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Aggtelek National Park Hungary July 2008
EuCan Visit Report

For two weeks at the beginning of July a group of us from Britain travelled to Hungary to participate in important Butterfly monitoring. As the trip was aiming to be as environmentally friendly as possible, travel by plane was out of the question so instead the group travelled by minibus and train. For the past few years I have been told by environmentalist and also by the media that air travel is far worse for the environment than any other forms of travel. However I would like to find out for myself that the total of 6 days travelling to and from Hungary in trains and a minibus was friendlier to the environment than spending a few hours in the air.

Our Carbon Footprint

The trip to Hungary was a great success. We were based in Szögliget in Aggtelek National Park and for two weeks worked with the Hungarians monitoring and surveying butterflies. Our aim was to identify interesting sites in the surrounding areas so the national park could purchase them allowing them to be maintained and managed. Also monitoring the butterflies in the National Park allowed us to see the impact of previous conservation work done by other EuCAN volunteers. And there was no shortage of butterflies. When we weren't wildlife watching on the hills we were under them in mines, caves and canyons. It is definitely the first time and most probably the last time I will ever eat lunch by torch light on picnic benches in the middle of a 5 hour long hike through a cave.

Everybody on the trip, as you would expect was of a similar mind set and cared about environmental issues and protecting the world we live in. However how much of a difference would it have made to avoid the days sitting on the minibus and the train and to have just hopped on a plane? But to be fair the train journey did allow opportunities to see other cities that would not have been possible on a plane; this was same also for the minibus, but replace cities with small dingy Belgium villages.

I take it for granted that what people tell me about air travel is true, but I, like probably so many others are ignorant to the actual impact of travelling on planes compared with more traditional forms of travel such as trains. It stands to reason that air travel uses more energy than other forms of travel as the entire plane and its contents has to be lifted off the ground and kept there, but the point of this report is to convince myself with all the possible evidence that I can find, that we did indeed reduce our carbon footprint.

As the group had to be split, due to the limited capacity of the minibus, each person's trip was different. Therefore I will use only my journey to base this report on. The outward journey consisted of 4 trains starting from London and stopping in Brussels, Koln, Munich and finishing in Budapest. The journey in total took around 24 hours which includes the time spent in each of the cities. The return journey was in the minibus and took a total 3 days camping in Germany and Belgium.

The internet will be my main source for this project. I will trawl the World Wide Web and try and put any data I find useful into the context of the report. I have not previously search for

carbon emissions from different types of vehicles and I have no idea whether I will be able to find anything useful at all.

Following the journey I took, I started from London. To note, I am not including the initial journey to get to London. From London we took the Eurostar to Brussels. According to the Eurostar website 'passengers who fly between London, Paris and Brussels generate ten times more emissions of the greenhouse gas carbon dioxide (CO₂) than travellers who go by rail'. And their figures would appear to back this up.

London to Brussels (Return)

Travel Type	kgCO ₂ per passenger per trip	gCO ₂ per passenger per km
Air (Heathrow)	160	219
Air (Gatwick)	222	322
Eurostar	18.3	24.3

http://www.eurostar.com/UK/uk/leisure/travel_information/before_you_go/Green_Eurostar.jsp

The next part of the journey took us through most of Germany to Munich stopping at Koln on the way. Getting the data for the Eurostar was quite easy but I have a feeling getting the data for this part of the journey may be much harder.

From google map I have found out that Brussels to Munich is about 600km as the crow flies. And using the carbon emissions calculator on Carbonify.com it tells me that this journey by train would produce 1.62 tons of CO₂ annually if I did it every month. This is all getting very complicated and none of it is telling me what I want. I will try and calculate the CO₂ emissions in kgCO₂ for a single journey. Therefore 1620kgCO₂ is emitted in twelve journeys, so for only one journey 135kgCO₂ is emitted. If you compare the 24.3gCO₂ produced per km by the Eurostar, it is easy to spot that the train used for this calculation is far less efficient, emitting a whopping 225gCO₂ every km. However the website does not tell us how many passengers were on the train, it could be assuming that I was the only passenger.

Brussels to Munich

Travel Type	kgCO ₂ per trip	gCO ₂ per km
Train	135	225

The last part of the journey was on a Hungarian sleeper from Munich to Budapest. Probably my most favourite part of the travelling. There were 4 of us plus 2 Italian girls in a cabin which could comfortably fit 2. But once we had manoeuvred our bags and lay down it was quite enjoyable.

I will have no hope of finding exact data for this part of the journey, so I will use the same calculation from before to work this journey out. The distance between these two destinations is 565km. I feel, due to the already large errors in the data used in this report, I can assume that the distance is 600km and use the data previously calculated.

Munich to Budapest

Travel Type	kgCO ₂ per trip	gCO ₂ per km
Train	135	225

Coming home we took a minibus from Budapest back to Salisbury. The distance, again using google, between these two locations is 1450km. Using Carbon Neutral's website it tells me that if we did this journey every week for a year we would produce 19.8 tons of CO₂. Therefore doing the same calculations as before I can work out that our CO₂ emission for one

trip was **380kgCO2**. This is 263gCO2 per km and we can divide this by the amount of passengers (7). So to put it into a readable format, the journey by minibus looks like this:

Budapest to Salisbury

Travel Type	kgCO2 per trip	gCO2 per person per km
Minibus	380	37

The Plane was far easier. I put London to Budapest Carbon emissions in to the search engine and chooseclimate.org gave me a very simple answer:
436 kg CO2

This works out, if Budapest and London are 1450km apart, to be **300.689gCO2 per km**
This is similar to the air travel emissions data by Eurostar and therefore we can assume that this figure represents one passenger on a full plane.

London to Budapest

Travel Type	kgCO2 per passenger per trip	gCO2 per passenger per km
Air	436	300

Ok we have all this data but it is pretty all over the place and hard to make anything of. The train data is the most confusing. The Eurostar stats I can say with confidence are the most reliable of any; the Brussels to Munich and Munich to Budapest journeys are a bit more dodgy. We are not told the number of passengers; the most obvious number would be 10 as this would bring the figure close to the Eurostar, but this is unrealistic. Maybe the Eurostar is 10 times more efficient than conventional trains, but again this seems an unrealistic number. Therefore I feel that taking the stats for the Eurostar and applying them to the whole journey will be more accurate. Now I can make a chart of the different forms of travel.

London to Budapest (One Way)

Travel Type	kgCO2 per passenger per trip	gCO2 per passenger per km
Train	34	24.3
Minibus	54	37
Air	436	300

This data is riddled with uncertain variables (number of passengers for example) and plenty of errors and assumptions, but even so it is clear to see that train and minibus travel are far more efficient than flying. And I am glad it has worked out like that, not just because if it hadn't I would be wondering what I had done wrong, but because it makes the whole journey not just more enjoyable than a plane journey but also more environmentally friendly. I would recommend travelling by train through Europe to anyone.

Thank you Nigel and Kathy for making it such a great trip. Also I think I might have stolen the idea of carbon emission off Jonathan, hope you don't mind!