Being green on sulphur: Targets, measures and side-effects - DTU Orbit (09/11/2017)

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Green House Gas (GHG) emissions are not the only emissions of concern to the international transport community. SOx emissions are non-GHG emissions that are caused by the presence of sulphur in the fuel. As the maximum percentage of sulphur in automotive and aviation fuels is strictly regulated in most countries around the world, much of the attention in recent years has focused on maritime transport. The attention mainly stems from the fact that in marine fuels the percentage of sulphur can be very high: it can be as high as 4.5 % in Heavy Fuel Oil (HFO), which is the fuel typically used in all deep-sea trades. Even though the amounts of SOx produced by ships are substantially lower than CO2, SOx emissions are highly undesirable as they cause acid rain and undesirable health effects in humans and animals. To mitigate these adverse environmental effects, the international shipping community has taken substantial policy measures. With the introduction of new limits for the content of sulphur in marine fuels in Northern European and North American sea areas, short-sea companies operating in these areas will face substantial additional cost. As of 1/1/2015, international regulations stipulate, among other things, a 0.1%limit in the sulphur content of marine fuels, or equivalent measures limiting the percent of SOx emissions to the same amount. As low-sulphur fuel is substantially more expensive than HFO, there is little or no room within these companies current margins to absorb such additional cost, and thus significant price increases must be expected. Unlike its deep-sea counterpart, in short-sea shipping such a freight rate increase may induce shippers to use landbased alternatives (mainly road). A reverse shift of cargo would go against the EU policy to shift traffic from land to sea to reduce congestion, and might ultimately (under certain circumstances) increase the overall level of CO2 emissions along the entire supply chain. The purpose of this chapter is to investigate the potential effect of sulphur regulations on the share of cargo transported by the waterborne mode vis-à-vis land-based alternatives.

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Green Transportation Logistics. The Quest for Win-Win Solutions. by. series International Series in Operations Research & Management Science #226.Â Throughout, the book pursues the goal of â€œwin-winâ€ solutions and analyzes the phenomenon of â€œpush-down, pop-upâ€, wherein a change in one aspect of a problem can cause another troubling aspect to arise. For example, speed reduction in maritime transportation can reduce emissions and fuel costs, but could require additional ships and could raise in-transit inventory costs. Or, regulations to reduce sulphur emissions may ultimately increase CO2 elsewhere in the supply chain. The book takes stock at the various tradeoffs that are at stake in the goal of greening the supply chain and looks at where Win-win solutions are sought, but they will not necessarily be possible. The chapter presents some basics, discusses the main trade-offs and also examines combined speed and route optimization problems. Some examples are finally presented so as to highlight the main issues that are at play.Â By green maritime logistics we mean achieving an acceptable environmental performance of the maritime transport logistical supply chain while at the same time respecting traditional economic criteria. In this paper the environmental focus is on maritime emissions. Achieving such goal may involve several trade-offs, and win-win solutions are typically sought. However, finding these solutions may be more difficult than may appear at first glance. The essence of a term "green logistics" is that the logistics activities should be based on green technologies, i.e. technologies which do not cause or cause minimal harm to the environment. According to greenlogistics.org (2014), 'logistics is the integrated management of all the activities required to move products through the supply chain'. For a typical product this supply chain extends from a raw material source through the production and distribution system to the point of consumption and the associated reverse logistics (Greenlogistics. org, 2014).Â Major priority Important, but not in today's economy Only for 'win-win' (i.e. cost reduction) Only to meet regulatory demands Not a priority. 48. â„¢ 15. of host publication: Green Transportation Logistics: The Quest for Win-Win Solutions. HN Psaraftis, CA Kontovas. peer-reviewâ€º Book chapterâ€“Annual report year: 2015 226, 299-349, 2015. 44*. 2015. A multiple ship routing and speed optimization problem under time, cost and environmental objectives. M Wen, D Pacino, CA Kontovas, HN Psaraftis.