

Swedish aquaculture – a green industry in blue fields

Strategy 2012–2020



The work to develop the strategy took place during 2012. A number of meetings were held where industry representatives, researchers, non-governmental organisations and government agencies together discussed how to develop Swedish aquaculture. The discussions revolved around how to achieve business development, regional development, ecologically sustainable development and quality development. The work on the strategy was managed by the Swedish Board of Agriculture.

An action plan will be developed to substantialize the goals of the strategy. The work with the action plan will begin in autumn 2012.

WE HAVE PARTICIPATED IN THE DEVELOPMENT OF THIS STRATEGY

Vattenbrukarnas Riksförbund

Svensk Skaldjursodling producer organisation

Swedish Society for Nature Conservation

World Wildlife Fund (WWF)

Sveriges Fiskevattenägareförbund

Swedish Association of Local Authorities and Regions

Svensk Dagligvaruhandel

East Sweden Region

Regional Council of Jämtland

Swedish University of Agricultural Sciences

University of Gothenburg

KTH Royal Institute of Technology

County Administrative Board of Jämtland

County Administrative Board of Västra Götaland

National Veterinary Institute

Swedish Agency for Marine and Water Management

National Food Agency

Swedish Board of Agriculture

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Contents

The growing aquaculture nation	5
Messages from key persons	6
Vision and goals	9
The vision	11
Aquaculture - an industry with a future	12
Environmentally and climate smart products from lakes and oceans	15
Aquaculture is a driving force in regional development	19
Aquaculture is growing faster than ever	21



What is aquaculture?

Aquaculture is a collective term for the cultivation of plants and animals in water. In Sweden, fish, mussels, oysters and crayfish are cultivated. In other parts of the world, there is also algae aquaculture. Fish, mussels and oysters are cultivated primarily for human consumption. There is also farming of fish for stocking and conservation purposes that are released into nature. Crayfish are cultured both for consumption and for stocking and conservation purposes.



The growing aquaculture nation

Sweden has over 2,000 km of coastline and almost 100,000 lakes. This unique resource provides a solid foundation for the expansion of aquaculture throughout the country. There is room for more entrepreneurs and companies that produce high-quality, healthy food and create employment, especially in rural areas. It is important to take advantage of these development opportunities.

In 2012, Swedish aquaculture is relatively small-scale, but the potential for growth is great. If mankind is to continue eating fish and shellfish to the same extent as today, without the oceans being fished out, aquaculture must grow substantially. Swedish aquaculture can help fill this growing need.

By 2020, aquaculture can be developed into an important green industry throughout the country - even more so if the industry is diversified and adapted to local conditions. Increased processing of the products contributes to improved profitability and increased employment. There is also significant growth potential in the production of fish for stocking purposes, in order to satisfy the needs of fishing tourism.

In the short term, cultivation of fish in inland hydropower dams and cultivation of shellfish along the west coast have the best potential for expansion. There are also opportunities for growth of aquaculture in other parts of the country. Continued technological development and introduction of new species can contribute to diversification of the market for aquaculture products.

A STRATEGY FOR GROWTH AND DEVELOPMENT

This strategy outlines the path for a growing, sustainable Swedish aquaculture industry by 2020. The challenge is to combine economic, ecological and social considerations. This challenge can best be met through collaboration between industry, research, non-governmental organisations, government agencies and policy makers. The strategy is a tool that can help strengthen the growing aquaculture industry throughout Sweden.

The strategy is divided into three sections:

1. Aquaculture - an industry with a future
2. Environmentally and climate smart products from lakes and oceans
3. Aquaculture - a driving force in regional development

Within each section, a number of goals have been established which contribute to the development of aquaculture into a profitable, growing and sustainable industry. The strategy also includes a division of responsibilities between industry and the authorities involved, with the aim of achieving these goals. The strategy aims to facilitate the realisation of the vision of a growing and sustainable aquaculture industry that produces high quality and environmentally sound food with a negligible impact on the ecosystem and climate. Swedish aquaculture becomes a green industry that creates jobs and growth in rural areas.

Messages from key persons

LENA EK, MINISTER OF THE ENVIRONMENT (IN 2012) AN ENVIRONMENTAL AND CLIMATE FRIENDLY ALTERNATIVE

Today, many fish populations in the oceans are being threatened by overfishing or by other unsustainable overexploitation. At the same time, the demand for fish and shellfish is increasing. Seafood, if caught and produced in a manner that is sustainable, is an environmentally friendly and climate friendly alternative. This emphasises the need for both fisheries and aquaculture to develop sustainably.

Sweden has committed to achieving a good ecological status according to the Water Framework Directive and a good environmental status under the Marine Strategy Framework Directive. In addition, we have commitments in the Baltic Sea Action Plan to reduce the discharge of nutrients. This makes it particularly important to assess the impact of the emissions of nutrients from aquaculture and to examine how good spatial planning and technological development can minimise the contribution to eutrophication from aquaculture.

One instrument for developing suitable locations for aquaculture in lakes and coastal areas is the municipal comprehensive plans in accordance with the Swedish Planning and Building Act. The county administrative boards and the Swedish water authorities have important roles in providing the municipalities with appropriate data for spatial planning and proposing suitable locations for aquaculture, based on water management action plans and in cooperation with the municipalities.

There is an extensive global development within aquaculture techniques, e.g. within closed systems and improved feed technologies. Swedish aquaculture research needs to develop further, but a positive example is the Aquaculture Centre West, that has created venues for collaboration within research, education and of aquaculture development.

It is also important to emphasise the positive environmental effects of aquaculture. Experiments are in progress both on the west coast and in the Baltic Sea to culture mussels as an environmental measure. The mussels absorb phosphorus and nitrogen when they filter the water and ingest phytoplankton. When the mussels are harvested, this results in a net removal of nutrients from the marine environment.

In the coming marine spatial planning, appropriate cultivation locations in the ocean can be identified. It is therefore important that aquaculture is considered when the marine plans are developed. Through restructuring at agency level, Sweden has focused on marine planning, and it is my ambition as Minister of the Environment to continue to encourage this work.

ESKIL ERLANDSSON, MINISTER FOR RURAL AFFAIRS (IN 2012) AQUACULTURE HAS A GREAT GROWTH POTENTIAL

– Few countries have better conditions for farming of fish and shellfish than Sweden. We have clean water, thousands of lakes

and a long coastline. In “Sweden - the new culinary nation”, a growing aquaculture industry is an important element.

There is no doubt that the Minister for Rural Affairs, Eskil Erlandsson, sees aquaculture as a green industry that can produce both good food and create employment throughout the country.

– Import of fish and shellfish to both Sweden and the rest of Europe is a massive industry that keeps growing. I believe that there is ample room for us to produce more ourselves - and if so, this should preferably be done in a sustainable way where we can keep a close eye on the production.

Eskil Erlandsson emphasises that production must be demand driven. Since the market is undoubtedly demanding aquaculture products, the challenge for Swedish aquaculture companies is to meet this demand. In this case, there is great potential for growth, suggests the Minister for Rural Affairs.

– Aquaculture businesses must market their products themselves. Society should contribute to provide the added value that the market is not capable of creating itself. In the coming Rural Development and Fishery programmes, aquaculture will be given greater scope, for example in terms of start-up support.

Eskil Erlandsson notes that the conditions differ between different parts of the country, but that fish and shellfish farming can become an important rural sector. Farms may vary in size depending on local conditions.

– Farmers and other rural entrepreneurs often need several strings to their bows and aquaculture can be one good solution for them. I also want to stress the importance of processing the fish and shellfish near the farms. This can also create jobs and development.

The strategy highlights the importance of sustainable aquaculture development. As with other green sectors, the aim is to use resources without depleting them. This includes reducing the proportion of wild-caught fish in fish feed and efficient disease control.

– I am convinced that a distinct environmental focus is a competitive advantage. Aquaculture that is economically, ecologically and socially sustainable has a bright future, Eskil Erlandsson concludes. -We will need more good and healthy food from our waters.

BJÖRN RISINGER, DIRECTOR GENERAL OF THE SWEDISH AGENCY FOR MARINE AND WATER MANAGEMENT GROWING AQUACULTURE WITH MINIMAL ENVIRONMENTAL IMPACT

Farmed fish, crustaceans and molluscs represent a potential source of protein at a time when the national demand for meat and fish is increasing whilst wild fish stocks are being depleted. However, in order for aquaculture to be developed in a sustainable manner, its environmental impact needs to

be minimised and the environmental risks involved need to be managed wisely.

Escaped farmed fish and interaction between farmed fish and wild fish stocks constitute a risk, since this can lead to loss of genetic variation and to genetic changes in wild populations. Another risk to biodiversity is the introduction of alien species into our waters.

A major challenge we face today is the eutrophication of our waters. The situation in the Baltic Sea is serious, and involves an extensive and long-term commitment for all countries in the Baltic region. Fish farming results in emissions of both nitrogen and phosphorus, which requires consideration when future farming sites are planned and assigned location. Similarly, the positive effects of mollusc farming in terms of nitrogen and phosphorus uptake should be taken into account. Several projects seek to develop new feed types for aquaculture. This work is important, since feed based on wild-caught fish cannot be considered sustainable in the long term in respect of nutrients or wild fish populations.

The development of a national strategy for aquaculture is needed in order to achieve sustainable utilisation and to reach the objectives for the water environment.

MATS PERSSON, DIRECTOR GENERAL OF THE SWEDISH BOARD OF AGRICULTURE (IN 2012)

AQUACULTURE - AN IMPORTANT COMPONENT WITHIN "SWEDEN - THE NEW CULINARY NATION"

– I am convinced that aquaculture will become an increasingly important industry for providing employment and rural development. High-quality products from our fish and shellfish farms will be of great importance for the continued development of "Sweden - the new culinary nation". In order to prevent overfishing of the oceans, we need to farm a much larger proportion of the fish we eat.

Mats Persson, the Director General of the Swedish Board of Agriculture, considers the Board's leading role in developing the new strategy an important responsibility. It is important to take advantage of the great potential of the industry while ensuring that the development is economically, ecologically and socially sustainable.

– When the vision is adopted, we will work towards developing a more concrete action plan in order to realise the goals jointly established by government authorities, researchers and industry.

Mats Persson particularly underlines the importance of collaboration in achieving results. Not in the least, this involves finding synergies with other industries, perhaps primarily within tourism.

– The combination of aquaculture and sport fishing (angling) is an opportunity with great development potential; mussel safaris in Bohuslän are another, Mats Persson suggests.

The Swedish Board of Agriculture is responsible for promoting aquaculture. In addition to the strategy and action plan, this work involves many other aspects.

– Efforts to simplify regulations are underway. The Board of Agriculture wants to support the private sector in this area, as well as in relation to other authorities.

Mats Persson sees development opportunities for aquaculture throughout the country. To facilitate the industry's growth, he regards cooperation with the municipalities as fundamental.

The involvement of the municipalities is of vital importance for local initiatives and efforts. We will contact the Swedish Association of Local Authorities and Regions to discuss how national agencies and municipalities can work together to promote aquaculture, Mats Persson concludes..

HENRIK HAMMAR, CHAIRMAN OF THE SWEDISH AQUACULTURE ORGANISATION

THE AQUACULTURE INDUSTRY HAS RENEWED FAITH IN THE FUTURE

– Recently, positive signals from both Sweden and the EU have inspired renewed faith in the future.

Henrik Hammar is Chairman of the Swedish Aquaculture Organisation. He sees growing potential for aquaculture, room for more businesses and many new jobs in Swedish rural areas.

– It's all about producing good food, and creating employment and development in a sustainable manner. A green industry with the potential to achieve this has a bright future.

We at the Swedish Aquaculture Organisation strive to encourage entrepreneurship and to find solutions for a growing and sustainable aquaculture industry. Collaboration with authorities and researchers is also crucial for success. The regulations concerning aquaculture are complicated and must be simplified, and the inspection fees need to be more reasonable.

Henrik Hammar sees opportunities for fish and shellfish farming in all parts of Sweden. The trick is to adapt activities to local conditions, and diversification of businesses is therefore of great importance.

– The aquaculture industry needs to develop its products, introduce new technologies and test novel species that are suitable for farming. Collaboration with other industries, especially tourism, is vital in order to strengthen "Sweden - the new culinary nation". I also believe that aquaculture can collaborate with other sectors to use industry waste heat for fish farming, says Henrik.

Local involvement is necessary in order for aquaculture to grow and develop, Henrik Hammar underlines.

– As a former regional and municipal politician, I know that understanding and commitment from municipal politicians is vital for local development. This of course also applies to aquaculture.

The Chairman of the Swedish Aquaculture Organisation views the aquaculture strategy as an important document, but also emphasises the even greater importance of the next step, developing an action plan and concrete measures.

Sustainable development: development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Social sustainability: building a long-term, stable and dynamic society where basic human needs are met.

Ecological sustainability: the long-term preservation of the productivity of waters, earth and ecosystems and reducing the impact on the environment and human health to levels that allow sustainability.

Economic sustainability: conserving human and material resources in the long term.

Definitions from the report "Our Common Future", by Gro Harlem Brundtland (1987)



VISION

Swedish aquaculture is a growing, profitable and sustainable industry with ethical production.

GOALS

Production increases through improved competitiveness.

Swedish aquaculture produces high-quality, healthy food in demand by consumers both in Sweden and worldwide.

Swedish aquaculture produces fish for stocking purposes to satisfy the needs of fishing tourism and for conservation.

Swedish aquaculture is characterised by collaborations between industry, researchers, non-governmental organisations and government agencies.

A reduced administrative burden and clear regulations benefit corporate development.

Swedish aquaculture is characterised by negligible environmental impact.

Swedish aquaculture contributes to food production that is ecologically, economically and socially sustainable.

New cultivation technologies are developed and the cultivation of novel species is tested through collaborations between industry and researchers.

Swedish aquaculture is characterised by preventive health initiatives and healthy animals.

Politicians at all levels and other stakeholders perceive Swedish aquaculture as a secure, long-term and successful industry.

Municipal politicians and other local stakeholders support Swedish aquaculture.

A majority of Swedish municipalities identify and include suitable sites for aquaculture in their spatial planning.



THE VISION

Swedish aquaculture is a growing, profitable and sustainable industry with ethical production

ABOUT THE VISION

Swedish aquaculture has a great growth potential. The demand for high-quality food, both fish and shellfish, will increase. The need for stocking fish for fishing tourism and for conservation purposes will also increase. Mussels and algae can be farmed for food production but also to reduce eutrophication and as a source of renewable energy.

For this vision to become reality, Swedish aquaculture products must be able to successfully compete on national and international markets. By utilising added values such as high quality, a high environmental profile and good animal health, competitiveness can be improved. This vision also requires favourable conditions for companies such as transparent regulations, reasonable fees and reduced administration by involved authorities. It is important that municipalities and regions designate sites suitable for aquaculture when conducting their spatial planning.

The responsibility of industry is to operate in a sustainable manner, economically, ecologically and socially. This involves working preventively and cultivating fish and shellfish in an ethical and environmentally friendly way. The development and use of new sustainable technologies and the diversification of production methods are important.

Through effective cooperation between industry, researchers, non-governmental organisations and government agencies, Swedish aquaculture can become a secure, successful industry that is profitable in the long term. Existent aquaculture businesses can grow and new ones can be established in order to produce good food and other services, as well as to create jobs throughout the country.

Aquaculture – an industry with a future

ABOUT THE GOALS

Production increases through improved competitiveness

MORE AND BETTER

Swedish aquaculture is characterised by prudent and conscious entrepreneurship. This involves businesses that are making new investments, specialising and focusing on competence development and considering the needs and demands of the consumers. Competitive and profitable aquaculture companies provide good development opportunities for industry.

Industry collaborates on the development of new products as well as on further development of distribution and information channels.

Swedish aquaculture cultivates both traditional species and new species with potentially favourable market conditions. The processing of traditional species is developed further. Development of the cultivation of other species continues.

Swedish aquaculture produces high-quality, healthy food in demand by consumers both in Sweden and worldwide

MARKET DEMANDS ARE OF KEY IMPORTANCE

Aquaculture produces healthy food of high quality that is in demand by consumers both on the Swedish and global markets. Production is based on an understanding and knowledge of what the market demands. By producing, marketing and distributing products year-round, the needs of the market are met. To increase demand for the products, a common standard and unique brands are created.

QUALITY THROUGHOUT THE SUPPLY CHAIN

The entire supply chain is characterised by ongoing quality work, from the breeding and production of roe and larvae, to the production of healthy food and fish for stocking and conservation purposes. Important factors in this quality work include good

animal welfare and a high environmental profile. By continuously working on quality development, the long-term competitiveness of Swedish aquaculture is strengthened. The quality of the aquaculture products is communicated by industry, researchers, non-governmental organisations as well as government agencies.

KNOWLEDGEABLE CONSUMERS MAKE THE RIGHT CHOICES

Consumers recognise products from Swedish aquaculture, make informed choices and prefer to buy these products. They associate Swedish aquaculture with added values such as high quality, environmental awareness, healthy animals and good taste sensations, thus reinforcing Swedish aquaculture as a brand.

Consumers perceive the identity and the taste experience of the products as a part of “Sweden - the new culinary nation”. Swedish aquaculture contributes to the vision of “Sweden - the new culinary nation” through an increased production of food commodities and an increased level of food processing.

Swedish aquaculture produces fish for stocking purposes to satisfy the needs of fish tourism and for conservation

MORE THAN JUST FOOD

Swedish aquaculture does not only produce food. When consumers are offered adventure experiences linked to aquaculture, demand may increase for products produced and processed by Swedish aquaculture. Processing and tourism are linked to aquaculture and different businesses reinforce each other.

Aquaculture companies diversify by developing complementary businesses. Entrepreneurs who diversify their business are less vulnerable to temporary market fluctuations.

Aquaculture also produces fish for conservation purposes that help preserve endangered populations and species in Swedish natural waters.

Swedish aquaculture is characterised by collaborations between industry, researchers, non-governmental organisations and government agencies

TOGETHER WE ARE STRONG

The aquaculture industry, researchers, non-governmental organisations and government agencies have a good relationship with each other. They work together to increase awareness of and involvement in Swedish aquaculture. However, there are clear demarcations and a division of responsibilities between the stakeholders. Networks, collaborations and strong meeting platforms continue to be developed.

A national aquaculture council coordinates efforts to strengthen Swedish aquaculture.

COMPETENCE AT ALL LEVELS DEVELOPS AQUACULTURE

Swedish researchers contribute their expertise to ensure that the aquaculture industry, non-governmental organisations and government agencies have access to the latest knowledge.

Training and education are needed at all levels and for all parties in order to develop Swedish aquaculture. New and existing entrepreneurs engage in training and competence development in order to develop the quality of their businesses. Government agencies continuously develop the competence of their staff.

A reduced administrative burden and clear regulations benefit corporate development

THE SAME RULES APPLY FOR EVERYONE

There are clear regulations regarding Swedish aquaculture and the permitting process is similar throughout the country. There is an ambition to simplify and streamline the administration for both the industry and government agencies. Simplified and clarified regulations can be reached through a continuous dialogue between industry and government agencies, and enables business owners to operate efficiently.

The government agency that promotes aquaculture (The Swedish Board of Agriculture) also collaborates with other authorities to achieve a common interpretation and application of regulations.

THE INDUSTRY IS RESPONSIBLE FOR

- analysing and influencing the demands of the market
- cooperating in order to create an efficient distribution system for aquaculture products
- supporting both existing and new entrepreneurs through expert advice, network-building and dialogue with relevant authorities
- specifying the need for training and competence development
- requesting and contributing to research and technological development that will benefit aquaculture

RELEVANT AUTHORITIES ARE RESPONSIBLE FOR

- supporting and promoting the industry to facilitate start-up for new companies and expansion of existing companies
- striving towards a simplified and coherent regulatory framework
- striving towards a common interpretation and implementation of regulations
- developing clear regulations, equivalent to those that apply to other animal production
- ensuring that the fees for monitoring and control are reasonable
- ensuring that the industry receives the training and competence development it requires
- ensuring the competence development of its administrators and other staff
- collaborating with the industry, researchers and non-governmental organisations
- initiating a national aquaculture council



Environmentally and climate smart products from lakes and oceans

ABOUT THE GOALS

Swedish aquaculture is characterised by negligible environmental impact

AQUACULTURE AND THE ENVIRONMENT

Aquaculture companies are committed to reducing negative impact on the environment. Farms are located in areas where negative environmental impact in terms of nutrient output is negligible. The production is adapted to the capacity of the ecosystem and takes into account other activities in the area. Swedish aquaculture makes a positive contribution to the environmental work by offering environmental services such as uptake of nitrogen and phosphorus.

By using alternative feed sources such as regionally produced mussels, aquaculture reduces its net contribution of nutrients to the Baltic Sea.

By using well-developed measurement methods and relevant indicators of environmental impact, clear signals are provided regarding how aquaculture production affects the surrounding environment. Authorities and aquaculture entrepreneurs quickly receive information regarding changing conditions and can adapt production accordingly.

Researchers develop knowledge that enables Swedish aquaculture to be at the forefront in terms of protecting the environment.

Swedish aquaculture contributes to food production that is ecologically, economically and socially sustainable

SWEDISH AQUACULTURE – A GLOBAL ASSET

Swedish aquaculture is as resource-efficient as possible. In a global world, it is our obligation to use resources efficiently when farming fish and shellfish. Swedish aquaculture contributes to securing global food security.

In order to reduce overfishing of the world's oceans and to reduce the market pressure on wild-caught fish, alternative feed materials such as mussels are being used.

By-products from aquaculture are resources that are used in an environmentally efficient manner.

The conscious consumer chooses and pays for the added value of aquaculture products produced in an ecologically and socially sustainable manner. This results in profitable and competitive businesses that contribute to regional development.

New cultivation technologies are developed and the cultivation of novel species is tested through collaborations between industry and researchers

NEW CULTIVATION TECHNOLOGY FOR A BETTER ENVIRONMENT

Geographical and environmental conditions vary throughout Sweden. For this reason, different cultivation techniques are used in different locations and in different environments, e.g. to reduce the nutrient load. Development of new knowledge on innovative technologies will reduce environmental impact and improve resource efficiency.

Swedish aquaculture cultivates an increasing number of native species that are adapted to our climate and our environment.

Researchers and aquaculture entrepreneurs are collaborating to develop products suitable for new and existing markets.

Swedish aquaculture is characterised by preventive health initiatives and healthy animals

PREVENTIVE HEALTHCARE PAYS OFF IN THE LONG RUN

Swedish aquaculture maintains a high animal health status through collaboration between industry, researchers and government agencies. With sound animal husbandry and preventive animal health work, the number of disease outbreaks decreases and their spread is restricted. This contributes to better animal welfare, a better economy for companies, a good final product and minimal use of medicines.

Swedish research produces knowledge that enables Swedish aquaculture to be at the forefront in terms of animal health and welfare. Swedish aquaculture products are produced

based on biological and species-specific needs and conditions. Aquaculture entrepreneurs have a high level of expertise in animal health and disease control and work proactively to reduce any negative impact on wild populations.

Animal health and welfare work improves the economy of individual companies, improves the competitiveness of industry and increases the attractiveness of the products.

Swedish aquaculture has access to high-quality breeding material

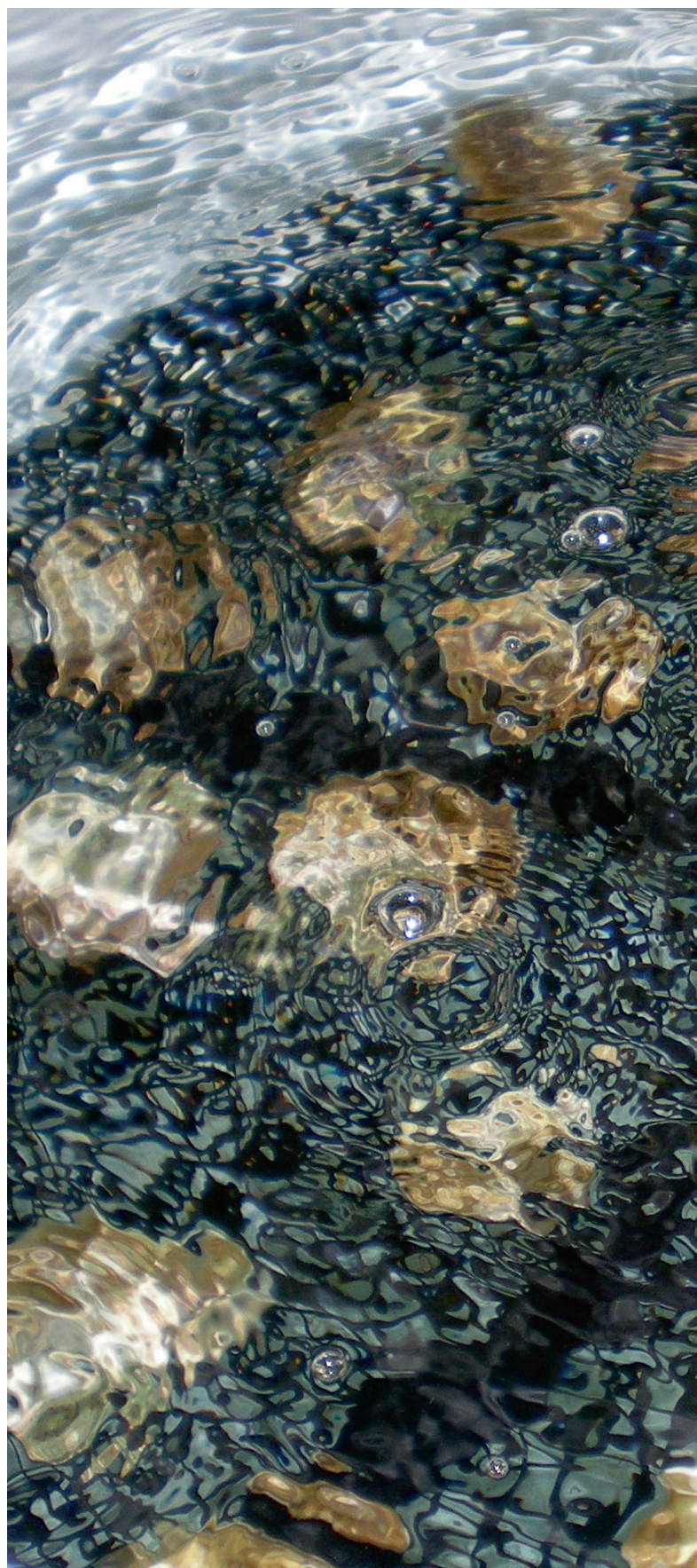
Long-term breeding initiatives contribute to the development of traits in fish that are important for economically and ethically sound fish farming. The breeding material is free from diseases.

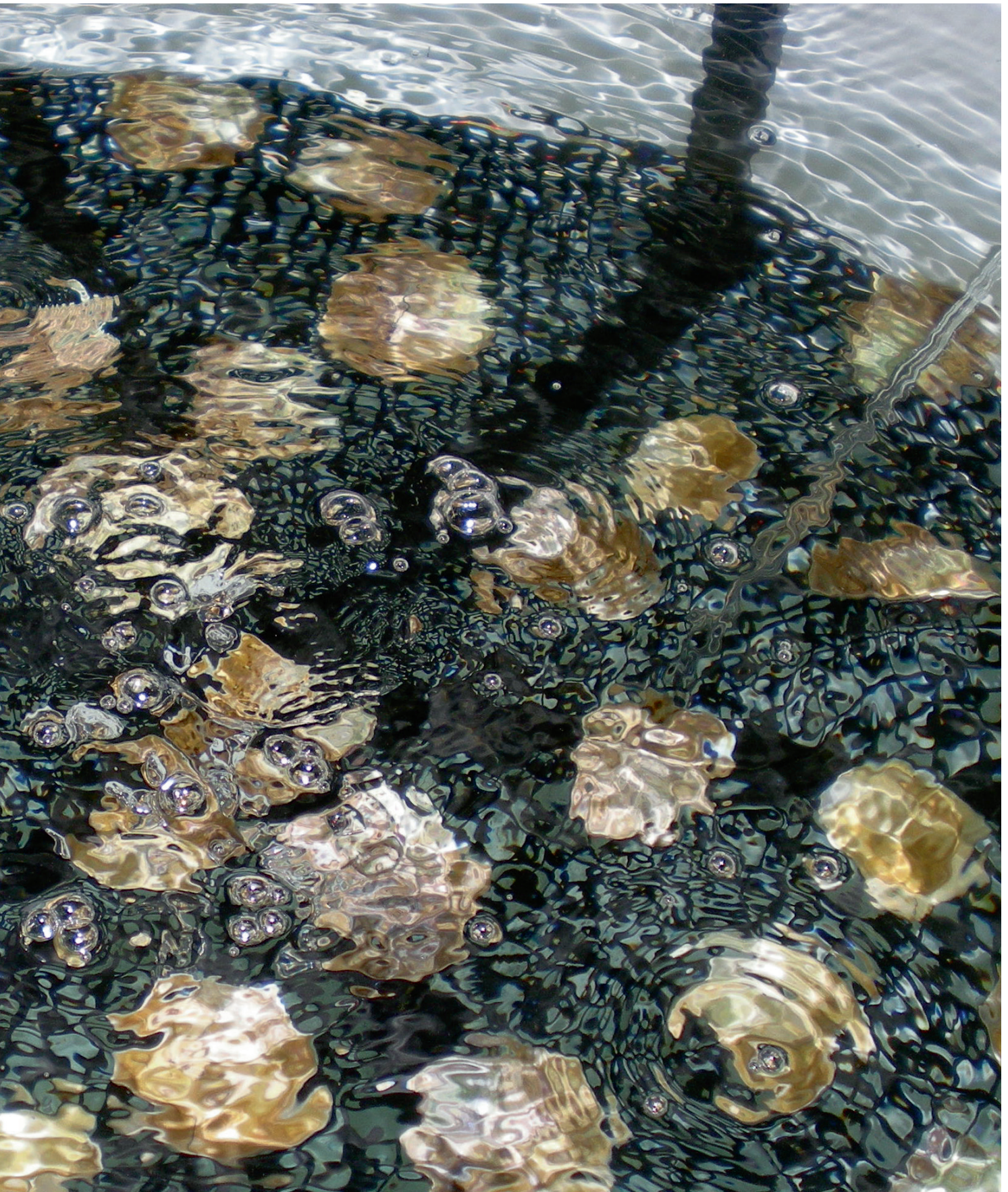
INDUSTRY IS RESPONSIBLE FOR

- developing the quality of their production
- using by-products in a resource-efficient manner
- using the best available technology
- developing their competence in the area of animal welfare and disease control, as well as environmental protection
- striving to maintain and strengthen the high health status found within Swedish aquaculture in collaboration with the relevant authorities

RELEVANT AUTHORITIES ARE RESPONSIBLE FOR

- supporting aquaculture research
- promoting national breeding efforts
- monitoring the health status of aquaculture animals in Sweden and internationally
- working nationally and within the EU for a regulatory framework that entails a cyclical approach to the raw materials used for feed







Aquaculture is a driving force in regional development

ABOUT THE GOALS

Politicians at all levels and other stakeholders perceive Swedish aquaculture as a secure, long-term and successful industry

AQUACULTURE – A GOOD INVESTMENT

Secure, long-term and successful entrepreneurship within aquaculture has a positive influence on how others perceive the industry. A prudent and conscious aquaculture industry with potential for the future attracts investors.

Profitable aquaculture businesses can be operated throughout Sweden. What is profitable for aquaculture companies is also profitable for society as a whole.

Municipal politicians and other local stakeholders support Swedish aquaculture

AQUACULTURE – RINGS ON THE WATER

Swedish aquaculture contributes to sustainable economic development and to the development and diversification of rural industry and commerce. This leads to new businesses, more companies and a higher level of employment.

A positive response from politicians and other local and regional stakeholders provides entrepreneurs with greater faith in the future and a willingness to invest in and expand their businesses. An increase or expansion of aquaculture enterprises also creates favourable conditions for entrepreneurs within other industries.

AQUACULTURE – A PART OF REGIONAL PLANNING

Swedish aquaculture contributes to regional development. Their activities are anchored in local communities. Regional and municipal politicians, civil servants, other stakeholders and organisations are positively committed and work to facilitate the establishment of aquaculture enterprises.

Aquaculture activities are included in regional development strategies and development plans.

A majority of Swedish municipalities identify and include suitable sites for aquaculture in their spatial planning

AQUACULTURE – A PART OF THE SPATIAL PLANNING

Municipalities identify suitable locations for aquaculture in their spatial plans, making it easier for entrepreneurs to start or expand a business. This offers a greater certainty for entrepreneurs wishing to start, run and develop their businesses.

The suitability of the location is assessed based on ecological, economic and social interests.

THE INDUSTRY IS RESPONSIBLE FOR

- conducting sustainable business characterised by prudent and conscious entrepreneurship
- demonstrating the importance of aquaculture for social development
- attracting interest among investors in the economic potential of aquaculture
- being an active participant in efforts to identify suitable farming locations

RELEVANT AUTHORITIES ARE RESPONSIBLE FOR

- identifying suitable aquaculture locations
- spreading knowledge about aquaculture and its potential
- being responsive to the industry's viewpoint on the potential and limitations of aquaculture



Aquaculture is growing faster than ever

Fish and shellfish have been cultivated all over the world for thousands of years. For instance, monks at Swedish monasteries cultivated carp as early as during medieval times. Modern Swedish aquaculture started in the late 1800's, when small-scale cultivation of rainbow trout began.

However, it is only in recent decades that aquaculture, i.e. the cultivation of fish, shellfish and algae, has become an increasingly global industry. In the early 1950's, the total global aquaculture production was estimated to have been approximately one million tonnes per year. According to statistics from the Food and Agriculture Organization of the United Nations (FAO), in 2009 the volume of aquaculture produce had increased to almost 56 million tonnes, and the sector continues to grow.

In 2012, about half of the fish used for food was produced through aquaculture, and this percentage is certain to keep growing. If mankind is to continue to eat fish and shellfish to the same extent as today, a far greater volume must be cultivated rather than fished. A continued increase in capture fisheries from the world's oceans will have serious consequences for biodiversity.

According to the FAO, more than 80 million tonnes of fish and shellfish would need to be cultivated in 2030 in order to meet increasing demand. Since health, climate and environmental reasons also support the increased consumption of fish and shellfish, there is potential for an even larger growth of production if handled sustainably.

In recent years, aquaculture has seen the most growth in Asia, but Norwegian aquaculture has also expanded rapidly through increased salmon farming. Norwegian aquaculture production is approaching one million tonnes per year, about 100 times the size of Swedish production.

In other words, Swedish aquaculture production is relatively low. Since Sweden has a long coastline and many lakes and rivers, however, there remains great potential for growth. In particular, there are significant opportunities for fish farming in the regulated, inland waters of Northern Sweden and for shellfish farming on the West Coast. Elsewhere in Sweden, good conditions are also found for the growth of aquaculture companies, a green industry in blue fields.







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