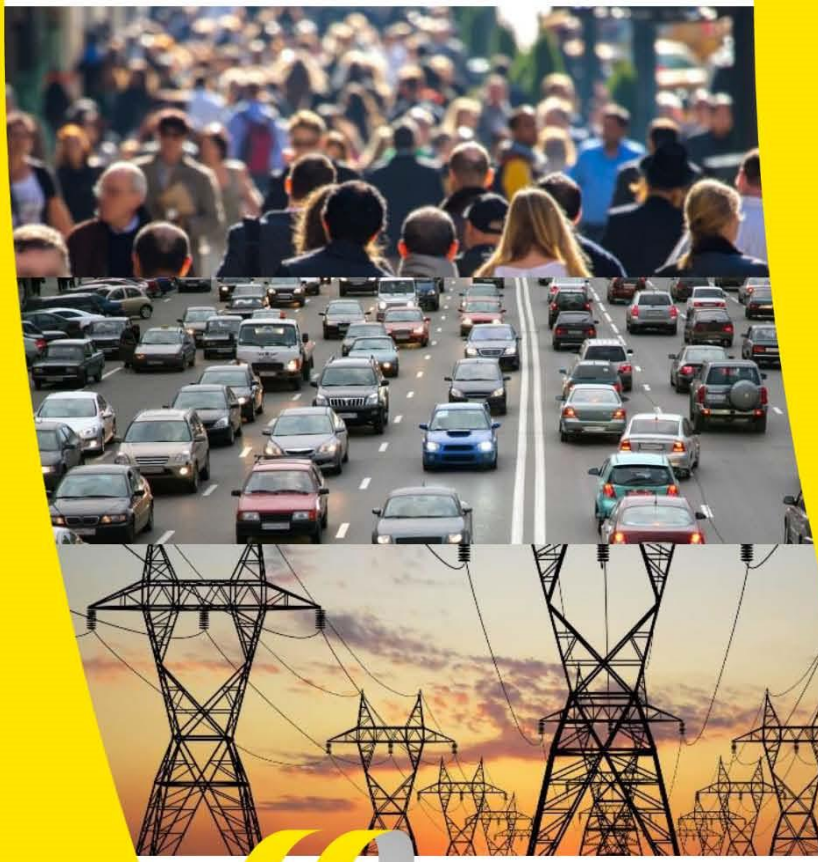
The share of aviation and maritime transport in the EU's transport related fossil fuel demand



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The share of aviation and maritime transport in the EU's transport related fossil fuel demand

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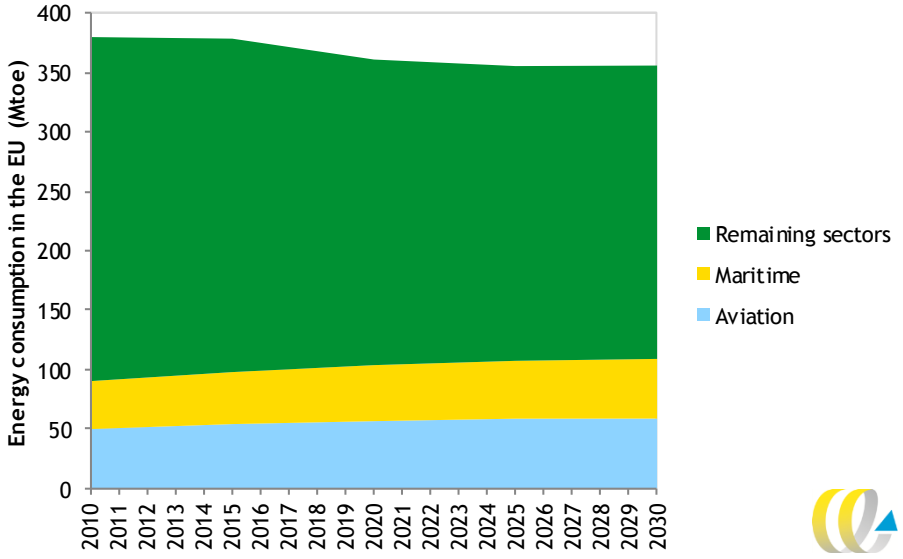
1 The share of aviation and maritime transport in the EU's transport related fossil fuel demand

1.1 Estimates up to 2030

This report analyses the demand for liquid fossil fuels in the EU transport sector over the years 2010 to 2030, notably for the sectors maritime transport and aviation. The transport sector includes private cars, vans, trucks, public transport and motorcycles, rail, aviation, inland navigation and maritime transport[1]. For aviation and maritime transport, both intra-EU and intercontinental movements with an EU country as origin are included[2].
The estimations are based on figures published in the "EU energy transport and GHG trends to 2050 - reference scenario for 2013", that accompanied the 2030 climate package Impact Assessment of the European Commission[3], as well as on the analysis underlying the European Commission's Impact Assessment on MRV regulation for the maritime transport sector[4].

Figure 1 Estimates of EU liquid fossil fuel consumption in the transport sector



Source: Own calculations based on (EC, 2013), Ricardo-AEA (2013a, 2013b), (IMO, 2015) (Statistics Canada, 2015).

Figure 1 splits the demand for liquid fossil fuels into the sectors maritime transport, aviation and remaining sectors. The figure shows that the aviation sector has a consistently *rising* liquid fossil fuel demand, starting at 50 Mtoe energy equivalents[5] in 2010 and ending at 59 Mtoe in 2030.

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1 Only energy demand sourced by liquid fossil fuels (gasoline, diesel, jet fuel, fuel oil and heavy fuel oil) is included in the analysis.

2 Inbound journeys are thus excluded.

3 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014SC0015&from=EN

4 http://ec.europa.eu/clima/policies/transport/shipping/docs/swd_2013_237_1_en.pdf

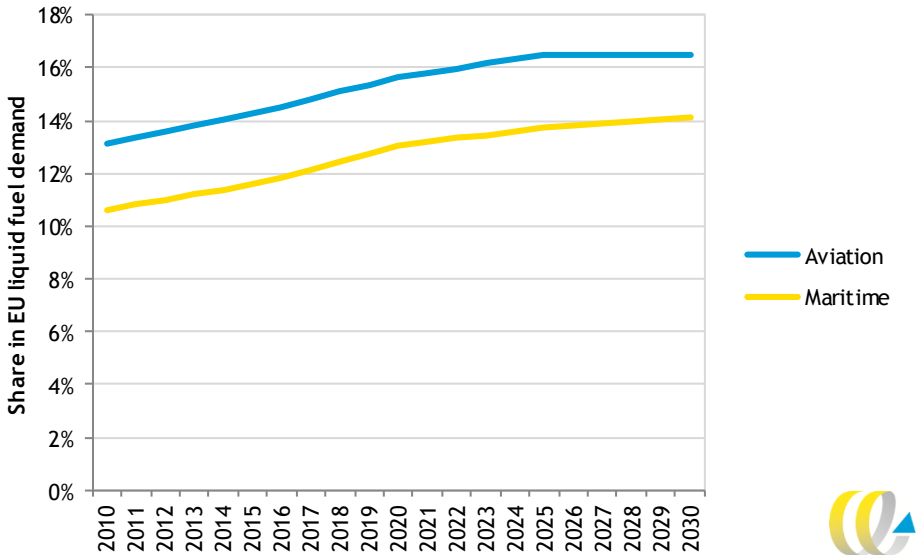
5 1 Mtoe is equivalent to 7.14 million barrels of oil.

The maritime transport sector is characterised by a *rising* liquid fossil fuel demand as well, starting at a value of 40 Mtoe in 2010 and rising to a value of 50 Mtoe in 2030.
The demand for liquid fossil fuels for the remaining sectors (public road transport, private cars and motorcycles, rail and inland navigation) will *fall* from 290 Mtoe in 2010 to 247 Mtoe in 2030.

Total demand for liquid fossil fuels related to the EU transport sector is estimated to decline over the years 2010 to 2030. In 2010 its volume is estimated at 380 Mtoe energy equivalents. In 2030 this volume is 356 Mtoe.

Figure 2 displays the evolution of the share of the demand for liquid fossil fuel by the aviation and maritime transport sector relative to liquid fossil fuel demand for the EU transport sector as a whole.

Figure 2 Estimates of the share of EU transport related liquid fossil fuel demand for aviation and maritime transport



Source: Own calculations based on (EC, 2013), Ricardo-AEA (2013a, 2013b), (IMO, 2015) (Statistics Canada, 2015).

The figure illustrates that the share of the maritime transport sector as part of the EU demand for liquid fossil fuels rises consistently over the years, from 11% in 2010 to 14% in 2030. The share of aviation rises from 13% in 2010 to 16% in 2030.

1.2 Methodology

Data for the fuel consumption in the aviation sector are taken from EC (2013), p. 91 and converted to Mtoe. The efficiency gains in the sector are estimated at around 1.5% per annum by the EC (2013). These efficiency gains are incorporated in the graphs presented above.
Aviation in this report is modelled in the scope covered by EUROSTAT and therefore PRIMES based on fuels sold in the EU, which corresponds to domestic and outgoing international flights only (p. 32).

Data for the fuel consumption in the maritime transport sector are based on (Ricardo-AEA, 2013a and b). The values from Ricardo-AEA (2013 a, p. 30) cover domestic routes, intra EU routes, incoming journeys to the EU and outgoing journeys from the EU. We have removed the emissions associated with the incoming journeys to the EU using data from Ricardo-AEA (2013b, p. 63), from which we could calculate the share of domestic routes, intra EU routes and EU outbound routes in total aviation emissions. The mass-conversion factor from CO_2 emissions to heavy fuel oil (HFO) is taken from IMO (2015), p. 105. Conversion factors to convert HFO mass to energy equivalents (Mtoe) are taken from Statistics Canada (2015). Ricardo- AEA (2013a) estimates the efficiency gains at 1% per annum. This is the combined gain due to the EEDI, economies of scale and fuel switching improvements. These efficiency gains are incorporated in the graphs presented above.

Data for the fuel consumption in the EU covering all transport sectors are the sum of the values for all sectors taken from EC (2013), p. 87 and the maritime transport fuel consumption, adjusted for the share of liquid fossil fuel consumption in total energy consumption of the transport sector (EC, 2013, p. 42). All figures are converted to Mtoe.

2 References

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Annex A Data behind the figures

A.1 Data behind Figure 1

Year	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30
Aviation	50	51	51	52	53	54	54	55	55	56	56	57	57	58	58	59	59	59	59	59	59
Maritime	40	41	42	42	43	44	44	45	46	46	47	47	48	48	48	49	49	49	50	50	50
Remaining sectors	290	288	286	284	282	281	276	271	267	262	257	255	254	252	250	248	248	248	247	247	247

A.2 Data behind Figure 2

Year	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30
Aviation	13%	13%	14%	14%	14%	14%	15%	15%	15%	15%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Maritime	11%	11%	11%	11%	11%	12%	12%	12%	12%	13%	13%	13%	13%	13%	14%	14%	14%	14%	14%	14%	14%