

# Production of large post-smolt in land-based facilities

**Will shorter production time of salmon in the sea, achieved through production of large post-smolt, improve fish health and make the salmon farming industry more sustainable?**

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## Background:

This study delves into the methodologies and outcomes related to land-based smolt production in the Norwegian salmon farming industry. Emphasizing a qualitative approach, it utilized document analysis to investigate the effects of extended land-based smolt production. The research highlighted the alarming mortality rate in sea-based salmon farming and revealed that a reduction in sea-based production time can enhance fish welfare, decrease lice infestations, and mitigate infectious diseases. Comparatively, Recirculating Aquaculture Systems (RAS) offer benefits, though they're energy intensive. Economic evaluations suggest that traditional aquaculture remains more cost-effective, but the potential sustainability of RAS could be leveraged with greener energy solutions. The study underscores the need for a balanced approach considering both fish welfare and environmental impacts.

## Material and Methods:

- A qualitative document analysis of selected documents
- Comparison of different analytic articles



Figure 1

## Results:

- Mortality rate and cost production was lower for production of 0,5 kg smolt in land-based facilities.
- Energy use and carbon emission was higher for post-smolt production in land-based facilities.
- Production of large post-smolt reduces use of medicine and delicing. This results in better fish health and reduces impact on the environment.

## Conclusion:

- Extending the production time for post-smolt in RAS systems reduces production cost, improves fish-health and mortality rate, but require higher energy usage and has higher carbon emissions.

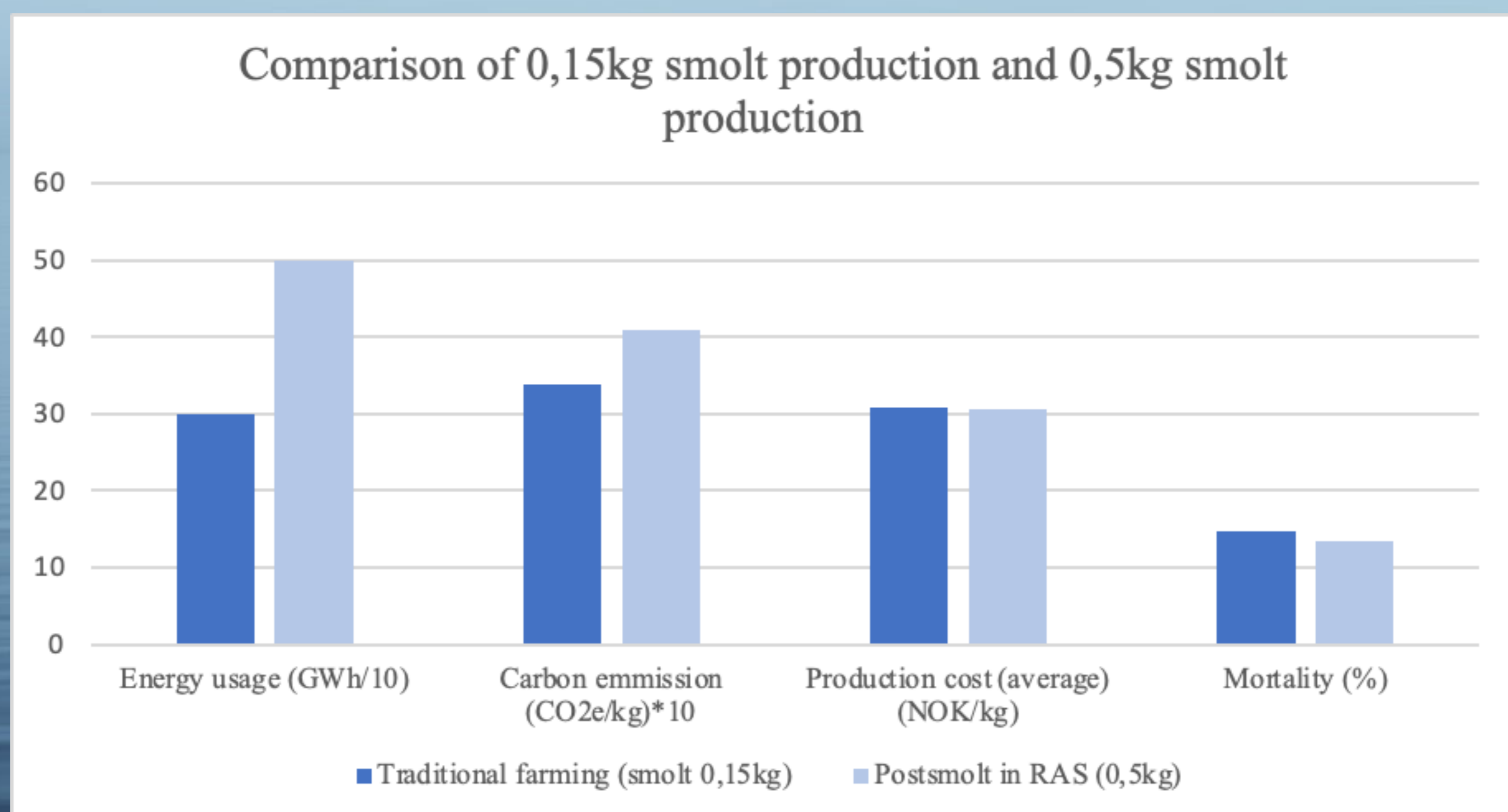


Table 1: Comparison of various parameters that differentiate the production of 0.15kg smolt and 0.5 kg smolt in RAS

## References:

(1) Bjørndal, Trond, og Amalie Tusvik. «Economic analysis of on-growing of salmon post-smolts». *Aquaculture Economics & Management* 24, nr. 4 (1. oktober 2020): 355–86. <https://doi.org/10.1080/13657305.2020.1737272>.

(2) Sommerset, I. (2021) Sammendrag, Fiskehelse rapporten, 2020, pp. 6-11

(3) Bjørndal, T., Holte E. A., Hilmarsen, Ø. og Tusvik, A. (2018) Analyse av lukka oppdrett av laks – landbasert og i sjø: produksjon, økonomi og risiko. Sluttrapport FHF Prosjekt 901442, 09/18. SINTEF, NTNU-Ålesund og SNF.



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