Achieving Blue Growth Post-Weser: a Study of Aquaculture Regulation in the Nordic Region

Jonas Kyrönviita

Department of Law, School of Business, Economics and Law,
University of Gothenburg, Gothenburg, Sweden
jonas.kyronviita@law.gu.se

David Langlet

Department of Law, School of Business, Economics and Law,
University of Gothenburg, Gothenburg, Sweden
david.langlet@law.gu.se

Niko Soininen

Law School and Center for Climate Change, Energy and Environmental
Law (CCEEL), University of Eastern Finland, Joensuu, Finland
niko.soininen@helsinki.fi

Antti Belinskij

Law School and Center for Climate Change, Energy and Environmental
Law (CCEEL), University of Eastern Finland, Joensuu, Finland; Finnish
Environment Institute (SYKE), Helsinki, Finland
antti.belinskij@uef.fi

Sara Kymenvaara

Law School and Center for Climate Change, Energy and Environmental
Law (CCEEL), University of Eastern Finland, Joensuu, Finland
sara.kymenvaara@uef.fi

Ellen Margrethe Basse

Department of Law, The School of Business and Social Sciences,
Aarhus University, Aarhus, Denmark
ellenmb@law.au.dk

Abstract

This article explores how the conflict between the interests of protecting water quality in the coastal waters of the Baltic Sea from nutrient emissions on one hand, and supporting blue growth in the aquaculture sector on the other, has played out in the Nordic legal systems and industry practice. It does so by reviewing the legal and industrial developments in Sweden, Denmark, Finland and the Åland Islands with a focus on interpretation and application of the common EU regulatory framework, mainly the Water Framework Directive and the ECJ Weser ruling, and the response from the aquaculture sector. The study shows that the four studied jurisdictions have taken disparate regulatory approaches in balancing ecological status of waters and blue growth. As a consequence of these legal developments, the aquaculture industry faces difficulty in attaining required permits for their operations in all four jurisdictions and significant uncertainty on how to develop the sector to meet the set growth objectives has arisen.

Keywords

aquaculture – blue economy – nutrient offsetting – best available techniques – Water Framework Directive – Weser case

1 Introduction – the Potential and Challenges of Aquaculture

Aquaculture, or farming of aquatic organisms, is the world's fastest growing major food production sector and already provides more fish for human consumption than capture fisheries.¹ With most wild fish stocks being fished to their maximum capacity or beyond and land resources tending to be subject to fierce competition, aquaculture offers a vital opportunity for increased and sustainable food production. In fact, with a global population expected to reach 8,5 billion by the year 2030,² continued expansion of aquaculture production is necessary to meet current and future needs for fish for human

1 Food and Agriculture Organization of the United Nations (FAO), *The State of World Fisheries and Aquaculture 2018 – Meeting the sustainable development goals* (2018). Available at: <http://www.fao.org/3/i9540en/i9540en.pdf>.

2 United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects 2019: Ten Key Findings* (2019). Available at: https://population.un.org/wpp/Publications/Files/wpp2019_10KeyFindings.pdf.

consumption.³ In the European Union (EU), there is considerable potential to expand the use of water resources for food production while also providing a boost to growth and jobs.⁴ Although the global growth rate of aquaculture has almost halved since the 1980s, production still grows about 5 % annually.⁵ In the EU, however, aquaculture production has been stagnant or even declined since the late 1990s.⁶

An EU strategy for sustainable aquaculture adopted in 2002 sets out policy directions to promote the growth of the industry.⁷ These directions have subsequently been further elaborated e.g. by the adoption of Strategic Guidelines for the Sustainable Development of EU Aquaculture from 2013⁸ and in multiannual national aquaculture plans as required by the revised EU Common Fisheries Policy (CFP).⁹ According to article 2.5(e) of the so called basic regulation of the CFP, the CFP has as one of its aims to “promote the development of sustainable Union aquaculture activities to contribute to food supplies and security and employment”. The objective for EU marine finfish production was an increase to 480,000 tonnes by 2020, an increase of 60 %.¹⁰ Despite these aspirations, aquaculture production within the EU remains stagnant.¹¹ According to the EU’s Scientific, Technical and Economic Committee for Fisheries (STECF), a significant barrier to growth is the administration and regulation of aquaculture.¹² However, deregulation as a means of promoting aquaculture production is complicated. Not least because of the potential negative effects on the marine environment associated with fish farming. To address these hazards, environmental legislation is in place to mitigate the potentially significant

3 FAO, *supra* note 1.

4 Communication from the Commission, Strategic Guidelines for the sustainable development of EU aquaculture COM/2013/0229 final.

5 *Id.*

6 European Environment Agency, Aquaculture production. Available at: <https://www.eea.europa.eu/data-and-maps/indicators/aquaculture-production-4/assessment> (access date: 22 August 2019).

7 COM(2002) 511 final, A Strategy for the Sustainable Development of European Aquaculture.

8 Communication from the Commission. Strategic Guidelines for the sustainable development of EU aquaculture COM/2013/0229 final.

9 Regulation: Regulation (EU) no 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy.

10 European Commission, Summary of the 27 Multiannual National Aquaculture Plans (2016).

11 COM(2009) 162 final, Building a sustainable future for aquaculture – A new impetus for the Strategy for the Sustainable Development of European Aquaculture, p. 2.; EUR 27033 EN, The economic performance of the EU aquaculture sector (STECF 14–18).

12 Scientific, Technical and Economic Committee for Fisheries (STECF), The Economic Performance Report on the EU Aquaculture sector (STECF-13–29), Publications Office of the European Union 2013, Luxembourg, EUR 26336 EN, JRC 86671.

harmful impact of aquaculture, such as disease and genetic harm to wild stocks, exploitation of pristine environments and eutrophication. Of these challenges, this article focuses specifically on the eutrophication of coastal waters caused by fish farming.

Released nutrients – phosphorus and nitrogen – in the form of feed spill and faecal matter from fish farms contribute to eutrophication of the water both locally in connection with the production facility and over a larger area due to the particles spreading with the water flow. This effect may be mitigated by the use of more advanced production techniques with water filtering, or by offsetting the effect through the use of so-called blue catch crops that extract nutrients from the water.¹³ Allowing increased nutrient pollution from fish farms could contradict the purpose of the EU's environmental regulation, including the overarching objective of the Water Framework Directive¹⁴ (WFD).

There is currently a conflict between the objectives of aquaculture growth on one hand, and achieving good status for all coastal water bodies within the given time frames on the other. This article explores how this conflict has played out in the regulation and management of aquaculture in four Nordic jurisdictions. It does so by analysing the legal developments in Sweden, Denmark, Finland and the Åland Islands with a focus on how they have implemented, interpreted and applied the common EU regulatory framework to achieve the aquaculture growth and environmental targets.

Sweden, Denmark and Finland, with the latter also including the autonomous region of the Åland Islands, are all EU member states in northern Europe that share the Baltic Sea as a common marine resource. These Nordic countries have similarities in their legal traditions and history, and are all subject to the same EU legal framework. Despite this, the jurisdictions have taken markedly different approaches to regulating aquaculture, which has resulted in the industry being differently affected and responding differently to supposedly common EU requirements.

The article will firstly look at the EU member states' common obligations to protect the Baltic Sea from nutrient emission stemming from aquaculture, the obligations to mitigate such emissions and the possibility to take advantage of offsetting measures within the context of these obligations. Secondly, the article will analyse and compare the implementation of these common

13 B.H. Buck et al., State of the Art and Challenges for Offshore Integrated Multi-Trophic Aquaculture (IMTA). *Front. Mar. Sci.* 2018 (5:165).

14 Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

obligations in each of the four jurisdictions and the effects of the environmental requirements on aquaculture permitting.

2 EU Member States' Obligation to Protect the Baltic Sea from Aquaculture Nutrient Emissions

Water quality has for the last decades been subject to increasingly comprehensive regulation at the EU level.¹⁵ The most central piece of legislation protecting inland and coastal waters is the WFD, an EU directive with the purpose of preventing further deterioration of, as well as enhancing the environmental quality status of, the EU's fresh and coastal waters. The WFD does not, however, seek to achieve complete harmonisation of the water legislations between EU member states.¹⁶ In fact, there are significant differences in the way that nutrient emissions from aquaculture and other environmentally hazardous activities in coastal areas are regulated by the member states.

As well known to the readers of this Journal, the WFD aims to fulfil its purpose by, inter alia, enacting different sets of environmental quality standards, requiring the member states to take measures to achieve good status or potential by 2015, 2021 or 2027 at the latest, and prevent deterioration, for all water bodies, including surface water bodies.¹⁷ The concept of surface water body, as defined in article 2.10, includes coastal waters.¹⁸ The quality standards to be achieved and instruments to be employed are generally defined in the WFD. The status of a certain body of surface water is assessed against different quality elements relating to both the chemical status, maximum concentration of priority substances listed in the Directive on Environmental Quality Standards in the Field of Water Policy,¹⁹ and ecological status, determined by standards

15 H. Blösch. European Water Policy and the Water Framework Directive: an Overview. *Journal for European Environmental & Planning Law*. *Journal for European Environmental & Planning Law* 3, 2004.

16 ECJ Judgment: Case C-32/05, *Commission v. Luxembourg* [2006] ECR I-11323.

17 See inter alia L. Squintani et. al. Strengths and Weaknesses of the Dutch Implementation of the Water Framework Directive. *Journal for European Environmental & Planning Law* 14, 2017 and S. Hendry. The EU Water Framework Directive – Challenges, Gaps and Potential for the Future. *Journal for European Environmental & Planning Law* 14, 2017.

18 D. Langlet, Scale, space and delimitation in marine legal governance – Perspectives from the Baltic Sea. *Marine Policy* 2018 (98), pp. 278–285.

19 Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council.

established in Annex V, table 1, section 1.1.4. relating to biological, hydromorphological and physico-chemical quality elements set by the member states for each water body. Good status is defined as certain conditions that deviate only slightly from those normally associated with the surface water body type under undisturbed conditions.²⁰ The system contains an innovative way to monitor and regulate ecological and chemical quality, but the WFD's range of complex requirements have proven a challenge for the member states and no generally applicable method for assessment has been developed.²¹

Member states are required to establish a baseline study, a river basin management plan, a programme of measures that are needed to reach the environmental goals, and monitoring activities for each river basin district. As per article 11.2 of the WFD, the programmes are to include basic and, when necessary, supplementary measures to meet the environmental objectives set in the river basin management plan within the specified plan period and to fulfil the overall objective of the WFD and other EU legislation. During the implementation, several questions regarding the nature of the member states' obligations under the WFD have arisen, some of which have generated case law by the Court of Justice of the European Union (CJEU). This has forced member states to reconsider the implementation and application of the WFD.

Of particular importance to aquaculture and other activities with marked impact on waters was the 2015 ruling in the so-called *Weser case*.^{22,23} The case was initiated by a request from a German court for a preliminary ruling on the member states' obligations under article 4.1 of the WFD, including the obligation to implement necessary measures to prevent deterioration and the obligation to protect, enhance and restore water bodies in order to achieve at least good status by 2015, or later if subject to extension. The questions put forward in the request concerned two issues: whether the obligation of non-deterioration was to be applied on an individual project basis and when such deterioration should be considered to have occurred.

The CJEU found that member states are required, unless a derogation is granted, to refuse authorisation for an individual project where it may cause a deterioration or if it jeopardises the attainment of good status. Derogations may be granted under article 4.7 e.g. for new sustainable human development

²⁰ Annex 5, section 1.2 of the WFD.

²¹ D. Hering et al., *The European Water Framework Directive at the age of 10: A critical review of the achievements with recommendations for the future*. *Science of The Total Environment* 2010 (vol. 408, Issue 19), p. 4007–4019.

²² ECJ Judgment: Case C-461/13, *Bund v Germany* [2015] ECR I-433.

²³ H.F.M.W. van Rijswijk & C.W. Backes. *Ground Breaking Landmark Case on Environmental Quality Standards?*. *Journal for European Environmental & Planning Law* 12, 2015.

activities if certain conditions are met, including that all practicable steps of mitigation are taken and there is an overriding public interest and/or the benefits of achieving the objectives in the WFD are outweighed by the benefits to human health, human safety or sustainable development. Thus, merely adopting a programme of measures is not sufficient to fulfil the requirements of the WFD. Furthermore, the Court clarified that *deterioration* occurs as soon as the status of at least one of the quality elements, as defined in Annex V, section 1.2.1 to 1.2.6 of the WFD, falls by one status class, even if that fall does not result in a fall in classification of the body of surface water as a whole. The ruling limited the member states' discretion in achieving the objectives of the directive, making the achievement of good status binding not only as an overall objective but applicable in individual projects affecting a water body. As a consequence of the CJEU ruling by the ECJ in the *Weser case*, national authorities may not permit activities that deteriorate the environmental quality of a water body or jeopardise the achievement of good status.

For marine waters, the EU has adopted the Marine Strategy Framework Directive²⁴ (MSFD) based on the same holistic and integrative ecosystem approach to the maritime resources as the WFD. It applies to the member states' marine waters outside the geographical scope of the WFD, although with some overlap, and has furthered the use of the ecosystem-based perspective.

3 Nutrient Mitigation and Offsetting in Marine Aquaculture

Nutrient emissions from fish farming have an impact on the ecological status of water bodies. Under the WFD, such status is determined for each surface water body based on biological quality elements and supported by physico-chemical and hydromorphological quality elements. To achieve good physico-chemical status for a water body, nutrient concentration levels and other emission levels must not exceed established standards which are based on the functioning of the ecosystem and the achievement of the values specified for the biological quality elements.

A common method for sea-based fish farming in northern Europe is the use of open net pens placed directly into the water. The production method is simple and requires relatively low economic investment by the producer. However, the technique offers limited opportunities to filter nutrients and

24 Directive: Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).

thereby to mitigate pollution as required under the prevention and source principles, stated in the preambles of the WFD and the MSFD. According to the principles, early action and cleaning facilities established inside or very close to the fish farm to prevent damage is preferable to having to repair damage once it has occurred. In smaller water bodies, even limited input of nutrients can affect the status classification due to a larger impact on the concentration of nutrients.²⁵

To mitigate the environmental impact of fish farming, new production systems are being developed. The systems are closed or semi-closed, meaning that the the water used in production is not in direct contact with the environment and either flows through or is recirculated. This offers the possibility to filter the water before releasing it back to the recipient waters,²⁶ which can significantly reduce the environmental effects of the production. The development of closed or semi-closed systems is primarily aimed at reducing environmental harm from the production process, but the systems must also enable production that is efficient and economically viable. Even though there are a lot of unknowns when it comes to cost of production in more advanced aquaculture systems, there is no doubt that the closing of a system adds significantly to the cost.²⁷

The use of best available techniques (BAT) is a legal principle and a regulatory requirement prescribed in article 10 of the WFD. The techniques considered as best are the ones most effective in achieving a high general level of protection of the environment as a whole, taking in to consideration the availability under economically and technically viable conditions. Such requirements may – particularly in sectors such as aquaculture that are not covered by the EU's industrial emission directive²⁸ (IED) – vary considerably between, and even within, individual member states.²⁹ In general, national environmental regulation, in accordance with the prevention and source principles, requires an activity to take all required mitigation measures, including best available technique, before taking advantage of offsetting measures.³⁰ For countries

²⁵ Langlet, *supra* note 18.

²⁶ S. Eriksson et al., Översikt av tekniker för odling av vattenlevande organismer i Sverige – miljöpåverkan, odlingsystem, odlingsarter och foder, Havs- och Vattenmyndigheten 2018. (in Swedish).

²⁷ *Id.*, at pp. 67–68.

²⁸ Directive: Directive 2010/ 75/ EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) [2010] OJ L 334/ 17, article 11.

²⁹ J. Heldbo & S. Meyer, Comparison of legal regulation and technology level requirements, for aquaculture facilities producing rainbow trout in freshwater, in selected European countries, The Danish Environmental Protection Agency 2016, p. 170.

³⁰ A. Belinskij et al., Nutrient offsets – a potential tool to reconcile growing economy with strict water quality standards, NutriTrade, Policy Brief 2018 (no 3).

that are parties to the regional Convention on the Protection of the Marine Environment of the Baltic Sea Area, further guidance is likely forthcoming. The Fish Correspondence Group of the Helsinki Convention's governing body, HELCOM, published a first proposal on BAT and Best Environmental Practices (BEP) to avoid or minimize nutrient pollution from aquaculture operations in the Baltic Sea region in 2020,³¹ but has yet to publish guidance documents.

Nutrient offsets are achieved through activities that extract nutrients from the water, inter alia farming of blue catch crops such as mussels or algae. In principle, nutrient offsetting could open up the possibilities to earn a permit for a polluting activity by neutralising its net impact on water bodies, thus ideally not affecting the water body's physico-chemical status. In relation to the WFD, the neutralising effect of a proposed nutrient offsetting measure needs to be verified in a reliable manner to make sure that the activity whose emissions are offset will not cause a deterioration or jeopardise the attainment of good status in accordance with the ECJ's interpretation of the WFD in the *Weser case*. This also limits where the offsetting measures may occur. For legal recognition in accordance with the WFD, the effect must be achieved in the same water body as the nutrient loading from the aquaculture operation occurs. As such, nutrient offsetting *ex situ* does not meet the legal requirements set by the WFD.³²

4 In Comparison – National Development of the Aquaculture Sector Post-Weser

4.1 *Introduction to Aquaculture in Sweden, Denmark, Finland and the Åland Islands*

As the WFD and legal principles concerning mitigation and offsetting measures are implemented individually in each jurisdiction, regulatory mechanisms of common descent and with common objectives differ between jurisdictions. As noted earlier, the directives do not seek to achieve complete harmonisation of water legislation in the EU member states. The following section compares these mechanisms in relation to the permitting of aquaculture operations in coastal waters of four jurisdictions in Northern Europe sharing the Baltic Sea as a common resource.

All three member states have relatively limited aquaculture production with Denmark leading the pack with a total production of fish and shellfish of

³¹ CG Aquaculture 3-2020, submitted 10 June 2020.

³² N. Soininen et al., Too important to fail? Evaluating legal adaptive capacity for increasing coastal and marine aquaculture production in EU-Finland. *Marine Policy* 2019 (110).

47 500 tonnes per year, of which 14 000 tonnes hail from the state's 19 marine fish farms (2018). Finland has a total production of 14 300 tonnes, including 11 900 tonnes from marine farms (2018) of which the Åland Islands produces 7 000 tonnes of fish per year (2018).³³ Sweden's total production is 11 100 tonnes of fish per year, 2 900 tonnes of which are from marine farms (2018).³⁴ All three member states have also set ambitious growth objectives for the period 2014–2020. Denmark, Finland and Sweden set the growth objectives at 25 %, 46 % and 100 % increase in production respectively.³⁵ The Åland Islands are included in the Finnish production growth objectives. As of 2018, the latest year for which numbers are available, none of the three member states had yet reached their targets and are unlikely to do so by 2020. Strikingly, Sweden had the most ambitious objective but is the only one of the three member states that has seen a decline in production since 2014.

Aquaculture production and the nutrient emissions from such production are subject to permit requirements in each jurisdiction. In all jurisdictions, one or more environmental permits, limited in scope and time, are required to start and operate a production site, and approval is dependent on compliance with national and EU legislation.

4.2 *Approaches to the Water Framework Directive in Aquaculture Permitting*

For Finland and Sweden, the WFD and subsequent *Weser case* have significantly impacted the individual permit process for fish farming. In Sweden, the *Weser case* highlighted the inadequate implementation of the WFD as the national legislation lacked a clear and precise rule reflecting the binding nature of the non-deterioration requirement and the requirement not to authorise individual projects that jeopardize the attainment of good status.³⁶ The first rulings on fish farming in Sweden from the Land and Environmental Court of Appeal after the *Weser case* came in March 2017 and clarified several important legal

33 Luke Natural Resources Institute Finland, Statistics Database Finland. Available at: http://statdb.luke.fi/PXWeb/pxweb/en/LUKE/LUKE__o6%20Kala%20ja%20oriista__o2%20Rakenne%20ja%20tuotanto__10%20Vesiviljely/?rxid=001bc7da-70f4-47c4-a6c2-c9100d8b50db (access date: 30 June 2020).

34 Central Bureau of Statistics (SCB) & Board of Agriculture (Jordbruksverket), Aquaculture in Sweden in 2018. Available at: https://www.scb.se/contentassets/cef2fb103630496bb532e76c98f747e6/j01201_2018a01_sm_j060sm1901.pdf (in Swedish).

35 All multiannual plans are available at: https://ec.europa.eu/fisheries/cfp/aquaculture/multiannual-national-plans_en.

36 G. Michanek, Tillstånd får inte ges om aktuell ytvattenstatus försämrats eller uppnåendet av god ytvattenstatus äventyras – analys av EU-domstolens förhandsavgörande C-461/13, JP Infonet 2015.

issues in permitting.³⁷ The four cases, three of which concerned emissions to coastal waters in the Baltic Sea, concerned renewal of permissions for ongoing production in open net pens in similar conditions, leading to almost identical grounds of judgment for all cases.

The cases highlight the complexity of applying the obligations of the WFD directly to an individual project. Although concerning permit renewals, the activities' existing and future environmental effects with impact on environmental quality standards were difficult to measure. Furthermore, multiple species used as references in measuring the biological quality elements could not be found in the water body. In regard of these uncertainties, and because the water bodies had moderate, but on the verge of, good status, the Court chose a precautionary approach. The judgments only granted the operations permits limited in time to allow for orderly discontinuation of existing production.

In Finland, the significance of pollution under the Environmental Protection Act and the weight of harm and benefit under the Water Act are evaluated against the Water and Marine Management Plans as established according to the WFD and the MSFD.³⁸ The Supreme Administrative Court of Finland (SAC) has on several occasions stated that the non-deterioration rule and the aim of achieving good surface water status as set out in the WFD and the *Weser case* are strictly binding and no environmental or water permit can be granted that do not adhere to them, unless an exemption is granted.³⁹ There is a broad consensus on this in the Finnish legal literature as well.⁴⁰

The practical implications of the binding environmental objectives of the WFD are still somewhat unclear for the Finnish aquaculture sector. The SAC has so far granted permits for aquaculture operations even when there is scientific uncertainty as to whether the nutrient impact of the production in open net pens jeopardise the achievement of good ecological status. However, in many cases the SAC has stated that a permit can only be granted for a limited time, less than ten years, and that an applicant must evaluate suitable

37 Swedish Land and Environmental Appeal Court Judgment: Cases MÖD 2017:21, MÖD 2017:22, M 8882-15 and M 2620-16.

38 J. Kauppila, *Vesienhoitosuunnitelmien oikeudellisen vaikuttavuuden rakentuminen*. University of Eastern Finland 2016; N. Soininen, *Vesioikeudellinen Perusteluvelvollisuus – Tutkimus vesilain intressivertailuperustelujen oikeudellisista edellytyksistä*. Finnish Lawyers' Association 2016 (A-Series N:o 330).

39 Finnish Supreme Administrative Court Judgment: Supreme Administrative Court 2017:87; Supreme Administrative Court 14.2.2018 t. 608; Supreme Administrative Court 2019:166.

40 Soininen et al., *supra* note 32; T. Paloniitty, *The Weser Case: Case C-461/13 Bund v. Germany*, *Journal of Environmental Law* 2016 (28(1)), pp. 151–158; J. Kauppila, *Vesienhoitosuunnitelmien oikeudellisen vaikuttavuuden rakentuminen*. University of Eastern Finland 2016.

locations for longer-term aquaculture operations.⁴¹ One of the challenges for aquaculture permit applications is that the status classification of coastal water bodies, of which only 13 % have achieved good or high status,⁴² is often based on expert judgment without specific empirical observations on different quality elements.⁴³

While there is agreement that the non-deterioration rule and the aim of achieving good surface water status are legally binding in Finland, there is scientific uncertainty as to whether single aquaculture operations do in fact deteriorate the ecological quality of coastal or marine waters or jeopardise the attainment of good water status as stipulated by the WFD. Current scientific models regarding the ecological status of coastal waters cannot establish the impact of a single aquaculture operation on a water body due to significant internal nutrient loading, and loading from other sectors, such as agriculture and forestry. In order to manage this uncertainty, aquaculture permits have been issued only for few years at a time, and are subject to review with developing scientific knowledge.

The Finnish and Swedish cases have both highlighted the question of when the achievement of good status of a water body is *jeopardised*. In terms of effects, there is a considerable difference between granting or denying a permit when there is uncertainty as to whether the operation would cause a water body not to reach good status in a timely manner. Due to the complex requirements and lack of generally applicable methods for assessment, uncertainty as to an operation's impact on the water body is likely to arise.

For the Åland Islands and Denmark the WFD and, subsequently, the *Weser case* have been of less significance in individual permit processes. The Åland Islands implemented the legal framework of the WFD as a separate chapter to the current Water Act in 2005. As the framework is not connected to the provisions on environmental permitting, the environmental quality standards do not have legal significance in the permitting of aquaculture operations or other activities. Administrative practices of the permitting authority and case law from the Åland Administrative Court after the *Weser case* demonstrate a complete disconnect between permitting and the WFD by disregarding the environmental quality standards and administrative borders of water bodies

41 Finnish Supreme Administrative Court Judgment: Supreme Administrative Court 26.4.2018 t. 1953; Supreme Administrative Court 26.4.2018 t. 1948, 1949 and 1950.

42 Finnish Environment Institute (2018). Ecological and Chemical Condition of Surface Waters in Finland, www.ymparisto.fi/pintavesientila (access date: 30 June 2020).

43 Soininen, *supra* note 32.

in permitting of aquaculture.⁴⁴ In the wake of the *Weser case* and two decades of industry requests for a renewal of the legal framework, a government bill on a new Water Act for the Åland Islands was presented in 2019 and is currently in the legislative process. It proposes to integrate the WFD framework with environmental permitting insofar that environmental quality standards developed in the course of river basin management would function as limit values when considering whether an applying activity could lead to deterioration of status or jeopardise good status.

The situation is different in Denmark. After failing to publish and report its first generation river basin management plans in a timely manner,⁴⁵ Denmark started the decision-making process on the second generation of River Basin Management Plans (2016–2021) in December 2013. A 2015 Danish political agreement, the *Food and Agricultural Package*, made it possible for the aquaculture sector to increase the level of emissions of nutrients into surface and coastal waters. The EU Commission questioned the compliance of the agreement with the WFD, the Nitrate Directive and the Habitats Directive,⁴⁶ with reference to the binding nature of the environmental objectives in article 4 of the WFD as stated in the *Weser case*. As a consequence of the political agreement, the Danish Parliament passed an amendment to the Environmental Protection Act in 2017 making it possible to use an *environmental space* of 800 tonnes of nitrogen for aquaculture production, with an additional 43 tonnes of nitrogen earmarked for existing aquaculture for already received discharge permits.⁴⁷ The agreement was based on an assumption that Denmark under the Helsinki Convention has a space between the maximum permissible and the actual emission of nitrogen and phosphorus based on inter alia reports from the Danish Centre on Environment and Energy and Aarhus University with reference to the HELCOM Copenhagen Ministerial Declaration.⁴⁸ Additionally, the agreement included the postponement of the handling of

44 Åland Administrative Court Judgment: E.g. Ålands förvaltningsdomstols decision 52/2016, no. 2014/44; The permitting authority's decisions 2018–643 ÅMH-Pn 7/20m of 10 June 2020, 2016–546 ÅMH-Pn 6/17 and 2016–546 ÅMH-Pn 5/17 of 24 June 2017 and 2014–564 ÅMH-Pn 2/17 of 15 February 2017.

45 Judgment C-190/14 from the CJEU.

46 The EU Commission's letter 8540/16/ENVI on 'Implementation in Denmark of Directives 91/676/EC, 2000/60/EC, 92/43/EEC, in relation to the recently adopted agriculture package', May 2016.

47 Regulation: Act No. 680 of 8 June 2017 on Compensatory Marine Instruments for the Establishment or Expansion of Marine Aquaculture.

48 HELCOM Copenhagen Ministerial Declaration – Taking Further Action to Implement the Baltic Sea Action Plan-Reaching Good Environmental Status for a healthy Baltic Sea, 3 October 2013, Copenhagen, Denmark.

6,200 tonnes of nitrogen for the third water planning period under the WFD (2022–2027) in favour of the food and agricultural sector. The general election to the Danish Parliament in June 2019 resulted in a new government led by the Social Democrats. In August 2019, the Minister for the Environment announced that the statutory order implementing the Act will not be issued. In October 2020, a bill on removing these provisions from the Act with effect from January 2021 was presented by the Minister in the Parliament. It is highlighted in the bill that the legally binding Statutory Order on the Programme of Measures⁴⁹ implements the WFD rules. Based on the binding effects of the ruling of the *Weser case*, the Danish authorities may not permit activities that deteriorate the environmental quality of a water body or jeopardise its water quality standards.

The crucial factor in the individual permit process for open net pen facilities in Denmark has not been the operation's effect on the achievement of good status for a certain water body but the obligation to protect the integrity of Natura 2000 sites. Member states are under article 6 of the WFD required to register and to protect all Natura 2000 sites in harmony with the requirements stated in the Habitats Directive⁵⁰ and/or the Wild Birds Directive.⁵¹ The Habitats Directive stipulates in article 6 that member states must take steps to avoid deterioration of the conservation objectives of the Natura 2000 sites. In 2018, 2019 and 2020, the Environmental Protection and Food Appeals Board has refused to accept the approval of existing marine based fish farms located close to Natura 2000 sites as there was a risk that these will have significant negative effects on the Natura 2000 sites' conservation objectives. The ruling in the *Weser case* was not part of the assessment made by the Appeal Board. In October 2020, a decision from the Danish Government not to accept any new offshore fish farm was published by the Minister for the Environment.

4.3 *Approaches to Nutrient Offsetting in the Context of Aquaculture*

Unless carefully operationalised, regulation for stronger water protection may generate unnecessary constraints for economic activities.⁵² To achieve environmental standards on good ecological status and allow for coastal waters to be a sustainable part of future food production in marine based fish farms,

49 The Danish Statutory Order No. 449 of 11 April 2019 on the Programme of Measures.

50 Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

51 European Parliament and Council Directive 2009/147/EC on the Conservation of Wild Birds. These sites are also protected under Article 7 of the Habitats Directive, and they are all part of the Natura 2000 network.

52 Belinskij et al., *supra* note 30.

innovative regulatory solutions may be needed. For fish farming, neutralising some of the environmental effects by utilising nutrient offsetting may provide the flexibility needed to allow industrial growth while also complying with the WFD and the MSFD.⁵³

As a regulatory tool, nutrient offsetting is generally not well defined and is used in vastly different ways. In Sweden and Finland, it is not recognised in national legislation. This entails a prohibition from earning an aquaculture permit by offsetting the net impact on a water body in Sweden. Such explicit legal obstacles do not exist in Finland's national legislation but nutrient offsetting has not been used in practice. Thus far, there are no examples of such measures in aquaculture permit decisions. What is clear, however, is that offsetting may not be used to avoid mitigation of significant environmental impact regulated by the Environmental Protection Act. In the current legal setting in Finland, offsetting can only be used as an additional measure to comply with the WFD requirements.⁵⁴

In the Åland Islands, operators may be allowed to expand operations by using an *improvement surplus*, a concept that is also included in the proposed bill on a new Water Act. An *improvement surplus* is defined in the existing Water Act as a consequence of a quality improvement measure that *creates better water quality than required by the Act*. However, the act lacks a definition of water quality improvement measure and applications to utilize an improvement surplus created by trawling fish species, i.e. removal of nutrients, to expand aquaculture activities have been rejected by the authority. The law requires a *direct connection* between the improvement measure and the surplus, but the environmental benefits of the measures proposed thus far have been deemed uncertain. The measures are not considered to bring an environmental benefit to a specific water body and species subject to quota would have been fished in any case, thereby not giving any additional effect.⁵⁵ By the new Water Act, the Ålandic legislator aims to design a functional legal instrument that allows operators to expand aquaculture activities by means of additional offsetting measures with proven and sustainable environmental effects.⁵⁶

53 Soininen et al., *supra* note 32.

54 Soininen, *supra* note 32. See also NutriTrade (2018) NutriTrade Policy Brief No 3: Nutrient Offsets – a potential tool to reconcile growing economy with strict water quality standards. Available at <http://database.centralbaltic.eu/sites/default/files/NutriTrade-Policy-Brief-3-Nutrient-Offsets.pdf> (accessed 30 November 2020).

55 Åland Administrative Court Judgment: e.g. Decisions nr 40 (ÅLR 2011/6672 36 S40) and 41 (ÅLR 2011/6671 37 S40) of 5 June 2012 and nr 123 (ÅLR 2015/2211 249 S3).

56 Kirsi Kostamo et al., Nutrient compensation for aquatic coastal environment—legal, ecological and economic aspects in developing an offsetting concept, The Finnish

As part of the Danish *Food and Agricultural Package*, marine instruments for offsetting were to be used in order to make it possible for authorities to approve new production activities. The marine instruments accepted by the rules laid down in the Environmental Protection Act were mussel farming and/or cultivation of seaweed as these are expected to remove some of the nutrients and phosphorus discharged into the neighbouring marine environment. The use of marine instruments has been halted as the statutory order implementing the rules will not be issued by the incumbent government. As mentioned supra, in October 2020 the Government presented a bill with the intention to have the Parliaments support to repeal the mentioned rules.

4.4 *Approaches to Best Available Technique in Aquaculture Production*

Aquaculture is not a sector subject to mandatory BAT standards, the level of technique and management required is not regulated by union legislation. What technique is considered best is instead determined in each jurisdiction. Recent technical advancement has put into doubt whether open net pens is to be considered best available technique.

In the Åland Islands, thus far, open net pens in combination with low-nutrient feed has been deemed to meet the BAT-requirements. Similarly, according to the case law of the Finnish Supreme Administrative Court, open net pens are still considered BAT in Finland.⁵⁷ In Denmark, BAT requirements were not part of the assessment made by the Appeal Board in the above mentioned cases, but the requirements are part of the conditions stated in the Statutory Order on Environmental Permits.⁵⁸

In Sweden, the national guidelines for fish farming were last updated almost thirty years ago and before 2017 no recent case law existed on BAT conditions in relation to aquaculture, leading to legal uncertainty. While not decisive on the matter, the Land and Environmental Court of Appeal has in several cases since the ruling in the *Weser case* questioned whether open net pens could be considered best available technique as it offers no filtering.⁵⁹ Furthermore, in none of the cases has the operator been able to successfully argue that the

Environment Centre and the Government of the Åland Islands, October 2020, p. 21–23. Available at: https://seabasedmeasures.eu/wp-content/uploads/2020/10/nutrient-compensation-for-aquatic-coastal-environment_kostamo-et-al.-2020_final-report.pdf (accessed 1 December 2020).

57 Supreme Administrative Court 26.4.2018 t. 1953; Supreme Administrative Court 26.4.2018 t. 1948, 1949 and 1950.

58 The Danish Statutory Order No. 1534 of December 2019 on Environmental Permits.

59 Swedish Land and Environmental Appeal Court Judgment: Cases MÖD 2017:21, MÖD 2017:22, M 8882-15 & M 2620-15, also M 1425-17 & M 10773-16.

use of other techniques than open net pens are not economically viable. In an ongoing process for a salmon farming permit on the west coast of Sweden, the Swedish Agency for Marine and Water Management initially argued that even the recirculating system suggested by the applying company was not to be considered BAT.⁶⁰

Recent technical advancement, uncertainty about the economic costs and lack of harmonisation measures may have contributed to the current disharmony in BAT-requirements for fish farming between the jurisdictions. Farming in open net pens has been the standard technique for a long time, but more advanced techniques with lesser environmental impact have started to replace the open systems, whether legally required or not.⁶¹

4.5 *The Effects of Environmental Requirements on Aquaculture Permitting*

The recent legal developments in EU law and in the jurisdictions of the three Nordic member states has affected the aquaculture industry and the possibility to reach the growth objectives. The following section reviews how the approaches in the different jurisdictions to the legal framework has affected the aquaculture production in practice.

In Sweden, ambitious objectives, national strategies and changes in administrative practices have not led to a growth in aquaculture production. Recent developments in case law may even lead to a period of further regression for the industry as current permits may not be renewed. The application of permits for operation in the coastal waters of the Baltic Sea have not been successful and several operations have been forced to close.⁶² Even closed-loop facilities placed on land with extensive waste water filtering have thus far been denied permit.⁶³ Instead, new and renewed permits have mainly been issued for operations in oligotrophic freshwater bodies as emission of nutrients into these waters have been considered less harmful. In fact, the use of open net pens have been deemed as BAT in many such cases.

In Finland, the industry has started to react to the regulatory pressures stemming from the WFD and the *Weser case*. Several operators and research

60 Opinion of the Swedish Agency for Marine and Water Management: Case M 4421-17 (annex 22).

61 See for example Swedish Land and Environmental Appeal Court Judgment M 185-17 and above mentioned M 4421-17.

62 See for example Swedish Land and Environmental Appeal Court Judgment: Cases MÖD 2017:22, M 8882-15 & M 2620-15.

63 Swedish Land- and Environmental Court Judgment: Case nr M 4421-17 from Vänersborgs tingsrätt on April 4th 2019, currently in appeal.

institutions are developing recirculating operations in which the rearing unit would be moved to land and all wastewater would be treated and circulated back to use in the fish farming tanks. Furthermore, the Finnish government is currently reviewing opportunities of pooling together open-pen operations and locating them in the ecologically least vulnerable coastal and marine areas; these planned areas are still, however, mostly under the scope of application of the WFD.⁶⁴ In practice, the rearing of fry in the closed-loop facilities combined with the environmentally suitable location of open net pen operations seems to be the idea of state-of-the-art aquaculture in Finland. It remains to be seen how this approach can reconcile the planned increase in aquaculture with the environmental objectives of the WFD.

On the Åland Islands, the *Weser case* has yet to impact the permitting of aquaculture. With the future Water Act in force the situation will be diametrically different and existing aquaculture activities as well as new ones will be considered in the light of the legally binding requirements imposed by the WFD as interpreted by the *Weser case*.

As the authorization in the Environmental Protection Act to issue a statutory order on marine instruments in Denmark was stopped by the new Minister for the Environment in 2019, and as all the fish farms are located close to Nature 2000 sites, the future is uncertain also for existing operations. In 2018, 2019 and 2020 the Appeal Board has sent back permit applications to the Environmental Protection Agency under the Ministry of Environment Minister has stated that the future of aquaculture in Denmark is land-based,⁶⁵ but we are yet to see if the industry is willing and able to adhere to this vision.

5 Conclusions

While the EU aquaculture sector was expected to make major strides as a provider of food and jobs, it has instead found itself in a perfect storm of competing interests and objectives. It was targeted as a sector with high potential for development within the blue growth agenda, but less flexible water protection regulation and an expectation on the industry to shift to more advanced, but

64 Ministry of Agriculture and Forestry and Ministry of the Environment, National spatial plan for the aquaculture sector (2014). Available at: <https://mmm.fi/documents/1410837/1801200/Kansallinen+vesiviljelyn+suunnitelma/55a022d6-054b-4136-b8b3-bcae09e53379>.

65 M. Lindved Norup, Regeringen sætter en stopper for at opdrætte flere fisk i danske havbrug, *DR*, August 26, 2019. Available at: <https://www.dr.dk/nyheder/indland/regeringen-saetter-en-stopper-opdraette-flere-fisk-i-danske-havbrug> (access date: 30 May 2020).

considerably more expensive, techniques has at least contributed to it being unable to meet the growth objectives. As evidenced by the development in the four jurisdictions examined here, it has found itself in uncertainty and administrative limbo as permits have been subject to lengthy application processes and in the end commonly resulted in refusal or limited production capacity, leaving the sector uncertain as to the legal requirements and unable to become an integral part of sustainable food production in the EU.

The case studies make evident the high level of *de facto* flexibility of the WFD. Even though all of the actions taken in the different jurisdictions may not be fully consistent with the spirit or even the letter of the WFD, as interpreted by the CJEU, disparate regulatory approaches have been pursued in practice. In some cases, individual jurisdictions have also seen abrupt changes in the regulatory approach to aquaculture and water protection. This prompts the question whether clearer EU rules or guidance could in fact help the industry by promoting stability and predictability. At least partly, this could be achieved through the development of a BAT reference document for aquaculture. Also, elaborated EU guidance on nutrient removal could serve this purpose.

The case of marine aquaculture highlights the difficulties in squaring blue growth with water protection. Ideally, the two would have synergies, but more often than not they are in conflict. There is a need for the EU and the member states to rethink their strategies for how to achieve sustainable growth in the aquaculture sector.

Declarations of Competing Interest

None.

Funding

Niko Soininen and Antti Belinskij have conducted their research in a project entitled 'Enhancing Adaptive Capacity for Sustainable Blue Growth (BlueAdapt)' funded by the Strategic Research Council of Finland.