Aquaculture in general

▪ Aquaculture is the breeding of fish and other aquatic organisms.

▪ The world’s fastest growing food producing industry. Accounts for half of the fish consumed. Amount is expected to grow.

▪ Clearly positive environmental impact by easing the pressure on wild fish stocks

▪ But also negative impacts such as fish diseases, sea lice, crossbreeding with wild fish and pollution from nutrients, chemicals, hormones and other pollutants.

▪ International environmental standards have not followed suit with the development of the industry: Only one global standard for sustainable aquaculture: Article 9 in FAOs voluntary ‘Code of Conduct for Responsible Fisheries’.
Aquaculture in Denmark and Norway

- Both countries have long coastlines.
- Both countries have political commitments for significant expansions of aquaculture.
- Both countries have complicated regulatory frameworks involving both central and local authorities. Thus, political ambition for streamlining and easing regulation.
- Heated discussions in both countries on the balance of economic and social versus environmental considerations in aquaculture.
- In Norway, primarily salmon is bred - in Denmark primarily rainbow trout.
Aquaculture production volume

- Very big difference in production volume:
  - Norway: 1,315,000 tonnes annually. Value NOK 44 billion.
  - Denmark: 44,000 tonnes. Value: DKK 1 billion.

- In Denmark, fresh water aquaculture is larger than mariculture - but mariculture is growing. Freshwater aquaculture is now well controlled environmentally.
Location of mariculture

**Denmark:** Typically close to the coast in shallow waters with low salinity and water flow.

**Norway:** In deeper water, more salinity and more flow.
Major environmental impacts from mariculture

Norway

- Escape of farmed salmon with negative effects on wild salmon populations such as salmon lice contamination, diseases and crossbreeding.

- Norway has the most important spawning area for North-East Atlantic salmon and thus a special responsibility for its conservation. (Convention for the Conservation of Salmon in the North Atlantic Ocean (1982)). Significant decrease in the population over the last 30 years.

Denmark

- Eutrophication (nutrient loading) with nitrogen and (to a lesser extent) phosphorus from feed residues and faeces. Comes on top of much higher levels of eutrophication from agriculture.
Overview of domestic legislative framework - Norway

Norway

Main legislation: Aquaculture Act.

Objective: ‘to promote the profitability and competitiveness of the aquaculture industry within the framework of a sustainable development and contribute to the creation of value on the coast.’

- Aquaculture activities require a license from the County Council according to the AA. Conditions: ‘Environmental responsible’, not contravening adopted land use plans, approved by the competent authorities of a number of sectoral laws (e.g. Food Act, Animal Welfare Act, Pollution Control Act, Water Resources Act, Harbour Act.

‘Every person has a right to an environment that is conducive to health and to a natural environment whose productivity and diversity are maintained.

Natural resources should be managed on the basis of comprehensive long-term considerations whereby this right will be safeguarded for future generations as well.

In order to safeguard their right in accordance with the foregoing paragraph, citizens are entitled to information on the state of the natural environment and on the effects of any encroachment on nature that is planned or carried out.

The authorities of the State shall issue specific provisions for the implementation of these principles.’
Overview of domestic legislative framework - Denmark

Danmark

- Main legislation: Environmental Protection Act
- Objective: ‘to contribute to safeguarding nature and environment, thus enabling a sustainable social development in respect for human conditions of life and for the conservation of flora and fauna.’ Includes Precautionary, Polluters Pay and Best Available Technology principles.

- Mariculture included in an annex listing polluting enterprises which require a permit. Competent authorities (local authorities and EPA) have established that mariculture activity requires Environmental Impact Assessment.

- Permit required also from the Fisheries Act.

- EU environmental legislation is a strong legal component.
EU legislation mostly relevant to mariculture

- **Denmark** is a full member of the EU.
- **Norway** is member of European Free Trade Area (EFTA) and the European Economic Area (EEA) with Iceland and Liechtenstein and the EU states. Norway has incorporated parts of EU’s environmental legislation.

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Water Framework Directive

- Applies to coastal waters (and rivers, lakes and groundwater) to ‘prevent deterioration of the status’. River Basin Management Plans are to achieve good-surface water status through protecting, enhancing and restoring surface water bodies.

- CJEU applies a strict interpretation of the non-deterioration obligation. (Weser case). Not just a general obligation, but applies also concretely to the authorization of individual projects.
Water Framework Directive and mariculture in Norway and Denmark

Norway:
Norwegian River Bassin Management Plans so far do not take the main biological effects of mariculture into account. (Escape of farmed fish with adverse effects on wild salmon population) in River Bassin Management Plans.

Denmark
75% of coastal waters are in an unfavourable ecological status according to WFD criteria due to eutrophication. Agriculture accounts for 70%. 2nd generation RBMP heavily delayed.
EIA Directive

- ‘Intensive fish farming’ is listed as an activity in Annex II. National authorities decide whether an EIA is required on the basis of the significance of the environmental effects. Criteria specified in Annex III.
- No statistics of when Norwegian authorities require EIA for mariculture, but it happens very rarely.
- ‘So, a Member State which established criteria and/or thresholds at a level such that, in practice, all projects of a certain type would be exempted in advance from the requirement of an impact assessment would exceed the limits of its discretion under Articles 2(1) and 4(2) of the Directive unless all the projects excluded could, when viewed as a whole, be regarded as not being likely to have significant effects on the environment (see, to that effect, Kraaijeveld, paragraph 53).’ (CJEU Case C-392/96. Commission of the European Communities v. Ireland).
- Denmark requires EIA for mariculture installations.
Habitats Directive (legal effect in Denmark)

▪ Requires the designation of core sites on land and sea for species and habitat types to ensure that these are maintained, or restored, to a favourable conservation status in their natural range. (Natura 2000 sites.)

▪ Strict interpretation by the CJEU on whether an activity has the potential for adversely affecting a Natura 2000 site in several rulings. (Waddenzee (C-127/02), the Sweetman v An Bord Pleanála (C258/11) and the Commission v. Spain (C-404/09).

▪ Many Natura 2000 sites in Danish coastal areas. Thus, actual and potential conflict with mariculture.
Natura 2000 sites in Denmark
Marine Strategy Framework Directive (legal effect in Denmark)

- Objective: to maintain good environmental status in the marine environment by the year 2020. To that end, marine strategies are to be developed and implemented.

- Relevant for mariculture beyond coastal waters. Here the Danish Government plans the next generation of mariculture.

- Denmark has been working hard against EU set criteria for good environmental status. To widen the ‘environmental space’ for mariculture?
Marine Spatial Planning Directive (legal effect in Denmark)

▪ ‘establishes a framework for maritime spatial planning aimed at promoting the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources’.

▪ Relevant for spatial planning of mariculture in relation to other uses of the marine space.
Latest policy development - Norway


Ambition: 5 doubling of growth in aquaculture.
- ‘The Traffic Light System’: Coastal waters are designated as different production areas:
  
  Green: Areas open for growth.
  Yellow: Unhanged amount of production
  Red: Reduced amount of production.
- Only one environmental indicator for sustainable production: Salmon lice. (Not escape, crossbreeding, diseases, eutrophication etc.) Lawfulness in relation to the WFD? Constitution § 112?
Latest policy development - Denmark

Danmark

- Growth strategy for aquaculture: 4 doubling of production for mariculture. Wider ‘environmental space’ in terms of nitrogen and phosphorous loads mainly by location of new installations further out in the sea, but also more space for existing installations in coastal waters.

- Ammendment of the Environmental Protection Act. Opens for environmental approval of mariculture where it should otherwise be refused. Condition: Establishment of compensating measures in the form of mussel breeding and seaweed cultivation. Effect of these measures highly disputed. Lawfulness in relation EU legislation cf.the Briel Case?
Some conclusions

- Norwegian regulation of mariculture is primarily based on concerns for the industry while the Danish regulation is more based on the environmental effects.

- But this difference is being levelled off since Denmark is weakening its environmental regulation to support the industry.

- A mismatch between political ambitions and legal obligations in both countries! The current mariculture production seems to already be at odds with EU environmental legislation. (Norway: WFD and the EIA Directive. (Denmark: Mainly WFD and the Habitats Directive). The ambitious growth strategies of the two countries will multiply production - apparently without sufficient mitigation measures to change this situation.
Solution?

- Aquaculture on land?