



The Business and Industry Committee's memorandum about the

## **Member's proposal on aquaculture in Recirculating Aquaculture Systems**

The Business and Industry CommitteeBusiness and Industry Committee proposes that

The Nordic Council recommends to the Nordic Council of Ministers

*to adopt the position that the Baltic Sea, given its environmental vulnerability, makes an appropriate pilot area for Recirculating Aquaculture Systems (RAS) within the framework of the EU Common Fisheries Policy*

*to ensure that the development of recirculating aquaculture systems be supported and prioritised in the EU Common Fisheries Policy, especially for fragile ecosystems like the Baltic Sea*

*to ensure that the environmental consequences of aquaculture in the Baltic Sea are clearly observed in the EU's future strategic guidelines on common principles and objectives for the development of aquaculture*

*to ensure that within the EU there is a common ceiling for emissions of nutrients from aquaculture in open cages in the Baltic Sea*

*to ensure that the Nordic countries/Baltic Sea countries encourage the use of local ingredients in fish feed*

### **1. Background**

Aquaculture is one of the fastest growing, food producing sectors in the world and can contribute substantially to the global demand for food. Within a few years, farmed fish are expected to exceed the production of conventional fisheries (*FAO Fisheries Statistics*). Currently, the growth markets for aquaculture in recirculating systems are mainly in China and Southeast Asia. At the same time, aquaculture in Europe is stagnating. In the countries bordering on the Baltic Sea, development has been relatively

slow so far because of environmental problems that have led to severe restrictions in development. In Denmark, a large part of the production of rainbow trout in fresh water has been converted to recirculating aquaculture systems, and in Norway this method is used mainly for the production of salmon juveniles. In Norway, aquaculture also takes place in large facilities far out to sea (not in a closed system). This may also become more common in the future.

The importance of Nordic aquaculture and its potential are described in detail in the Nordic Council of Ministers' PABAN report<sup>1</sup> on the perspectives for sustainable development of Nordic aquaculture. The potential for developing aquaculture in the Baltic Sea is additionally described in various reports from the project AQUABEST ([www.aquabestproject.eu/AQUABEST](http://www.aquabestproject.eu/AQUABEST))

Large-scale, traditional aquaculture in open cages leads to high emissions of phosphorus and nitrogen and is therefore a problem in semi-closed, shallow inland seas with low water exchange, such as the Baltic Sea. At the same time, aquaculture provides jobs in remote regions, economic growth and fish for both the international and the Nordic markets. It would be preferable, seen from a purely environmental perspective, for the EU to set a ceiling for emissions of nutrients from aquaculture in open systems in the Baltic Sea.

The Council of Ministers' PABAN report proposes specifically for the Baltic Sea to: 1) make the licensing system more coherent, to encourage the adaption of eco-efficient technologies and practices; 2) spread spatial planning knowledge ideas throughout the area; 3) decrease the nutrient import from the oceans by using regional feed ingredients; and 4) assess the feasibility of recirculating farming (RAS) and transferring technology throughout the area.<sup>2</sup> Certainly, there are problems linked to the characteristics of certain regional forage fish concerning the storage of dioxins and other toxic substances, in regard to the general pursuit of local/regionally produced ingredients. However, the general goal in the Nordic countries should still be to use local/regionally produced fish feed, and this is fully in line with the Nordic Council of Ministers' Programme for Bio-economy.

Recirculating farming (RAS) is rapidly being established as a land-based technology, both within and outside the EU. At the global level, the UN Food and Agriculture Organisation (FAO) has been working to achieve an ecosystem approach to aquaculture since 2005.<sup>3</sup> According to the Council of Ministers' PABAN report, the use of recirculating technology in Danish trout farming has allowed for greater production without increasing the environmental impact.<sup>4</sup>

To date, the Nordic Council of Ministers' fisheries co-operation has funded the establishment of a Nordic network for recirculating aquaculture (RAS) with DKK 565.000, including a workshop during the Finnish Presidency in 2011. It also funded a workshop at the DanAqua exhibition in Ålborg in October 2013 with DKK 119.500. Over 200 people from 27 countries attended the workshop.

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<sup>1</sup> *Perspectives for sustainable development of Nordic aquaculture* (The PABAN report). By Rosten Trond W., Paulsen Helge, Alanära Anders, Eskelinen Unto, Bergsson Arnljótur Bjarki and Olafsen Trude, 2013. Found on: <http://www.norden.org/sv/publikationer/publikationer/2013-546>

<sup>2</sup> Ibid, s. 70.

<sup>3</sup> Ecosystem Approach to Aquaculture (EAA). See FAO's website visited on 9.9.2013 at 12:54. <http://www.fao.org/fishery/topic/16035/en>

<sup>4</sup> The PABAN report, p. 123.

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**13-00258-8**

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Business and Industry Committee

Annex/es:  
- Member's proposal

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Today the EU is the authority for fisheries for the EU member states around the Baltic Sea. A joint Nordic EU position on the Common Fisheries Policy could therefore be considered.

In the EU's revised Common Fisheries Policy, large-scale aquaculture is one of the answers to overfishing of the world's fish stocks and aquaculture will be a focus area in the new EU research programme *Horizon 2020*. When the EU renews its fisheries policy, and draws up its guidelines for aquaculture in 2013, it is important to be aware of the environmental consequences of conventional aquaculture in open cages, especially for fragile ecosystems like the Baltic Sea.

The historical expertise and knowledge of aquaculture in the Nordic countries could be used to trial the Baltic Sea as a pilot area for green growth in sustainable aquaculture. This would be in line with the European Parliament resolution for a *bioeconomy for Europe* (2 July 2013)<sup>5</sup> and its objectives to ensure an integrated, coherent, cross-sectoral and interdisciplinary approach to bioeconomy and promoting and increasing investments for the bioeconomy in Europe.

## 2. Consultation process

The Business and Industry Committee discussed this member's proposal at its meeting in October 2013. There was agreement in the committee that this was an important matter but it was felt that there was a lack of knowledge about whether the technology was well enough developed to be used in practise in the Nordic Region.

To shed light on the matter, the Business and Industry Committee invited Jesper Heldbo from the industry/AquaCircle in Denmark, and Per Bovbjerg Pedersen from the Technical University of Denmark (DTU), to a joint meeting with the Environment and Natural Resources Committee, in January 2014.

Both presenters agreed that the technology for recirculating aquaculture systems is available but that there are still challenges associated with end waste, and the technology is expensive requiring significant investment. Compared with conventional aquaculture in open cages, however, both the environmental and fish health benefits are greater. Emissions of, e.g. phosphorus and nitrogen can be reduced by 80% and 50% respectively. Also, much less water is used with recirculating farming. A reduction from 50.000 litres of water per kilo fish to just 50 litres water per kilo fish. Because the water is in a closed system where the temperature can be controlled, disease can also be kept at bay more easily. Growth will also be better since it is possible to regulate the living conditions for the fish.

Before the meeting, the member's proposal had been sent for informal consideration to Helge Paulsen of the Technical University of Denmark, and to the Nordic Council of Ministers' Working Group for Fisheries. It was argued, amongst other things, that an increase in the distribution of aquaculture in recirculating systems would be lower in the Baltic Sea than in other emerging markets, mostly because of environmental restrictions. Informal feedback had also been obtained from the Nordic Council of Ministers' Working Group for Fisheries in conjunction with the drafting of this member's proposal. All relevant views from these parties have been included in this report.

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<sup>5</sup> European Parliament resolution of 2 July 2013 on Innovating for sustainable growth: a bioeconomy for Europe ([2012/2295\(INI\)](#))

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### 3. Committee's views

Given that the Nordic countries have excellent conditions for aquaculture, there are grounds for the Nordic Region to invest in it, and it is likely that there will be new and unimagined opportunities with recirculating farming.

The drawbacks with the new technology are, in addition to the demand for high investment costs and increased energy consumption, that there is also a need for special training to run this technology-intensive production. Thus there are reasons to give it special funding.

The Business and Industry Committee, supported by the Environment and Natural Resources Committee, believes that the member's proposal comes at the right time and that there are grounds for the Council to fund the ambitions in the member's proposal.

### 4. Conclusion

Based on the above the Business and Industry Committee proposes that

The Nordic Council recommends to the Nordic Council of Ministers

*to adopt the position that the Baltic Sea, given its environmental vulnerability, makes an appropriate pilot area for Recirculating Aquaculture Systems (RAS) within the framework of the EU Common Fisheries Policy.*

*to ensure that the development of recirculating aquaculture systems be supported and prioritised in the EU Common Fisheries Policy, especially for fragile ecosystems like the Baltic Sea.*

*to ensure that the environmental consequences of aquaculture in the Baltic Sea are clearly observed in the EU's future strategic guidelines on common principles and objectives for the development of aquaculture*

*to ensure that within the EU there is a common ceiling for emissions of nutrients from aquaculture in open cages in the Baltic Sea*

*to ensure that the Nordic countries/Baltic Sea countries encourage the use of local ingredients in fish feed*

Copenhagen, 3 April 2014

*Anders Karlsson (S)*

*Arto Pirttilahti (cent)*

*Cecilie Tenfjord-Toftby (M), Chair*

*Eero Suutari (saml)*

*Finn Thranum (V)*

*Gunvor Eldegar (A)*

*Heidi Nordby Lunde (H)*

*Mikkel Dencker (DF)*

*Ruth Mari Grung (A)*

*Steingrímur J. Sigfússon (VG), Vic-Chair*

*Tarja Filatov (sd)*

*Torgeir Knag Fylkesnes (SV)*

*The proposal was adopted by the Nordic Council 8th April 2014.*

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## Enclosures: Member's proposal

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Aquaculture is one of the fastest growing, food producing sectors in the world and can contribute substantially to the global demand for food. The importance of Nordic aquaculture and its potential are described in detail in the Nordic Council of Ministers' PABAN report<sup>6</sup> on the perspectives for sustainable development of Nordic aquaculture.

Large-scale, traditional aquaculture in open cages leads to high emissions of phosphorus and nitrogen and is therefore a problem in semi-closed, shallow inland seas with low water exchange, such as the Baltic Sea. At the same time, aquaculture provides jobs in remote regions, economic growth and fish for both the international and the Nordic markets.

The Council of Ministers' PABAN report proposes specifically for the Baltic Sea to: 1) make the licensing system more coherent, to encourage the adaption of eco-efficient technologies and practices; 2) spread spatial planning knowledge ideas throughout the area; 3) decrease the nutrient import from the oceans by using regional feed ingredients; and 4) assess the feasibility of recirculating farming (RAS) and transferring technology throughout the area.<sup>7</sup>

Recirculating aquaculture systems (RAS) is rapidly being established as a land-based technology, both within and outside the EU. At global level, the UN Food and Agriculture Organisation (FAO) has been working since 2005 to find an ecosystem approach to aquaculture.<sup>8</sup> According to the Council of Ministers' PABAN report, the use of recirculating technology in Danish trout farming has allowed for greater production without increasing the environmental impact.<sup>9</sup>

To date, the Nordic Council of Ministers' fisheries co-operation has funded the establishment of a Nordic network for recirculating aquaculture (RAS) with DKK 565.000, including a workshop during the Finnish Presidency in 2011. It also funded a workshop at the DanAqua exhibition in Ålborg in October 2013 with DKK 119.500.

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<sup>6</sup> *Perspectives for sustainable development of Nordic aquaculture* (The PABAN report). By Rosten Trond W., Paulsen Helge, Alanära Anders, Eskelinen Unto, Bergsson Arnljótur Bjarki and Olafsen Trude, 2013. Found on: <http://www.norden.org/sv/publikationer/publikationer/2013-546>, visited on 9.9.2013 at 14:29.

<sup>7</sup> Ibid, s. 70.

<sup>8</sup> Ecosystem Approach to Aquaculture (EAA). See FAO's website visited on 9.9.2013 at 12:54. <http://www.fao.org/fishery/topic/16035/en>

<sup>9</sup> The PABAN report, p. 123.

Today the EU is the authority for fisheries for the EU member states around the Baltic Sea. A joint Nordic EU position on the Common Fisheries Policy could therefore be considered.

In the EU's revised Common Fisheries Policy, large-scale aquaculture is one of the answers to overfishing of the world's fish stocks and aquaculture will be a focus area in the new EU research programme *Horizon 2020*. When the EU renews its fisheries policy, and draws up its guidelines for aquaculture in 2013, it is important to be aware of the environmental consequences of conventional aquaculture in open cages, especially for fragile ecosystems like the Baltic Sea. The burden from aquaculture is local, some areas are more sensitive than others and therefore tolerate a lower load.

The historical expertise and knowledge of aquaculture in the Nordic countries could be used to trial the Baltic Sea as a pilot area for green growth in sustainable aquaculture. This would be in line with the European Parliament resolution for *a bioeconomy for Europe* (2 July 2013)<sup>10</sup> and its objectives to ensure an integrated, coherent, cross-sectoral and interdisciplinary approach to bioeconomy and promoting and increasing investments for the bioeconomy in Europe.

Long-term sustainable aquaculture in the Baltic Sea area is quite likely also to be of interest for security policy. A Nordic Region which is dependent on import of fish from outside (for direct consumption or as feed for aquaculture) is more vulnerable than a Nordic Region that can farm its own fish in the long-term.

Based on the above the members propose that

The Nordic Council recommends to the governments of the Nordic countries,

*to jointly adopt a Nordic position that the Baltic Sea, given its environmental vulnerability, makes an appropriate pilot area for Recirculating Aquaculture Systems (RAS) within the framework of the EU Common Fisheries Policy*

*to ensure that the development of recirculating aquaculture systems be supported and prioritised in the EU Common Fisheries Policy, especially for fragile ecosystems like the Baltic Sea*

*to jointly work to ensure that the environmental consequences of aquaculture in the Baltic Sea are clearly observed in the EU's future strategic guidelines on common principles and objectives for the development of aquaculture*

*to monitor a common ceiling for emissions of nutrients from aquaculture in the Baltic Sea. Encourage the use of fish feed which is made from fish from the Baltic Sea, so as not to increase the total amount of nutrients in the Baltic Sea*

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<sup>10</sup> European Parliament resolution of 2 July 2013 on Innovating for sustainable growth: a bioeconomy for Europe ([2012/2295\(INI\)](#))

Mariehamn, 27 September 2013

*Anders Eriksson (ÅF)*  
*Annicka Engblom (M)*  
*Christina Gestrin (sv)*

*Elisabeth Björnsdotter Rahm (M)*  
*Torgeir Trældal (FrP)*  
*Wille Valve (MÅ)*

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