



# The FINFARMGIS-method

## method helps to assess the location of a fish farm

**Researchers at the Natural Resources Institute Finland (Luke) have developed the FINFARMGIS method (FINFA), which can be used to identify the area's best suited to the various stages of fish farming using a spatial data tool. The method simultaneously considers several factors that has an influence for the location of fish farming.**

**The method has been used in enviromental licence process for fish farming companies, marine planning, zoning, and public fish farming production development projects, such as planning production sites in state or municipal waters.**

### Benefits for the customer

The FINFA analysis consist of a clear spatial data presentation and a supporting report that justifies the suitability of the area for fish farming.

The FINFA analysis contains the most up-to-date information and a comprehensive range of characteristics, allowing the location to be assessed more comprehensively. In addition, information and new criteria affecting location control are constantly updated in the method as the information increases. With the help of FINFA analysis it is possible to build other additional analysis services for environmen-

tal licence applications, such as production volume assessment and nutrient modeling.

### Content of the service

The service produces a report with map attachments for the customer. The report includes a FINFA analysis for the desired area. The report has assessed the suitability of the area for various factors and a recommendation on possible fish farming sites. The report can be directly attached to the customer's environmental application. In addition to spatial data analysis, it is possible to include a production volume estimate for the site in the service. The production volume estimate is based on the production volumes allocated to existing plants as well as the environmental conditions of the site. In addition it is possible to make a preliminary assessment of good locations based on nutrient load, to which more detailed nutrient load models can be added based on the production volume estimate. The modeling is produced, for example, by the Finnish Environment Institute or another modeler.

### Why Luke?

Luke's experts have strong expertise in fish farming and factors that should be taken into account in

location management and environmental permit applications for fish farming and how the environmental impact of farming can be reduced.

In offshore farming the best way to reduce impacts is through location control; Luke has been developing a national location management plan and developing the FINFA tool for location management. Luke works closely with other experts, such as the Finnish Environment Institute, on how to assess environmental impacts, reduce nuisances and increase production. Luke is an independent body that provides research-based expert services.

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→ In FINFA, Finnish coastal waters are divided into 100 × 100 meter squares, for which a value between 1 and 5 has been calculated for each factor affecting the location of fish farming. This value describes the suitability of the area for fish farming for that factor, with areas receiving one (1) being the least suitable for fish farming and five (5) receiving the best. The final index value of each box consists of the total score of the factors, the maximum value of which is thus formed by multiplying the number of factors by five. The factors can thus be assessed separately and together so that, regionally, production can be directed to the best areas.

# FINFARMGIS

Several different factors have been considered simultaneously in identifying the best fish farming areas. Most of the factors are related to the minimization of the environmental impact of the facilities, but the analysis also takes into account economic and social aspects as also the other uses of the water area to optimize the total sustainability.

Factors that affect location include, for example

- depth of sea area
- transparency of the maritime area
- sea area flow
- distance to underwater reefs in Natura 2000 sites
- distance to bird nesting islands in Natura 2000 sites
- distance to the peaks of underwater marine nature
- distance to existing point loaders at sea
- ecological status of water bodies
- functional distance to the beach
- holiday population density

The method also excludes areas where fish farming is not possible, for example national parks, conservation areas or shipping lanes.

