

Locally grown apples in Europe versus apples from overseas

German scientists compared apples grown in Germany and stored for 5 months in cold atmosphere (CA) to freshly harvested apples from New Zealand. They only looked at energy costs for transportation from the apple farms to the home consumer (see Figure 1).

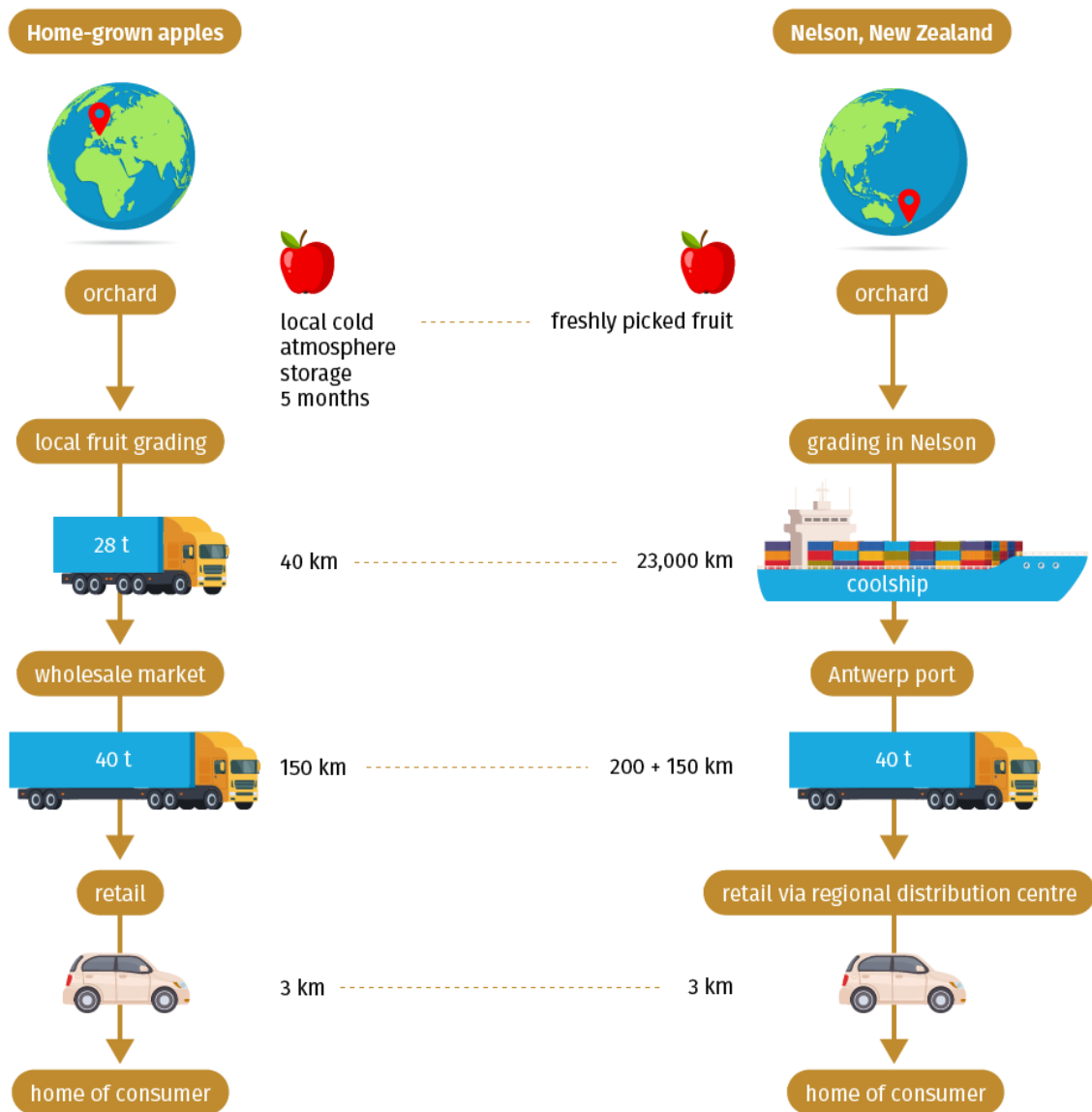


Figure 1: Transport channels of the food supply chain to compare primary energy requirements of locally grown apples in Germany stored for 5 months versus freshly harvested apples imported from New Zealand in April. CA- cold atmosphere, RDC- regional distribution centre

Source: M. Blanke; B. Burdick (2005): Food (miles) for Thought, ESPR12(3) 125-127 (modified)

Talking about sustainability includes more than just arguing based on one indicator. Aspects of climate impact or environmental impacts as for example noise and air pollution during transportation, land consumption and fragmentation of the landscape are not considered. However even “just” looking at energy costs is already quite impressive...

Work assignment

- 1) Calculate the total amount of energy costs for home -grown and imported apples!
- 2) Analyse the table and compare the energy costs for both apples (local and imported)!

Home-grown, local fruit from Germany	Primary energy requirement [MJ/kg apples]	Import from New Zealand	Primary energy requirement [MJ/kg apples]
Apple cultivation	2.800	Apple cultivation	2.100
Initial cooling after harvest	0.086	Initial cooling after harvest	0.086
150 days CA storage at 1 °C in Germany	0.810	23.000 km in refrigerated on a ship from New Zealand to port of Antwerp, 28 days cooling on board	2.534 0.302
Packaging	0.650	Packaging	0.650
Transportation to regional distribution centre in a small truck, 40 km	0.093	Transportation to regional distribution centre in a large truck, 200 km	0.276
Transportation to retail (supermarkets) in a big truck, 150 km	0.207	Transportation to retail (supermarkets) in a big truck, 150 km	0.207
Cooling on truck 95 km *	0.028	Cooling on truck 175 km *	0.055
Consumer shopping by private car, 6 km	1.150	Consumer shopping by private car, 6km	1.150
Total amount		Total amount	

Table 1: “Food miles” - primary energy requirements per kg apples in April

* It is assumed that half the distance of transportation is done in a cooling truck.

source: M. Blanke; B. Burdick (2005): Food (miles) for Thought, ESPR12(3) 125-127 (modified and simplified)