

Guidelines for environment-friendly and efficient vessel operation (eco navigation)

1. Competences

The boatmaster shall be able to consider economic and ecological aspects of the craft operation in order to use the craft efficiently and respect the environment.

In particular, the boatmaster shall be able to:

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
<p>1. apply awareness of the ecological stakes related to the operation of a craft on inland waterways;</p>	<ol style="list-style-type: none"> 1. Knowledge of basic statistic data on environmental performance of inland waterway transport. 2. Knowledge of general potential to reduce carbon footprint and emission of pollutants by eco-efficient vessel operation. 3. Ability to explain economic and ecological advantages of eco-efficient vessel operation to crew members, including possible savings in fuel consumption and vessel operation costs.
<p>2. demonstrate knowledge of the various optimisation potentials to improve the environmental performance of the craft involved;</p>	<ol style="list-style-type: none"> 1. Knowledge of the effects of the following factors on average fuel costs and/or energy requirement: craft category, frequently sailed operation areas, characteristics and dimensions of the inland waterway and of the craft, craft type, propulsion, amount of goods or passengers on board, duration of journey, speed, passage in curves, weather, water depth, currents, effect on bank, traffic situation, the applicable regulatory framework as well as the operational profile. 2. Ability to estimate effects of possible measures of vessel operation (steering, manoeuvring, defining course and speed, use of information technology, use of shore power etc.).
<p>3. apply measures to proactively and significantly reduce polluting emissions by reducing the fuel consumption of the craft;</p>	<ol style="list-style-type: none"> 1. Knowledge of options to reduce fuel consumption when sailing and stationary. 2. Ability to apply measures to reduce fuel consumption with a view to engine use and maintenance, craft speed, bow and stern waves induced by craft and craft position in waterway taking into account currents, including return currents and dynamic sinkage. 3. Ability to instruct crew to apply measures to reduce fuel consumption.

COLUMN 1 COMPETENCE	COLUMN 2 KNOWLEDGE AND SKILLS
4. control the various influencing factors on which direct action can be taken (without further intermediary action);	<ol style="list-style-type: none">1. Knowledge of various factors influencing fuel consumption.2. Knowledge of control tools and instruments allowing for immediate improvement of fuel consumption.3. Ability to control propulsion engines, dimensions of craft, sinkage and other parameters of craft operation that influence fuel consumption.
5. master the tools available on board to control and improve the craft's performance in terms of fuel consumption;	<ol style="list-style-type: none">1. Knowledge of tools and instruments available on board allowing to monitor and to improve fuel consumption.2. Ability to use tools and instruments to assess current fuel consumption.3. Ability to use tools and instruments to improve fuel consumption and communicate with crew and shore-based installations accordingly.
6. follow new tools and available technologies;	<ol style="list-style-type: none">1. Knowledge of new on board and shore-based tools and available technologies to reduce fuel consumption.2. Ability to use new on board and shore-based tools and available technologies to reduce fuel consumption.
7. train the use of new tools and available technologies whenever possible.	<ol style="list-style-type: none">1. Knowledge of available training tools as well as potential of alternative fuels for improving the environmental performance of inland waterway transport.2. Knowledge of new developments in terms of training tools and technologies including alternative fuels improving the environmental performance of inland waterway transport.3. Ability to pass on knowledge and train the use of available technology, new tools and alternative fuels whenever possible.

2. Technical requirements for simulators used for eco-navigation

A simulator used for training should be in line with the ES-QIN standards for approved vessel handling simulators.
