

# Environmental Production Information and LCA An Example of the Swiss Ecological Time Unit



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## Introduction

The Swiss Ecological Time Unit (SETU) is a concept that calculates the environmental impacts of a product in relation to an annual target for environmental impacts. The method has been developed as a possible unit for Environmental Product Information [1]. To gain more insight into the concept the beverages, snacks and meals offered during the Swiss LCA discussion forum 41 are assessed in ecological time.

## Life cycle inventory analysis

The meals are prepared by the gastronomy group ZFV. An inventory flow is listed for each meal to account for the production, the transport, the packaging, the storage and the preparation. The energy required for the preparation in the industrial kitchen is assessed based on a previous ESU project on canteen meals [2]. The ESU database for food products provides the inventories for the basic ingredients [3]. Thus, ingredients and their quantity used in the inventory flow may differ from the meals delivered. The functional unit is chosen for each item based on the weight of a portion and the amount of the main ingredients per person. In the case of beverages, it is based on the volume of a cup or a glass.

## Impact assessment: Method setup

In 2005 the total environmental burden caused by the consumption of goods and services per Swiss capita per year is about 20 million eco-points based on the ecological scarcity 2006 method [1, 4]. This includes all imports to Switzerland.

The Swiss threshold level for a sustainable consumption behavior is estimated with the calculation of all emissions and resource uses and the identification of reduction targets enacted by governmental policies. The application of the reduction targets to single emissions and resources uses leads to a total reduction of 40%. Thus, the critical environment impact should be reduced to 12 million eco-points. This value is converted into a yearly basis (365 days or 8760 hours) and used as a reference for the calculation of the eco-time.

## Impact assessment: Conversion results

Table 1 shows the conversion to ecological time for the beverages. The values are relevant compared to the 8 hours spend at the forum in Berne. A comparison between the products is straightforward. The ecological time of a cup of coffee is 36 eco-minutes and only 7 minutes for a cup of tea. This difference is due to the high amount of pesticides used during the production of coffee. It leads to severe emissions into the top soil.

	Ecological scarcity	Ecological Time
	eco-points	eco-hours
Annual budget	12'279'131	8760:00:00
<b>beverages</b>		
Kaffee in Thermos 1.8dl p/Pers	846	0:36:13
Tee in Thermos 1.8dl p/Pers	156	0:06:40
Apfelsaft Naturtrüb 2.5dl p/Pers	273	0:11:41
Mineral mit/ohne Gas 2.5dl p/Pers	62	0:02:38
Mineral mit Gas 2.5dl p/Pers PET/CH	65	0:02:46
Eistee Paradise 2.5dl p/Pers PET/CH	169	0:07:13

Table. 1 Conversion of ecological scarcity points to ecological time based on a annual time budget

## Impact Assessment: Single score

Fig. 1 depicts the eco-time for the beverages and snacks. One can notice the higher ecological time of the apple juice compared to water or iced tea because it requires more natural resources and fertilizers. Biscuits have a high ecological impact due to the butter production.

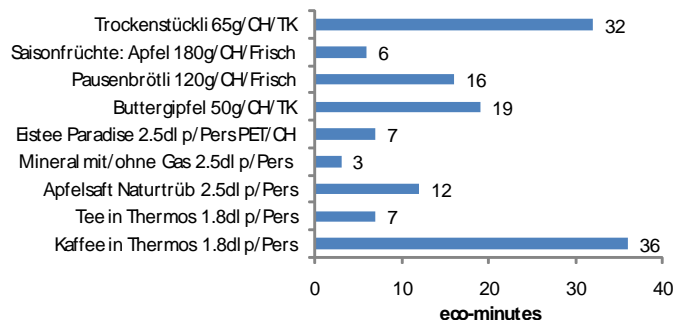


Fig. 1 Ecological time of beverages and snacks offered during the coffee break.

Fig. 2 shows the eco-time values for the food portions offered during the lunch break. The risotto consumes about 71 eco-minutes. This is explained by the electricity consumption to prepare the risotto. The quarkschnitte takes 102 eco-minutes due to the high impacts from milk production or in other words you should not cause any other environmental impacts during two hours of enjoying your dessert if you want to achieve the annual target value (or share it with a second person).

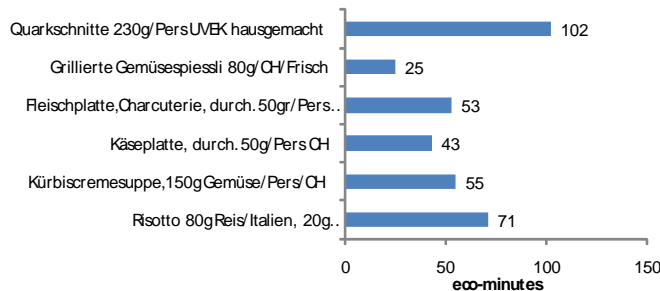


Fig. 2 Ecological time for the food portions offered at lunch.

## Conclusions

The use of ecological time is straightforward and not time-consuming when comparing the environmental impacts of different products. It is less ambiguous than the use of qualitative values or too abstract quantitative ones like ecological scarcity points. Showing the eco-time for food products could help consumers adopt a more sustainable behavior while becoming familiar with their annual sustainable time budget.

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