

Definition of a reference fleet

For some of the evaluation criteria, fleet-wide effects are estimated. This of course requires the definition of a "typical" railway fleet (concerning the diesel vs. electric vehicles and passenger vs. freight operation) which serves as a reference frame for calculations. The following reference fleet was defined:

	Electric	Diesel	Sum
Passenger operation	55%	10%	65% (regional/main line: 45%/20%)
Freight operation	30%	5%	35%
Sum	85%	15%	100%

Source: IZT

Limitations of the concept

Of course, there are pronounced national differences in the composition of railway fleets. However, a closer look at some of the major European railways shows that for the purposes of the EVENT project, a reference fleet can be defined which is sufficiently accurate for most European railway companies in order to give rough estimates on system-wide effects. Nevertheless such aggregated figures (e.g. energy efficiency potential throughout fleet) have to be treated with great care especially since some railways do differ considerably from the reference fleet defined for this evaluation tool. For example, at DSB the share of diesel traction is much higher than in the assumed reference fleet, at SBB it is close to zero. Despite these limitations, we believe that the definition of a reference fleet helps to give a reasonably accurate estimate on fleet-wide effects.

Weighting issues

The most natural approach to defining a reference fleet would be a vehicle count. However, it is hardly reasonable to count one locomotive or one passenger coach with the same weight as one high-speed train or DMU. Since the target quantity of the EVENT project is energy efficiency and fleet-wide effects eventually refer to this quantity, it was decided to take energy consumption as the weighting criterion for the individual fleet segments. This produces the next weighting problem how to compare diesel and electric power consumption. Two approaches seem reasonable:

1. take costs as a weighting factor
2. take primary energy as a weighting factor

The first option is closer to the economic reality of railway operators, the second option is more relevant in an environmental perspective. Since energy prices (both diesel and electric power) vary extremely between railway companies, the cost approach is hardly feasible. Therefore a primary energy perspective was taken.