AAE-E3100 – Energy Carriers D, Period I, 2022
Learning Exercise 6 [36p.]

The exercise is to be completed independently (please do not copy paste from other students or from other sources) and returned as a single pdf report with presentation of used equations in possible calculations.

Name the uploaded pdf-file so that it tells the course, learning exercise number and your name, like AAE-E3100_LE6_Lastname.pdf

Include your name and student number on the first page of the report. Avoid too long answers. Figures and graphs are preferred when applicable. The time for answering this exercise is estimated not to exceed 8 hours if you have attended lectures.

Maximum number of points of the LE6 is 36p. Deadline: 23.10 at 23:55.

Exercise **36 points**

a) Using the End-Use Analyzer (EUA tool, ADVANCEFUEL - Tools), please investigate the changes in fuel consumption and TTW CO_2 emissions that occur when changing from a conventional fuel to using an alternative fuel. Choose one candidate for road, marine and aviation use (3 candidates in total) and, if available, report the changes in fuel consumption and emissions for different shares of these alternative fuels blended with the conventional reference fuels. **12 points**

b) Choose one of the 3 fuels in task a) (road, marine or aviation fuel) and reflect on its current and future role as an energy carrier. Consider the potential limitations for its growth (you may for instance include legal, technical, environmental, and economic challenges). (Max. 200 words) **12 points**

c) Choose one of the 3 fuels in task a) (road, marine or aviation fuel) and find a life cycle assessment on its GHG emissions with a comparison against a conventional fuel. Which methods/assumptions were used in the life cycle assessment and how does the alternative fuel compare to its conventional counterpart? **12 points**

2 Feedback of the week (no impact on grading)

3 Hours spent on learning exercise (no impact on grading)