

***How can RAS technology
contribute to the green
transition in aquaculture?***



EU

Recirculation systems: Water is reused after some form of treatment , ***Data Collection Framework***

Closed recirculation systems: Enclosed environment involving the recirculation of water and which depends on permanent external energy input to stabilise the environment for the animals, ***regulation organic production.***

Denmark: m³ water per kg feed

Low: 5 – 25, Medium: 1 – 5, High: < 1

AAC has asked the Commission to develop unique and operational indicators based on water intake and feed used to enable proper segmentation.

Green Deal, 2019

- European food should become the global standard for sustainability.

Farm-to-fork strategy, 2020

- New framework for a sustainable food system
- Farmers must transform production methods more quickly to deliver better climate/environmental results.

EU Competitiveness Compass, 2025

- Closing the innovation gap, reduce dependencies, cutting red tape.

Vision for agriculture and food, 2025

- Geopolitical and geoeconomic tensions: Dependencies are becoming vulnerabilities.
- Long-term competitiveness/sustainability, food security and resilience.
- Grasp the opportunities of the green transition.
- The Union of 2040 must be a place where food production thrive.

Commission work programme 2026

- Secure food supplies are essential for Europe's wellbeing
- Vision 2040 for fisheries and aquaculture: Boost competitiveness and sustainability

Indicators

- European Court of auditors: + 1 billion € allocated 2014 – 2020 with no indicators to monitor progress.
- STECF 2024 Aquaculture Economic Report: Indicators **economic** sustainability.
- Commission Guidance fish **welfare** indicators, EURCAW Aqua: **Welfare** indicators seabass, carp (trout and salmon), Danish Green Programme: Fish **welfare** in aquaculture (app. 0,7 million €).
- Commission Guidance **environmental** performance indicators (end 2025).
- STECF indicators on the **social** dimensions of fisheries in selected Member States.

Vision for agriculture and food: On-farm sustainability compass.

Sustainability compass

Environment	Social	Economic	Welfare
N	Antibiotics	Productivity	Body injuries
P	Age	Earnings	Mortality
BI5	Gender	Value worker	Feeding behavior
CO2e	Education	Size	Dissolved oxygen

RAS: Production and profitability

	Number			Weight of sales (tonnes)			Profit margin %		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Traditional	73	66	59	8.898	8.048	6.688	-1,2	-0,7	6,7
RAS Low	27	23	23	5.545	5.415	4.268	4,5	2,7	1,7
RAS Medium	21	18	17	8.938	8.779	8.230	10,7	7,8	8,1
RAS High	24	24	22	13.270	9.770	10.352	-9,5	-1,3	-2,1
Marine	17	18	19	12.264	13.592	14.335	21,8	21,1	14,4

Source: Statistics Denmark

Increased production

Access to space and water

- New RAS farms have been established
- Opportunity for terrestrial farmers ('plug and play')
- Convert flow-through farms

Emission based regulation

- Optimize water treatment technologies (woodchip reactor)
- Feed improvements
- Education

Value chain

- New species (salmon, kingfish, zander, microalgae)
- Smolt marine fish farming
- Climate impact (flooding, drafts, temperature)
- Cluster (agriculture, energy etc.)

Awareness

Transparency sustainability

Profitability