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## TOOL FACTSHEET



### **Tool name**

AquaSpace Tool

### **Tool type**

Tool (Arc GIS AddIn)

### **Short description of the tool**

The AquaSpace Tool is one of the first Geographic Information System (GIS)-based planning tools empowering an integrated assessment and mapping of 30 indicators reflecting economic, environmental, inter-sectorial and socio-cultural risks and opportunities for proposed aquaculture systems. The GIS AddIn is an open source product and builds in the prospective use of open source datasets at a European scale, hence aiming to improve reproducibility and collaboration in aquaculture science and research. Tool outputs comprise detailed reports and graphics allowing key stakeholders such as marine planners or licensing authorities to evaluate and communicate alternative planning scenarios and to take more informed decisions.

### **Source (where/ link)**

<https://gdi.thuenen.de/geoserver/sf/www/aqspce.html>

### **Licence cost or other type of costs (e.g. maintenance)**

The AquaSpace Tool is free of charge.

ESRI ArcGIS Desktop Basic license (10.3.1 or higher): \$1,500 for a single use license / \$3,500 for concurrent / \$800 for annual subscription.

### **General requirements (technical and input data)**

Operating System: Microsoft Windows 7, Windows 8/8.1 (32 or 64 bit) or Windows 10

Processor/CPU: 2.7 GHz Intel Core i5 processor or equivalent (4 cores) (hardware below/above will increase/decrease tool run times)

System RAM: 4 GB total minimum, 16 GB recommended

Windows Feature .NET Framework: .NET 4.6 Framework

Input data are provided (AquaSpace tool Geodatabase (GDB)) but can be replaced.

### **Management dimension for which the tool could be used**

- Policy / Management
- Environmental
- Economic / Market
- Other sectors



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### Main functionality

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Site identification | <input type="checkbox"/> Modelling                     |
| <input checked="" type="checkbox"/> Mapping             | <input type="checkbox"/> Stakeholder engagement        |
| <input checked="" type="checkbox"/> Economic analysis   | <input type="checkbox"/> Ecosystem services assessment |
| <input checked="" type="checkbox"/> Scenario analysis   | <input type="checkbox"/> Other: (Please specify)       |

### Fields of application (i.e. issue to be solved)

The tool allows for a spatially explicit and integrated assessment of indicators reflecting the economic, environmental, inter-sectorial and socio-cultural risks and opportunities for proposed aquaculture systems (shellfish and finfish) in marine areas. It supports the planning and management of sustainable aquaculture development and helps to reduce uncertainty around new investments.

### Circumstances in which it can be implemented (strength and opportunities)

The tool functionalities can facilitate trade-off discussions hence allowing key stakeholders (e.g. industry, marine planners, and licensing authorities) to take more informed (e.g. based on graphical representations), evidence-based decisions on proposed aquaculture developments and the associated opportunities and risks. The tool is an open source product and builds in the prospective use of open source datasets at a European scale, hence aiming to improve reproducibility and collaboration in aquaculture science and research. Tool settings can be changed individually and datasets can be replaced.

### Limitations

Although a link to Web Feature Service (WFS) datasets was envisaged to address up-front limited data availability, the response still needed a high amount of time loading the data, which slowed down tool performance. Therefore, the tool currently presents a static Geodatabase (GDB) and results do not fully satisfy real-world requirements for decision making as open data available are currently not comprehensive at EU extent while lacking of updates.

### Technical skills needed to operate the tool

The installation process requires a fair amount of ArcGIS usage skills. The application does not require any relevant computational skills.

### Background knowledge needed to implement the tool

Running the tool requires a minimum knowledge of (spatial) information on sectorial requirements (i.e. constraints, conflicts and synergies) and economic considerations (e.g. regional fuel costs or market prices).

### How can the tool contribute to the EAA

Please select the EAA steps that the tool can contribute:



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1.  Scoping
2.  The identification of issues and opportunities
3.  Prioritisation of issues
4.  Objectives
5.  Management actions
6.  Monitoring

### How can the tool contribute to the MSP

Please select the MSP steps that the tool can contribute:

1.  Define goals and objectives
2.  Gather data and define current conditions
3.  Identify issues, constraints, and future conditions
4.  Develop alternative management actions
5.  Evaluate alternative management actions
6.  Monitor and evaluate management actions
7.  Refine goals, objectives and management actions

### AquaSpace case studies in which it has been implemented

**Case study name:**

Basque Country SP; North Sea, GER; Multi EEZ Mediterranean, GRC; Scotland, UK; Northern Adriatic, IT

**Reference and link to case studies report:**

<http://www.aquaspace-h2020.eu/>



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### Other bibliographic references

Gimpel, A., Stelzenmüller, V., Töpsch, S., Brigolin, D., Galparsoro, I., Gubbins, M., Marba, N., et al. 2017. AquaSpace tool to support MSP. Thünen Institute, Hamburg and AquaSpace project (H2020 no. 633476), Oban. Deliverable 3.3. Pdf obtainable from [www.aquaspace-h2020.eu](http://www.aquaspace-h2020.eu)

impel, A., Stelzenmüller, V., Töpsch, S., Galparsoro, I., Gubbins, M., Miller, D., Murillas, A., Murray, A.G., Pinarbasi, K., Roca, G., and Watret, R. (2018). A GIS-based tool for an integrated assessment of spatial planning trade-offs with aquaculture. Science of the Total Environment. doi: 10.1016/j.scitotenv.2018.01.133

[www.msp-platform.eu/practices/aquaspace-tool-support-msp](http://www.msp-platform.eu/practices/aquaspace-tool-support-msp)

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