



Work Group #4: Sustainable Marine Fuels

Deliverable 3.1 Report Review Template

1. Report title	Clean Maritime Plan
2. Publication date	July 2019
3. Author	Department for Transport of the UK
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)	The Clean Maritime Plan is related to the strategic vision 'Maritime 2050: Navigating the Future', which was published in January 2019.
6. Length (pages)	60
7. Link (or where to get if not available online)	https://sustainableworldports.org/wp-content/uploads/Department-for-Transport_2019_Clean-Maritime-Plan-report.pdf
8. Sector coverage	Maritime shipping
9. Main aim of the study	The Clean Maritime Plan, which can be considered the UK's National Action Plan on shipping emissions, is a roadmap for the strategic vision 'Maritime 2050', setting out in more detail how the UK government sees the UK's transition to a future of zero emission shipping.
10. Methodology	The study presents numerous policy ambitions formulated by the Department for Transport and other UK governmental bodies.

<p>11. Topic(s) and indication of the level of detail For example:</p> <ul style="list-style-type: none"> • System Description - <i>A description of the full marine energy system.</i> • System Components - <i>A description of all the components.</i> • Infrastructure requirements for new fuels • Applicability - <i>which of the new fuels are expected to replace existing fuels?</i> 	<p>The Clean Action Plan is divided into the following chapters :</p> <ul style="list-style-type: none"> • The ‘The Case for Action’ chapter gives an overview of the UK maritime shipping sector, its emissions, existing emission policies, emission reduction options, and the according market opportunities for the UK. • The ‘Our approach’ chapter sketches the political process the Clean Action Plan is part of. • In the chapters ‘Economics’, ‘Infrastructure’, ‘Innovation’, and ‘Regulation’ governmental commitments are specified and explained. • The table on pages 48 and 49 provides an overview.
<p>12. What are the main conclusions from the report?</p>	<p>The transition to clean maritime shipping is expected to be challenging for all stakeholders, but is also seen as a market opportunity for the UK.</p>
<p>13. What fuel/energy type(s) are discussed in the report and in what level of detail? For example:</p> <ul style="list-style-type: none"> • Fuel description e.g. type, energy density, specific energy density, flash point, boiling point, fire point, flammability limits, hazards 	<p>Figure 2 and Table 1 give a high-level overview of the following technologies and fuels that are relevant for a pathway to zero-emission shipping, specifying energy sources, production conversion technologies and onboard technologies:</p> <ul style="list-style-type: none"> • Alternative fuels: Methanol, ammonia, hydrogen, biofuels • Non-fuel propulsion: (hybrid) electric propulsion, shore power, wind propulsion, solar • Energy efficiency options
<p>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)</p>	<p>The report considers both greenhouse gas emissions and air pollution of UK domestic and international maritime shipping.</p>



<p>15. Does the report consider exhaust emissions only, or life-cycle, or both (or some other range of emissions)?</p>	<p>The Clean Maritime Plan stresses that it is important to consider lifecycle emissions, but does not provide an estimation of lifecycle emissions.</p>
<p>16. If determined in the report, what are the emission rates/factors by pollutant? NO_x, SO_x, PM₁₀, PM_{2.5}, ultra fine PM, VOC, NH₃, GHGs, Black carbon, and any others e.g. that may be unique to the fuel/energy.</p>	<p>Not specified in report.</p>
<p>17. Does the report discuss barriers and opportunities for ships to use the fuel(s)/energy? Does the report identify the maturity level of the fuel on a regional or global scale with respect to use by vessels?</p>	<p>The report discusses multiple barriers and opportunities for ships to use the fuel(s)/energy.</p> <p>The report does not explicitly identify the maturity level of the fuel(s)/energy with respect to use by ships.</p>
<p>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?</p>	<p>The report discusses multiple barriers and opportunities for ports to provide the fuel(s)/energy.</p> <p>For port electrification, the following barriers are explicitly listed:</p> <ul style="list-style-type: none"> • split incentives to invest and coordination failures between ports and the shipping industry; • imperfect information on abatement options • existing infrastructure and onboard technologies • the cost of capital • regulatory constraints <p>The report does not explicitly identify the maturity level of the fuel(s)/energy with respect to provision by ports.</p>
<p>19. Does the report include capital and operating cost estimates for the ship and/or land-side?</p>	<p>Not specified in report.</p>
<p>20. When are the fuel(s)/energy expected to be at a demonstration stage vs. commercialization? For example:</p>	<p>Not specified in report.</p>



<ul style="list-style-type: none"> • Technology Readiness Level of the system - <i>Estimated maturity of the system technology</i> • On Board Safety Readiness Level of the system - <i>Estimated maturity of the risk mitigations on board (on a scale of 1-9)</i> • External Safety Readiness Level of the system - <i>Estimated maturity of the risk mitigations for bunker operations (on a scale of 1-9)</i> 	
<p>21. Are the fuels suitable for short and/or long (trans-oceanic) voyages?</p>	<p>Not specified in report.</p>
<p>22. Does the report identify/discuss potential issues around community acceptance for this fuel, or potential social/community impacts associated with the system?</p>	<p>Not specified in report.</p>