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# A helping hand to lend: UK aquaculture seeks to broaden its horizons

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**By Jason Holland**

## Aquaculture Global Outlook seminar confirms sector can capitalize on expertise, rising global demand for seafood

Fish farming is an integral part of the national program to stabilize the rural population through higher income and better diets. Photo courtesy of the Food and Agriculture Organization of the United Nations.

Aquaculture is an essential contributor to the world food security challenge, and every stakeholder has a role to play in the sector's evolution, delegates were told at the recent Aquaculture's Global Outlook: Embracing Internationality seminar in Edinburgh, Scotland.

While U.K. aquaculture remains fairly modest in size, it was stressed that the sector could play a crucial role in progressing fish and shrimp farming globally, thanks to the increasingly recognition of its growth potential and also for the expertise that already exists in key areas. Furthermore, with around 90 percent of the world's aquaculture production and markets located outside of Europe, a strong case exists for setting the sector's sights much further afield when seeking new opportunities, particularly once the country separates from the European Union.

While the Scottish government is opposed to the UK's departure from the EU, Fergus Ewing, cabinet secretary for the rural economy and connectivity, said that the outlook for the aquaculture sector beyond Brexit is promising.

"The salmon export values for the first three months of this year, for example, were up 27 percent compared to last year, and while the EU remains our biggest regional market, the United States and China are very important export destinations too. We would expect these market opportunities will only grow," he said.

"If we look at things globally, there are more than 7 billion people on this planet. They need food. They need to be fed. And the contribution that can be made from the marine sector surely has by far the greatest growth potential (compared to) the limited productive capacity from land. We need more protein to eat. We see sustainable aquaculture as a key solution to that and for many other challenges."

## Local importance

Aquaculture is already essential to Scotland and is valued very highly, explained Ewing. Providing employment for 12,000 people, and mainly comprising the production of salmon, sea trout, oysters and rope-grown mussels, the industry is worth GBP 620 million ($785.3 million) and is the fastest-growing food sector in the country's economy.

"It's a keystone industry and is of fundamental importance to rural Scotland. Operating in some of the most remote and fragile communities, it provides employment to people who live on the edge of Scotland with substantial average salaries, compared to other sectors," he said. "It also makes an enormous contribution to Scotland in providing sustainable food on a global scale."

Salmon is by far the most economically important aquaculture activity in Scotland, with a combined turnover of GBP 1 billion ($1.3 billion) and directly employing 2,000 people. Added to that, salmon farming is a significant contributor to international research, said Ewing. But he also acknowledged that the sector continues to face challenges.

"Even with sea lice numbers at the lowest level in six years, an achievement that I believe the sector should take enormous credit for, and for reducing mortality levels, we do know that more does need to be done. It's absolutely essential that through our actions, we deliver widespread confidence in the sustainability of aquaculture in Scotland," said Ewing. "Sustainable Scottish aquaculture has an enormous global potential. Our country stands to benefit as the sector grasps the huge opportunity to grow the supply sustainably, to develop markets and exports further, and also to contribute to the environmental challenges facing everyone on this planet."

## Salmon outlook

Scotland is certainly not alone in coveting emerging salmon markets. Analysis shared by Kolbjørn Giskeødegård, senior analyst at Nordea Bank, confirmed that Chile's exports to China have soared over the past half-dozen years.

Up until 2013, Chile supplied this market with just a few containers of fresh salmon a year, but last year it sent 30,000 metric tons (MT) of the fish as well as larger but still moderate volumes of frozen salmon.

There are three driving factors to this "explosion," he said. As well as the demand growth, Chile had a lot of large-sized salmon, which is "perfect" for the Chinese market. Last but not least, there is much improved logistics between the two countries, with economies of scale establishing new direct flights from Chile to Chinese markets.

"There hadn't been a trans-Pacific flight before 2018. Now there are several. This means there are opportunities and there is growth potential," said Giskeødegård.

Norway also has China firmly in its sights. In the last 10 years, the Norway-China salmon trade has increased fourfold, with an estimated 150,000 MT of products expected to go to Chinese markets in 2019.

"We are on track for a very ambitious goal communicated by the Norwegian Seafood Council two years ago that said by 2025, China should absorb 240,000 MT of farmed [Norwegian] Atlantic salmon," he added.

However, with only a limited number of traditional salmon farming licenses in the world and with most already being fully utilized, the onus for the entire salmon farming economy is on optimizing production, said Giskeødegård. There is, for example, a growing trend among fish farmers in Norway, the Faroes and also Scotland to try and extend the period that the fish are kept and grown in land-based systems.

Historically, the norm was that the young salmon would remain in these systems up to weight of 60 or 80 grams before transfer and a grow out period of two years to reach a market size of 5 kg. Through new feeds and genetics, fish farmers have managed to reduce this period in the water down to an average of 18 months, but the main focus is now very much on producing larger smolts, with some companies aiming to reach 500 grams before transfer.

There's also a growing number of ventures looking to grow-out the entire cycle in land-based facilities, but the volumes are still very limited, said Giskeødegård: "There are only opportunities. If land-based farming was to become the new standard – if there was a fantastic breakthrough bringing massive production of farmed salmon – I am convinced there will also be a high-end niche with consumers demanding something special – salmon from the cold, clear waters off Scotland, the Orkneys or northern Norway and they will be willing to pay for it. There will be markets for everyone."

Nordea is forecasting "nice, steady" growth annually over the next five years with volumes increasing between 5 and 6.5 percent year-on-year.

"This will be driven by the current technology, which is open pens in the water, and not so much land-based or ocean farming," said Giskeødegård. "There shouldn't be any big supply shocks, but in this industry you never know. Something always pops up and that's the interesting thing in a sector that's so driven by biology."

Indeed, prior to the recent huge algae bloom in northern Norway, Nordea Bank was forecasting a 6.5 percent increase in the global salmon supply this year to almost 2.6 million MT, with Norway's own supply expected to rise to more than 1.3 million MT. However, he estimated that 2 to 4 percent of Norway's 5 percent growth had quickly been removed by the challenge.

## Global food security

**Melanie Siggs** (https://www.aquaculturealliance.org/advocate/aquaculture-exchange-melanie-siggs-part-1/), director of strategic engagements at the Global Aquaculture Alliance (GAA), told delegates that there's no need to worry about making the case for aquaculture as it is already "absolutely critical" to global nutritional security.

Her claim is supported by the EAT-Lancet Report, which brought together 30 leading world scientists to discuss how to provide a future population of 10 billion with a healthy diet that's within planetary boundaries and indeed whether the capacity, assets and abilities do indeed exist to achieve such a target. The findings of this study were published in January, with the conclusion that it was indeed possible to fulfill this requirement, but crucially that current diets would have to change.

"It is quite an urgent call to grow consensus on how we are going to create more sustainable systems for food, for people and for planet," she said.

EAT-Lancet recommends only a “limited intake” of red meat and starchy vegetables. Its “optional foods” are also related to farming and animal husbandry and include eggs, poultry and dairy foods, while “emphasized foods,” which need to be included in the diet in larger quantities, include vegetables, fruit and fish.

With most wild-capture fisheries already at their maximum sustainable yield or above, it’s up to aquaculture to fill the void, said Siggs: “We have a fantastic opportunity because of the diversity of species, geographies and ways in which we can grow them and feed them; and because of the science, understanding and knowledge that we now have to do that responsibly.”

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There’s also scope for aquaculture to contribute to the United Nations’ Sustainable Development Goals (SDGs). Launched in 2015 and agreed to by 193 nations, the 17 SDGs aim to solve common problems and secure economic, social and environmental gains by 2030.

While aquaculture isn’t specifically mentioned in the SDGs, seafood is providing more than 4.5 billion people with at least 15 percent of their per capita intake of their protein right now, and if zero hunger (SDG 2) is to be achieved as well as the kind of increased seafood intake recommended by the likes of EAT-Lancet, aquaculture needs to meet a great deal of that difference, said Siggs.

“We need to think about how we get our governments, our regulators and our investors to understand how important that is and what an opportunity it is,” she said.

These same stakeholders, she added, should also be informed that aquaculture can be an increasingly important contributor to Good Health and Wellbeing (SDG 3), Responsible Consumption and Production (SDG 12), Climate Action (SDG 13), and, of course, Life Below Water (SDG 14) and Life on Land (SDG 15). And in working more collaboratively across different sectors, the industry can progress SDG 17: Partnerships for the Goals.

It was further highlighted that the World Bank has forecast that aquaculture’s contribution to the total volume of seafood consumed globally is going to increase from its current level of around half to 62 percent by 2030, which will require an additional 44 million MT of products.

"So, the world is your oyster. We have the opportunity to grow aquaculture to meet not only our own futures, but also the overall global needs that have been proven to us.

"In short, the future of aquaculture is good for human and planetary health, and that's a great place to be right now," said Siggs.

## Branching out

Over the course of the last 50 years, many UK aquaculture experts have taken their knowledge and experience to distant regions, confirmed **David Little** (https://www.aquaculturealliance.org/advocate/aquaculture-exchange-david-little-university-of-stirling/), professor of aquatic resources and development with the Sustainable Aquaculture Group at the Institute of Aquaculture, University of Stirling.

With 76 percent of global aquaculture production taking place in Asia, the world is not equal when it comes to aquaculture, he said.

"It's no wonder when we look at what people eat and how important it is in their diets. The global mean is about 25 kg per capita per year, but one extraordinary thing about seafood is about how some people are so dependent on it."

The Institute of Aquaculture has been working around the world and has trained many students since it was established in 1980. One of its biggest success stories from the past four decades has been the development of genetically improved tilapia species – a fish that's becoming increasingly important in Africa as food and an industry.

"Africa is often seen as slow growing, and it is compared to what's happening in Asia. But there's great signs [of growth] there," said Little.

Clifford Spencer. Photo by Jason Holland.

Clifford Spencer, CEO of the National Aquaculture Centre in the United Kingdom and senior agriculture and bioenergy adviser to the UN, agreed that meaningful change is taking place in **Africa** (https://www.aquaculturealliance.org/advocate/investing-africas-aquaculture-future-part-1/), but also feels that many people find it difficult to comprehend the sheer size of the continent and the scale of the task at hand.

Valued at just $3.5 billion, African aquaculture currently accounts for just 0.15 percent of GDP. And mainly comprising smallholder "feed the family" operations, the sector has a "big job" to do, he said, especially when factoring in that the African population is forecast to more than double to 2.5 billion before 2050.

"It's estimated that unless things change, more than 40 percent, or food for 1 billion people, will have to be imported. This is ironic given the resources that are on the continent," said Spencer. "If all the parts can be put together – the knowledge, research and all the great work that organizations like Stirling are

doing – to create an infrastructure with partners talking and working together, then these challenges can be met. But what's required is mighty."



Egypt has, however, shown that aquaculture can be a thriving food sector in Africa, and perhaps it's this state's success that's spurring the hunger for getting aquaculture right in many other regions, while Little pointed to an ever-expanding network of UK-based "agents of change" that are taking their training and investing it in developing countries, including a number of Africa's 55 component nations. At the same time, a growing number of commercial organizations are offering supportive services to overseas aquaculture.

"To do all that we have done, it's about partnerships. In order to have impact, we certainly can't do it as one company, one researcher or one development organization; we need to come together," he said. "We've really got to connect; we've got to engage and we have got to invest. That's all that is required for having the international output that the UK already has and should continue to seek."

Patrick Blow, aquaculture manager for Marks and Spencer. Photo by Jason Holland.

## Consumer protection

With consumers becoming increasing engaged on sustainability issues and particularly with the food that they eat, to instill confidence in the sector and ultimately make aquaculture products more appealing, it's vital that supply chains can prove they are operating responsibly. And Little pointed out that as a consequence, retailers are among those setting the benchmarks for the aquaculture sector at a global level.

"Our customers, perhaps more than any other retailer in the UK, want to know where their food is coming from," shared Patrick Blow, aquaculture manager for Marks and Spencer (M&S) and an oyster farmer. "We have made a commitment to tell them exactly where it's coming from and to be transparent. Part of this is to be able to trace back to farm and so we are working a lot to prove traceback in our fish."

Using genetic traceback, the UK multi-channel retailer can, for example, prove that the vast majority of its shrimp comes from certain farms in Honduras. It is also working on establishing environmental isotope traceback, while a live transparency map on its website provides the locations of all of its aquaculture and other live supply chains.

M&S currently sells around 60,000 MT of seafood annually, with aquaculture accounting for one-third of this total. This growing farmed fish offering currently comprises nine species. "We are always scanning the horizon for new things. For example, crayfish and cobia, which we are [evaluating] at the moment," said Blow.

However, in getting a placement in M&S stores, every product, whether wild-caught or farmed, must adhere to an "evolving sourcing policy."

In March this year, M&S launched its Select Farms brand as part of its wider Plan A environmental and ethical program. Plan A was launched in 2007 and made 100 commitments to tackle five key issues of combating climate change, reducing waste, using sustainable raw materials, trading ethically, and helping customers to lead healthier lifestyles. Two years ago, Plan A 2025 was launched with another 100 targets that are summarized in three pillars: wellbeing; transforming lives and communities; and caring for the planet.

“Essentially, Select Farms is a code of practice – a contract between the retailer and its processors, suppliers and farmers – that determines how animals will be farmed,” said Blow. “These standards are continually evolving and using best-practice as we go on in that evolution. This is our commitment as a business to building a more sustainable future, and through those standards, we hope to drive material improvement across all of our farming supply chains. It’s also key to us is that we work with farmers and suppliers that we know and trust. We insist on supply chain traceability right from the raw materials that go into aquafeeds, through broodstock, farms, slaughter and all of the processing that goes on after that.”

Embedded in the Select Farm sourcing standards are outcome measure targets. Having already set targets for its supply chains including chicken, laying hens and pork, M&S has started rolling out the program to its aquaculture products, with quantifiable outcome measures now in place for salmon, sea bass, shrimp and trout. These calculate the impact that the inputs of the farming operations have had on the health, physical condition and behavior of the animals. The data gathered helps M&S identify areas that can be improved and transfer knowledge to areas that are weaker.

“Critical” attention is also paid to the business track record, said Blow: “It’s all very well talking about sustainability in environmental and welfare terms, but if you don’t have a business that can operate financially viably and with a track record, then that’s not sustainable either.”

He explained that in order to approve an aquaculture supply chain, M&S requires considerable information ahead of a physical visit. This information is gathered via an online tracker that questions the suppliers on their supply chains.

“That helps us to make sourcing decisions and every year it’s updated,” he said. “If you don’t update it, you don’t supply us – that’s the new rule.”

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Jason Holland is a London-based writer for the international seafood, aquaculture and fisheries sectors. Jason has accrued more than 25 years’ experience as a B2B journalist, editor and communications consultant – a career that has taken him all over the world. He believes he found his true professional calling in 2004 when he started documenting the many facets of the international seafood industry, and particularly those enterprises and individuals bringing change to it.