



FIS029 – Evaluation of Effectiveness
of FIS Research



A REPORT COMMISSIONED BY FIS AND
PREPARED BY

Anderson Solutions & O'Herlihy & Co Ltd

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Evaluation of Effectiveness

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Evaluation of Effectiveness

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1 Introduction

Anderson Solutions and O’Herlihy & Co were commissioned by Fisheries Innovation Scotland (FIS) to undertake an evaluation of the effectiveness of FIS research.

1.1 About FIS

FIS was established in May 2014 and is funded by its members. When FIS was founded the membership included the Scottish Government, Seafish Industry Authority (Seafish), Scottish Fishermen’s Federation (SFF), Sainsburys, Young’s Seafood, the Scottish White Fish Producers Association (SWFPA) and Scottish Natural Heritage (SNH). Since FIS was established, there have been some changes to its membership: Environmental Defence Fund joined in 2015/16 for one year, SWFPA ceased its membership in 2017/18 and Marks & Spencer and Funding Fish became members in 2017/18. In addition to funding from its members, FIS also received funding from the European Maritime Fisheries Fund, via the Scottish Government in 2014/15 and 2015/16.

The published aim of FIS includes the following statement of intent:

Fisheries Innovation Scotland is a legally constituted, non-profit-distributing organisation, with the remit of bringing together government, scientists, industry and other key stakeholders within a formal structure to lead an on-going programme of research, knowledge exchange and education.

1.2 Purpose of evaluation

The invitation to tender (ITT) states that the overarching objective of the evaluation is to deliver an assessment of how FIS research will be used to achieve a specific change within the sector. The ITT also requires the evaluation to, on a project-by-project basis:

- Identify which type of organisation would be the beneficial recipient of the evidence delivered by the research;
- Identify what type of change might occur as a result of the new evidence delivered by the FIS research;
- Identify whether this process could occur because of the FIS research alone or whether others must also contribute additional evidence or innovation;
- In the event of the third bullet point being relevant, identify who the other participants would be, and the nature of their contributions to the overall move towards change;
- Identify likely timelines for changes to be manifested and visible with the sector – either for stand-alone FIS research or for multi-input initiatives; and
- Conclude by mapping the environment for change-capable recipients of FIS research in the future and make recommendations for the nature of future FIS research that will prove effective in driving change and innovation.

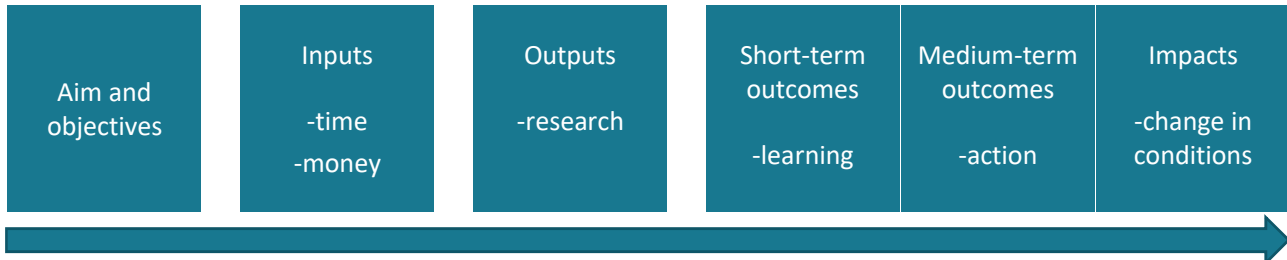
1.3 Methodology

In response to the stated aim and objectives set out above, a methodology was proposed which reflects a logic model for FIS that asks:

- What did FIS intend to achieve (aim and objectives);

- What did FIS invest (inputs);
- What did the FIS investment pay for and who does FIS reach (outputs);
- What new learning was generated (short-term outcomes);
- Has the learning led to action (medium-term outcomes); and
- What impact has the action had on the fishing industry (impacts)? (Figure 1-1)

Figure 1-1: Summary logic model for FIS



The methodology split the evaluation into two phases:

- The first phase was designed to establish expectations of and outputs from FIS research. Phase one focuses on ‘internal’ project knowledge and revolves around an interview programme with the researchers commissioned by FIS to deliver projects and individuals involved in the governance and delivery of FIS activities, i.e. the FIS Board, the executive directors (former and current) and the Technical Advisory Committee (TAC). The expectation was that phase one would signpost to, and perhaps provide evidence of, outcomes and impact that would support the research planned for phase two.
- Phase two was designed to go external to FIS and identify the outcomes and impact of FIS research. The intention was to map the pathway or pathways between publication of FIS research, outcomes and impact. The expectation was that phase two would consist of interviews with individuals one-step removed from FIS delivery, i.e. users of FIS research findings, and that this would provide evidence of the project characteristics which support effectiveness.

During the delivery of phase one it became clear that the number of individuals who could be identified as users of FIS research for interview in phase two was very limited. This has a significant impact on the ability of the evaluation to meet fully the originally stated objectives. Therefore, an alternative approach to phase two was proposed to a FIS Steering Group meeting. The Steering Group was provided with a presentation of the findings and conclusions from phase one and it was suggested that more value could be obtained from the remaining resources if time from phase two comprised more forward-looking tasks. The steering group accepted this and the change in project design was approved by the FIS Board. Therefore, this report reflects a final report on the evaluation but does not include findings from the interview programme initially proposed for phase two. This means that the report does not fully respond to the final objective set for the evaluation: *conclude by mapping the environment for change-capable recipients of FIS research in the future and make recommendations for the nature of future FIS research that will prove effective in driving change and innovation*. However, the report does make recommendations that are expected to inform discussions on future activity. A separate report will be provided on the forward-looking tasks which centre around a workshop with the FIS Board and TAC.

1.4 Structure of report

The evaluation report is structured as follows:

- Chapter 2 describes the aim, objectives, structure and processes of FIS;

- Chapter 3 presents the findings of the evaluation interviews with project researchers, board members, TAC members and the executive directors;
- Chapter 4 provides some observations from the evaluators;
- Chapter 5 presents the conclusions and recommendations from the evaluation;
- Appendix A contains one-page summaries of the projects covered by the evaluation. These summaries respond to the logic model framework described above and are not summaries of the project findings. Summaries of the project findings can be found on the FIS website.

2 About FIS

To understand the effectiveness of FIS research, it is first important to understand the purpose and activity of FIS. This chapter provides context that it is important to understand before reaching an assessment of effectiveness.

The chapter includes an overview of the aim and objectives of FIS (2.1), the structure of FIS (2.2), the resources available to FIS (2.3) and the processes through which FIS pursues its objectives (2.4).

2.1 Aim and objectives

Aim of FIS

FIS was established in May 2014 and its stated aim¹ is:

'Fisheries Innovation Scotland is a legally constituted, non-profit-distributing organisation, with the remit of bringing together government, scientists, industry and other key stakeholders within a formal structure to lead an on-going programme of research, knowledge exchange and education. FIS aims to deliver expert advice to help inform the governance and management of sustainable fisheries, the fishing industry and related supply chain throughout Scotland.'

It is envisioned that FIS through its activities will meet many of the innovation objectives currently listed under the provisions of Article 26 of the European Maritime and Fisheries Fund. The core focus is on innovations which will contribute both directly and indirectly to expanding the knowledge base needed to preserve our fisheries for future generations.

In a European context, FIS will work with existing bodies, such as the Regional Advisory Councils; the European Commission and ICES, with an aim to developing research links with other European fisheries with specific shared interests.'

The key messages which stand out in the stated aim are underlined above and summarised as:

- FIS will lead an on-going programme of research, knowledge exchange and education;
- FIS aims to provide expert advice;
- FIS will focus on innovations that expand knowledge; and
- FIS will work with others to develop research links.

FIS Objectives

The following are the stated objectives of FIS as presented on the FIS website:

- 'To provide information and support to our members, governments, public bodies and other organisations in order to inform fisheries policies and management.
- To advance, and to encourage the advance of, expertise, science and management of and in relation to prosperous and environmentally sustainable fisheries in Scotland.
- To establish, enable and encourage education, research and training relating to Scotland's marine fisheries.

¹ As presented on the FIS website [accessed 20.12.2018]

- Wherever possible contribute to and enhance the public's knowledge and understanding of fisheries in and surrounding Scotland and elsewhere.'

2.2 Structure of FIS

FIS is a membership organisation and its activities reflect its members' wishes. Members provide funding annually to support its research program. Membership of FIS shall be open to any organisation that meets the requirements of membership listed below and is accepted for membership by the sitting board of trustees/directors. To be a member, it is necessary to:

- support FIS Charitable Purposes, which are matched to the four objectives listed above;
- have a demonstrable track record as a stakeholder in relation to Scotland's fisheries and/or seas; and
- be willing and able to pay the minimum agreed annual subscription.

The Memorandum and Articles of Association for FIS comply with the Companies Act (2006) and the Charities and Trustee Investment (Scotland) Act 2005, the Charities Accounts Scotland regulations 2006 (as amended) and Accounting and Reporting by Charities code of statement of recommended practice applicable to charities preparing their accounts in accordance with the Financial Reporting standard applicable to the UK and Republic of Ireland (FRS 102).

The model adopted for FIS, comprising the identification of key research topics that are then issued to the research community through a research tender process, was based closely on that adopted for the Scottish Aquaculture Research Forum (SARF).

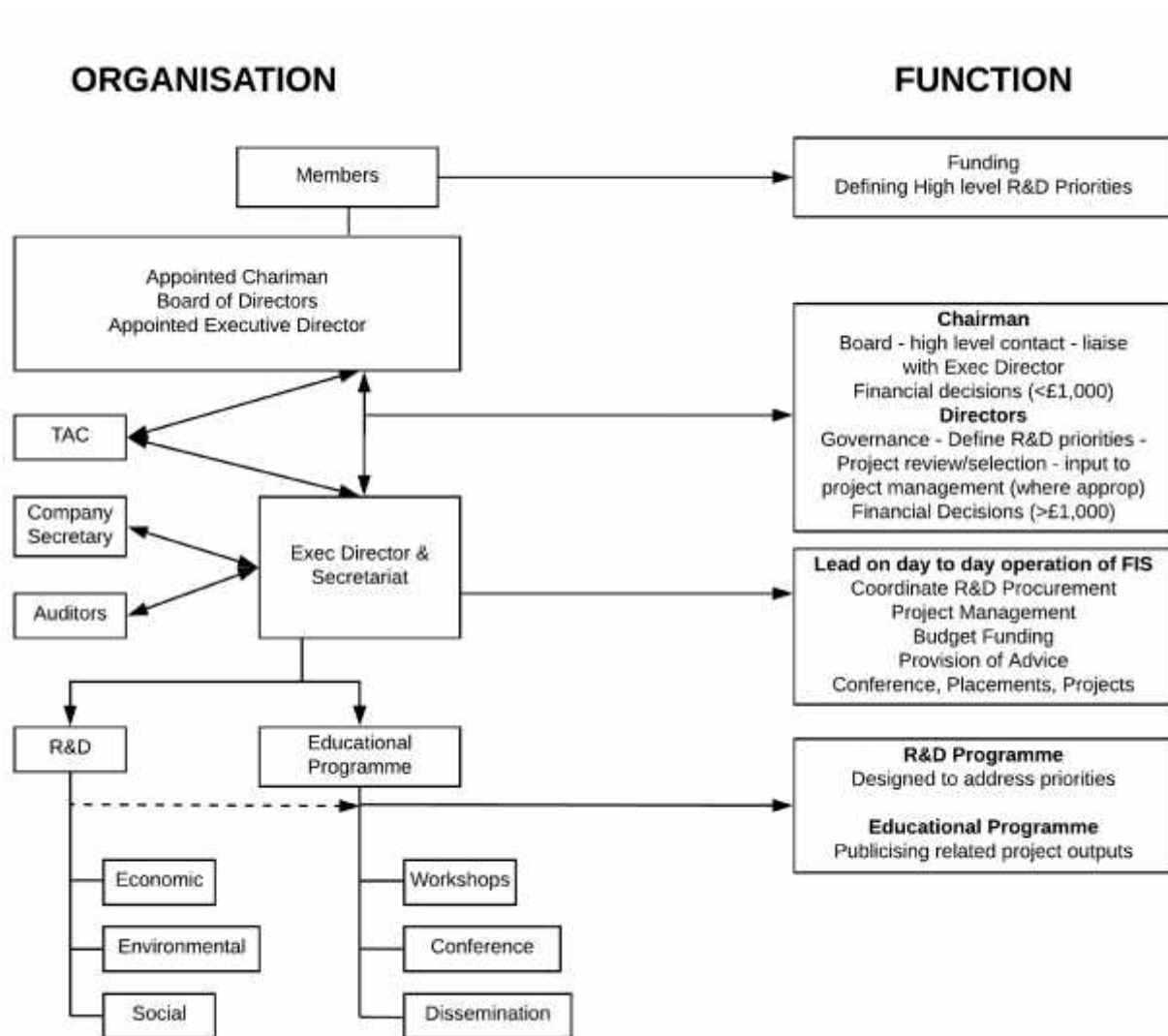
Therefore, the experience of SARF has influenced the operation of FIS. However, there are differences between the aquaculture and fisheries industries that affect the dynamics at play within the two organisations. The industry interests that are represented by SARF are much more narrowly defined than those of FIS as the number of key industry players for aquaculture in Scotland is relatively small (single figures). Scotland's fishing industry is structured very differently as it comprises several thousand operators operating in very diverse conditions.

Governance

The diagram below presents the relationship between the FIS organisational structures and its functional activities and responsibilities.

There are a number of points to note about the structure and operation of FIS as depicted in the diagram:

- Funding is provided by Members (FIS has also secured external EU funding);
- There are defined delegated authority limits set for the Chairman and Directors;
- The Governance structures allow for:
 - strategic decision-making and project selection by the board;
 - advice from the TAC to the FIS Board and Executive Director;
- The main delivery mechanisms are described as the R&D and Educational Programmes which:
 - the R&D programme addresses the industry priorities identified by the FIS Board; and
 - the educational programme is designed to publicise related project outputs and include workshops, conference and dissemination.



Source: Directors’ Account, FIS Annual Report, modified by Anderson Solutions and O’Herlihy & Co. Ltd

The board provides the strategic oversight and operational direction for the organisation. It comprises membership from those organisations that currently provide funding for FIS activities, namely:

- Marine Scotland - Marine Scotland is a civil service directorate within the Scottish Government, responsible for leading the protection of Scotland’s coastal waters and seas, to both build sustainable economic growth from Scotland’s marine assets, and to safeguard its valuable marine ecosystems;
- Seafish Industry Authority - Seafish is a non-departmental public body in the United Kingdom sponsored by the Department for Environment, Food and Rural Affairs. Established in 1981 and charged with working with the UK seafood industry to promote good quality, sustainable seafood. Seafish revised its mission in 2018;
- Scottish Fishermen’s Federation - The Scottish Fishermen’s Federation (SFF) was formed in 1973 to preserve and promote the collective interests of Scotland’s fishermen’s associations;
- Marks & Spencer - major UK retail business;
- Sainsbury’s Supermarkets Ltd – major UK retail business;
- Young’s Seafood Ltd - Young's Seafood Ltd. is a British producer and distributor of frozen, fresh, and chilled seafood, supplying approximately 40% of all the fish eaten in the United Kingdom every year; and

- Funding Fish - Funding FISH was established with the express purpose of supporting the implementation of the Common Fisheries Policy in order to achieve sustainable fisheries in Europe.

Scottish Natural Heritage, which also provides funding through membership of FIS choose not to be represented on the board but is represented on the TAC. The board meets quarterly.

Delivery structure

In terms of structure, there are staff, a board of trustees and a TAC. The board and TAC both influence the scope and direction of FIS activities:

- The board of trustees identifies the topics it would like the FIS research programme to address; and
- The TAC provides technical input to the board on how its research programme should best be delivered. The TAC will shape the focus of research so that the FIS funded reviews address gaps in existing or published evidence.

Individuals of the TAC do not represent the organisations in which they are employed, rather the TAC's members are selected based on their subject knowledge. Contribution to the TAC is voluntary and TAC members can contribute time to attend TAC meetings and project steering groups, provide technical advice on project proposals and undertake peer review of reports.

Up to mid-2018, there was a part-time Executive Director who supported the board and TAC, and who oversaw the research commissioning and delivery process. He effectively provided a Secretariat role to both groups. Since mid-2018, the Executive Director role has been expanded and is now a full-time position. The Executive Director is supported by an administrative resource (part-time).

2.3 FIS funding

The funding available to FIS is set out in Table 2-1. In 2015 and 2017, the members of FIS contributed a total of £450,000, in 2016 the funding from members was £475,000. In 2018, the funding from members reduced to £250,000. The decline was caused by a reduction in funding from the Scottish Government, Seafish and SFF. FIS also benefits from EU funding (EFF in 2015 and 2016 and EMFF in 2017 and 2018) and the table shows the year in which EU funds were drawn down by FIS via claims.

Table 2-1: FIS income, 2015-2018

	Total income, year ending (£'000s)			
	May 2015	May 2016	May 2017	May 2018
Marine Scotland, Scottish Government	150	150	150	100
Seafish	100	100	100	25
Scottish Fishermen's Federation	100	100	100	25
Sainsbury's Supermarkets Ltd	25	25	25	25
Young's Seafood Ltd	25	25	25	25
The Scottish White Fish Producers Association Ltd	25	25	25	-
Scottish Natural Heritage	25	25	25	25
Environmental Defence Fund	-	25	-	-
Marks & Spencer	-	-	-	25
Funding Fish	-	-	-	30
Total funds from members	450	475	450	280
EU funding by year of claim	168	193	156	174
Total FIS income	618	668	606	454

Source: FIS annual accounts and FIS secretariat

2.4 Delivery model

Identification of areas for research

Following its formation in 2014, FIS commissioned a research exercise to profile existing research evidence and identify gaps where it could usefully contribute to Scotland's fisheries knowledge base. This was project FIS001.

This project has, in part, informed the research programmes that FIS has pursued. The FIS Board is responsible for identifying pertinent issues that it feels FIS research could usefully address.

The FIS Board meets quarterly and uses one of these meetings to identify and put forward research topics to investigate in more depth. In advance of the meeting a form is provided to each board member and it is expected that they will consult with colleagues to identify potential topics for research. The form asks the proposer to provide information on subject, relevance to FIS objectives and the potential use or impact of the research topic. The board member then brings the proposals to the meeting. The agreed list of research topics which emerge from these discussions are influenced by individual board members' assessments of current industry needs.

The outline topics prepared by the board are considered in some depth by the TAC. It fulfils three functions, namely to:

- review topics put forward by the board and refine their focus so as to enhance the value of FIS research to the existing industry research evidence base;
- assist in the development of tender specifications for each research exercise; and
- review the tender responses and score them according to their relative strengths.

There have been three research calls² to date (2014/15, 2016/17, 2017/18) and funding has been provided for a total of 19 research projects. In addition, FIS has funded three conferences and two international

² This evaluation considers projects supported in the first two calls plus the most recent international study bursary.

study visits and contributed funding to develop a business proposal for the creation of a Chair of Fisheries at the University of the Highlands and Islands.

Appraisal of project proposals

The TAC adopts a structured process for appraising proposals, utilising a blind scoring system. Committee members then meet to discuss their scoring and rank the applications in priority order. Available funding is allocated to those projects deemed to meet the objectives of FIS and offer sufficient potential value. If the approved projects do not require all available funds, funds can be carried forward to the next call for proposals.

A Steering Group is formed for each project. This group comprises selected TAC members who have specific subject knowledge relevant for the research topic, the Executive Director and may include board members. The Group oversees the delivery of the project, supporting the Executive Director's day to day management where necessary.

Project delivery

Project delivery is monitored by the Executive Director.

When the contractor submits their draft report, it is circulated for peer review. Feedback from the (anonymous) reviewers, of whom there are usually three, is passed back to the contractors so that they can address the points raised and thereby strengthen the quality of their reports.

Dissemination

Final reports are published on the FIS website. This is the principal mechanism by which the research output is made available to the wider public/industry. Separately, the conferences held in 2016 and 2018 each included one day which showcased the findings of FIS research. Promotion of FIS on social media and the press has recently been strengthened by working with media agencies which has resulted in articles in publications such as Fishing News.

3 Effectiveness of FIS

This chapter presents the findings of the evaluation. The main purpose of the evaluation was to assess the effectiveness of the FIS research programme. The chapter begins by asking “what is effectiveness?”.

3.1 What is effectiveness?

Effectiveness can be judged using different measures in different situations. In an evaluation, effectiveness is judged by assessing what was delivered against what was intended to be delivered. In the evaluation of the effectiveness of FIS research, two approaches have been taken to establish intention:

- discussion with FIS Board members, and therefore funders, about what effectiveness means to them;
- a review of the published aim and objectives of FIS; and
- a review of the delivery model used by FIS.

During discussions with the Executive Directors of FIS (former and current), the FIS Board members and the TAC, a common view of effectiveness emerged, from which there was little divergence. FIS is effective if:

- FIS has funded research that has led, or will lead, to positive change ‘on the water’, or in other words research that has led to action which directly supports sustainable Scottish fisheries.

The only divergence from this ‘on the water’ view existed when respondents were, perhaps, more specific and stated that FIS would be effective if improvements in fisheries management resulted from the research it supported. Nevertheless, the expectation was that improvements in fisheries management would also benefit the fleet. Some differences were apparent in what individuals view as ‘fisheries management’. For some it is the regulatory and policy roles of fisheries managers, in particular government, for others it was a broader more inclusive definition that involved fishermen.

The evaluation also considers the published aim and objectives of FIS. The aim of FIS is summarised below:

- to lead an on-going programme of research, knowledge exchange and education;
- to provide expert advice to help inform the governance and management of sustainable fisheries, the fishing industry and related supply chain throughout Scotland;
- to use innovation to expand knowledge; and
- to work with existing bodies to develop research links (see Chapter 2 for the full FIS aim).

The published objectives of FIS, in summary, are to:

- provide information in support of fisheries policy and management;
- encourage the advance of expertise, science and management of sustainable fisheries in Scotland;
- establish, enable and encourage education, research and training relating to Scotland’s marine fisheries; and
- enhance the public’s knowledge and understanding of fisheries (see Chapter 2 for the objectives in full).

For a small organisation with, until mid-2018, only two part-time employees, the stated intentions for FIS are relatively diverse. A review of the FIS aim, the FIS delivery model and discussion with consultees has informed a distillation of the intentions of FIS into two key questions which create a simple framework for assessing the effectiveness of FIS:

- Has new and relevant knowledge been generated in relation to Scottish fisheries? This measure reflects the aim of FIS to undertake research and the FIS delivery model. The measure is focused on the ‘creation’ of new knowledge.
- Has new knowledge influenced, or is it likely to influence, positive change ‘on the water’? This measure reflects the views on effectiveness held by the individuals involved in FIS and is perhaps implied in the FIS aim of knowledge exchange and education. The measure is focused on the ‘use’ of knowledge.

It is interesting to note that the word innovation does not feature in the objectives of FIS and is only used once in the organisation’s aim, separate from its use in the organisation’s name and in reference to an EU programme. The sentence in which it is used is ‘The core focus is on innovations which will contribute both directly and indirectly to expanding the knowledge base...’.

Logic model

With the aim and objectives for FIS distilled into two key questions, the next stage in the evaluation is to create a logic model framework that is appropriate to FIS. A standard logic model has been adapted to reflect the ambitions and activity of FIS (Figure 3-1). A logic model provides a structure to assess the logical progression from aim and objectives through to impact. The logic model used for the evaluation asks the following questions:

- What did FIS intend to achieve (aim and objectives);
- What did FIS invest (inputs);
- What did the FIS investment pay for and who did the FIS project reach (outputs);
- What new learning was generated (short-term outcomes);
- Has the learning led to action (medium-term outcomes); and
- What impact has the action had on the fishing industry (impacts)?

Figure 3-1: FIS logic model

Aim and objectives	Inputs	Outputs		Outcomes – Impact		
		Activities	Participation	Short-term	Medium-term	Long-term
	What we invest	What we do	Who we reach	What the immediate results are	What the medium-term results are	What the impact is
	Staff	Conduct meetings	Board members	Learning	Action	Conditions
	Volunteer time	Commission research and publish	TAC members	Knowledge	Further research	More sustainable fishing industry
	Money	Deliver a conference	Research community and their partners	Evidence	Fisheries management change	
		Exchange projects	Conference attendees	Publication	Industry change	
		Promotion through media	Wider audience via media	Presentation		
				Improved understanding between stakeholders		
				Changing opinions and attitudes		

A logic model is useful for providing a visual overview of aim, activity and impact and for providing a framework within which the evaluation can occur.

3.2 Projects undertaken

The projects covered by interviews during the evaluation process are listed in the table below. The scope for the evaluation agreed with FIS excluded a number of FIS activities including the initial project, FIS001, the conferences, current projects and the international study bursaries. However, one bursary recipient was interviewed following a chance encounter which identified useful evaluation data.

Table 3-1: Projects funded by FIS and included in the evaluation interview programme

No.	Title	Investment from FIS	Delivery organisation
Funded in 2014/15			
002	Modelling the physical impact of demersal fishing gears on the seabed	£94,337	University of Aberdeen
003	Modelling the whole ecosystems impact of trawling	£58,210	University of Strathclyde
004	Slippage Mitigation and Acoustic Characterisation (SMAC). Phase I: sonar adaptation and development of data processing tools	£110,903	University of Aberdeen
005	Reconsideration of European Relative Stability Quota Shares and Implications for the Landings Obligation	£14,186	Marine Scotland Science
006	Mapping and modelling incentives for a landing obligation in demersal fisheries	£72,870	University of Portsmouth
007	Post-catch survivability of discarded under-sized Norway lobsters (<i>Nephrops norvegicus</i>): Towards a regional and ecosystems-based approach	£74,956	University of Stirling and Scottish Association for Marine Science
Funded in 2016/17			
010	Innovation in Scottish fisheries governance and management structures	£63,272	MRAG
011A	Innovation in selectivity through on-net or alternative technologies	£49,580	MRAG
011B.1	Developing and facilitating innovation in spatial selectivity	£46,276 (incl 011B.2)	University of Aberdeen
011B.2	Developing and facilitating innovation in gear selectivity, University of Aberdeen	£46,276 (incl 011B.1)	University of Aberdeen
012A	Quota management and choke species under the landing obligation	£45,000	CEFAS
012B	Economic analysis of quota allocation under a landings obligation (LO): problems and solutions	£29,880	University of Portsmouth
013	Scoping the background information for an ecosystem approach to fisheries in Scottish waters – review of predator-prey interactions with fisheries and balanced harvesting	£51,063	University of Strathclyde
014	Fisheries management in the context of shared seas	£49,993	NAFC Marine Centre
015	Post-catch survivability of discarded Norway lobsters (<i>Nephrops norvegicus</i>): Further investigations within the largescale fleet operation (follow-up to FIS007)	£217,509	University of Stirling and Scottish Association for Marine Science
Funded in 2017/18			
019	Fisheries International Study Bursary Programme	£3,943	Individual

Source: FIS application forms and financial records

3.3 Findings from project interviews

A summary for each project, which follows the logic model structure and responds to the questions in the framework, is provided in Appendix A. The projects included are those from the first two calls for research undertaken by FIS plus the international study bursary provided in 2017/18. The summary, or project map, for each project in Appendix A includes information from the application form, the final report and the evaluation interview.

Each project has been assessed against the headline measures of effectiveness established for the evaluation as described earlier in this chapter:

- has new and relevant knowledge been generated in relation to Scottish fisheries; and
- has new knowledge influenced, or is it likely to influence, positive change 'on the water'?

The assessment is presented in Table 3-2. The columns indicate the extent to which each project has responded to the measures of effectiveness set out above. The rows are used to categorise projects. The categorisation of each project is determined by two factors:

- who is expected to be the end user, or adopter, of the project outputs i.e. the fleet or government; and
- the extent to which the project responded to a very specific problem or a broader knowledge gap. For example, targeting an exemption for nephrops survivability (specific problem) or predator-prey interactions (broader knowledge gap).

Assessments such as these can be to some extent subjective, in this case around what constitutes a 'specific problem'. In this assessment, the extent to which the project was designed to provide a solution or an answer, rather than provide knowledge, was considered. The assessment of each project has been undertaken in a consistent manner and the matrix provides a useful framework within which to view the work, and the effectiveness, of FIS (Table 3-2).

The first point to note is that none of the FIS funded projects included in the evaluation are viewed as ineffective. All projects meet at least the first measure of effectiveness in that new knowledge has been generated for Scotland's fisheries. Therefore, FIS has been largely effective when judged against a measure of knowledge generation.

The evaluation findings have shown that the second measure of effectiveness, which aims to see the knowledge used, is more important to members than the first – they take the first as a given. The picture of effectiveness is more mixed under this measure.

Five of the 15 projects are considered to respond well to both measures of effectiveness (first column of projects in Table 3-2). All five projects have an identifiable pathway to impact. For two of these projects more work and more investment are required before the pathway to impact is complete and benefits are experienced 'on the water'. However, further investment is not guaranteed so there is a risk that the pathway to impact will not be completed. There are three projects for which impact has occurred or is imminent. These are two projects which examined nephrops survivability and the international study bursary project. The individual awarded the international study bursary has already implemented changes and is planning to implement further changes which are understood to be of value to the local fleet. For the nephrops projects, impact will be determined by the success, or failure, of the application for a survivability exemption to the EU. It is interesting to note that these three projects, nephrops survivability (x2) and international study bursary, are the highest and lowest cost projects of those reviewed for the evaluation, with a total spend of £292,500 and £3,900 respectively.

There are a further two projects which are considered to partially respond to the second measure (second column or projects). These projects include those where action has resulted from the project but a pathway to impact from the FIS project does not, or no longer, exist. The actions resulting from these projects tend to be driven by the increased knowledge of the researcher in the topic area and the researcher using the knowledge gained in the FIS project to support other activities. For example, the researcher for FIS005 (relative stability shares), has developed the methodology used in the FIS project to respond to a different question. In FIS003 (ecosystem impacts), the researcher has used the knowledge to develop a model that has been utilised elsewhere. These two projects are unique in the sense that the FIS project has had an influence on the capacity of the researcher to respond to other problems or queries in relation to Scottish fisheries. Therefore, although the published findings of the FIS funded project are not being used, the knowledge and/or tools developed by the researcher are being used and are valued within Scotland. This is a less direct and less attributable pathway to impact than the projects in the first column, but these projects do, at least partially, respond to the second measure of effectiveness as there is an ongoing impact from the investment.

It appears that projects addressing a more specific query (rows 1 and 3) are more likely to have resulted in some form of action, even if it is further research in response to a different question (second column).

The process by which topics for research are selected and the assessment of applications should guarantee that the funded projects are of relevance to the Scottish fishing industry. If the topics selected by FIS are relevant and the knowledge generated is judged to be of acceptable quality – which is assured through the peer review process – then there are other factors influencing the extent to which the knowledge is used.

Table 3-2: Assessment of FIS funded projects against key measures of effectiveness

User and nature of project	Project responds well to both measures of effectiveness and an identifiable pathway to impact exists	Responds well to first measure of effectiveness (knowledge generation) and some action has followed but direct pathway to impact does not exist	Responds well to first measure of effectiveness, knowledge generation but no evidence of use or a pathway to impact
Fleet is end user and project responds to a specific query	FIS004, FIS011B (both parts)		
Fleet is end user and project responds to broad knowledge gap	FIS019		FIS011A
Government is end user and project responds to a specific query	FIS007, FIS015	FIS003, FIS005	FIS002
Government is end user and project responds to broad knowledge gap			FIS006, FIS010, FIS012A, FIS012B, FIS013, FIS014

In order to further investigate the characteristics that support impact, the projects for which an identifiable pathway to impact exists from the original FIS project are described further below:

- Nephrops (FIS007 and FIS015) – the need to investigate nephrops survivability was identified at a workshop, organised by MASTS, which focused on the nephrops industry and was attended by representatives from government, academia and industry. The landing obligation created a clear incentive to find a solution and a project to look at survivability aligned well with policy challenges. Furthermore, the aim of the research, the potential user, the potential beneficiary and how the

findings would be used were all clear from the outset. The researcher took ownership of the project and promoted the findings directly to the intended user, the Scottish Government.

- SMAC and Smartfish (FIS004 and FIS011B) – both projects focus on technical innovations that could be used directly by a specific fleet segment. The work is designed to find solutions to specific and current challenges for the Scottish fleet. Success of the innovations remains uncertain until further work, including further investment, is undertaken. In each case the researchers continue to promote the outputs. SMAC has been followed by further investment from others (FISA and MASTS) and one part of FIS011B which looked at gear selectivity (referred to as Smartrawl and FIS011B.1 in the project summaries in Appendix A) has received follow up funding from FIS (FIS024). The other part of FIS011B, which looked at real-time reporting, referred to as FIS011B.2 in the project summaries in Appendix A, has not yet led to action but a pathway to action and impact exists, although FIS turned down an application for further funding.
- International exchange project (FIS019) – the applicant organised a ten-day visit to Denmark that engaged with fishers, fishing representatives, scientists, buyers/processors and fisheries managers. The trip identified two aspects of successful fisheries in Denmark - Building trust and effective communication. There is a very close interaction between the scientific base and those on the water. The applicant has introduced key changes to her work as a result of the visit, for example, she has a monthly question and answer session (identified at the Danish Technology University), that aims to build links between the Orkney Fisheries Association and local fishing communities. This has attracted a range of queries for local skippers that she has been able to answer. It has received positive anecdotal feedback from boat operators. The applicant plans to introduce further changes as a result of the lessons learned.

The projects which have resulted in a notable impact in the capacity of the researcher and have therefore impacted upon the researchers' activity have also been reviewed. These projects are having an impact but perhaps not the impact originally envisaged when the FIS project was commissioned:

- Ecosystem impact of trawling (FIS003) – the project generated significant and quantifiable impacts for the research team. Its implementation also led to the improvement in knowledge on modelling the impacts of trawling. FIS funding led to the development of a new model. This model has acted as a foundation for others and has been beneficial for the research institution and policy makers (who benefit from its application and the new insights it provides). The quantitative impacts include: A collaborative follow-on research project worth £700k of which the FIS applicant's institution received £380k; Two Horizon 2020 bids worth €12M of which the applicant's institution received €600k; Two post-doctoral students engaged; Eligible for Research Excellence Framework exemplars; 2-3 peer reviewed publications to date and more to follow; Researcher invited to ICES working group and he suggested his input has influenced EU thinking on the issue of closing areas of the seabed.
- Relative stability quota shares (FIS005) – Marine Scotland Science undertook work which was initially intended to inform debate around relative stability. Following the Brexit vote this appeared less relevant, however the researcher has developed the methodology to create new analyses in support of debate around zonal attachment. The project funded by FIS provided a useful first step.

The projects which are considered to have had the greatest impact, and are described above, have one notable characteristic in common. The researcher retained 'ownership' of the project and undertook one of the following actions:

- Promotion of the findings to the intended user, in this case the Scottish Government (nephrops, FIS007 and FIS015);
- Pursuit of follow-on funding to enable the researcher to continue to develop the work (SMAC, FIS004 and both parts of Smartfish, FIS011B);
- Application of the lessons learned (international study bursary, FIS019);

- Development of tools and knowledge gained through the FIS project for use in other activities (ecosystem impacts, FIS003 and relative stability shares, FIS005)

Eight of the 15 projects included in the interview programme have not directly led to action and are not on an identifiable pathway to action. However, these projects did generate new and relevant knowledge in relation to Scottish fisheries and this knowledge remains with the researcher and will passively feed into other work they undertake. These projects can be judged to meet the specified aim of FIS, knowledge generation, but at this time are considered unlikely to lead to any follow-up action and therefore unlikely to result in the knowledge being used in an attributable way. Therefore, these projects fail to meet the measure of effectiveness around use of the knowledge.

It is worth noting that FIS outputs are freely available on the FIS website and no record is kept of how many times project reports are downloaded (this is due to be rectified in the near future). Therefore, whilst the evaluation process has not been able to identify users for a number of projects and the intended pathway to impact has not materialised, there may still be unidentified value in the work that FIS does.

Additionality for FIS

Additionality refers to the proportion of outputs/outcomes from FIS activities that would not have been achieved through FIS beneficiaries pursuing a different funding route or designing their projects in a different way. The critical question to be asked is *“to what extent would (some of) the positive outcomes resulting from FIS’s activities have been generated anyway through parties pursuing other activities”*.

The opposite of additionality, known as *non-additionality*³ or *Deadweight*, is a central principle used by the public sector to appraise potential funding opportunities. If Deadweight is high (additionality low), projects are deemed to provide a poor return on investment.

The assessment is Deadweight is not black and white - a project might proceed without funding:

- at a later date;
- on a smaller scale; and/or
- at a lower level of quality.

Timing, scale and quality effects are known as partial additionality factors and the benefits are attributed to the “additional” proportion of the project that FIS can be deemed to have enabled.

All of our FIS evaluation project interviews included consideration of Deadweight/non-additionality. This comprised two separate assessments:

- the extent to which the project would have proceeded had FIS funding not been available; and
- whether *the output* of the project would have been achieved through following a different route (i.e. pursuing different funding sources or designing the project or its implementation differently).

Applicants suggested that funding for projects of the kind supported by FIS was difficult, if not impossible, to obtain from other sources. All but two said that their projects would not have been pursued at all had FIS funding not been available. In the two cases where (aspects of) the project might have proceeded in some form, it would have taken notable longer to initiate or the quality would have been lower (in this case, the FIS requirement for peer review was considered to have driven up the FIS project’s quality).

³ Additionality is the uniquely attributable benefit of an activity. Deadweight is the level of non-additionality - i.e. the benefits that would have derived anyway, regardless of whether or not a funded activity would have been pursued.

In the two cases where the beneficiaries indicated that their project might have been pursued in some way, one indicated an elongated timescale of “around 6 months later” while the second suggested “in excess of one year later”.

Given the interviewee of the “one year later” project indicated that they had no specific plans to apply for funding to support the project and given they observed that there were no obvious sources of funding support available for these types of project, we consider that they would have been unlikely to undertake a similar project, so Deadweight is assumed to be very low/negligible. This beneficiary noted significant quantitative impacts.

Overall and given that all but two beneficiaries cited “No Deadweight”, we conclude therefore that FIS additionality is very high.

It was also striking that the research outputs would not have been generated through a different route or alternative funding sources in all but one of the cases reviewed - only one of the interviewees cited other projects, in which they were involved or for which they were seeking funding support, that would have generated a similar output/outcome to the FIS supported project and this would have taken longer and been of lower quality as described above.

Furthermore, researchers commented that funding from FIS could bring added benefit. A number of researchers commented that engagement from a FIS steering group, the connections that FIS can facilitate between the researcher and industry and the enhanced status of undertaking FIS supported research can all improve project relevance and quality.

3.4 Feedback from researchers

During the interviews with researchers, questions about their experience of working with FIS were asked. The feedback is summarised under four headings: strategy, role, delivery and change.

Strategy

Researchers highlighted that solving big problems requires significant and long-term investment, in general larger than the sums of money invested by FIS. There were also questions raised about the scope and nature of FIS calls for proposals and comments around how little was understood about the overall aim of FIS and its motivation for undertaking certain pieces of research. However, researchers also highlighted how FIS is the only source of funding for applied research in fisheries; and how engagement with FIS contributed to the researchers’ profile amongst key UK stakeholders.

Role

Researchers were not specifically asked about the strategic and operational role of FIS. However, the discussions with researchers tended to explore issues of uncertainty around role and confusion about why FIS was commissioning research and then not doing anything with it. Everyone was asked who they believed had responsibility for disseminating the findings and the responses were mixed. For some researchers, FIS was the client and had asked for a piece of work to be done and therefore FIS was the ‘owner’, for others FIS funding had supported a project they were already trying to pursue and in these cases the researcher was likely to take more responsibility for dissemination. Those who specifically saw FIS as the owner of the research also considered that it was FIS’s responsibility to disseminate the findings – the researchers’ contractual engagement ended once the final report was issued and they did not know what FIS had done or intended to do with their output. Depending on the project, FIS appears to move between being a ‘funder’ and being a ‘client’. The role it is fulfilling in a particular project appears to have

an impact on the extent to which the researcher considered themselves the 'owner' and on the likelihood of action following the project's completion.

Delivery

Researchers were on the whole very satisfied with FIS processes. The application form, support of a steering group, support of the Executive Director and effective peer review were all mentioned as positive engagements with FIS.

Change

Similar to all individuals interviewed for the evaluation, the researchers want to see the outputs being used. No one wants to invest time and energy into a project to see it "sit on a shelf". In general, researchers would like to work more closely with FIS to promote use of the findings. Several researchers suggested that engagement and dissemination should be designed into the project. Under this approach, successful applicants would be required to set out tangible steps that they would have to follow in order to maximise the likelihood of the research being impactful. Researchers commented that FIS is better connected to industry and government than researchers tend to be. However, researchers did not see dissemination as the only challenge. They also raised concerns about how topics were selected and the need for FIS to engage more with the 'grass roots' industry to identify problems.

3.5 Findings from interviews with individuals within FIS structure

In addition to the project interviews, the evaluation process included 18 one-to-one interviews with every member of the FIS Board and all but one member of the TAC, and with both the previous and current Executive Directors. An overview of the feedback received during these interviews is provided under the following headings: aim, innovation, customer, effectiveness, change and strengths and weaknesses.

Aim

The interviews showed that there is a common view on elements of what the aim of FIS is. The most common elements stated by consultees is that the aim of FIS is to:

- support sustainable fishing;
- resolve problems; and
- stimulate tangible, real world impact on the water (including changes in behaviour and attitude).

There were also less frequent comments around the aim which included: the aim of FIS is to conduct research for industry, to improve fisheries management and to educate others.

Consultees also frequently mentioned what FIS is not, for example:

- FIS is not a policy think tank;
- FIS is not a research funder;
- high-quality research is not the goal;
- its priority is not fisheries management; and
- FIS is not about achieving impact tomorrow.

It can be observed that there is some conflict between what some consultees think the aim of FIS is and what others believe FIS is not, i.e. aim is to improve fisheries management, and, FIS is not there to change fisheries management.

Whilst the consistency shown from consultees with regard to the aim in the first three bullet points, i.e. support sustainable fishing, resolve problems, stimulate real world impact, is reassuring, this does provide a difference in focus between this and the published aim of FIS. Furthermore, there appears to be a weakness in how the aim is translated into a clear role for FIS. It appeared to be easier for consultees to describe what FIS is not, rather than what FIS is. This is perhaps reflected in comments received such as “aim of FIS was confused at beginning”, “FIS is struggling for an identity, [for example] conference became far too political”, “FIS is too academic, industry is struggling to see benefit”, “I don’t understand where project ideas come from” and “FIS needs a clearer vision for the future”.

Innovation

The interviews highlighted some tension around the interpretation and importance of the term ‘innovation’. For example, there were comments that innovation is the route to solve the problems and is therefore core to the aim of FIS. For others the term innovation is less important than the need to see a tangible change in the industry.

Some interpretations of innovation provided by interviewees are:

- Innovation means moving industry forward through novel developments or the enhancement of existing practices;
- Innovation doesn’t have to be shiny and new;
- Innovation comes from peer reviewed research;
- Innovation is finding a new way to do things;
- Innovation is finding systems from elsewhere and applying them to Scotland;
- Innovation can be anything, a new way of doing accounts, a technical change, the way we use data;
- Innovation means it is new to market or is a new way of working; and
- Innovation is application of research, if research is not applied then there is no innovation.

One interviewee questioned whether calls for research proposals is the correct way to stimulate innovation.

The term innovation can be open to interpretation. The board has discussed what it means to FIS although no formal definition has been prepared and, as noted earlier in the report, innovation does not form a key part of the published aim and objectives of FIS. One board member stated that it would be useful to revisit ‘innovation’ and agree what innovation means to FIS and what activity is acceptable to FIS⁴.

Customer

Consultees were asked who they view as the ‘customer’ of FIS, i.e. who is FIS there to serve. There is broad consensus that fishers are the main customer, with some consultees adding that FIS members are also

⁴ The OECD Oslo Manual for measuring innovation defines four types of innovation: product innovation, process innovation, marketing innovation and organisational innovation. OECD states that innovation is: more than ideas - implementation is required, not necessarily R&D-based, at least new to the subject, and success is aimed at but neither guaranteed nor required.

customers. A small number of consultees stated that the customer is the wider fishing industry, including the supply-chain, government and researchers. One consultee stated that it's not entirely clear who FIS is there to serve.

Effectiveness

During the interviews the topic of effectiveness generated the most wide-ranging discussion. However, there was one clear message and that is that there is frustration around the apparent lack of effectiveness.

Consultees were asked what effectiveness in the context of FIS means to them. There was little divergence from the view that effectiveness is seeing FIS outputs being used and, in time, 'change on the water'.

Consultees provided their views on the reasons for a lack of effectiveness:

- FIS does not engage well with the wider industry;
- FIS is too academically focused "some projects seem to be research for its own sake, can see that the topic fits remit but does it deliver on needs of industry?";
- FIS finds it hard to generate project ideas;
- FIS does not promote its output;
- FIS does not consider the wider context. Comments included: "the need for action isn't built in to FIS activity", "project ideas are driven by a very small group", "FIS does not engage with users", "conference presentations don't explain context" and "not sure we check if others are doing the same".
- There is a lack of transparency around decision-making, in particular the reasons why particular topics are selected. Comments included "ideas seem random" and "TAC doesn't know board's direction".

Change

The interviews resulted in a very clear message that there is a need for FIS to change. The three themes around change which emerged are:

- Work within a more strategic and long-term focus. One consultee mentioned building on the Scottish Government's strategy for 2030.
- Focus on practical projects. "Impact and engagement need to be built in to the projects from the beginning". Several consultees suggested less focus on research-led activity. The international bursary programme was held up as an example of a different way of stimulating change.
- Become less insular and communicate more effectively. "Develop shared ownership with industry". Consultees noted weaknesses in the identification of topics for investment and in the use of FIS outputs, however, the operation of the research programme was viewed as strong - "we're weak at the front-end and back-end, the bit in the middle works well". It should be noted that FIS has already taken steps to invest in improved external communications through a contract with a social media agency.

More specific suggestions for change put forward by interviewees include:

- Engage with industry more effectively to generate ideas for investment;
- More transparency in decision-making;
- Revisit structure of FIS; and

- Improve communication internally in FIS.

Importantly, the board recognises the need for change and appears open to change. The need for FIS to change was also echoed in the interviews with the researchers funded by FIS. The potential value of FIS appears to be recognised by all, but change appears vital to enable FIS to realise its potential value.

3.6 Conclusions

Strengths and weaknesses

The main strength of FIS, put forward by everyone interviewed, is its multi-stakeholder structure and the experience of those involved. This was viewed as a unique selling point for FIS and a difficult to replicate characteristic.

Another strength of FIS is its effectiveness in developing knowledge relevant to Scottish fisheries, which aligns well with its published aim. The operation of its research programme, once topics have been decided, was also viewed positively by those within FIS and by the researchers commissioned by FIS. Elements of the research programme, such as steering groups and peer review, appear to add to the quality of the research and, when at their most effective, help to guide the research to a more effective response to the problem.

However, there are concerns around the impact that FIS activity is having 'on the water', the members of FIS want to see the knowledge used and this is where the greatest weakness is evident. Whilst the evaluation has shown there are five projects that respond well to both the measures of effectiveness, and two further projects that have led to action, there are too many projects that do not appear to be on a pathway which will see the outputs used. The evaluation process highlights concern around how topics for research are selected and, once projects are completed, how use of the output is facilitated.

Effectiveness

From an evaluation perspective, FIS has focused on a key element in its published aim which is the creation of knowledge and it has achieved this. Furthermore, the quality of its output is recognised as high and it is achieving all of this with very limited human resources. From this perspective, FIS is effective.

Seven of the projects reviewed for the evaluation have led to follow-up actions. Five of the seven are believed to be on the pathway envisaged when FIS invested in the activity. However, two of these projects remain in an early stage of development and will require significant further funding to reach a point where the research is in use by the fleet. The two nephrops projects and the international study bursary project are the only projects where impact on the fleet is either imminent (nephrops) or is already being experienced (international study bursary). The remaining two projects of the seven have led to action through the ongoing use by the researcher of the knowledge and tools developed, which also provides benefit to Scotland.

The ongoing commitment of the researcher following the conclusion of the FIS project is the one characteristic common to all projects for which follow-up action is noted. FIS itself has not successfully supported uptake of the outputs of its work and therefore has had no effective role in achieving the second measure of effectiveness: use of the knowledge.

Whilst there has been action as a result of some projects, which as described has been led by the researcher, the impact to-date is limited and too many FIS projects are not resulting in follow-up action. These outcomes do not reflect the ambitions of those involved in FIS and what they view as effectiveness. Everyone involved in FIS wants to see the knowledge being used and the knowledge resulting in improvements 'on the water'. Concerns around the effectiveness of FIS are manifesting in evident

frustration and individuals and organisations are beginning to question the value of ongoing commitment in FIS, “investing in FIS is getting harder to justify”.

4 Evaluator observations

In this chapter, the evaluators offer observations that may help to inform FIS's future strategic and operational direction.

One way to view FIS is as a problem-solving organisation, focused on using research as a problem-solving tool, for the benefit of the Scottish fishing industry. The concept of FIS as a problem-solving organisation appears to fit with ambitions of those engaged in FIS. However, it is not possible for FIS to solve the problems on its own, particularly as FIS is not the problem owner, nor does FIS have the power to implement solutions. Therefore, the focus of FIS is to provide a service that investigates problems and potential solutions. FIS fulfils a problem analyst role and has the potential to inform, catalyse or facilitate action by others.

FIS has limited resources and many of the problems it has explored are significant in both scale and complexity. It would be unreasonable to expect their quick resolution. However, the evaluation findings suggest that the lead-time between FIS activity and impact is not the primary cause of its lack of impact.

In an effective problem-solving process, the problem owner, problem analyst and solution implementer are engaged in the process (Figure 4-1). For some problems these three roles may be undertaken by the same person, or within a single organisation. However, in a fragmented, diverse and complex industry such as fishing the problem-solving process is significantly more challenging. This challenge is perhaps reflected in the effectiveness of FIS to date.

A key challenge for FIS is that its potential role in effective problem-solving is compromised due to its apparent isolation in the process. It may be that connections have been assumed to exist due to the multi-stakeholder structure of FIS, however, there is little evidence that these connections are operational (Figure 4-2).

Figure 4-1: Connections in effective problem solving

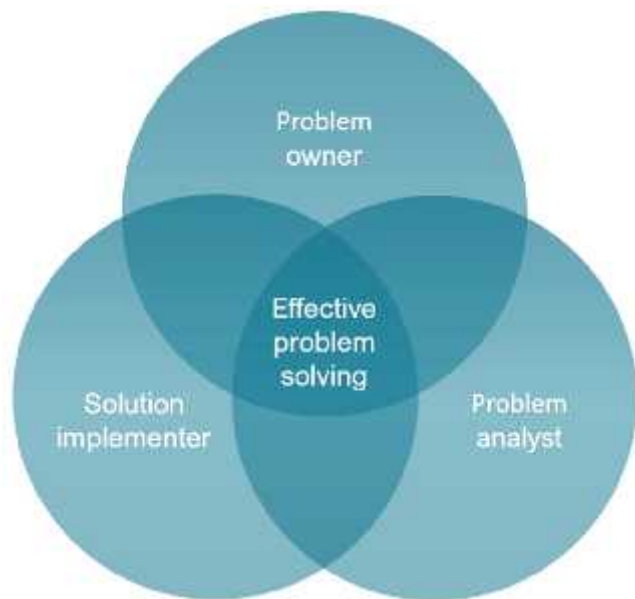
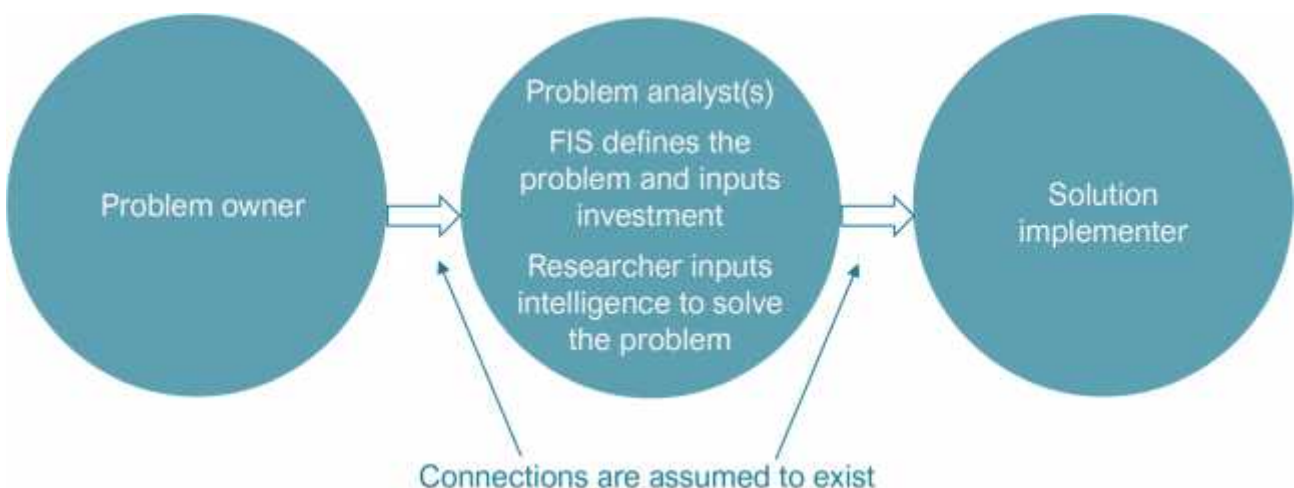


Figure 4-2: Visualisation of FIS in its role as problem analyst

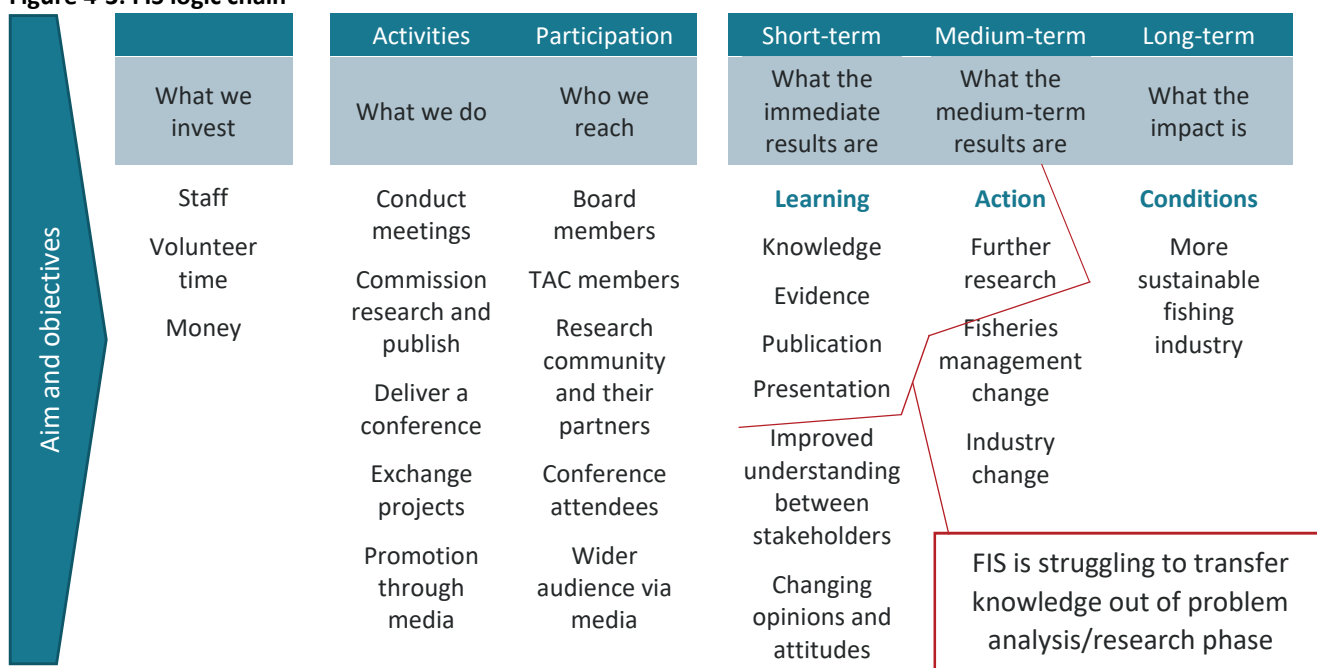


There are at least two potential consequences for impact that stem from FIS, the problem analyst, being isolated from both problem owners and solution providers:

- FIS, the problem analyst, asks the wrong question and therefore the research undertaken is not appropriate. This can be caused by isolation from the problem owner;
- the right question is asked, and the research offers a solution, but no one acts upon it. This can be caused by isolation from the solution implementer.

It is likely that both potential consequences of isolation may have a role in FIS effectiveness. The consequence of isolation is that in too many projects, FIS investment has not led to action, and appears unlikely to lead to action, that could generate the type of impact the members of FIS want to see. Too often the effect of FIS investment ends once the knowledge has been generated. The barrier between FIS investment and action is demonstrated in the logic model framework below (Figure 4-3).

Figure 4-3: FIS logic chain



The evaluators believe that isolation in the problem-solving process may be the root cause of many of the challenges that FIS is facing as it tries to pursue greater effectiveness. All of those engaged in FIS, including its members, clearly believe that FIS could be more effective.

The evaluation findings do point towards a route to greater effectiveness. One commonly cited example of FIS effectiveness raised by consultees is the two investments FIS made into investigation of nephrops survivability in response to the landing obligation. In this project (x2), the specifics of the problem were identified externally at a MASTS workshop focused on the nephrops sector and attended by industry, academia and government, the research funded by FIS fully investigated the problem, and the implementation of the solution was undertaken by the Scottish and UK Governments. The problem owner, problem analyst and solution implementer were all engaged in this problem-solving process. However, as noted in the previous chapter the facilitation of this was not undertaken by FIS. Instead MASTS and the researcher played proactive roles in ensuring engagement. The next chapter asks the members of FIS if the problem analyst role feels like a good fit for the ambitions which they have for FIS; and if so, are there internal and external mechanisms which FIS can utilise to better engage in the wider problem-solving process.

5 Conclusions and recommendations

Evaluation Context

FIS was established in 2014 with an aim and delivery model that are focused on the generation of knowledge. The delivery model developed for FIS mirrored the delivery model used for SARF. This model was designed to achieve the aim via a research programme, through which FIS commissions research in response to agreed priorities. Three calls for research have been issued by FIS since 2014, two of which have been completed. The completed research projects and their 'effectiveness' are the focus of the evaluation. The research programme was enhanced by three FIS conferences, two of which have been used as the primary mechanism for FIS to transfer the knowledge generated from the research programme to others.

The greatest strength of FIS is widely recognised as its multi-stakeholder structure which includes the Scottish Government, fishing industry representatives, processing sector, retail sector and NGOs as members and trustees on the board. Each member provides an annual funding contribution to FIS to support its activities. This has been enhanced by EU funding. The operation of FIS is further strengthened by the expert advice provided by the TAC which comprises a similar mix of stakeholders plus representatives from academia. The contributions of the members and the TAC are largely voluntary and are in addition to the full-time roles that these individuals already have. FIS also benefits from an appointed and independent Chair to the Board and an Executive Director, which has only recently become a full-time post. FIS also employs a part-time administrative resource.

There are two measures of effectiveness

The aim of the evaluation was to establish the effectiveness of the research programme. The evaluation process established two measures of effectiveness for FIS:

- Has new and relevant knowledge been generated in relation to Scottish fisheries? This measure reflects the aim of FIS to undertake research and the FIS delivery model. The measure is focused on the 'creation' of new knowledge.
- Has new knowledge influenced, or is it likely to influence, positive change 'on the water'? This measure reflects the views on effectiveness held by the individuals involved in FIS and is perhaps implied in the FIS aim of knowledge exchange and education. The measure is focused on the 'use' of knowledge.

FIS has achieved its primary aim

The evaluation has found that the multi-stakeholder approach combined with the quality and experience of the individuals involved has led to a programme of research projects which has generated new and relevant knowledge specific to Scottish fisheries. This conclusion means that FIS can be viewed to have achieved the core element of its published aim.

But the board feels it could achieve more

However, the evaluation also revealed frustration with the limited evidence that the knowledge generated by FIS is being used. The stated position of nearly all individuals involved in FIS is that effectiveness is achieved when the knowledge is used, which creates the second measure of effectiveness. The notable frustration that FIS is not leading to sufficient action may be evident in recent reductions in funding to FIS from some members.

Just under half of the projects reviewed have led to action

The findings of the evaluation indicate that seven of the 15 projects have led to some form of action and five of these projects are on an identifiable pathway to impact. However, two of the five remain in a research and development phase which requires further and significant investment in order to have a chance of achieving impact 'on the water'. The three projects which have moved out of the research phase are the two nephrops survivability projects which have been followed by action by government and the recent international study bursary which has been followed by action within an industry organisation. In the remaining two of the seven projects that have led to action, the researcher has used the knowledge and tools gained to support different research. Eight of the 15 FIS projects have not led to any visible action other than passive transference of the knowledge gained through the researchers own work.

Why do so few projects indicate an implementation pathway?

The evaluation process must recognise that the generation of 'new' knowledge and the application of that knowledge in a way that results in a practical impact on the water does take time, and FIS is a young organisation with limited resources. Exploring the 'new' involves risk and, for good reason, not all investments will result in an obvious positive impact. Furthermore, FIS activity has included a mix of projects consisting of desk research projects, modelling projects and technical innovation projects. These all have different outcomes and different pathways to impact on the water. However, the findings indicate that the lead-time between knowledge generation and impact, the nature of the research, or the failure of a concept, are not the main reasons for the limited evidence of action following a FIS project.

Analysis of success against the two measures of FIS effectiveness leads to one final evaluation question: why are so many FIS projects not on a pathway to impact?

In all evaluations there are lessons to be learned and weaknesses to be addressed. This evaluation has found that the core of FIS, i.e. the generation of knowledge, is managed highly effectively. The knowledge and breadth of experience of those involved can be readily highlighted as a key influence on this success.

The evaluation has found that when projects have resulted in follow-on action, this action has been facilitated by the researchers themselves. Apart from the FIS conference and publication of final reports on the FIS website, there is no evidence that FIS has played an effective role in encouraging the uptake of its research findings. Despite the multi-stakeholder approach, FIS appears to be operating in isolation. A lack of clarity around how FIS activity fits into the wider industry environment, a lack of engagement with problem owners in the development of priorities for research and a lack of engagement with solution implementers in the dissemination of findings means that FIS is operating in isolation and creating, or at least not dismantling, barriers to greater effectiveness. There appears to have been an assumption that if the knowledge is generated that it will be used, which is implied in the delivery model of FIS.

The evaluation also indicates that when a project is designed to address a more specific problem or query that it may be more likely to lead to action. However, we consider the previous conclusion around researcher 'ownership' to be a greater influence on follow-up action and that this variable is influenced by whether FIS is acting as a client or a funder.

FIS, as problem analyst, needs to engage actively with both the problem owner and solution provider if it is to be effective

The evaluator observations in Chapter 4 put forward a model which views FIS as a problem analyst within a structure which also includes a problem owner and a solution implementer. Effective problem-solving is much more likely when all three roles work together on a problem. In the aquaculture industry, from which the FIS model was taken, the stakeholder map is much less diverse, much less complex and much less fragmented than in the fishing industry. This means that it can be easier to have the problem owner,

the problem analyst and the solution implementer in one room. In fisheries the challenge is greater. The key conclusion arising from the evaluation is that FIS could substantially improve its effectiveness by reducing its isolation. Two potential ways forward might be to:

- develop the role of FIS to be more facilitative, engaging more effectively with problem owners and potential solution implementers, as well as undertaking a problem analyst role; or
- engage in a system/process which has another organisation facilitating effective problem-solving and through which FIS can contribute its problem analyst skills.

However, even if FIS addresses its isolation, the external context for FIS will continue to be challenging. The fishing industry is fragmented, diverse and has limited resources for risky investment; Brexit and the landing obligation continue to dominate the minds of industry; and, importantly, industry change can take time.

The need for FIS to change was echoed in all of the evaluation interviews, including with board members who were open to change. The potential value of FIS appears to be recognised by all, but change appears vital to enable FIS to realise its value.

Recommendations

The evaluation provides FIS with an opportunity to revisit intention, learn lessons and plan for the future. The following are recommended areas for discussion in support of more effective FIS investment in the future:

- Revisit the aim and objectives of FIS to establish if they remain appropriate and if they state sufficiently clearly what the members wish to achieve.
- If the role of problem analyst, as described in Chapter 4, is a good fit for FIS, it is recommended that FIS considers how it can better engage with problem owners and solution implementers. This may involve a review of how FIS identifies the problems it wishes to provide analysis for in order to support a solution, how to avoid isolation in the wider problem-solving process, and how and when FIS can exit from the problem-solving process and leave a sustainable pathway to impact. Specifically, it is recommended that FIS clarifies its role in response to the following questions:
 - where does FIS fit within the wider problem-solving process? Is there an existing process it can link in to?
 - when FIS commissions research, is it a client or a funder?
 - at which stage(s), if any, does FIS take ownership of the problem-solving process?
 - does FIS have a role in building research capacity that can then be used in different research pathways, for example as seen in FIS003 and FIS005?
 - what does the 'innovation' in Fisheries Innovation Scotland stand for?
- Develop a logic model for FIS which clearly aligns aim, objectives, inputs, outputs, outcomes and impact.
- If the previous recommendation is followed, it is recommended that FIS revisits its delivery model, including its systems and processes, to check fit with any amendments made to the FIS logic model.
- Finally, consider the different nature of the projects supported, for example, modelling, desk research, international study bursaries and operational innovation, and consider if they require different forms of engagement and different expectations.

A proposal for a facilitated workshop with the board, TAC and Executive Director of FIS is intended to investigate and respond to the discussion points highlighted above. This is proposed to replace the interview programme initially planned for phase two.



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