hie.co.uk

SKILLS REVIEW FOR THE AQUACULTURE SECTOR IN SCOTLAND

Executive Summary - May 2018

ekosgen

imani DEVELOPMENT global vision, local knowledge

HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

INTRODUCTION

ekosgen with Imani Development were commissioned by Highlands and Islands Enterprise (HIE) to carry out a skills review of the aquaculture sector in Scotland. The review was commissioned on behalf of the aquaculture Industry Leadership Group (AILG) in order to better understand the demand for and supply of aquaculture and related skills.

There is consensus that the sector has the potential to grow but that the potential will only be realised if people with the right skills are in place to fuel it. The study included steering group representation from Skills Development Scotland (SDS).

Running between July 2017 and January 2018, the work involved a literature review and forecasting information; consultations with stakeholders and employers in the sector and the supply chain; an online survey of employers; and an analysis of data gathered through public sources and specific data requests.

AQUACULTURE PRODUCTION JOBS ARE CONCENTRATED IN THE HIGHLANDS AND ISLANDS AND PROVIDE VITAL EMPLOYMENT WITHIN RURAL COMMUNITIES.

AQUACULTURE IN SCOTLAND

Scottish aquaculture is a highly valuable sector and makes an important contribution to the Scottish economy, of around £620m GVA annually. Scotland, and the Highlands and Islands specifically, has a particularly advantageous geography for aquaculture production, and given the increasing global demand for fish and shellfish, the sector in Scotland has significant growth potential.

A study commissioned by HIE in 2017 suggests that by 2030 it could grow to providing just short of 14,500 jobs and a GVA of £740m, while the ambition set out in the Aquaculture Growth to 2030 strategic plan is to double turnover to £3.6bn by 2030, providing 18,000 jobs. Whilst they may not agree on the final figures, there is certainly agreement that the sector will grow.

Finfish production, in particular Atlantic salmon, outstrips the production of shellfish but both have a role to play in sustaining Scotland's reputation as a source of high quality products that attract premium prices.

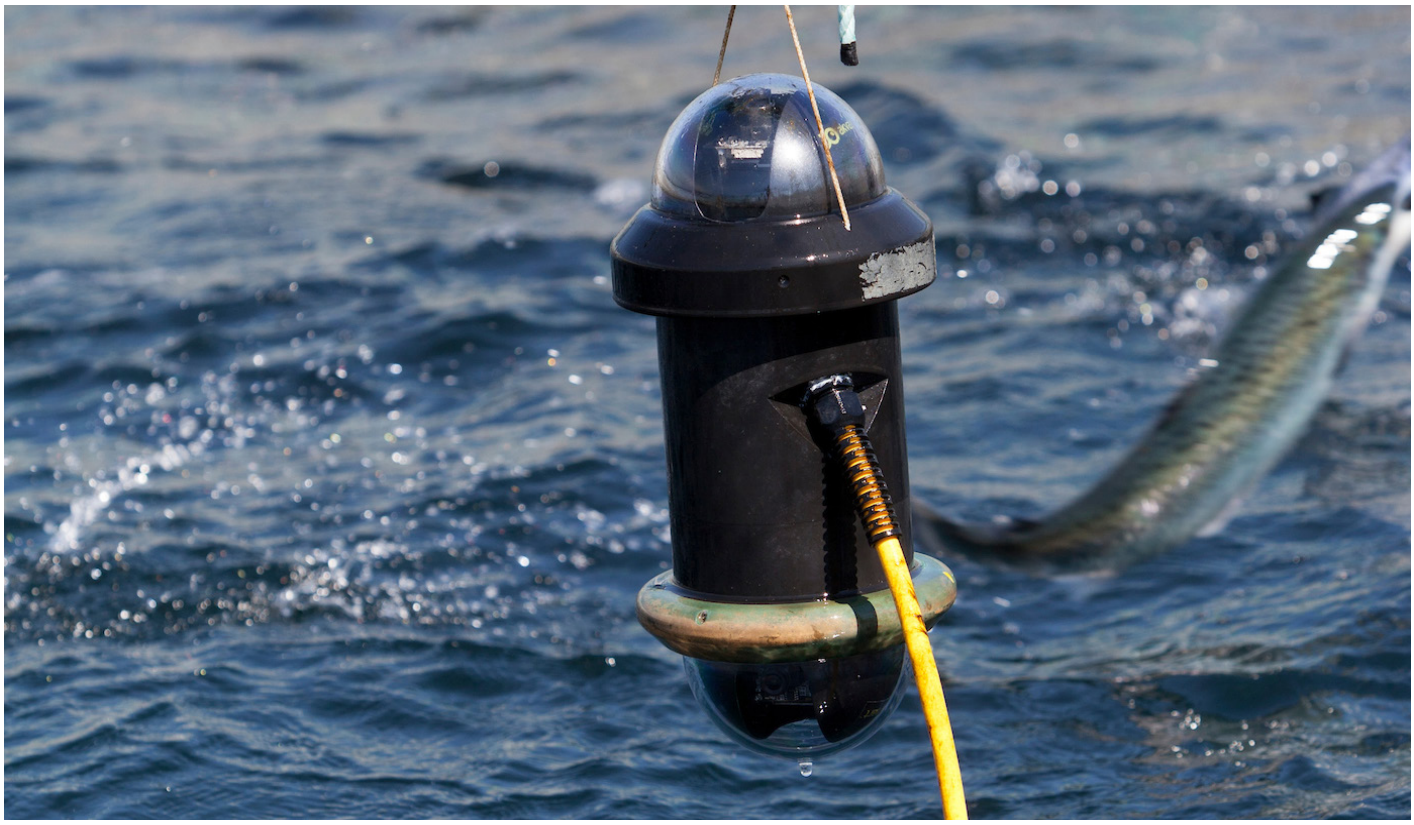
With 87 businesses, finfish is characterised by a small number of large producers, the result of consolidation within the industry. Shellfish, on the other hand, has a much larger number of small and very small producers (138), although there has been some consolidation in Shetland.

There are around 2,279 people in Scotland employed in finfish or shellfish production and 7,725 in the immediate processing supply chain. The aquaculture supply chain also includes a wider business base such as equipment supply, feed manufacture, wholesale supply, freight and transport and veterinary and health activities. These sectors combined employ around 29,000 people, although this captures employees that work across, and are influenced by, a large number of sectors, not just aquaculture.

Along with its economic contribution, the importance of the aquaculture sector is also demonstrated by its role and prominence within rural and fragile communities.

Production sites and jobs for both finfish and shellfish are concentrated in the Highlands and Islands, and provide vital employment, economic development opportunities and supporting infrastructure, particularly in the region's more remote and rural areas.

As well as being a driver of growth in the Highlands and Islands, the sector's reach and supply chain extends across Scotland, with many processing, distribution and export operations located in, for example, Aberdeenshire, the Scottish Borders and Dumfries and Galloway.



DRIVERS OF CHANGE AND CHALLENGES

Aquaculture faces a number of challenges to growth which must be overcome if it is to maximise its contribution to the economic and social health of Scotland. Finfish and shellfish face common challenges as well as some specific ones. These drivers of change all affect the future needs of employers and skills demand for the workforce.

The Aquaculture Growth to 2030 strategy sets out the strategic priorities for the sector and the growth ambitions. Alongside this, Scottish Aquaculture: a view towards 2030, provides an innovation roadmap for the sector and, combined, these documents support the evidence base and innovation requirements that are, and will, drive the sector. The research priorities set out in Marine Scotland's Aquaculture Science and Research Strategy reflect the innovation areas in the roadmap.

Although the volume of Scottish salmon production has been increasing, it is not currently sufficient to satisfy demand either domestically or in export markets. The Scottish market share has declined as other producer countries have increased production in response to growing global demand. It is clear then that if Scotland is to continue to be recognised as a major producing nation, production capacity needs to expand, and this will have implications for workforce numbers and skills required as well as the location of sites.

Aquaculture faces a number of challenges which must be overcome if it is to maximise its growth. Doing so will impact on the future skills demand for the workforce.

The majority of production sites are in near-shore or inshore waters but there is pressure on availability. Key players in the sector are now exploring the potential for establishing sites in more exposed and off-shore locations. This is driving research and innovation in terms of developing the equipment, expertise and technology required by the conditions in exposed sites. These emerging new offshore processes and equipment will mean a shift in technology and skills. Against this backdrop, the precautionary approach of planning and regulation is inhibiting expansion with issues related to the complexity, cost and time needed to secure planning permissions, leases and licences.

Biological conditions in Scotland's water are changing and this is likely to continue as a result of climate change. Although ocean warming may create opportunities for aquaculture to diversify into new species, it is likely that there will be increasing risks and issues as ocean warming may increase the prevalence of parasites and pathogens. Sea lice, algal gill disease and other pathogens are already challenges to the industry and fish health, welfare and good environmental stewardship are key drivers for innovation. There has been significant investment to improve disease control through management practices, treatments and innovative technologies. These issues are driving the need for scientific, fish health and technical skills to research the problems and impacts, find solutions and then apply them in production. Linked to this is the need to find more cost effective and sustainable feed and the skills and knowledge to develop new protein sources.

As with many sectors, there is increasing automation and application of digital technologies in aquaculture. Processes such as feeding are more mechanised and monitoring fish stocks can now be carried out digitally and remotely. The workforce will therefore require the skills to respond to these new and evolving working practices and, importantly, continue to adapt their skillsets as technology advances.

Industry and academic collaboration and networking are beneficial to the sector, and the companies within it. It enables crosssectoral transfer of knowledge and skills, for example trout farming learning from salmon. There is also scope for better alignment between education, academic research and industry need. Knowledge sharing with other sectors and other countries is also beneficial, for example Norway for salmon and New Zealand for shellfish, and from oil and gas and renewable energy industries, particularly in relation to moving to more exposed sites.

There is a considerable amount of aquaculture-related engineering in Scotland, for example cages and equipment. However, well-boats and a great deal of the research and development (R&D) comes from international supply and knowledge networks. To capture more of the value, some of this activity could be attracted to Scotland and this would enhance competitiveness and the provision of higher value employment.

BOAT SKILLS
ENGINEERING SKILLS
LEADERSHIP,
ORGANISATIONAL MANAGEMENT
AND WIDER BUSINESS SKILLS
TECHNICAL AND DIGITAL SKILLS
SOFT, TRANSFERABLE SKILLS
SPECIALIST SKILLS RELATING TO
FISH HUSBANDRY,
FISH HEALTH AND BIOLOGY
R&D SKILLS

SKILLS SUPPLY, DEMAND, CHALLENGES AND OPPORTUNITIES

Although Scotland's aquaculture-related education is internationally renowned, there remains a limited supply of courses and qualifications that are specific to aquaculture. In addition, training provided by aquaculture employers is not always transferable or recognised by other employers. Compounding all of this, the pipeline of entrants from formal education is currently insufficient to meet demand. There is a challenge in ensuring industry-relevant skills and a demand for more courses and aquaculture learning opportunities overall, and a need for more vocational or practical aspects to courses. This is not just in terms of numbers, but also in geographical reach of the education provided.

The current and future growth aspirations of the sector is driving a particular need for skills in production although there is also demand, albeit less acute, in other areas such as processing and the wider supply chain.

Engineering skills are a key demand and there is currently a shortage. Aquaculture is competing with many other sectors to recruit engineers and it can be difficult, particularly for smaller companies, to attract these skills. Similarly, boat skills are a key requirement across aquaculture, for boat-handling and boat-based working skills. The industry and supply chain is struggling with provision of statutory training for boat handling and availability of companies and instructors providing sufficient courses to cope with demand as the sector grows.

As a result of consolidation, particularly in finfish, leadership, organisational management and wider business skills are in high demand as businesses have become larger and more complex. For the shellfish sector, many of the businesses are micro and often owner-occupied and this can make succession planning difficult. There is a lack of new people entering to take over production.

The need for technologically and digitally skilled staff is particularly acute in finfish as a result of expansion, automation and new models of production. Demand for technical skills is expected to increase, with more specialist and niche skills required as the industry develops and adopts more sophisticated and innovative techniques and technology. Softer, transferable skills are also required both now and in future to be able to continually adapt to changes within the sector. Whilst shellfish producers tend to be low-tech, some are looking at how technology can be applied to improve and grow production which is creating a need for more technical skills.

A key driver for innovation in the sector is fish welfare and environmental stewardship. Reflecting the importance of this, the aquaculture sector needs people who are skilled in up-to date approaches to fish husbandry, fish health, feeding and biology. These are lacking in the current workforce and will be increasingly important for the future sustainable development of the sector.

Looking towards the medium to longer term, the need for technical skills will undoubtedly increase; as production processes adopt new technologies so will manual and operative roles. Changes such as Closed System Aquaculture (CSA), more offshore production and farming new species will mean new skills, knowledge and expertise will be needed in the sector and the supply chain.

In the supply chain as well as boat skills and engineers, there is a demand for chemistry, environment and fish health specialists along with quality assurance during processing and value-added preparation. Supply chain employers also report a need for R&D skills to drive innovation and diversification and this is a cross cutting theme for the sector as a whole. If the commercial benefits of R&D are to be realised, there needs to be good collaboration across industry, academic institutions and research centres as well as the skills and capabilities to do so.

In aquaculture, there is a shortage in the supply of workers generally, and in people with the right level of experience. A number of factors can make it hard to attract people in to the industry and it has competition from other sectors. This is compounded by lack of awareness and misperceptions amongst potential employees of the career opportunities in aquaculture, particularly in relation to emerging opportunities around digital and technical skills. The locations of aquaculture operations, particularly production, makes it even more difficult to recruit the skills required and a key challenge for the Highlands and Islands is retaining and attracting talent. Local infrastructure is crucial so that there are not only jobs, but that areas are attractive as places to live, work and learn.

Brexit is beginning to have an impact on the supply of much needed international workers, especially in processing. Brexit will also potentially negatively impact the supply of international students who come to Scotland to study, and then stay and work in the sector. There is also a significant gender imbalance within the aquaculture sector workforce and education pipeline which also impacts on the available workforce.

There is a challenge in ensuring industry-relevant skills, a need for more vocational or practical aspects to courses and demand for more courses and learning opportunities overall in terms of numbers and the geographical spread of provision.

RECOMMENDATIONS

It is clear that aquaculture in Scotland has enormous potential and there is a remarkable set of opportunities for growth. Given the location of production, processing and supply chain businesses, maximising the sector's potential will support sustainable and inclusive economic growth, particularly within remote and rural areas of the Highlands and Islands.

The sector faces challenges in terms of the skills it needs now, and the skills it will need to fuel its development and growth. There is a need to upskill and reskill the existing workforce as well as ensure the pipeline of people with the skills, attitudes and aptitudes flows into it and is retained.

This will require a planned, strategic approach to skills development by employers, and also on the part of stakeholders in education, training and economic development. Skills and economic development are inextricably linked and over the last decade there has been an increasing drive for an integrated approach, illustrated by the Enterprise and Skills review. Effective communication and working across the policy and strategic areas, locally, regionally and nationally, will be important to achieve consistent integration of skills and economic development in aquaculture.

RECOMMENDATION 1: PROMOTING THE SECTOR AS A CAREER DESTINATION

Aquaculture is a very positive career destination. It is a growing sector that is developing in new and exciting ways. There are varied roles within the sector and its supply chain and progression opportunities in terms of skills and role development. There are also opportunities around leadership and succession planning in finfish and shellfish. However, there is a lack of awareness and understanding about modern processes, working conditions and visibility of career opportunities and pathways.

To attract people into aquaculture, the sector and the roles within it must be clearly communicated and reinforced amongst potential recruits, people and organisations that influence career decisions. The profile of the sector must be raised and it should be promoted as fast growing and technology driven. It must be acknowledged that at this stage, this is more reflective of finfish rather than shellfish but in both there is undoubtedly scope to raise and alter sector profile.

Promoting the sector as a career destination should be at all qualifications and skills levels, as well as for all types of jobs. This will mean promoting the sector to younger people including school leavers as well as graduates, post graduates and other potential recruits. Whilst there is a need to promote the sector to people who could fill a wide range of roles, there would be particular merit in the short term in raising awareness to attract more engineers in to aquaculture and the supply chain.

RECOMMENDATION 2: DEVELOP LEADERSHIP, MANAGEMENT AND BUSINESS CAPACITY

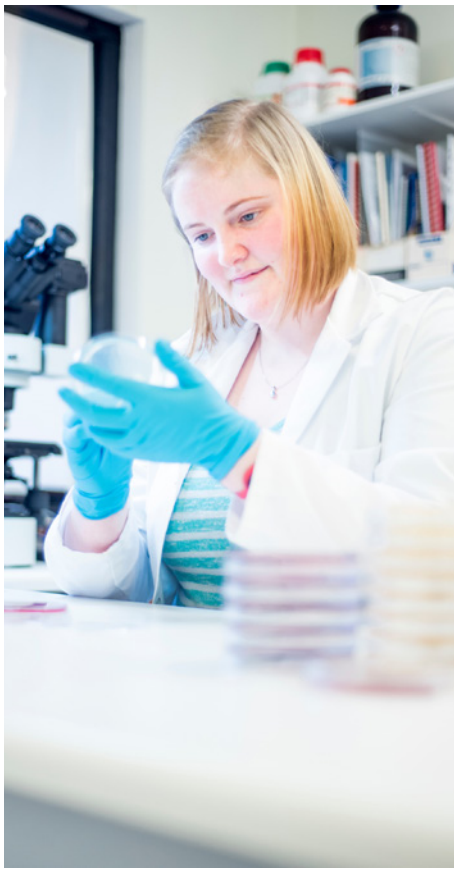
There are a number of programmes and initiatives available in the Highlands and Islands and other parts of Scotland that are designed to develop leadership and management skills in business leaders and future leaders. Some aquaculture businesses have already benefited from these but there is scope to extend the reach more widely in to the sector and target leadership and management development support, along with wider business skills at aquaculture and supply chain businesses. Barriers to participation should be explored and tackled where they exist; for example, financial barriers, time commitment and attitudinal barriers. This will be a key requirement if the industry is to reach its potential and should be addressed in the short to medium term.

There is increasing interest in, and commitment to, leadership development being built into education and learning cutting across subject areas, for example through internships and other programmes and initiatives. This is important for the future of the Scottish economy as a whole and for specific sectors. Going forward, learners in aquaculture-related subjects should have the opportunity to develop leadership and business skills as part of their study at under-graduate level and post-qualification. This should be explored and introduced as soon as is practical, recognising the range of partners who would be involved.

RECOMMENDATION 3: CONSISTENCY AND TRANSFERABILITY OF TRAINING AND EDUCATION

To address gaps in skills in the current workforce and in new recruits, many employers provide in-house induction and skills training. Whilst this is very positive and proactive, the downside is that training and skills across the sector is not consistent and because it is largely not accredited, there is a lack of industry wide quality assurance. The advantage to employers is that their staff are trained in the specific skills and working practices of that firm but, when employees move to other employers, they frequently have to undertake new training rather than port across.

Whilst employers may resist sharing and aligning their in-house training, ultimately this would benefit both employers and employees. Employees benefit as their training would be recognised by a wider range of employers which may enhance their access to career progression opportunities and provide greater mobility. Employers benefit as there is a significantly reduced need to provide bespoke training for each new entrant to the businesses, saving time and unnecessary training investments and improving productivity. Overall this could retain more people in the sector and in time grow the labour pool. This could potentially be achieved through accreditation and could deliver efficiencies at sector level as well as a greater degree of consistency and transferability across the industry. Whilst employers may worry that it would make it easier for staff to move between employers, it may build a greater skills capacity rather than skills development being a ‘revolving door’ where employees repeat training each time they change employer.



RECOMMENDATION 4: DEVELOPING A DIGITALLY ENABLED WORKFORCE

Digital skills are increasingly important in every sector in the Scottish economy and have changed how we expect to work, live and receive services. Aquaculture is no different and IT and digital skills are critical for many roles in the workforce. This will continue to develop and change as technology advances.

Staff in, and entering the sector must have the skills to enable them to use digital technology, and looking to the medium to longer term, have the ability and confidence to continue to learn and upskill as they adapt to new changes in technology. There is no doubt that the technology and skills required now will look very different in a decade and certainly, by 2030. To embed this digital capital in the workforce, digital literacy should be a key component of training and learning across the aquaculture skills pipeline. In addition, aquaculture businesses should be directed to initiatives and support to help develop the digital skills of their existing workforce, for example through Skills for Growth. Updating digital skills and responding to technological changes will be an on-going requirement and it is one that should be tackled in the short term to keep abreast of developments and maximise productivity.

RECOMMENDATION 5: ENHANCE PROVISION OF WORK BASED LEARNING AND VOCATIONAL TRAINING

Work-based learning is highly valued by employers as providing skills development for staff in the workplace that is considered to be more effective and aligned to working practices. It also, with the right delivery structures, makes it more accessible to a wider population who may not be able or willing to relocate or travel to participate in learning. There is scope to expand the provision of work-based learning including for higher level qualifications at SCQF Level 9 and above.

Consideration should be given to expanding the provision of undergraduate level aquaculture courses in line with industry need and ensure that undergraduate courses comprise an element of work placement. Underpinning the provision of training and education is that it should be accessible to learners whether they are full time learners or in employment. This means expanding the number of places as well as the locations in which it is delivered. Location is a particular issue for aquaculture given the dispersed geography of operations.

Opportunities for work-based learning and vocational training should be actively promoted in the sector and in communities with aquaculture producers. Where these are available on an outreach basis and in local areas, it should be clearly promoted. This is a high priority area of work that will take some time to achieve but exploratory work and planning should start in the short term.

RECOMMENDATION 6: WIDEN THE RECRUITMENT POOL

The aquaculture workforce is largely male and is ageing. Diversifying the workforce is an important objective, and it would help to widen the pool of potential recruits by broadening it out to more women, and to younger people. This will include awareness raising about career opportunities and learning and education in the sector, and taking consideration of the factors that will attract younger people and more women into the sector, and retain them.

Support could be provided to employers to review and develop their recruitment processes. Businesses could also be provided with guidance and encouragement to put in place more flexible working practices and importantly, the internal culture to support take up. This would help to remove some of the real and perceived barriers to working in the sector, in particular for women who tend to have the main caring responsibilities in households.

Again, flexible working is a key tool for retaining staff. Achieving this will likely rely on drawing and building on existing work in the Highlands and Islands to tackle occupational segregation and encourage more diversity in the workforce including people with shared protected characteristics.

THE SECTOR HAS THE POTENTIAL TO GROW, BUT ONLY IF PEOPLE WITH THE RIGHT SKILLS ARE IN PLACE TO FUEL IT.

FOR MORE INFORMATION CONTACT:

T: +44 (0) 1463 245 245
E: hieresearch@hient.co.uk

Highlands and Islands Enterprise
An Lòchran
10 Inverness Campus
Inverness
IV2 5NA

hie.co.uk

HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean