

# meteoLCD Weblog

A weblog on climate, global change and climate measurements

« [TIR Lëtzebuerg 2016, the Rifkin report: conclusion](#)  
[The Ewringmann report on pump tourism \(part 1\)](#) »

## Greenhouse gas emissions from energy and transport (DE,FR,LU)

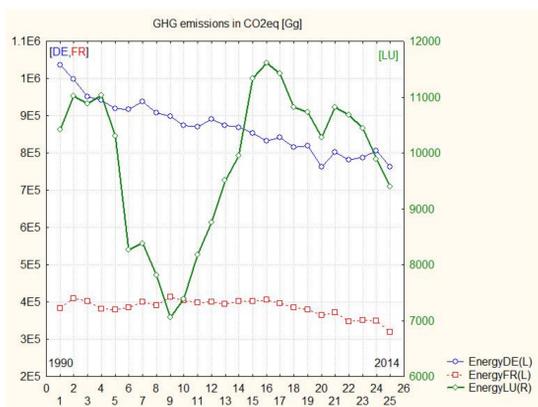
In our news papers, Germany's Energiewende appears nearly unanimously as a success story, and as a demonstration of political decisions that all countries should adopt. The official EU politics look heavily to Germany for its decisions concerning "climate control" and weaning from fossil fuels. One aim is to electrify transport, and a new fad that has developed very quickly is "Diesel bashing" (read [this comment](#) from the Scientific Alliance for a more sober appreciation). All EU countries must submit every year an inventory of their GHG emissions (or what they think they are), which goes into a big database, the latest called UNFCCC\_V19. This extremely large database of nearly 550000 lines is freely accessible at the [EEA Access .mdb file](#) or a [csv file \(link\)](#). It is a treasure waiting to be exploited by everyone interested in questions of energy, transport and emissions.

In this blog I will surf this database for 3 countries: Luxembourg (LU), Germany (DE) and France (FR). The questions to ask will be:

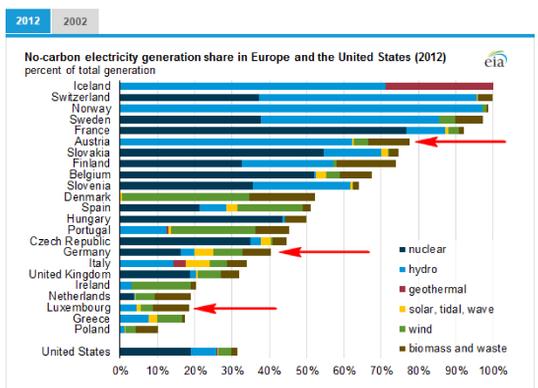
- » how have the greenhouse gas emissions changed in the transport and energy sectors
- » what are the percentages of the transport emissions related to those of the energy sector?

### 1. Emissions in the energy sector from 1990 to 2014

The energy sector is a very large one: it contains electricity production, transport, manufacture etc... The database expresses the total GHG emissions in CO2 equivalents (which means according to their global warming potential (GWP) relative to CO2; as an example, methane CH4 has a GWP over 100 years of 25). The quantity of the emissions is given as a mass, expressed in the SI unit Gg (Gigagram); 1000 Gg = 1000\*10<sup>9</sup> g = 1 Million metric tons. The following figure shows how the emissions have changed since 1990. As Luxembourg's values are tiny compared to those of its neighbors, I give them on the right vertical axis. The x-axis holds the years, with 1 corresponding to 1990 and 25 to 2014.



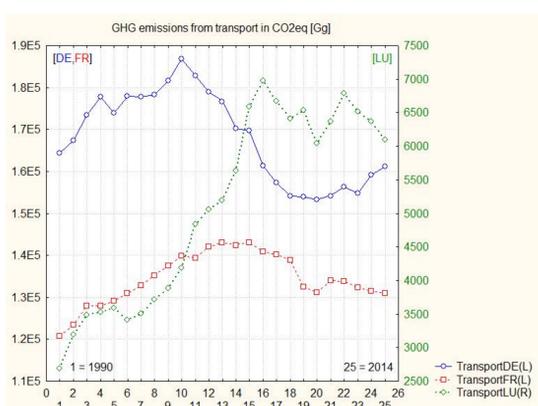
Clearly all 3 countries show a decline in their emissions: relative to their maximum, the percentages rounded to the next integer, are -26% (DE), -22% (FR) and -19% (LU). The decline in Germany is more or less monotonous; a similar pattern starts only in 2005 for France, whereas the situation in Luxembourg is completely different. After a very big decrease from 1993 to 1998, the emissions rise steeply, exceeding even the prior maximum. From 2005 on, the decline is the general tendency. The 2014 per capita emissions in [kg] are the following: 9437 (DE), 4853 (FR) and 17096 (LU). The low number for France is clearly due to its carbon-free nuclear electricity production; the following picture shows how the different countries figure in this no-carbon competition (note the uncomfortable situation of Germany, showing a rather unsuccessful Energiewende for the time being):



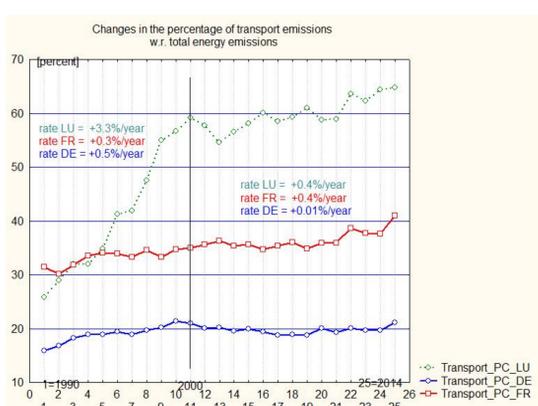
The extraordinary high per capita emissions of Luxembourg are due mostly to the transport sector. We know that about 65% of all LU energy GHG emissions come from the transport sector. Due to an (in my opinion extremely silly) convention, all fuel sold in Luxembourg is calculated as if it was used in Luxembourg. But this is not the case. As a small country lying on many North-South transportation roads, and having normally lower fuel prices than its neighbors, about 80% of the fuel sold at the pumps is directly exported. So the Luxembourg record does not reflect a real behavior, but is simply the result of a certain bookkeeping convention, that Luxembourg has foolishly accepted in the early 90's. The rapid increase of 39% for the period 2000-2012 is mostly a fingerprint of the rise in exported fuel (an increase by about 42%, compared to an in-country increase of only 30%). The next chapter will look at the transport emissions, and their part in total energy emissions changed from 1990 to 2014.

### 2. Emissions in the transport sector from 1990 to 2014

Here is a plot of the GHG emissions from transport; the same units and convention as mentioned above apply.



We see that the German emissions start falling in 1999, and rise again 10 years later, possibly a fingerprint of the success of big German cars! The French emissions start decreasing in 2004, and except a small up-tick in 2011 continue to fall. Luxembourg's down starts only in 2005 for 4 years, rises again for 2 years, and since 2012 falls at about the same rate. If we look at the percentages of the transport emissions versus the total energy emissions, we obtain the next picture:



France and Luxembourg show the same pattern, whereas the percentage of German transport emissions w.r. to total energy emissions is practically constant. So we have three different behaviors: after 2000, the part of the Luxembourg transport emissions is more than 8 times less than before; for France, there is not much of a change whereas Germany has lowered a slightly rising percentage to a constant.

### 3. Conclusion

What could remain puzzling, is the strong drop in Luxembourg's total energy emissions between 1993 and 1998. In my opinion the major part can be explained by the shutdown of a big chunk of Luxembourg steelworks and the start in 1994 of only electrical steel making and the scrapping of all blast furnaces. As the electricity is imported, the GHG emissions from its production are not included in the Luxembourg balance, but in those of its neighbors. Again a totally incomprehensible decision taken in Brussels which makes pictures like those given in this blog suggest a reality that does not exist!

In a next blog, I will comment on the Ewringmann report pump tourism, which was mandated to quantify the gains and losses due to the cheaper fuel prices in Luxembourg.

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