



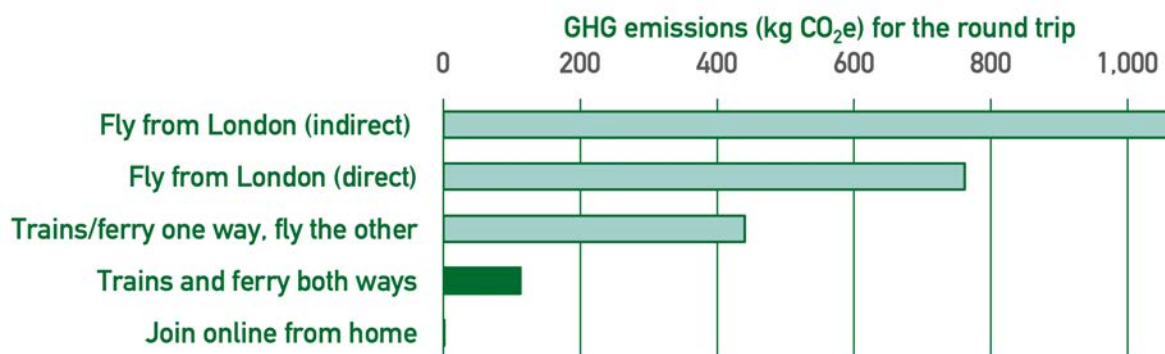
## ISAE Greener Travel Guide: Tallinn 2023

In order for the Society to try to reduce the carbon footprint of our activities, we are asking members to consider using greener travel options if they attend our face-to-face meetings. This document gives some advice on greener options for travel to our next international congress in Tallinn, Estonia.

### Starting in Europe

For those starting their journey in Europe (with London used for the figures quoted):

- If getting to Tallinn without flying is not a viable option, try to book a **direct flight** to Tallinn. This can reduce your emissions by about 30% compared with indirect flights i.e. where you change planes at an intermediate airport. Tallinn airport's direct destinations are listed on their website: <https://www.tallinn-airport.ee/en/flight-info/destinations/>
- If making the whole trip without flying is not viable, consider the **no-fly option one way** and then fly direct the other way. This can reduce your emissions by over 40% compared with flying direct both ways.
- If attending in person, making the whole journey via the **no-fly option** (i.e. trains and the ferry) can reduce your travel emissions by **over 90%** (see Figure 1).



**Figure 1.** The greenhouse gas (GHG) emissions associated with different ways of participating in the ISAE 2023 congress for a delegate based in London, United Kingdom.

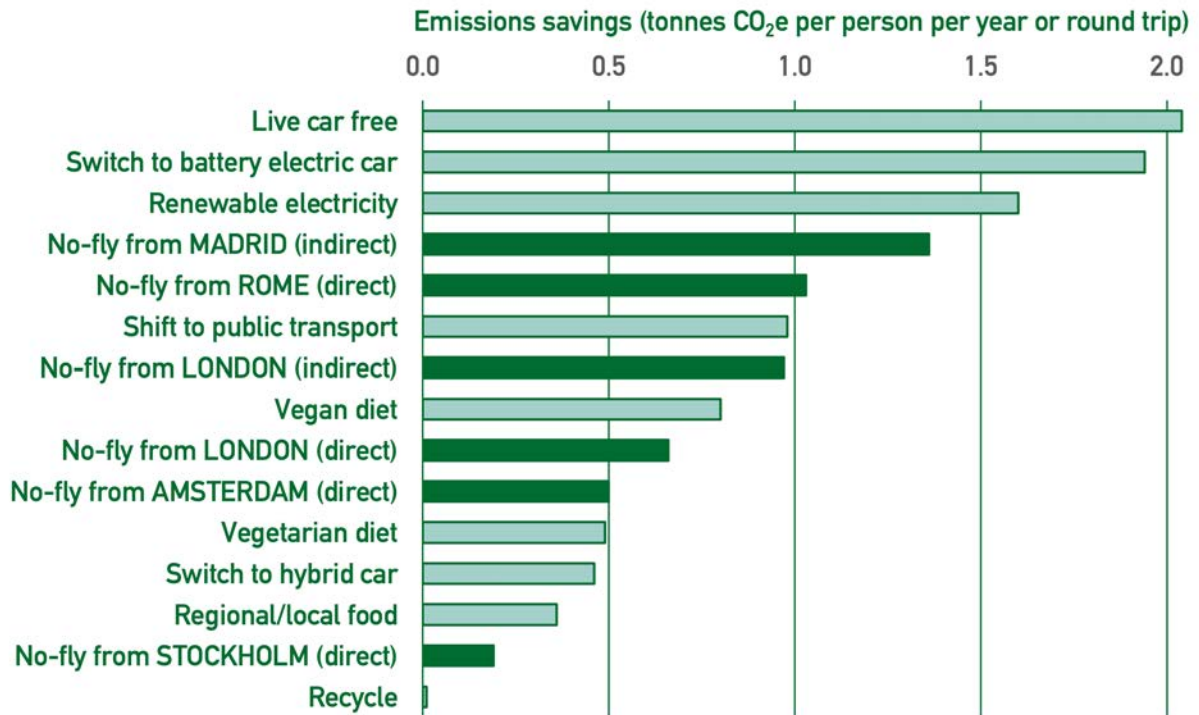
### Starting outside Europe

For those starting their journey outside Europe:

- Unless you are willing to travel across the oceans via a cargo ship, travel to Tallinn from outside Europe will involve at least one flight each way.
- There do not appear to be any direct flights to Tallinn from outside Europe (other than charter flights from Egypt).
- One way to reduce the carbon footprint of your journey would be to take a direct flight to city in Europe near Tallinn (e.g. Helsinki or Stockholm) or one of the major European air hubs (e.g. Frankfurt, Amsterdam etc.) and then **finish your journey by train and/or ferry**.
- Avoiding the final intra-European flight both ways could save about 0.5 tonne of GHG emissions (assuming your direct flight arrive/departs from Amsterdam or Frankfurt).
- Although this will add a 1-2 days to your journey, this could help you get over jetlag.

### Comparison with other carbon mitigation options

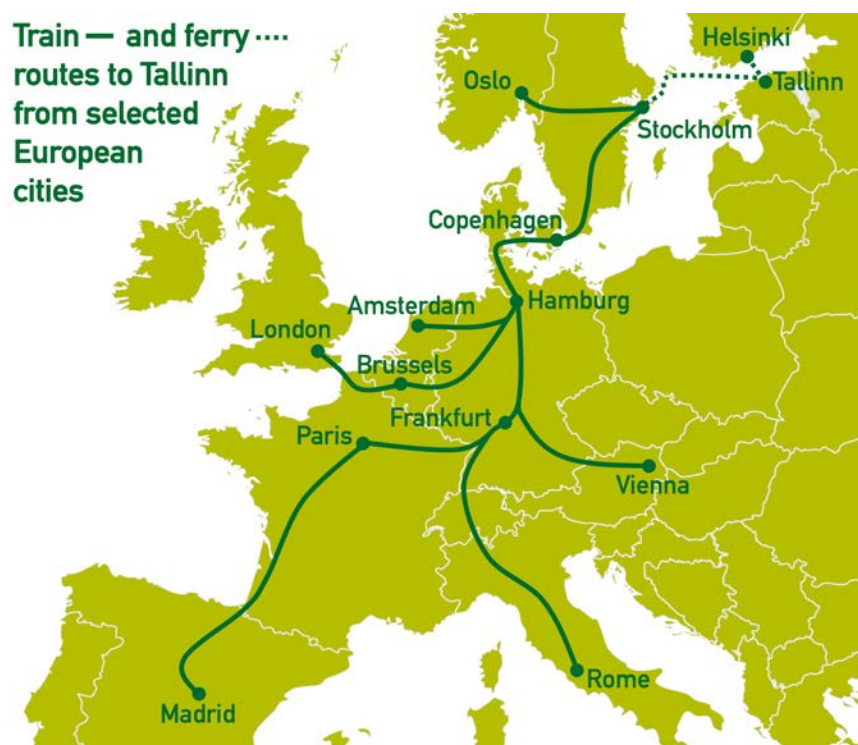
Figure 2 shows how the emissions saved by using the greener travel options given above compare with other actions an individual can take to reduce their carbon footprint. The reduction in your personal carbon footprint by avoiding flying to Tallinn this summer is similar to the savings associated with some major lifestyle changes e.g. shifting to public transport, a meat eater going vegan or buying only regional/local food.



**Figure 2.** A comparison of the emissions saved by taking the no-fly option to travel to Tallinn from five European cities (dark green bars) compared to other personal mitigation options (light green bars showing median emissions reduction values of selected actions on a per person per year basis taken from Ivanova *et al.* 2020 *Environ. Res. Lett.* 15 093001 <https://doi.org/10.1088/1748-9326/ab8589>).

### No-fly travel routes to Tallinn

The excellent Seat 61 website ([www.seat61.com](http://www.seat61.com)) gives lots of advice for travel across Europe without flying. The website gives three possible routes to get to Tallinn from Western Europe. Of these, getting the train (via Germany and Denmark) to Stockholm and then an overnight ferry to Tallinn appears to be the greenest for those in western and central Europe (see [The carbon footprint of different routes to Tallinn](#) on page 4). Train and ferry routes from selected European cities to Tallinn are shown in Figure 3.



**Figure 3.** A map showing the train and ferry routes to Tallinn from selected European cities.

Finnish delegates can take a short ferry trip from Helsinki direct to Tallinn. For the rest of Scandinavia, the journey would involve a train to Stockholm followed by an overnight ferry to Tallinn. For the rest of western, central and southern Europe, the aim would be to arrive in Hamburg by train no later than the evening of 29<sup>th</sup> July. There is currently\* a sleeper train that departs Hamburg Altona station at 21:19, arriving in Stockholm the next morning. After a day exploring Stockholm, the ferry for Tallinn departs at 17:30 and arrives in Tallinn the next morning. For delegates travelling from eastern Europe, the overland route via Poland, Lithuania and Latvia will probably be quicker, cheaper and, at some point, greener. EcoPassenger does not appear to cover travel east of Warsaw, so it is difficult to calculate the carbon footprint of this travel option. However, from anywhere in Europe, it should still be a lot greener traveling by train and coach rather than flying.

\*It is possible that train and ferry times will change, so please check timings at the time of booking, and book well in advance if possible.

### More details on these carbon emissions estimates

For travel within Europe, the EcoPassenger website ([www.ecopassenger.org](http://www.ecopassenger.org)) provides a sophisticated carbon footprint calculator and travel planner that allows different transport options to be compared. For travel outside Europe, [CarbonFootprint.com](http://CarbonFootprint.com) allows the CO<sub>2</sub>e emissions for flights between various airports around the world to be calculated. Note that these two websites will give different estimates for the same journey in Europe. This is because the EcoPassenger websites take a far more sophisticated approach to calculating the emissions estimates.

Unfortunately, EcoPassenger does not include Tallinn as a destination, and also does not include the emissions associated with travel on a ferry. However, we can use a nearby destination that is included in EcoPassenger (i.e. Helsinki) to estimate the emissions associated with flying to Tallinn. To estimate the GHG emissions associated with the no-fly option, we can use EcoPassenger to get the figures for rail travel to Stockholm, and then add on the emissions associated with the ferry. One of the Baltic ferry operators (Tallink) gives emissions figures for their Stockholm-Helsinki route (20-24 kg CO<sub>2</sub>e), and the Stockholm-Tallin route looks to be slightly shorter, so we can use 22 kg CO<sub>2</sub>e for the ferry journey (although not stated, it is assumed this is one way). Using this approach, we can calculate the carbon savings associated with the no-fly journey compared with flying starting from various cities across Europe, and these are presented in table 1 below.

Starting city and flight route	Greenhouse Gas Emissions (kg CO <sub>2</sub> e per passenger)				
	Flying emissions (to Helsinki)	Train emissions (to Stockholm)	Ferry emissions (to Tallinn)	Total "no-fly" emissions	Emissions savings (round trip)
Stockholm (direct flight)	118.1 kg	0.0 kg	22 kg	22.0 kg	192 kg
Copenhagen (direct flight)	255.9 kg	0.6 kg	22 kg	22.6 kg	467 kg
Frankfurt (direct flight)	320.7 kg	40.6 kg	22 kg	62.6 kg	516 kg
Amsterdam (direct flight)	317.7 kg	44.0 kg	22 kg	66.0 kg	503 kg
Berlin (direct flight)	236.5 kg	35.2 kg	22 kg	57.2 kg	359 kg
Vienna (direct flight)	305.8 kg	42.4 kg	22 kg	64.4 kg	482 kg
Paris (direct flight)	393.6 kg	35.8 kg	22 kg	57.8 kg	671 kg
London (fly direct one way, train/ferry the other)	383.6 kg	34.3 kg	22 kg	56.3 kg	327 kg
London (direct flight)	383.6 kg	34.3 kg	22 kg	56.3 kg	655 kg
London (indirect flights via Copenhagen)	534.2 kg	34.3 kg	22 kg	56.3 kg	956 kg
Rome (direct flight)	514.7 kg	60.2 kg	22 kg	82.2 kg	865 kg
Madrid (indirect flights via Barcelona)	683.2 kg	45.6 kg	22 kg	67.6 kg	1231 kg

**Table 1.** A summary of the emissions saved by taking the no-fly option to travel to Tallinn compared with flying from eight European cities. Flying and train emissions are taken from the EcoPassenger website (using an average passenger load factor, including a radiative forcing 'climate factor' for flights and using the railways electricity generation 'mix including Green Certificates'). Emissions for the ferry are from the ISAE Greener Travel Guide: Tallinn 2023

Tallink website. The emissions figures are for one way journeys except the emissions savings which are for the round trip i.e. to and from Tallinn. Note that EcoPassenger takes passenger loading into account, so the website will give different emissions figures depending on the day and time of travel. However, emissions from flying are invariably a lot higher than those from travelling by train, ferry or coach.

### The carbon footprint of different routes to Tallinn

Seat 61 gives two other no-fly travel options to Tallinn. However, for delegates in western or central Europe, both of these produce more emissions than the route via Stockholm. The first alternative involves getting a ferry from Travemünde (near Lübeck, Germany) to Helsinki (Finland) and then another ferry from Helsinki to Tallinn. However, a return journey (Hamburg-Tallinn) using this option produces 165 kg CO<sub>2</sub>e (see table 2) compared with just 72 kg CO<sub>2</sub>e for the route via Stockholm. The second Seat 61 alternative to get to Tallinn is an all-overland option on trains and busses via Berlin, Warsaw, Vilnius and Riga. At the time of writing, EcoPassenger only covers travel to Warsaw, but the round-trip on a train from Hamburg to Warsaw alone produces 170 kg CO<sub>2</sub>e i.e. considerably more than the whole journey (including the ferry) via the Stockholm route. However, for many delegates in eastern Europe, the overland route will be greener, depending on how close you are to Tallinn. We have not determined exactly where this is, but making the return journey via coach overland from Warsaw to Tallinn produces an estimated 54 kg CO<sub>2</sub>e, much less than the 190 kg CO<sub>2</sub>e via the Stockholm route. In contrast, from Berlin, the Stockholm route still has lower emissions than the overland route (86 vs 158 kg CO<sub>2</sub>e for the return journey).

Travel mode, route and source for carbon emissions estimates	kgCO <sub>2</sub> e one way	
	Section	Total
Train Hamburg-Travemünde (EcoPassenger)	3.6	82.4
Ferry Travemünde-Helsinki <a href="https://www.finnlines.com/company/environment/commitments/">https://www.finnlines.com/company/environment/commitments/</a>	71	
Ferry Helsinki-Tallinn <a href="https://en.tallink.com/sustainability-and-environment">https://en.tallink.com/sustainability-and-environment</a>	7.8	

**Table 2.** Details of the emissions estimate calculations for the journey from Hamburg to Tallinn via the ferry from Travemünde.

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