TIME USE DATA IN COMPARATIVE LCA FOR SUSTAINABLE CONSUMPTION

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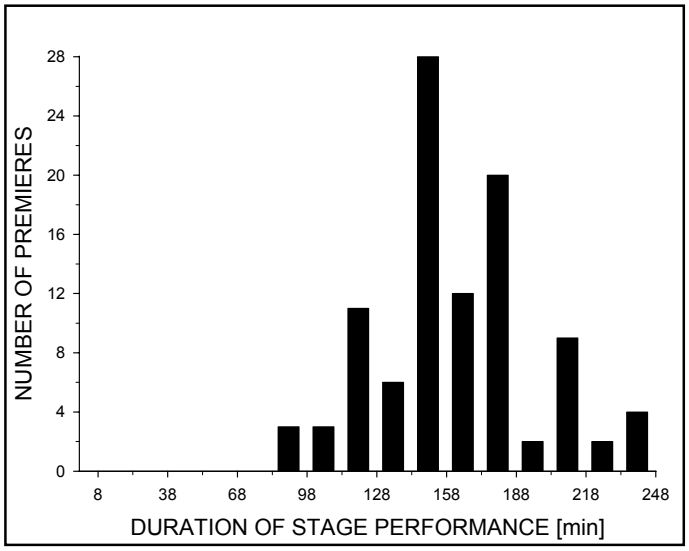

Fig 1 Time use for a visit to the theatre

Duration of 100 stage performances, including duration of intermissions. Data presented in 15min time intervals. Data range: min: 90min, med: 150min, max: 240min.

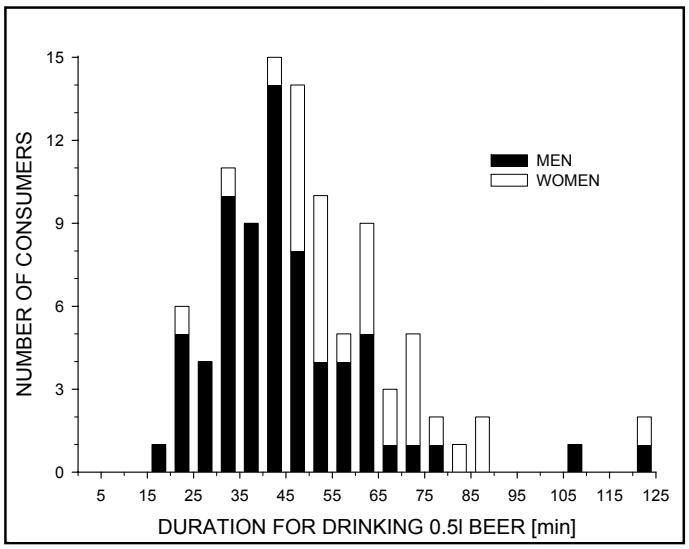

Fig 2 Time use for drinking beer in a pub

Average time use for consuming 0.5l beer, excluding breaks to start on another beer. Data presented in 5min time intervals. Data range: 1) total: min: 19min, med: 45min, max: 120 min, 2) men: 19min, med: 41min, max: 120min, 3) women: min: 23min, med: 58min, max:120min.

INTRODUCTION

Individual patterns of consumption vary considerably in their functions. Consequently, life cycle assessment (LCA) of consumer behaviour has to cover products that differ widely in functionality. The basis for a comparative LCA, however, is the presence of at least one common function. Multi-functionality leads to the application either of multiple functional units [1] or of generally valid, defined functions. The equivalence of consumer goods, for example, can be determined by user acceptance [2] and, similarly, functional units can be represented by the time duration of a service [3].
Here, we present time use data for drinking beer in a pub and for a visit to the theatre and then apply these data as a functional unit for a comparative LCA study.

DATA COLLECTION

For the time use of a theatre visit, 100 premieres from 1960 to 1971 at the Vienna Burgtheater were considered. The length of time of these 3340 stage performances were taken from a "Theaterzettel" collection [4].
Time use data for drinking beer were assessed at a Vienna students' pub. Observations were carried out on twelve days (Oct. & Nov. 2004) in a span of time from 6:30pm to 1:30am. Thirty-one women and 69 men were taken into account. Their total consumption comprised 164 selling units or 76.4 litres of beer.
From these data, the reference flows for a theatre visit and for going to a pub were calculated.

RESULTS

The median length of time of a theatre performance amounted to 150min (Fig. 1).
The compiled data on time use of men and women for consuming 0.5l beer (Fig. 2) showed a significant gender difference (Mann-Whitney-U, $p<0.001$; COVRAM [5], $P=0.0002$). The median time use of men is 41min and of women 58min.

The time use data for a theatre visit includes the duration of the intermission. To ensure the comparability of collected time use data, we need to consider the break between the consumption of two beers. We therefore calculated the average length of time to start on another beer (arithmetic mean: 9min).
Defining the functional unit as the duration of a theatre performance yields a value of 150min. Within the same duration, the reference flow of consumed beer – with a corresponding number of breaks included – is 1.5l beer for men or 1.1l beer for women.

CONCLUSION & PROSPECTS

Precise time use data from observation – in contrast with diary-based collections [6] – give the detailed information on individual consumer behaviour required for the present case study. This data enables the quantification of a generally valid function (e.g. consumer acceptance). A time-use-based functional unit may serve well as a basis for comparing individual consumer behaviour in LCA.

In a next step, the LCI (life cycle inventory) for drinking beer and going to the theatre, based on the calculated reference flows, will be compiled. In the sensitivity analysis, special attention will be focused on the implemented time use data sets. In the future, LCA studies on consumer behaviour must model systems that also take parallel consumption into account.

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