

Comparison of Energy Turnover of Regional and Global Food

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Usually people assume regional production and consumption of food needs in all cases less energy than global processes. To verify or falsify this by empirical data and to improve the used method of Life Cycle Assessment a scientific evaluation of specific energy turnover of food production and distribution is carried out, comparing regional with European-continental and with global food processes. This study points at the question if the operation efficiency and the logistics are more important than the transport distances as such, regarding all the specific energy efforts of the whole process chain.

Performing this investigation two examples of food – fruit juices and lamb meat - comparing regional and global food chains were researched, allocating all energy efforts to the functional units, from the very beginning of primary production including all transports and distribution steps up to the point of sale in Germany. Countries of origin of the fruit juices were Brazil, England, Poland, Italy and Germany. The data were compared with information from different regional German producers, who harvest their crop, squeeze their juice and sell it locally. Lamb meat from New Zealand, which is shipped round the world to Germany, was compared with data of local German farmers, who produce lamb meat very close to their point of sale.

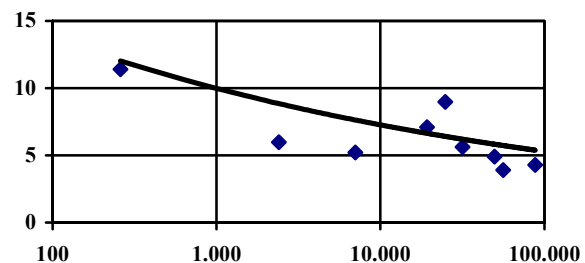
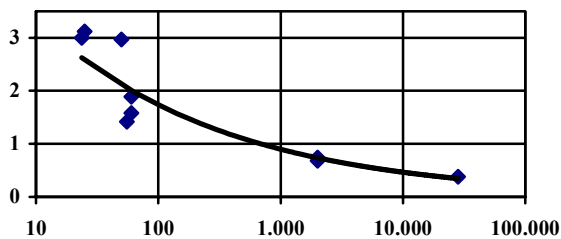


Fig. 1: Specific energy of juices [kWh/l] dependent on the yearly fruit throughput [t/a]

Fig. 2: Specific energy [kWh/kg] of lamb meat dependent on the yearly lamb throughput [t/a]

All empirical data demonstrate a strong logarithmic degression of the specific energy turnover in kWh per l juice (fig. 1) or kWh per kg lamb meat (fig. 2), dependent on the business size. Small farmers need basically more energy to producing and distributing their products than bigger business does. The influence of the business size is much more important than the transport distance.

Both examples demonstrate the influence of good manufacturing and marketing logistics on the ecological quality. Small farmers are usually not able to produce and market effectively, compared with larger units, despite of the global transports. This principle seems to be comparable with economic functions as well. High quality juices, which are concentrated in Brazil and diluted in Germany, need less total energy input than regional German juices. The production and distribution of German lamb is less efficient than the New Zealand process, since of the climatic differences and the very bad logistics of the local German marketing. Regarding these scientific results, which are methodical and empirical evaluated, it is evident, that not the transport distance of food as such is decisive on terms of energy. The sophisticated logistics of producing and marketing are much more important. Further investigations are running upon frozen vegetables and upon wines, comparing regional and global process chains.