



Sustainable Aquaculture
Innovation Centre

Annual Report

2021-2022

sustainableaquaculture.com



Executive Summary

SAIC is pleased to present our results for the Financial Year 2021/22, Year 3 of our current five-year programme. During Year 3, we have not just achieved but gone beyond our five-year KPI targets, exceeding by a considerable margin 15 of the 17 targets agreed with our funders.

Here, SAIC CEO, Heather Jones, gives a brief executive summary...



Reducing
environmental
footprint

Increasing
economic
impact



Greening the blue economy

through innovative R&D projects that
minimise the environmental footprint
of fish farming



Quadrupling return on investment

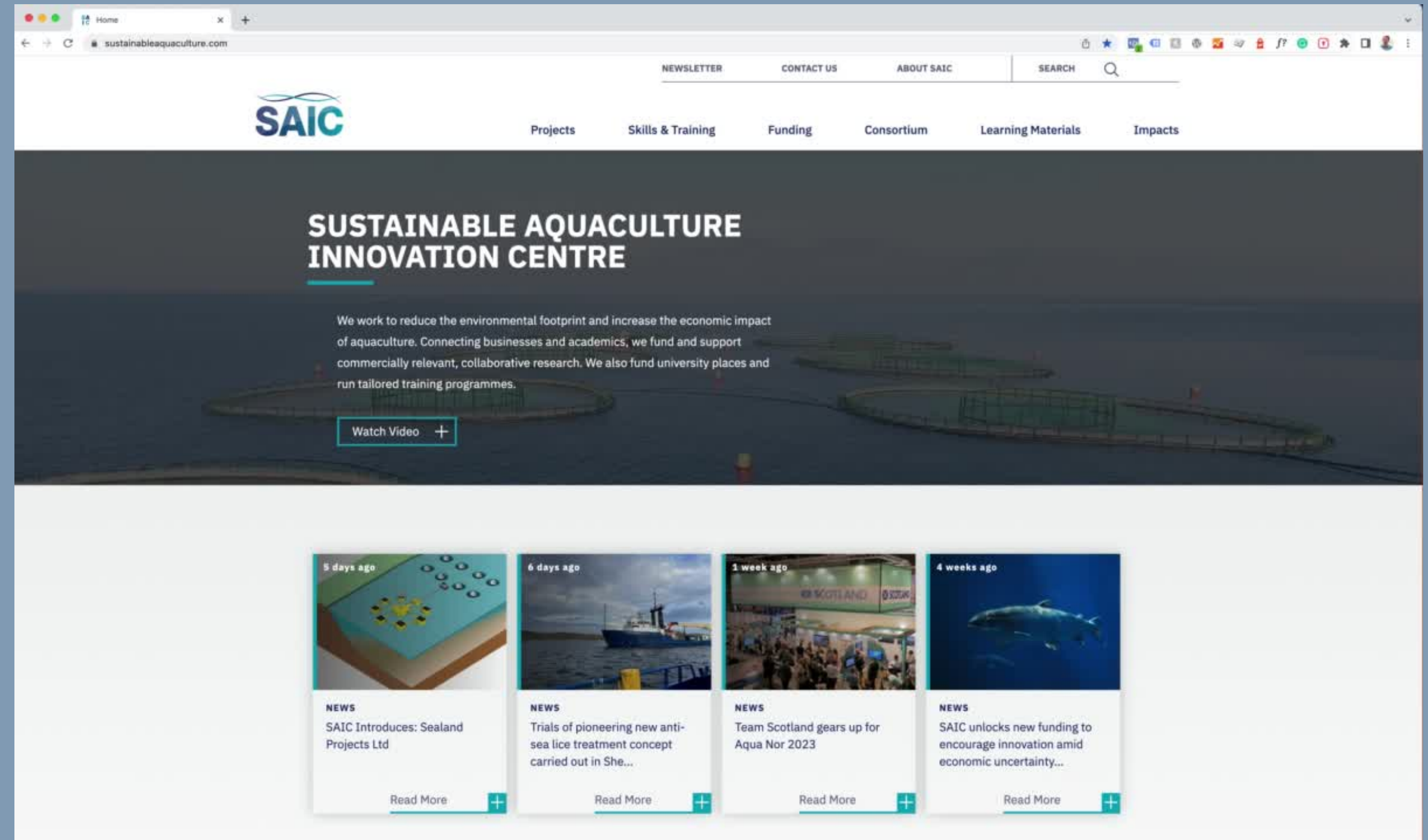
by generating over £4 in industry and
third-party funding for every £1 of
public money

Making it easier to share knowledge

Over the last year, we have redeveloped our website to make it easier to find information on the projects and topics you're interested in.

You can filter by general research area – such as finfish health and welfare, shellfish, or environmental impact – or by whether a project is completed or ongoing. You can also sort projects A-Z or select to see the most recently added case studies.

Have a look – you may be surprised by the breadth and depth of SAIC-supported research!



Case Study



WellFish Diagnostics is a prime example of what can be achieved through the projects SAIC funds: genuinely innovative technology that has a significant impact on aquaculture, not only in Scotland but across the world. Enhancing fish health and welfare is a key part of the sector's sustainability and we are excited to see how this technology can be applied at a global scale. The company is now working with the entire Scottish salmon sector, a large trout farm, and producers in Ireland and Norway, with plans for further expansion into South America and Canada by 2023.

“Wellfish presents a huge opportunity for the aquaculture sector to completely transform its practices for monitoring, responding to and predicting health challenges within the fish population... We are the first-ever laboratory to offer a non-lethal method of examining fish health commercially... It means farmers can make data-informed husbandry decisions, spot the early onsets of a potential health challenge and take proactive measures to reduce the impact, such as choosing to change feeding regimes or introducing early treatment to their fish populations.”



CEO Brian Quinn, CEO of WellFish Diagnostics

Delivering Innovation with Impact

SAIC recognises the actual and potential economic impact of the aquaculture sector. We consider ourselves to be an important delivery vehicle in helping to achieve **Scotland's National Strategy for Economic Transformation**. We can demonstrate our impact in each of the programmes for action:



**Entrepreneurial
People and
Culture**



**New Market
Opportunities**



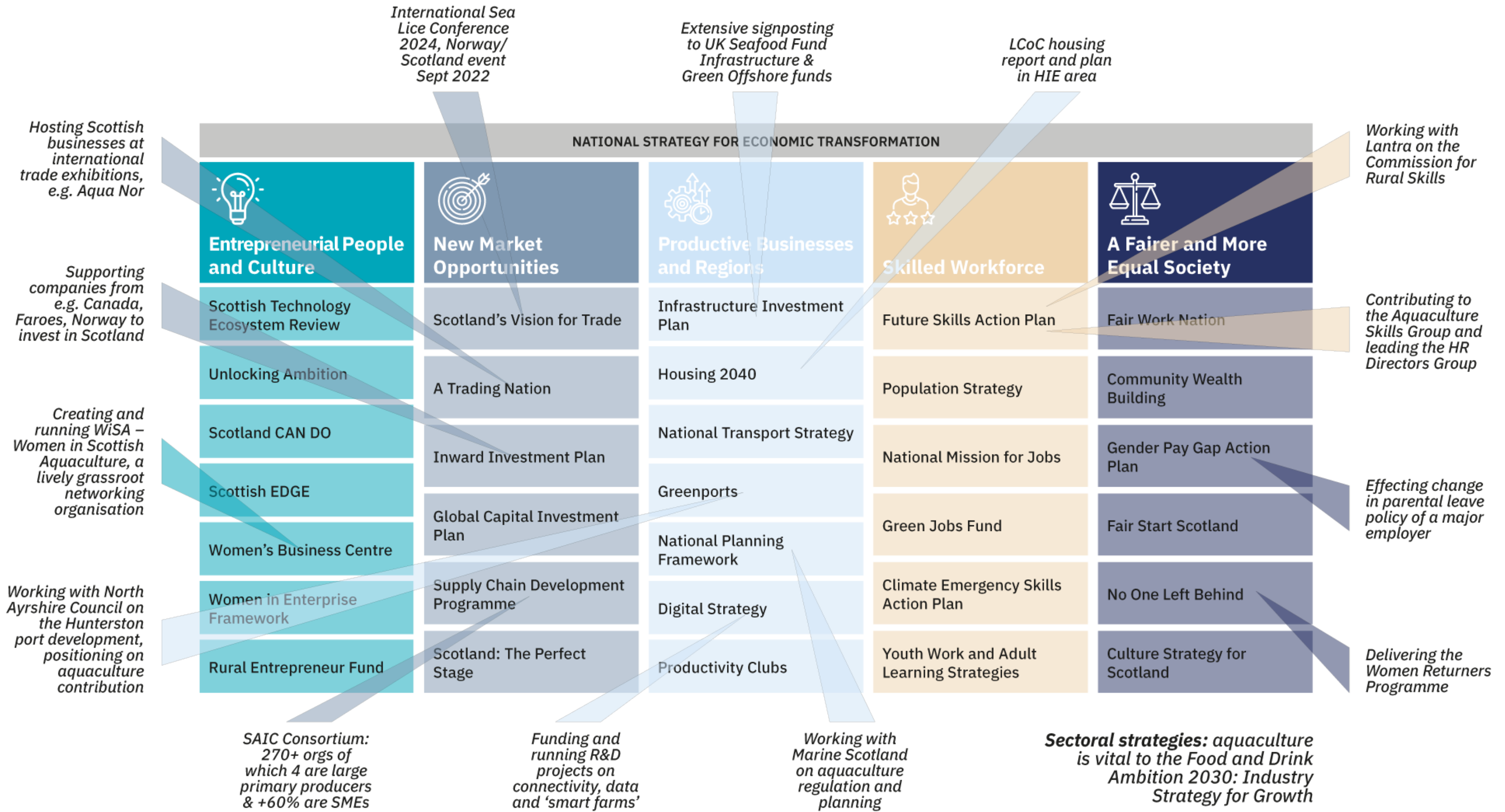
**Productive
Businesses and
Regions**



**Skilled
Workforce**



**A Fairer and
More Equal
Society**



Delivering Innovation with Impact

Entrepreneurial People and Culture

- SME engagement: 166 (61%) of SAIC Consortium members are SMEs.
- SME collaboration: 18 (22%) of SAIC's collaborative project partners are SMEs.
- We help nurture an entrepreneurial infrastructure via the creation of spin-out companies.
- We work jointly with fellow innovation centres to boost impact via co-funded projects, events and skills initiatives.
- Through our training programmes, we are helping to create entrepreneurial talent, bringing together bright sparks and future leaders from both private-sector businesses and academic institutions.
- Through our consortium members, we have expanded the reach of new and emerging technologies into Scottish aquaculture, aiding their network and providing innovative new solutions to the sector.

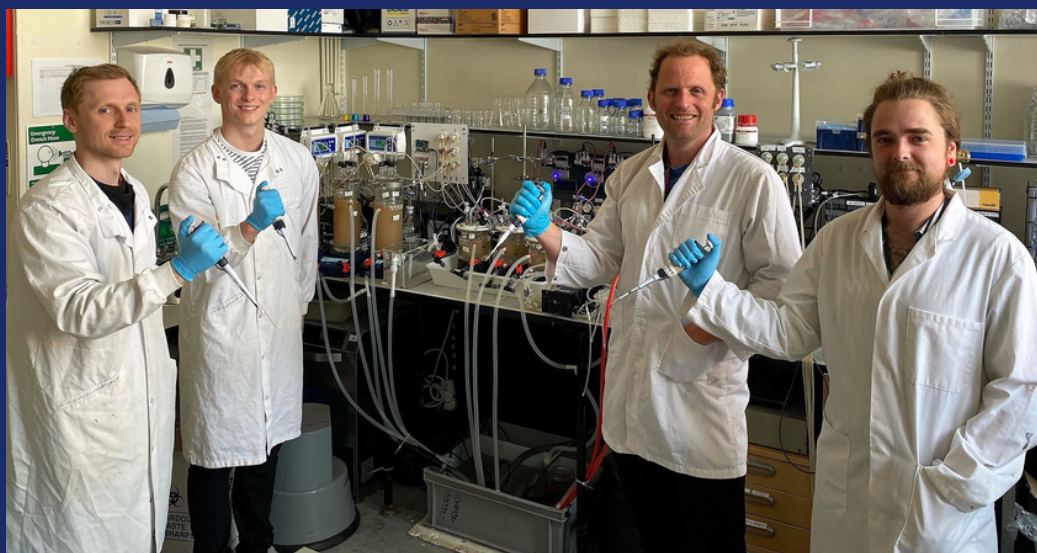
New markets and opportunities

- Our core collaborative projects are forecast to create 38 new products, 41 new processes, 21 new services, and 19 new business models.
- Through the Team Scotland stand at Aqua Nor 2021, SAIC helped to create market opportunities for aquaculture businesses.
- At Aquaculture UK, we supported the network of our professional community, leading the conversation on opportunities for digitisation for the sector, and sharing project insights.
- Our international conferences on gill health, Ballan wrasse, lumpfish and harmful algal blooms created lively and well-attended forums for knowledge exchange.
- We are central to a new cross-sector initiative exploring the creation of a Scottish Aquaculture Supply Chain cluster, to harness expertise and innovation.
- SAIC has leveraged over £48m of industry and third-party funding to date, attracting investment into research that will benefit Scottish industries and communities.
- Our collaborative projects are forecast to generate a Gross Value Add of £50m per year from 2026, rising to £100m per year by 2031.

Case Study



Research breakthrough leads to international contract win



SalmoSim – the start-up behind an Atlantic salmon digestion simulator – has secured a new contract with Dutch nutrition, health and bioscience multinational Royal DSM to support the development of its sustainable aquaculture feed offering.

The gut simulation technology will be used by Royal DSM to explore the effects of different ingredients, enzymes, vitamins and supplements that could be included in its range of salmon feed products to boost fish health and wellbeing.

Dr Martin Llewellyn, founder of SalmoSim and reader at the University of Glasgow, said:

“Our gut simulation system provides feed manufacturers like Royal DSM with a valuable opportunity for pre-screening the impact of various ingredients on fish digestive systems. The nutritional landscape is continually evolving, with both sustainability and fish health in mind. Yet, conducting live feed trials can still be expensive and difficult to arrange.”

“SalmoSim offers an alternative science-based route to market, providing robust evidence for the supply chain and producers to inform future decisions about trialling key ingredients. We’re pleased to be supporting a leading international company with its mission to accelerate sustainable aquaculture production and transform the approach to nutrition.”

What started off as a collaborative SAIC-funded R&D project six years ago has now become an important asset for companies developing alternative feeds or new digestible medicines. The international success of SalmoSim shows how ground-breaking Scottish research can have a real-world valuable impact on worldwide food production systems, animal health and sustainability.

Delivering Innovation with Impact

Productive Business and Regions

- SAIC-funded projects have continued to grow and develop, such as the Core Hatchery project, which formed part of a successful £4.4m application for the Shellvolution project to the Islands Deal.
- Many of the key aquaculture businesses and opportunities are based in the H&I region, of which 48 (18%) belong to the SAIC consortium. SAIC continues to promote the region, as well as holding several events in this geography.
- SAIC has supported ground-breaking projects alongside the European Institute of Innovation & Technology (EIT) funding vehicle, giving rise to the EIT Digital project Aquaculture Insights and the EIT Food project BREEZE. The former was a collaboration with partners from Scotland, Japan, the Netherlands and Norway. The latter is a revolutionary and environmentally friendly concept to improve the management of sea lice. Pulcea and the University of Stirling have recently received an ‘Outstanding’ accolade for its Knowledge Transfer Partnership.

Skilled Workforce

- Through the creation and delivery of our popular Leadership and Innovation programmes, we have provided industry and academia with the opportunity to invest in skills and training.
- We have promoted aquaculture as a rewarding career path via our ongoing ‘New Wave of Talent’ programme, raising awareness of the sector and helping to expand its talent pool.
- SAIC has established the Aquaculture HR Directors Group, bringing businesses together to work with public-sector agencies to enable them to respond more swiftly to the skills and recruitment challenges faced by the sector.
- SAIC funds MSc and PhD places for students to allow them to undertake applied research within aquaculture, linking students to sector professionals and academic partners, and creating networking and employment opportunities.

We caught up with SAIC Scholar Calum Stephen – formerly Planning Development Officer at Salmon Scotland and now Environmental Analyst at Bakkafrost Scotland – to find out how his SAIC scholarship helped kick-start his career, and why his work matters.

Delivering Innovation with Impact

A Fairer, More Equal Society

- Through our delivery of the Women Returners Programme, SAIC has engaged women who were looking to get back into work following a career break, helping to remove barriers to employment. Several have now found careers in the sector.
- SAIC established the Women in Scottish Aquaculture (WiSA) network, which promotes the diverse and rewarding careers that are available in aquaculture, to encourage more women to enter the sector. It also supports the progression, opportunities and development of women already working in aquaculture.
- SAIC was a partner in the independently assessed Salmon in Schools initiative, where high school pupils across the Stirling Council area were provided with healthy salmon meals and information about the benefits of seafood. SAIC also helped deliver an aquaculture careers day to over 400 pupils at the Lochgilphead Joint Campus.
- The creation of stable, well-paid jobs is of particular value in relatively remote and rural areas. As shown in the Frontline report on the economic impact of SAIC's activities, independent economists forecast that SAIC's projects will create 600 new jobs by 2026.

A Culture of Delivery

SAIC exists to deliver value to the aquaculture sector, our funders, consortium members, and our wider network of students and learners. SAIC's in-house culture – and, by extension, the way we conduct all our work with and for external stakeholders – always seeks to embody the four SAIC values:



Case Study



GENOMIC BREEDING FOR GILL HEALTH AND LICE RESISTANCE IN SALMON **Towards improved accuracy and affordability**

- Total project value: **£10.07m**
- Project duration: **48 months**
- Partners: Hendrix Genetics (formerly Landcatch Natural Selection), The Roslin Institute, The Institute of Aquaculture at the University of Stirling, Noahgene Ltd

This project sought to optimise genomic selection in salmon breeding to improve the accuracy and affordability of the technology, with the end goal of applying these innovations to advance the breeding of salmon stocks with increased gill health and resistance to sea lice.

The project achieved its primary aim and objectives with significant developments in breeding for disease resistance. Cost-effective methods for genomic selection using low-density genetic markers were developed for sea lice resistance and were extended to other target traits and species.

OUTCOMES

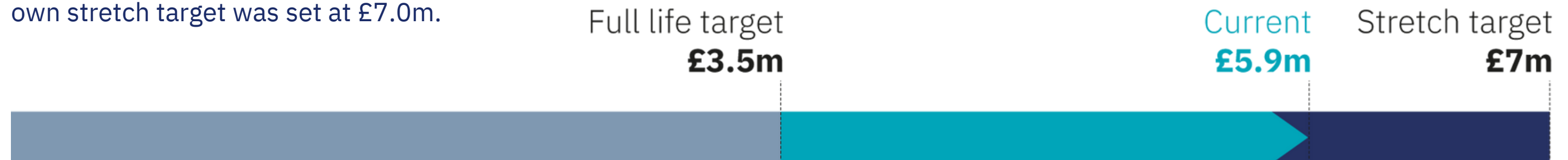
- The results of the project have been widely and rapidly disseminated across the sector to benefit aquaculture breeding and production.
 - Hendrix Genetics has used the results to inform its cutting-edge breeding programmes in Scotland and Chile.
 - The impacts of improved selection for sea lice and gill health traits are resulting in more robust salmon strains with higher levels of disease resistance.
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Project Milestones

In Year 3, SAIC exceeded 15 of the 17 KPI targets agreed upon with our funders. As it became clear that we were convincingly surpassing most of our targets, we set ourselves some extended stretch targets to make sure we remain ambitious in our goal-setting and achievements. Here is a summary of our performance against some of our targets.

External Funding

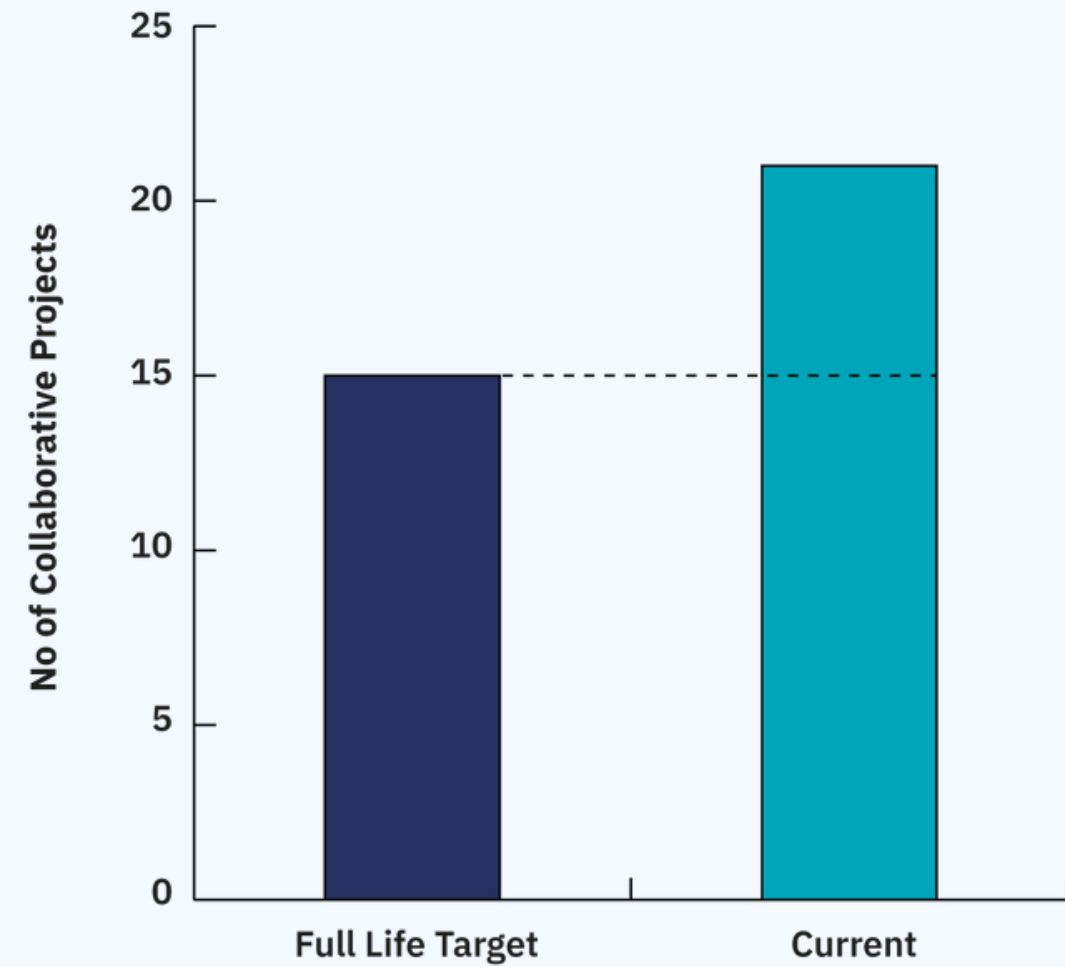
Our target for external funding was £3.5m. We had achieved £5.9m by Year 3 and our own stretch target was set at £7.0m.



Collaborative Projects

Full-Life Target: 15 collaborative projects

Current: 21

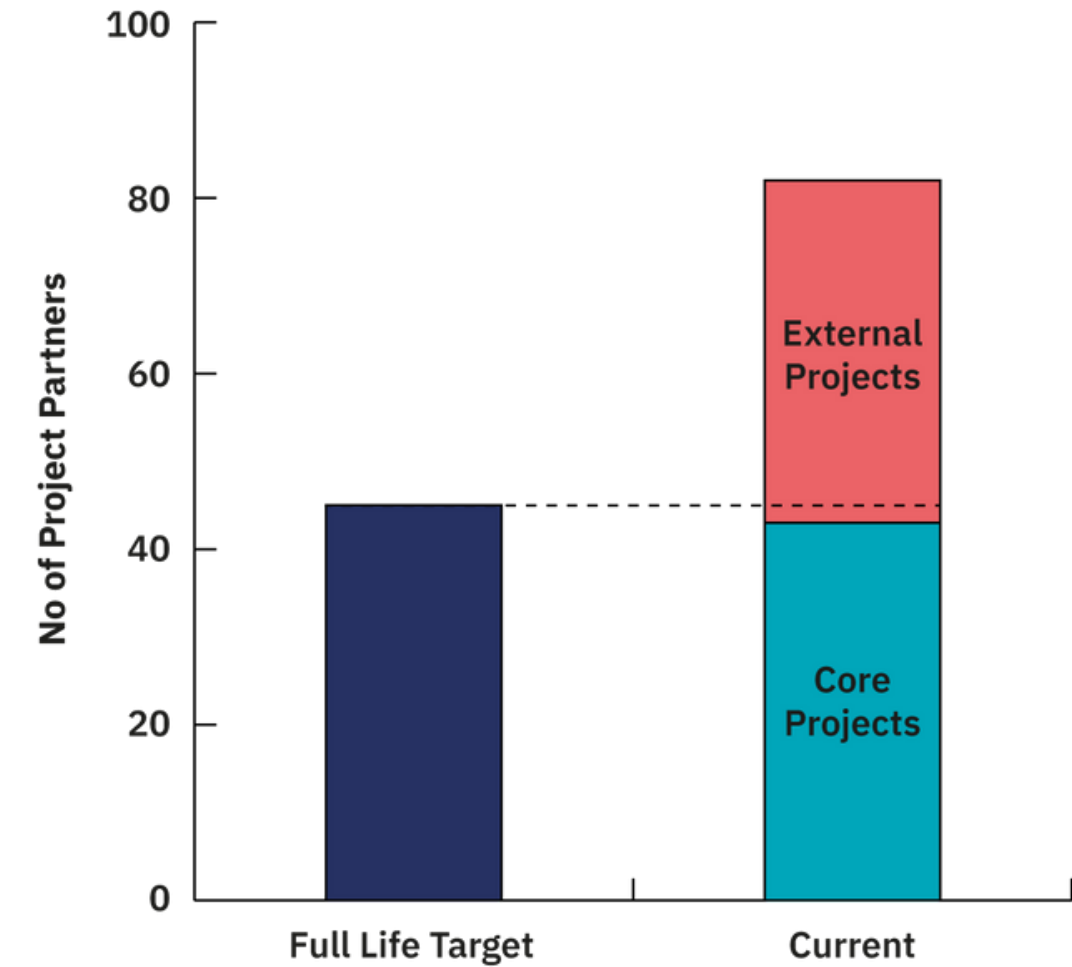


Collaborative Project Partners

Full-Life Target: 45

Current: 82

Core projects: SAIC is the main funder – External projects: a third-party funding vehicle is the main funder, with SAIC signposting, consultancy and financial/in-kind support

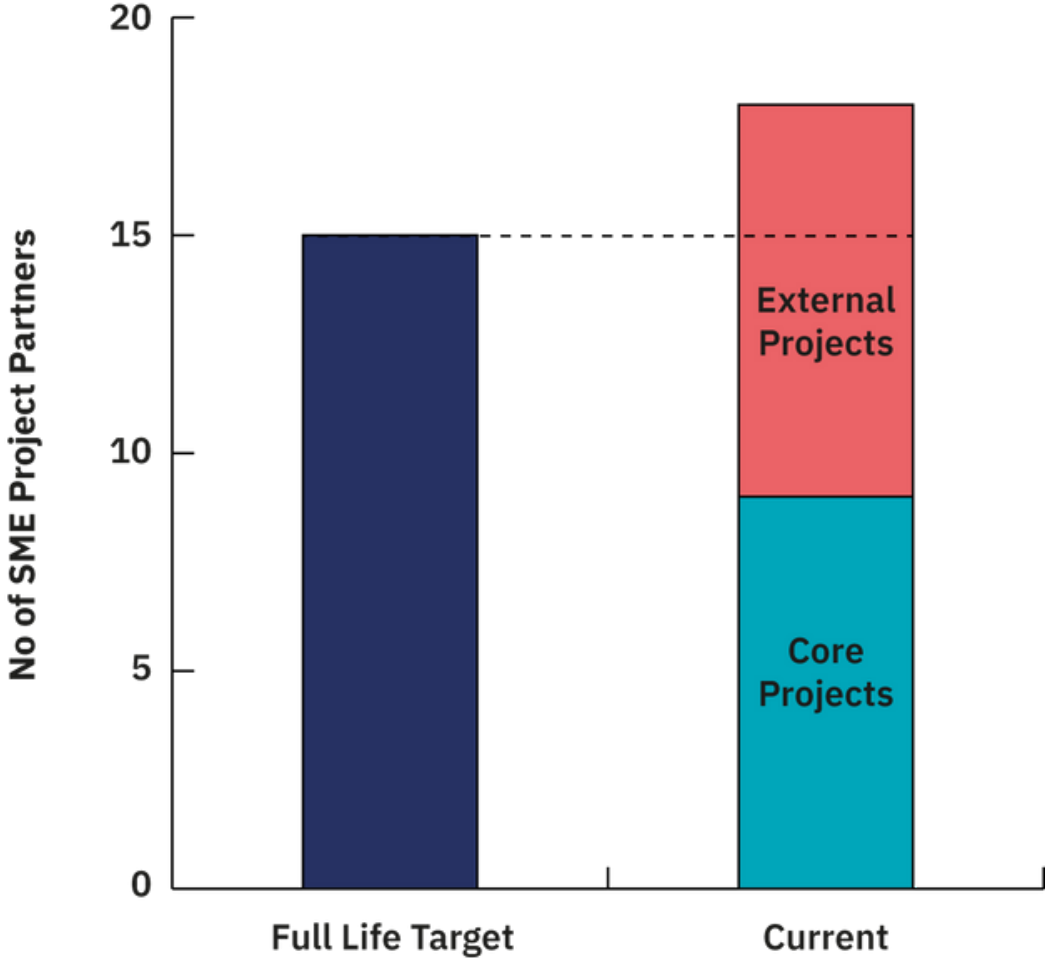


SME Project Partners

Full-Life Target: 15

Current: 18

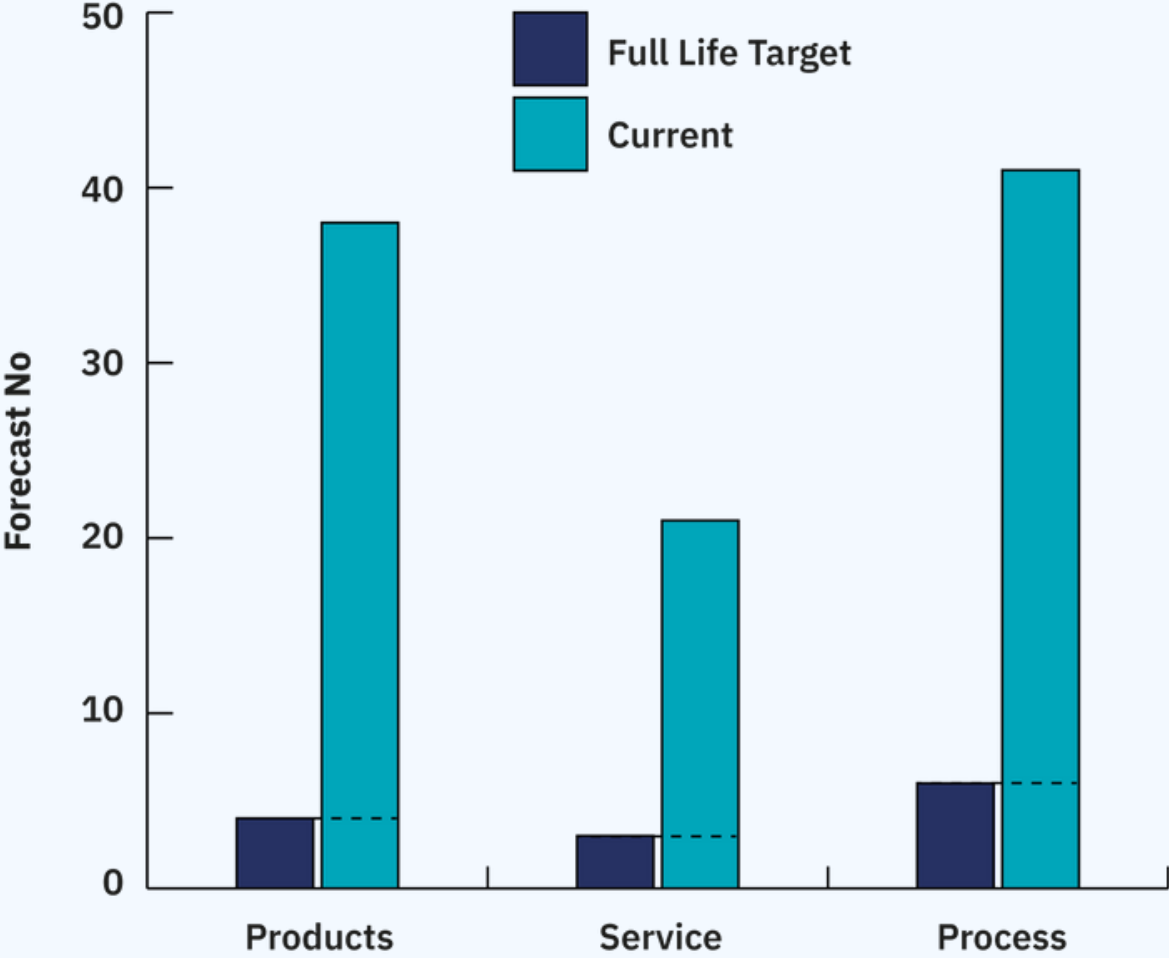
Core projects: SAIC is the main funder – External projects: a third-party funding vehicle is the main funder, with SAIC signposting, consultancy and financial/in-kind support



Collaborative Project Outputs

Full-Life Target: four new or improved products, three new or improved services, and six new or improved processes

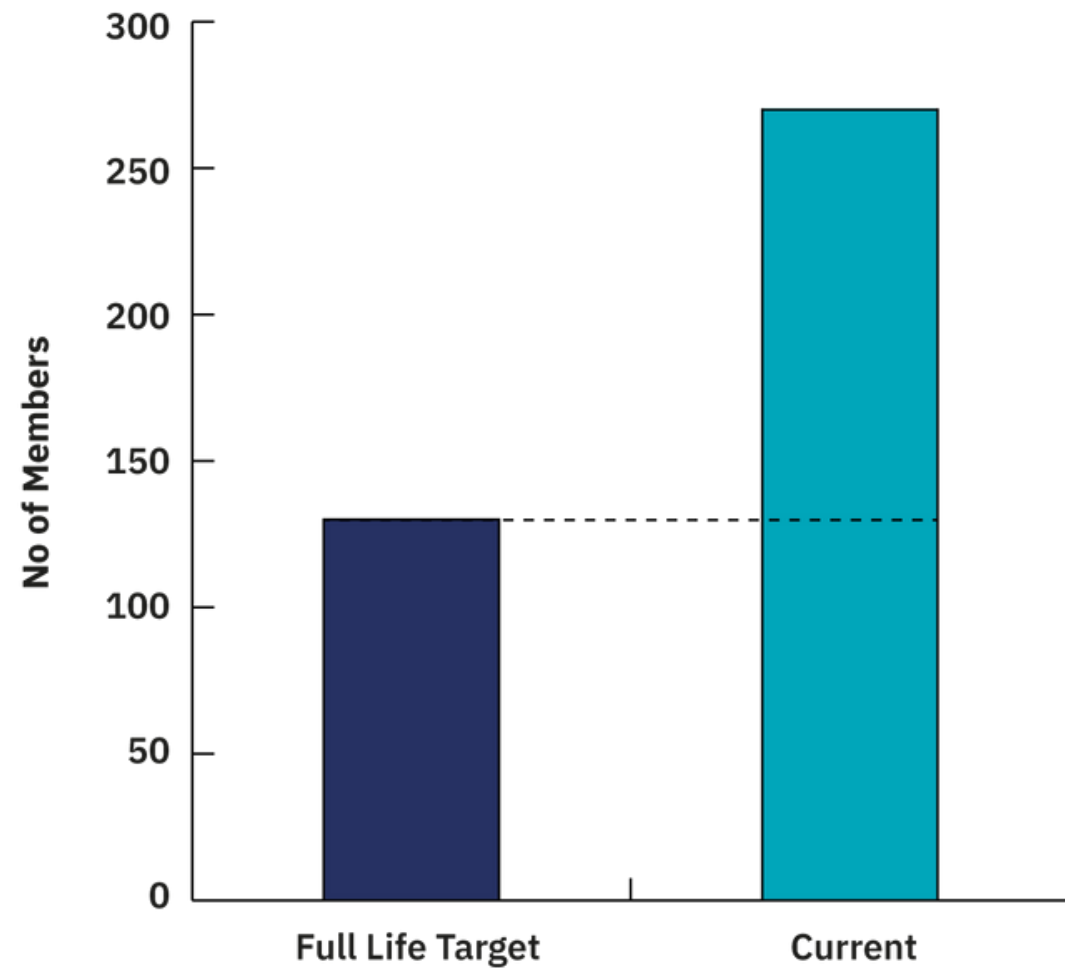
Current: 38 new or improved products, 21 new or improved services, 41 new or improved processes



Consortium Membership

Full-Life Target: 130 Consortium members

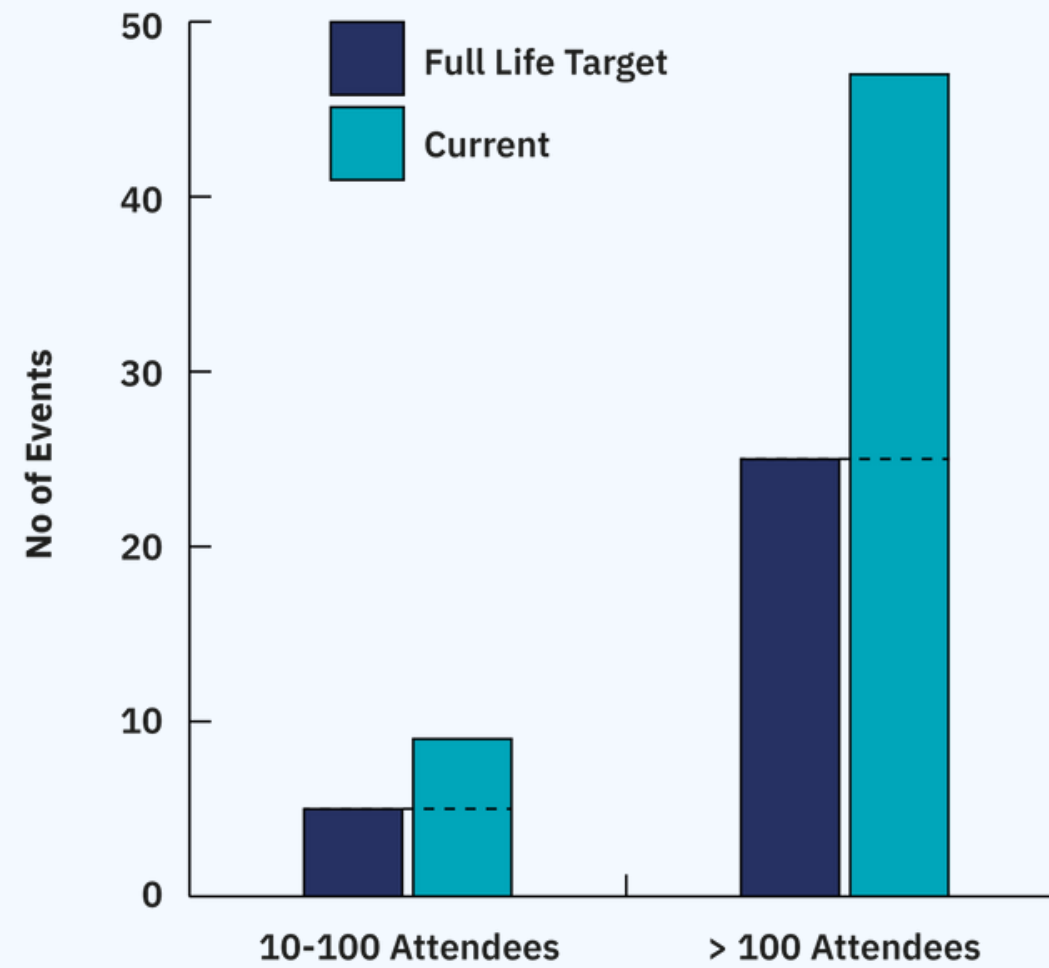
Current: 270+ Consortium members



SAIC-led Events

Full-Life Target: five events > 100 attendees, 25 events 10-100 attendees

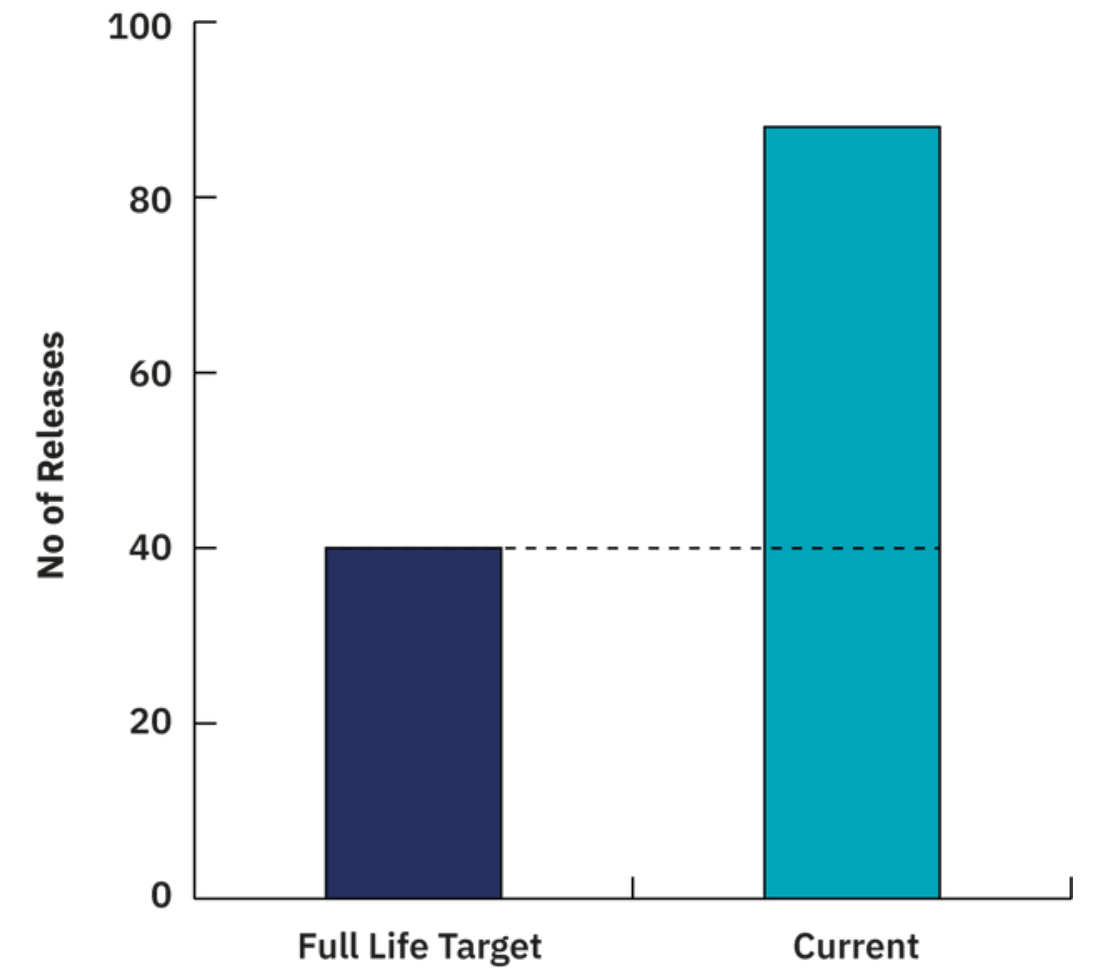
Current: nine events > 100 attendees, 47 events 10-100 attendees



Media Releases

Full-Life Target: 40 media releases

Current: 88 media releases





Talk to us

Whether you're looking for a connection, need funding support, want to find out about our training programmes, or would like to make use of our extensive network, we're here to help.

info@sustainableaquaculture.com
sustainableaquaculture.com

