The German Consumer Carbon Footprint (CCF) in comparison to the Product Carbon Footprint (PCF) of Wine

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The German wine market in total amounts to 20,000,000 hectoliter per year. This is equivalent to an average consumption of 24 liter per capita. Almost 2/3 of that volume is imported, mainly from France, Italy and Spain. Imports from overseas – countries of provenance are the Americas, South Africa, Australia and New Zealand - are becoming more important for the German market. In that context the public is complaining about “food miles”, and the pretended huge release of CO₂ caused by global transportation. People in Germany prefer to believe that the marketing distance proportionally determines the so called “Product Carbon Footprint” (PCF), and blame global supply chains for climatic change.

Particular research based on our hypothesis of “Ecology of Scale” [Schlich 2005] gave evidence to the contrary, inter alia by wine as case study: The carbon emission allocated to the functional unit of one bottle of wine is definitely decreasing if the business size increases, and is rather independent of the transportation distance. We investigated global, regional and local supply chains of wine which was bottled at the places of origin. The research included the primary production, the transportation of grapes and must, the wine making and bottling facilities, and finally the shipping up to the Point of Sale (PoS) in Germany. The final allocation showed PCF values in a range from 240 g to 1,725 g CO₂ per bottle (0.75 l), and proved a declining dependence on the business size [Schlich 2008, Schlich 2010].

Our follow-up studies focused on the questions how much energy German consumers use for shopping, and which CO₂-emission has to be added to the upstream PCF-values. For this purpose we first defined the Consumer Carbon Footprint as allocation of the CO₂ release to the food basket which is purchased at the PoS and transported back home. The data mining was performed by different methods: macro-statistics, surveys at PoS (supermarket, organic retailer), and 4-week diary study at home.

As results we found CCF data for German consumers in a range from 280 g (macro-statistics), 125 g (downtown supermarket), 290 g (4-week diary study) up to 1,500 g CO₂ (organic retailer in a surrounding area) per kg of purchased goods caused only by the ride to and from PoS [Sima 2012, Mohr 2014]. Obviously, the CCF-values depend on the means of transportation (as pedestrian; by bike, car or public transport), as well as on the distance to the PoS (downtown, surrounding area), on the question of attending multi-purpose routes (PoS, workplace, school), and on the amount of the purchased goods which is taken home in one ride.

However, the investigated CCF data are definitely comparable to the PCF data of entire wine supply chains. The “last two miles” under the responsibility of the ultimate consumer can cause as much energy turnover and CO₂ release as global, regional or local wine supply. Further investigation is planned to find out the ecological impact of parcel and food services which deliver internet orders to the front door of the ultimate consumer in Germany.

References


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