

PROJECT REPORT

MAIN OBJECTIVE OF THE STUDY

In Finland consumption of wine has increased rapidly during the last decades. In 1985 the consumption of wine was only 5% but in 2008 the share was already 15% of all alcohol and the curve is rising every year. Wine drinkers are also getting more conscious about the qualities, prices and countries of origin of the wines they drink. Because of the northern location and cold climate, Finland doesn't produce (commercial) wine. Even though sometimes some of the last phases of the production are made in Finland, almost all the wine is shipped from around the world. Chile is the leading wine producer having almost 30% share of the wine markets in Finland. This means that one bottle of Chilean wine can easily travel over 17 000 km to get from the vineyard to our table.

Reflecting on these, this study investigates the CO₂ footprint and energy consumption of the transportation system of red wine consumed in Finland. This study concentrates on comparing red wines bottled either in the country or origin (Chile) or in Altia's factory in Rajamäki Southern Finland.



PRODUCT COMPONENTS



RED WINE IN A GLASS BOTTLE

PET bottle	40g
Aluminium fold	4g
Sythetic cork	4g
Wine (content)	750g



RED WINE IN A PLASTIC BOTTLE

Glass bottle	750g
Aluminium fold	4g
Natural cork	4g
Wine (content)	750g

STAKEHOLDERS

Wine producer in Santiago

Material manufacturers

Shipping company: transportation by sea

Transportation companies in Chile and Finland: transportation by land

Ports in Helsinki and San Antonio

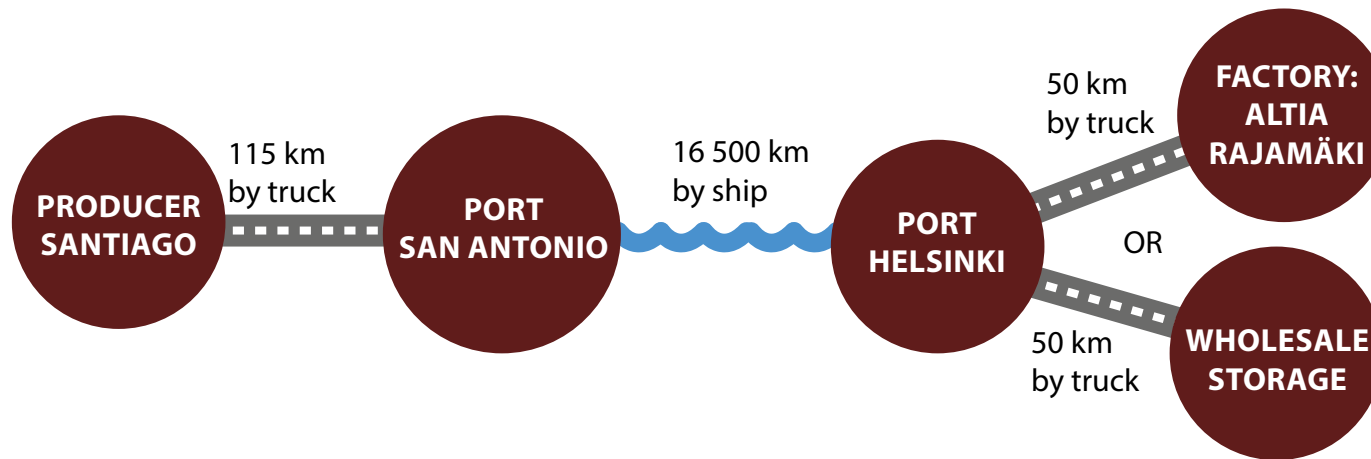
Altia Rajamäki (Finland): importer, quality control, bottling, wholesales, sales, storage

Wholesales companies in Finland: importer, storage, sales

Alko Oy: retailer in Finland

Legislation: Officers and boarder controls, local and global laws

LOGISTIC SYSTEM AND SCENARIOS



GLASS BOTTLES

Scenario 1.

Produced and bottled in Chile

Scenario 2.

Produced in Santiago (Chile), bottled in Rajamäki (Finland).

PET-BOTTLES

Scenario 3.

Produced and bottled in Chile.

Scenario 4.

Produced in Santiago (Chile), bottled in Rajamäki (Finland).

The transportation system is studied in four different scenarios. The journey of the wine starts from Santiago where it is produced. First the wine travels to the port in San Antonio, then in a ship and when it arrives in Helsinki it will be transported either to Rajamäki (if not yet bottled) or in the wholesales storage (if already bottled). In these scenarios the whole sales storage is located 50 km away from the Helsinki port (there are many of them around Helsinki, but this one is competitive in distance with the Rajamäki factory). In the study the product is in the quantity of 100 bottles. This study leaves the production of the wine itself out. Also the final transportation to the retailer and to the place where the wine is used are left out because of the minimal footprint.

Scenario 1.

Produced and bottled in Chile

**GLASS
BOTTLES**

Transport:

[Summary](#)

Breakdown by transport stage

Stage name	Transport type	Distance (km)	Energy (MJ)	%
Chile to Finland	Sea freight	1,7e+04	4e+02	95,0
Santiago to San Antonio	14 tonne truck	1,2e+02	15	3,5
Helsinki to wholesales	14 tonne truck	50	6,4	1,5
Total		1,7e+04	4,2e+02	100

Breakdown by components

Component	Mass (kg)	Energy (MJ)	%
aluminium fold	0,4	1,1	0,3
glass bottle	75	2,1e+02	49,7
cork	0,4	1,1	0,3
wine	75	2,1e+02	49,7
Total	1,5e+02	4,2e+02	100

Scenario 2.

Produced in Santiago (Chile),
bottled in Rajamäki (Finland)

**GLASS
BOTTLES**

Transport:

[Summary](#)

Breakdown by transport stage

Stage name	Transport type	Distance (km)	Energy (MJ)	%
chile to helsinki	Sea freight	1,7e+04	2e+02	95,0
helsinki to rajamäki	14 tonne truck	50	3,2	1,5
santiago to san antonio	14 tonne truck	1,2e+02	7,3	3,5
Total		1,7e+04	2,1e+02	100

Breakdown by components

Component	Mass (kg)	Energy (MJ)	%
wine	75	2,1e+02	100,0
Total	75	2,1e+02	100

Scenario 3.

Produced and bottled in Chile

**PET-
BOTTLES**

Transport:

[Summary](#)

Breakdown by transport stage

Stage name	Transport type	Distance (km)	Energy (MJ)	%
Chile to Finland	Sea freight	1,7e+04	2,1e+02	95,0
Helsinki to Wholesales	14 tonne truck	50	3,4	1,5
Santiago to San Antonio	14 tonne truck	1,2e+02	7,8	3,5
Total		1,7e+04	2,2e+02	100

Breakdown by components

Component	Mass (kg)	Energy (MJ)	%
aluminium fold	0,4	1,1	0,5
plastic bottle	4	11	5,0
plastic cork	0,4	1,1	0,5
wine	75	2,1e+02	94,0
Total	80	2,2e+02	100

Scenario 4.

Produced in Santiago (Chile),
bottled in Rajamäki (Finland)

**PET-
BOTTLES**

Transport:

[Summary](#)

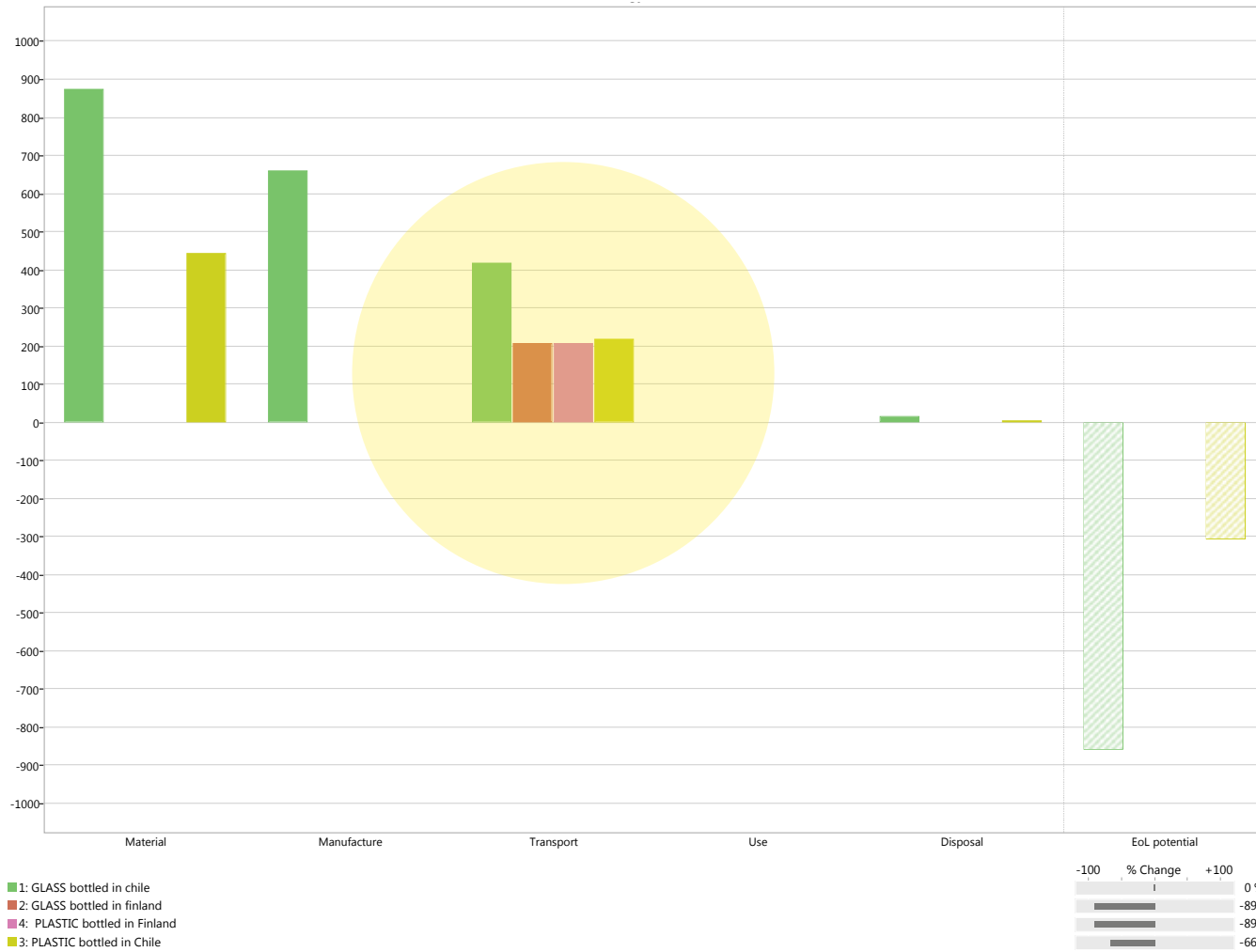
Breakdown by transport stage

Stage name	Transport type	Distance (km)	Energy (MJ)	%
Chile to Finland	Sea freight	1,7e+04	2e+02	95,0
Helsinki to Rajamäki	14 tonne truck	50	3,2	1,5
Santiago to San Antonio	14 tonne truck	1,2e+02	7,3	3,5
Total		1,7e+04	2,1e+02	100

Breakdown by components

Component	Mass (kg)	Energy (MJ)	%
wine	75	2,1e+02	100,0
Total	75	2,1e+02	100

ENERGY CONSUMPTION AND CO2 FOOTPRINT CHART



REFLECTION

Comparing the four different scenarios it becomes self evident that transporting wine in a glass bottle from across the globe has the highest footprint. The transportation processes in Finland seems to have barely no impact in the big scale.

Wine (the content) is half of the weight of the product, so the CO2 footprint and energy consumption can be reduced by 50% using the option of bottling the wine in Finland.

What comes to the PET-bottled wines, it only adds 5% to the product. In the quantity of 100 bottles (like in this study) the 5% doesn't have that big of an impact. Although, creating sustainable solutions the 5% matters when it comes to bigger quantities.

This study left out the research of the production of the wine bottle itself, assuming that it travels the same distance either to Chile or Finland.

So, what is the take off for the consumer?

- 1.** The best choice (out of these 4 scenarios) is to buy a wine PET-bottled in Finland. You save 50% of CO2 and energy compared to the worst scenario. You not only support the global sustainability, but also reduce local emissions.
- 2.** The second best choice is to buy a wine GLASS-bottled in Finland. You save 50% in the global scale, but the local transportation emissions are higher.
- 3.** The third best choice is to buy a wine PET-bottled in Chile. You save 45% of the emissions.
- 4.** The worst choice is to buy a wine GLASS-bottled in Chile. You'll wine experience costs 200% more for the environment.

Since the customer could have a really big impact just by choosing the Finland bottled wine, the place of bottling should be made more visible. Even though the results of this research were pretty much common sense, there should be more information about this made visible. Also, for a regular consumer it doesn't make a difference in taste and also barely in the shelf life of the wine bottle to buy a PET of a glass one, since the new material technologies have been approved by many wine specialists. In that sense, a responsible wine drinker should always choose the plastic bottle. That's always a secure choice even if the place of bottling is not known.

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