

Abstract

This thesis investigated how the environmental impact can be reduced by reducing CO₂ emissions from ships during the piloted route on the Scheldt. Ship emissions consist of harmful substances such as various greenhouse gases: carbon dioxides, methane, nitrogen oxides and sulfur oxides. Ship emissions increase the share of these greenhouse gases in the atmosphere. These gases have adverse effects on the climate, human and the biological ecosystems. For example, the substances contribute to global warming, the rise in the sea temperature, the rise of sea levels, the weather becoming more extreme and the spread of diseases such as malaria.

Various models were studied to quantify the effect of slow steaming on shorter routes, in particular the piloted Scheldt route. When applying the data from the current research, it was determined that the best results were obtained when using the models of Corbett et al. (2009) and Chang et al (2014). Those showed that a 10% deceleration compared to manoeuvring speed corresponds to a 19% reduction in fuel consumption. A 30% deceleration compared to manoeuvring speed corresponds to a 51% reduction in fuel consumption. A deceleration that is half slower compared to the manoeuvring speed corresponds to a 75% reduction in fuel consumption. The largest reduction which occurs when the speed is halved, is 22 tons of fuel. This corresponds to 70 tons of CO₂ reduction, a reduction of 75%. The effect of slow steaming is therefore indeed significant. So an effective contribution can be made during pilotage based on choices about speed made during the piloted process.