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How aquaculture furthers the Blue Growth Initiative

Monday, 26 August 2019

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Greater fish production ties into several of FAO's Sustainable Development Goals



The aim of the Blue Growth Initiative is to enable fisheries and aquaculture to contribute to the United Nation's Sustainable Development Goals (SDGs), particularly Goal 14, which relates to conservation and sustainable development of the oceans, seas and marine resources. Shutterstock image.

When Blue Growth entered the lexicon a decade or so ago, few knew what it really meant or how get involved, but everyone agreed that it was a positive step for the planet.

Today, Blue Growth is recognised as an integral part of sustainable global development, and seafood companies increasingly have these principles embedded within their policies.

According to the Food and Agriculture Organisation (FAO), **Blue Growth** (<http://www.fao.org/zhc/detail-events/en/c/233765/>), has three pillars of sustainable development – economic, environmental and social. Its Blue Growth Initiative was put in place to help improve the use of aquatic resources and achieve better outcomes across all three pillars, which can be adapted to meet the needs and priorities of each country, region or community.

“Harnessing the power of the sea to improve social and economic development of populations, while simultaneously safeguarding marine resources and promoting environmental sustainability, is imperative as we move towards a world approaching 10 billion [people] by 2050,” said Árni M. Mathiesen, assistant director-general, FAO Fisheries and Aquaculture Department.

The aim of the Blue Growth Initiative is to enable fisheries and aquaculture to contribute to the United Nation's **Sustainable Development Goals** (<http://sustainable.development.goals>) (SDGs), particularly Goal 14, which relates to conservation and sustainable development of the oceans, seas and marine resources.

One key priority is to support “blue” communities to maximize use of aquatic resources to provide food security and nutrition, while generating work and securing livelihoods. A second priority is to maximize production through ecosystem-based approaches to fisheries and aquaculture management, and a third is to encourage trade in seafood that supports economic development.

Aquaculture production is rising rapidly, and the FAO's latest State of World Fisheries and Aquaculture publication, shows that it outpaced capture fisheries production for the first time in 2016, to account for more than half of the total, if non-food uses including reduction to fishmeal and fish oil are excluded.

Of the 171 million metric ton (MT) of global production of seafood in 2016, aquaculture weighed in at 90.6 million MT or 53 percent, up from 26 percent in 2000.

This trend is predicted to continue, making aquaculture an essential part of future blue growth.

St. Andrew Mussels, the largest mussel grower in Chile, agrees with this sentiment and sees blue growth as one element in a long-term demand driver for mussels.

“A growing number of people are factoring carbon footprint into their consumption decisions, and that should be a very positive trend for mussels and other filter feeders, which sequester carbon in their shells,” Managing Director Soames Floweree told *The Advocate*.

However, the contribution of aquaculture to global food security and economic growth is not without its issues, and the sector remains constrained by challenges, which governments and businesses are working to overcome. They include poor governance; weak management regimes that affect trash fish or feed fisheries in particular; conflicts over the use of natural resources; use of poor practices; gender discrimination; and child and slave labor. On top of this, the impacts of climate change pose threats to sustainable aquaculture development.

Blue Growth in Europe

The blue economy currently represents around 5.4 million jobs in Europe and generates a gross added value of almost €500 billion a year.

Seas and oceans are major drivers for the European economy, and aquaculture is cited as one of the most promising areas offering a high potential for sustainable jobs and growth. Other areas include coastal tourism, marine biotech, ocean energy and seabed mining.

Alistair Lane, executive director of the European Aquaculture Society (EAS), said that while the EU Commission clearly desires aquaculture development, that desire needs to be translated within member states into licences to develop farms, along with an enabling environment backed up by policy, and greater attention to coastal planning. However, each country develops its own national multiannual strategic plan for the promotion of sustainable aquaculture and is autonomous in the way this is managed.



Nordlaks' prototype offshore fish farm is a giant ship-shaped facility, a major departure from traditional fish farm designs.

“Development of aquaculture to feed people and create employment is an essential part of growing the blue economy and progress is being made with new species, new areas to farm, new techniques, greater use of genomics to improve breeding, and greater uptake of aquaculture certification,” said Lane.

Sustainability certification standards are an important factor in improving practices across the globe and focussing greater attention on the environmental and social impacts of fish farming. The two leading global players are the Global Aquaculture Alliance, which operates a Best Aquaculture Practices (BAP) scheme, and the Aquaculture Stewardship Council (ASC). Both organisations operate standards for a wide range of farmed species, including shrimp, salmon, tilapia and shellfish.

Certification is one of several tools that are helping to drive improvements, but innovation and adoption of leading-edge technologies are also crucial to the future of the sector. To address this aspect, EAS has organised a session at its annual conference in October this year, for entrepreneurs and companies to pitch their ideas to a panel of high-level representatives from investment funds interested in aquaculture.

“We want funders to learn about the latest innovations that work with the blue economy, and we are excited about the prospects the session offers the companies who have signed up,” said Lane.

In the Mediterranean, a number of different species have been trialled through the five-year Diversify program, which was led by a consortium of universities, research centres and businesses, with support from EU funding. The programme aimed to move the emphasis away from the farming of European sea bass and gilthead sea bream, and tuna ranching.

“The program was set up to help farmers gain the technical skills and confidence to try new and emerging finfish species, which in turn would help satisfy the expanding European market for sustainable fresh fish. The program looked at wreckfish (*Polyprion americanus*), amberjack (*Seriola dumerili*), meagre (*Argyrosomus regius*), Atlantic halibut (*Hippoglossus hippoglossus*), pikeperch (*Sander lucioperca*) and grey mullet (*Mugil cephalus*). Wreckfish looked particularly promising,” said Lane.

He explained that Norway is using a three-pronged approach to its blue growth development of salmon farming, with a move towards more contained sites within fjords to protect the environment; the issuing of open sea leases to trial prototype cages that can withstand the rigors of exposed locations; and a greater emphasis on recirculating aquaculture systems (RAS) onshore.

Nordlaks is one of the companies building a prototype offshore farm. According to project manager Bjarne Johansen, its Havfarm is a giant ship-shaped fish farm, which is a major departure from traditional fish farm designs.

“In order to move aquaculture out of the fjords to more exposed locations, we needed new technology able to withstand the tougher weather conditions, while also keeping the fish and people safe,” said Johansen.

“Havfarm will be an important tool for Nordlaks to reduce its impact on the environment. It will also be more resistant to sea lice infestation than conventional installations, as a result of an innovative steel louse skirt that extends 10 meters underwater.”

Multi-faceted approaches to blue growth

There is not one simple answer to aquaculture making a contribution to blue growth, but attention to breeding, feeding, welfare and environmental control can combine to make a considerable difference.

Enhanced nutrition is an important factor in improving fish growth, and research into the relationships between fish diets, nutrition, growth and health has played a major part in enhancing the economic and environmental performance of aquaculture production. New ingredients and technological processes have enabled the replacement of increasing proportions of fishmeal and fish oil in commercial feed, while maintaining the health of the fish and its nutritional value for consumers.

The field of genomics is playing its part, with genome editing helping to improve the resistance of fish to disease and make them less vulnerable to sea lice, which in turn makes seafood production more efficient.

Waste management is also a key aspect of blue growth strategies. FAO figures show that one billion MT of food is wasted each year, despite the fact that 815 million people around the globe remain undernourished.

Around half of the seafood loss in North America takes place at the consumption stage, while in the developing world, the greatest loss takes place post-harvest. Here fish are lost from poorly constructed nets, or become inedible due to substandard transport without ice, or inefficient fish processing and storage facilities. Efforts to improve standards are essential to meet blue growth goals.

The growing use of aquaponics is another field that is seen as an essential part of a future blue economy. Systems combine hydroponics, soil-less agriculture and aquaculture in a closed system to grow fish and vegetables. Aquaponics is water efficient, not reliant on fertilizers or pesticides, and can be set up on rooftops and in deserts. A major advantage is that it offers an adaptable and scalable means to provide fish protein and vegetables to local communities at relatively little cost.

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