Work Group #4: Sustainable Marine Fuels

Deliverable 3.1 Report Review Template

1. Report title	**Factsheet Marine Biofuels**
2. Publication date	2017
3. Author	European Technology and Innovation Platform (ETIP) Bioenergy ETIP is an industry-led stakeholder forum and develops research and innovation agendas as well as roadmaps for action at EU and national level.
4. Client (organization and type of organization, specifying private/commercial/public; research institute/interest group etc.)	n/a
5. Context of study (e.g. project in the context of which report is published or titles of other reports if part of a series)	
6. Length (pages)	2
7. Link (or where to get if not available online)	https://sustainableworldports.org/wp-content/uploads/ETIP_2017_Factsheet-marine-biofuels-report.pdf
8. Sector coverage	Maritime shipping

9. Main aim of the study	Main aim of the factsheet is to provide a high-level overview of marine biofuels with regards to the different types and production technologies, the technology readiness of the fuels and the barriers to their use.
10. Methodology	
11. Topic(s) and indication of the level of detail For example: • System Description - *A description of the full marine energy system.* • System Components - *A description of all the components.* • Infrastructure requirements for new fuels • Applicability - *which of the new fuels are expected to replace existing fuels?*	The following topics are covered in the study: • Marine engines – a description of the types of marine engines (low level of detail) • Biofuel production technologies - an overview of the different biofuel production technologies (low level of detail) • Barriers for biofuels – a description of the barriers (low level of detail)
12. What are the main conclusions from the report?	Biofuels contain little or no sulfur and could therefore be used in emission control areas. However, there are still multiple barriers to the deployment of marine biofuels.
13. What fuel/energy type(s) are discussed in the report and in what level of detail? For example: • Fuel description e.g. type, energy density, specific energy density, flash point, boiling point, fire point, flammability limits, hazards	The following fuel/energy types are presented in the factsheet: • SVO • Biodiesel (FAME) • Renewable diesel • Ethanol • Butanol • Lignin diesel oil • Upgraded pyrolysis oil • Upgraded bio-oil • Methane

	• Methanol • DME • FT-Diesel For each of these fuel types the following parameters are mentioned: • Feedstock • Processing • Fuel precursor • Processing
14. What environmental aspects does the report consider? E.g. Air quality emissions, climate change emissions (GHG + BC), other (for example terrestrial or underwater noise, water quality, emergency releases, fugitive emissions, odour, water resources, mining)	The factsheet focuses on marine biofuels due to their low sulphur emissions and their potential use in ECAs.
15. Does the report consider exhaust emissions only, or life-cycle, or both (or some other range of emissions)?	The report considers exhaust emissions only.
16. If determined in the report, what are the emission rates/factors by pollutant? NOx, SOx, PM10, PM2.5, ultra fine PM, VOC, NH3, GHGs, Black carbon, and any others e.g. that may be unique to the fuel/energy.	These are not determined in the report.
17. Does the report discuss barriers and opportunities for ships to use the fuel(s)/energy? Does the report identify the	The report discusses barriers for ships to use marine biofuels, namely: • high prices • insufficient logistic support at ports

maturity level of the fuel on a regional or global scale with respect to use by vessels?	• limited expertise in shipping sector • lack of long term fuel test data • reduced cargo space • safety requirements No opportunities are explicitly discussed. The maturity levels of the different biofuel production processes are sketched on a high-level.
18. Does the report discuss barriers and opportunities for ports to provide the fuel(s)/energy? Does the report identify the maturity level of the fuel on a regional or global scale with respect to provision by ports?	This is not discussed in the factsheet.
19. Does the report include capital and operating cost estimates for the ship and/or land-side?	This is not discussed in the factsheet.
20. When are the fuel(s)/energy expected to be at a demonstration stage vs. commercialization? For example: • Technology Readiness Level of the system - *Estimated maturity of the system technology* • On Board Safety Readiness Level of the system - *Estimated maturity of the risk mitigations on board (on a scale of 1-9)* • External Safety Readiness Level of the system - *Estimated maturity of the risk mitigations for bunker operations (on a scale of 1-9)*	The technology readiness level is identified for the different fuels, but without details or specifics.

21. Are the fuels suitable for short and/or long (trans-oceanic) voyages?	This is not specified in the study.
22. Does the report identify/discuss potential issues around community acceptance for this fuel, or potential social/community impacts associated with the system?	This is not specified in the study.