.

SGN

- Total Cost: £51,034
- Subcontractor funding: £43,098
- SIF Funding Requested: £51,034

Centre for Energy Equality

- Total Cost: £69,200
- SIF Funding Requested: £59,245

Fife Council

- Total Cost: £4,410

SIF Funding Requested: £1,575

Value for Money: Hy-Fair will deliver excellent value for money and return on investment for consumers if successful. Illustrative potential benefits have been outlined in Questions 5 & 6 and the Discovery project will seek to better quantify these benefits. As an example benefit, given the scale of the transition, over-looking an issue that brings delays and modest additional roll-out costs for even a small percentage of customers would lead to increased network costs in order of tens of millions of pounds -- Hy-Fair will help avoid such circumstances.

In addition, by helping businesses to adapt to the hydrogen transition, new green businesses and products will be developed faster, helping to grow the economy overall.

The focus of the project is on supporting CIVS and businesses that may transition to hydrogen gas in the future, though the learning will likely also apply to all consumers. Learning may also be applicable for other change projects within the energy sector including for other low carbon heat sources and low carbon transport.

All partner and subcontractor costs have been benchmarked against SGN's existing pool of suppliers and are considered cost competitive.

Document Upload

Documents Uploaded Where Applicable

Yes

Documents:

SIF Discovery Round 2 Project Registration 2023-04-12 4_58

Hy-Fair Show and Tell.pptx

SIF Discovery Round 2 Project Registration 2023-11-22 11_22

SIF Discovery Round 2 Project Registration 2023-11-28 1_13

This project has been approved by a senior member of staff

☑ Yes