

## ANNEX G

### USE OF SCIENCE AND EVIDENCE IN AQUACULTURE CONSENTING AND THE SUSTAINABLE DEVELOPMENT OF SCOTTISH AQUACULTURE

#### Current funding for Aquaculture Research

*Information provided by the Scottish Government Aquaculture policy division.*

*Table 1. Funding for aquaculture research in Scotland*

Public Sector spending on direct aquaculture programmes and research	
<ul style="list-style-type: none"><li><b>NOTE ON FUNDING ESTIMATES:</b> The following numerical estimates are from a range of sources and are not directly comparable. For example, some organisations have provided estimates that include staff-costs and a value for in-kind support, while others do not provide a numerical value for in-kind contribution. These differences have been noted where possible in the table below.</li></ul>	
<b>Marine Scotland (MS)<sup>1</sup> Self-funding</b>	<p>Marine Scotland funds research projects to support its Marine Scotland Policy programmes.</p> <p>Aquaculture research is supported across the Marine Analytical Unit (MAU), Marine Scotland Science (MSS) and the Fish Health Programme.</p> <p>Where work interests are shared, the Scottish Government may partner with other organisations who may contribute additional funds (such as Crown Estate Scotland, SEPA, academic or industry partners).</p> <p>On average Marine Scotland spends £3.871 million annually on the fish health programme, facilities and research to support sustainable aquaculture development. Innovation is supported through Scottish Funding Council contributions (worth £18.6m to date) to the Sustainable Aquaculture Innovation Centre and our European Maritime and Fisheries Fund (EMFF) and Marine Fund Scotland.</p>
<b>Crown Estate Scotland (CES)</b>	<p>CES commission ad-hoc aquaculture research to support the Scottish Aquaculture sector. Research comprises either projects agreed as part of internal business planning and budgeting, based on anticipated industry need and aligned with CES's</p>

<sup>1</sup> [Marine Scotland Directorate - gov.scot \(www.gov.scot\)](http://www.gov.scot)

corporate plan and legislative obligations, or projects proposed by MS for joint MS/CES funding through a separate ‘work packages’ programme that includes aquaculture business as part of a wider remit (These are commissioned and managed by MS contributions).

In 2021/22 a total of £191,000 was invested in projects managed by CES and an additional ~£100,000 on joint MS/CES research projects (estimates based on averaging across multi-year projects).

Examples of recent CES-led research projects include an Economic feasibility study on seaweed<sup>2</sup>, Co-Existence of Capture Fisheries & Marine Aquaculture<sup>3</sup> - Review of Measures for Improved Co-existence, and Blue Economy Opportunities for Scottish Farmed Shellfish<sup>4</sup>.

**Growth Deals (UK and Scottish Government)**

City Region and Growth Deals are packages of funding agreed between Scottish Government, UK government and local partners. They aim to bring improvement to regional economies.

A range of funding packages have been agreed which are relevant to aquaculture research and innovation in Scotland:

- Islands Growth Deal (Orkney, Shetland and Western Isles) – The Shell-Volution project in Shetland, which will receive £4.4 million of UK Government funding, aims to enable future growth in the low-carbon and sustainable aquaculture sector with a focus on research.
- Argyll and Bute Rural Growth Deal – Funding toward creation of a Marine Aquaculture Programme which aims to deliver an Innovation Campus and R&D centre (The value of Government investment in these projects will be confirmed when the Full Deal is signed. UK and Scottish Governments have committed £50 million to the whole Deal over 10 years). Aquaculture projects which will receive a portion of this funding (yet to be agreed) include:
  - MERL Machrihanish Innovation Campus to provide large scale marine finfish and multi-trophic research and development capability as well as dedicated business incubation and scale up premises and facilities;
  - SAMS International Seaweed and Shellfish Industry R&D Centre to create a platform for industrial innovation that will allow a direct commercialisation of the world leading research expertise at SAMS and to catalyse growth in the region’s high value seaweed and shellfish industries;

**DEFRA / UK government policy and the Centre for Environment, Fisheries**

UK government policy may also commission relevant research projects relating to aquaculture and some of these may have a UK-wide scope. For example, most recently a project conducted with Seafish is being carried out to assess opportunities for bivalve mussel productions to contribute to food security (£10-12,000). The regulations, monitoring and advice services

<sup>2</sup> [Seaweed Farming Report \(crownstatescotland.com\)](https://www.crownstatescotland.com/seaweed-farming-report)

<sup>3</sup> [Report - Aquaculture coexistence v3 \(crownstatescotland.com\)](https://www.crownstatescotland.com/report-aquaculture-coexistence-v3)

<sup>4</sup> [blue-economy-opportunities-for-scottish-farmed-shellfish \(crownstatescotland.com\)](https://www.crownstatescotland.com/blue-economy-opportunities-for-scottish-farmed-shellfish)

<b>and Aquaculture Science (Cefas)</b>	carried out by the Cefas) is generally focused on England and Wales, with equivalent work carried out by Marine Scotland Science (Fish Health Inspectorate and the National Reference Laboratory for crustacean, fish and mollusc diseases) in Scotland.
<b>NatureScot</b>	NatureScot may fund research projects with relevance to aquaculture. In 2021-22 NatureScot made a contribution to the multi-partner, multi-jurisdictional project SeaMonitor <sup>5</sup> , focused on habitat use of high conservation-value species and including tracking migration routes of wild salmon, which has relevance for farmed fish interactions. (£246,000 spread over two years). In addition, NatureScot is also providing informal support and in-kind contributions to a number of SAIC-led projects (£42,969 in-kind) and are members of the Sustainable Aquaculture Forum established by the Marine Alliance for Science and Technology for Scotland (MASTS). Until 2019, NatureScot was a key funder of research through the Scottish Aquaculture Research Forum (SARF), which has since been replaced largely by the Sustainable Aquaculture Innovation Centre (SAIC) as the primary funding body for aquaculture research.
<b>SEPA</b>	SEPA is not a major funding organisation with respect to aquaculture R&D though they have made small financial contributions to a small number of aquaculture research projects in the past. SEPA's recent contribution to aquaculture research projects has been in the form of in-kind contributions through environmental data collection and analysis or regulatory advice for a number of SAIC projects, participation in advisory and steering groups (including in the above-mentioned SPILLS project) as well as providing letters of support for projects.
<b>Funds available for Aquaculture Research</b>	
<b>Marine Fund Scotland<sup>6</sup></b>	This fund was created in replacement of the EMFF following EU Exit. It provides competitive grant awards to projects which deliver on Scotland's Blue Economy Vision and outcomes. The first year of the fund was 2021/22. In 2021/22 and 2022/23, the fund had a value of £14m per annum. Grant awards in the first two years of the fund made to projects relevant to aquaculture research and innovation have been estimated at £3.8m and £2.1m, respectively.
<b>Sustainable Aquaculture Innovation Centre (SAIC)<sup>7</sup></b>	SAIC is part of the Scottish Innovation Centres <sup>8</sup> programme, which aims to drive growth in sectors of key economic and social importance. SAIC is an independent, science-led organisation working to reduce the environmental footprint and increase the economic impact of aquaculture. SAIC co-invests in collaborative R&D projects in the areas of fish health and welfare, shellfish, sector capacity, and the environment.

<sup>5</sup> [SeaMonitor - Loughs Agency \(loughs-agency.org\)](https://loughs-agency.org/)

<sup>6</sup> [Marine Fund Scotland 2022-23: general guidance notes - gov.scot \(www.gov.scot\)](https://www.gov.scot/resources/documents/2022/02/Marine-Fund-Scotland-2022-23-general-guidance-notes.pdf)

<sup>7</sup> [Home \(sustainableaquaculture.com\)](https://sustainableaquaculture.com/)

<sup>8</sup> [Funded Innovation Centres \(sfc.ac.uk\)](https://sfc.ac.uk/)

Core funding is provided by the Scottish Funding Council (£18.6m, 2014 to date). Since 2019, Highlands and Islands and Scottish Enterprise agencies have contributed £2m and £500k respectively to SAIC's direct project pot.

Since 2014, SAIC has turned a direct project funding pot of £9.3m into industry-critical research, supporting more than 70 collaborative projects. This includes leveraging a further £14.4m of third-party funding (e.g. UK and EU funding) into academic and industry collaborations, from £1.3m of direct SAIC investment. In addition, industry has contributed £33.6m to applied R&D. The total value of the SAIC project portfolio is £58.3m.

SAIC funding supports part of the costs of research, and is paid to the Scottish university that is the lead academic partner. All SAIC projects must have a minimum of one academic partner based in Scotland and one industry partner with activities that would benefit the Scottish economy.

SAIC's consortium of 300 member organisations is the widest network of aquaculture organisations (commercial, research, academic, NGO and government) in the UK, and its activities support scale-up, dissemination and adoption of results from applied R&D projects. SAIC's people programmes offer skills and training services e.g. funding 167 MSc and PhD students, and putting 300+ delegates through targeted skills courses. SAIC also enables knowledge exchange through multimedia marketing, communications, and events.

SAIC recently commissioned an independent economic assessment (Frontline Consultants and Steve Westbrook, 2021).

to estimate the organisation's wider impact on the Scottish economy and employment, as summarised on the SAIC website<sup>9</sup>.

#### **Seafood Innovation Fund (SIF)<sup>10</sup>**

The UK government's Seafood Innovation Fund (SIF) is a research and development (R&D) fund that launched in July 2019. The SIF programme is now part of the UK Seafood Fund<sup>11</sup> under the Science and Innovation pillar. The Centre for Environment, Fisheries and Aquaculture Science (Cefas) handles this funding on behalf of the Department for Environment, Food and Rural Affairs (Defra). SIF funds cutting-edge technology and innovation by supporting projects, ideas and technologies that aim to "disrupt" the seafood sector and is open to all organisations. The 4<sup>th</sup> call just finished, and successful projects will be announced spring 2023.

<sup>9</sup> [Impacts \(sustainableaquaculture.com\)](https://sustainableaquaculture.com)

<sup>10</sup> [Home - Seafood Innovation Fund](#)

<sup>11</sup> [£24 million for cutting-edge science and fisheries - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

	23 projects relevant to Scottish Aquaculture across calls 1-3 (2019 to present) have been funded with an overall contribution of £2.8million – just over half of all SIF funded aquaculture projects. This has been used to fund projects such as the development of new types of feed, aquaculture pen design through to creating zooplankton challenge models for salmon.
<b>Fisheries Industry Science Partnership (FISP)<sup>12</sup></b>	FISP is also part of the UK Seafood Fund under the Science and Innovation pillar. A total of £7.5 million was awarded to 29 projects over 3 rounds between October 2021 and December 2022. The successful projects and funding for a fourth and final round (closed Jan 2023) are yet to be announced. FISP focuses on four funding areas that can be applied for, with one designed exclusively for aquaculture projects. There is one project relevant to aquaculture (Ecosystem Benefits of UK Oyster Aquaculture Sites) worth £155,015.
<b>UK Research Councils: UK Research &amp; Innovation (UKRI)/ Natural Environment Research Council (NERC)/ Biotechnology and Biological Sciences Research Council (BBSRC)/ Science &amp; Engineering Research Council (SERC)</b>	Supports both fundamental and applied science and innovation that can lead to development on policy and increased knowledge-exchange between academia and industry. Certain outcomes may be of fairly immediate application, although a great deal of the research funded by such bodies for aquaculture may aim at more long-term goals. Scottish aquaculture-related research expenditure from a range of funding calls since 2021 has been estimated on the order of ~ £1 million. Additionally, research councils have funded at least 11 relevant PhD projects based at Scottish institutions in that time. Funding calls can have a broad remit that includes aquaculture (e.g. NERC Sustainable Management of UK Marine Resources) or can be specifically offered for aquaculture research (e.g. BBSRC-NERC Joint Call in Aquaculture: Collaborative Research and Innovation). – UK Aquaculture Initiative <sup>13</sup> BBSRC and NERC have committed £650,000 to support a collaborative network in aquaculture. The funding was awarded, through a competitive process, to the Aquaculture Research Collaborative Hub UK (ARCH-UK) <sup>14</sup> . November 2022.
<b>European Union (EU), United Nations (UN) funding sources and calls</b>	There are international calls through organisations such as the UN and EU for research projects e.g. through Horizon Europe. These are necessarily large projects, complex to organise involvement within and MS will have limited control over direction of work in such multinational projects. However, SG objectives can align with these organisations.
<b>Aquaculture Industry Engagement Fund<sup>15</sup></b>	Academic Institutes also offer partnership opportunities with the aquaculture sector, for example through the Aquaculture Hub - Aquaculture Industry Engagement Fund at the University of Highlands and Islands.
<b>Other Research Support Opportunities</b>	

<sup>12</sup> [UK Seafood Fund: Fisheries Industry Science Partnerships scheme - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/schemes/uk-seafood-fund)

<sup>13</sup> [UK Aquaculture Initiative – UKRI](https://www.ukri.org/funding/ukri-funding-schemes/uk-aquaculture-initiative/)

<sup>14</sup> [Aquaculture research collaborative hub UK \(ARCH-UK\) – UKRI](https://www.ukri.org/funding/ukri-funding-schemes/aquaculture-research-collaborative-hub-uk-arch-uk/)

<sup>15</sup> [Aquaculture Hub - Aquaculture Industry Engagement Fund \(uhi.ac.uk\)](https://www.uhi.ac.uk/aquaculture-hub/)

<b>Marine Alliance for Science and Technology for Scotland (MASTS)<sup>16</sup></b>	Provides support for research meetings and workshops.
<b>Scottish Universities Insight Institute (SUII)<sup>17</sup></b>	This virtual institute promotes collaboration between scientists and broader society. Notably a report on the role of the oceans in a just and inclusive future brought together academics and policy colleagues to identify goals for a just Blue Economy within UN sustainability goals.

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<sup>16</sup> [MASTS | Marine Alliance for Science and Technology for Scotland](#)

<sup>17</sup> [Scottish Universities Insight Institute > Opportunities > Follow Up Support \(scottishinsight.ac.uk\)](#)