

# Innovative technologies in aquaculture

**Denmark: the State of Play**

*Blue Platform Workshop, November 17th 2020*

**BIOECONOMY HOTSPOT GULDBORGSUND**

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# The State of Play in Denmark

*Facts – Trends - Policy developments:*



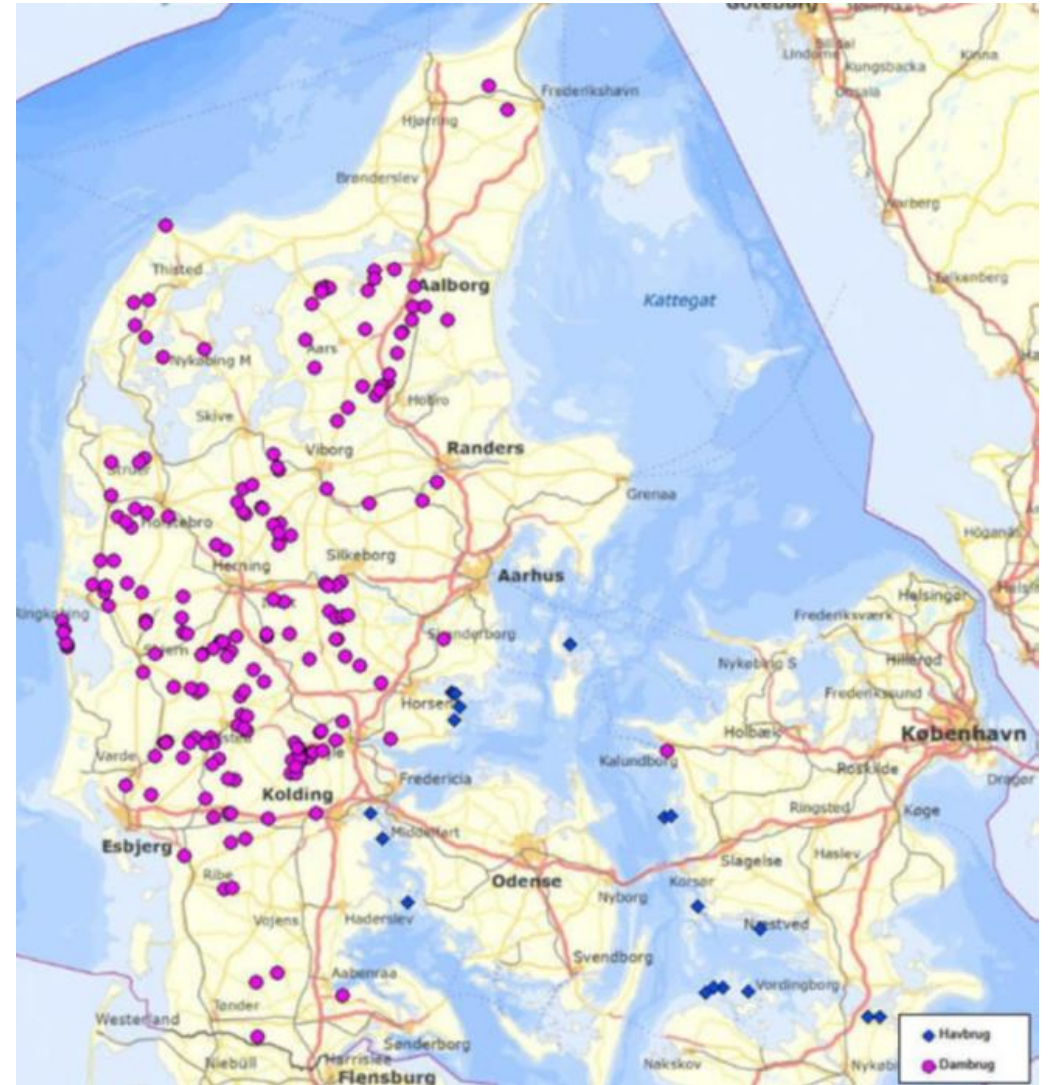
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# Facts - Denmark

- Total aquaculture production has remained constant, during the past five years, at around 45.000 tons, of which app. 30.000 tons is freshwater production (2017)
- Production values in 2016: 87,5 mio.€ - 90% export to DE
- 103 companies – 271 employees (2016 figures)
- Main products: rainbow trout (60%), technology, feed
- Fish aquaculture is the dominant sector; 200 model semi-RAS/flow-through farms, 19 sea-cage grow out facilities, RAS is mainly used for growing eel and for breeding, as well as R&D facilities for brood stock development and feed companies
- Only a handful of FRAS (fully recirculated) commercial plants – for pike perch, yellowtail, salmon, rainbow trout and 1 caviar/sturgeon farm
- Few shellfish/seaweed – mussel farms, oysters, seaweed farms
- Aquaponics – the combined culturing of fish and plant – is still on a level of local enthusiasts, although recent policy trends have pushed fish farmers towards looking at high-tech aquaponics as well as compensatory cultivation (mussels, seaweed, etc.) for increased nutrient uptake



Danish Aquaculture facilities/farms, EPA report 2016



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# Trends - Denmark

- Producers: are looking for solutions – are tired of being labelled as the bad guys – Danes are technology dependent in general - *demonstration sites needed!*
- Consumers: are not completely comfortable with blue food, although “sea-gardens” are becoming more and more popular – *mindset needs addressing*
- Animal (fish) welfare: citizens are focused on health – both their own and the animals they eat. Most people think that fish farming in closed ponds / RAS is not a pleasant thought - *education needed*
- Diversity of fish products is very limited in Denmark – salmon steaks, plaice, cod, shellfish, frozen fish of unclear origin (fish fingers, fish balls, etc.) – marinated and smoked herring, mackerel, salmon, caviar – *mindset change and new products are needed*
- Education – there is only one school of aquaculture in Denmark (now with RAS facility since 2019), attached to a farm and zoo education facility – which reflects the level of interest and investment on the national scale 😞
- Policy – Danish strategy for sustainable development of the aquaculture sector 2014-2020 has the vision of increasing RAS technology-based fish farming. The new Danish minister of Environment has proclaimed that Danes must eat more fish – but with Brexit threatening the wild catch picture and increased environmental restrictions regarding open-water cultivation (including mussels) – how is this expected to be made a reality? By buying fish from unsustainable sources from across the world?





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# Policy - Denmark

- 1989 Danish Aquaculture Law, 2012 nutrient discharge based regulation (ACT 1567/2016)
- Danish regional administrative bodies (municipalities) secure national regulations and are responsible for approval of aquaculture production – this will change in 2021 and be governed by the Min. of Environment
- Environmental approval is the prime vehicle for all other legal fields in Denmark; “environment” also covers consideration of noise emissions, water extraction and discharge, use of chemicals and medicine
- Approvals are valid for 10 years and specifies highly detailed limitations and thresholds, including feed type and substances, approval time = 12mths
- Since 2012 - change towards discharge-based regulation to encourage BAT/BEP - traditional pond farms pushed out of the market
- Traditionally, government agencies provide the legal, policy and regulatory frameworks under which aquaculture and aqua feed use is controlled. In recent years, the emergence of certification bodies, such as the Aqua-culture Stewardship Council, Global GAP and the Global Aquaculture Alliance (GAA), has seen a new approach to environmental governance (influence from EU/Global bodies).
- LATEST CHANGES: 22/10-2020 – new bill of law – no compensatory cultivation of mussels/oysters for sea-cage farming – expected to be passed by January 2021.



THANK YOU !

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