

New standardization project on Primary energy factors and Greenhouse gas emission factors

Start of new work in CEN/TC371 on the series of EPB standards: the development of a standard procedure to assess Primary Energy Factors (PEF) and CO₂ emission factors to be used for Energy Performance of Buildings declarations.



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CEN/TC371 WG1 is working on developing a method for (re) calculation and reporting of primary energy factors (PEF or also known as primary energy conversion factors) and the connected CO₂ emission factors for various fuels and other energy resources. This work is very important in the context of energy performance assessment of buildings. This new standard for determination of the PEF and CO₂ factors is expected to be used in relation to the EU Energy Performance of Buildings Directive (EPBD).

There is a need for greater clarity and transparency about the considerations, assumptions and choices that have been made when determining the value of these energy conversion factors and related CO₂ emission factors. The standard is linked to EN ISO 52000-1, the overarching standard for determining the energy performance of buildings. This standard includes a table B.16 presenting default values for these factors. In clause 9.6.2 of this standard the concept of primary energy factor is illustrated in **Figure 1**.

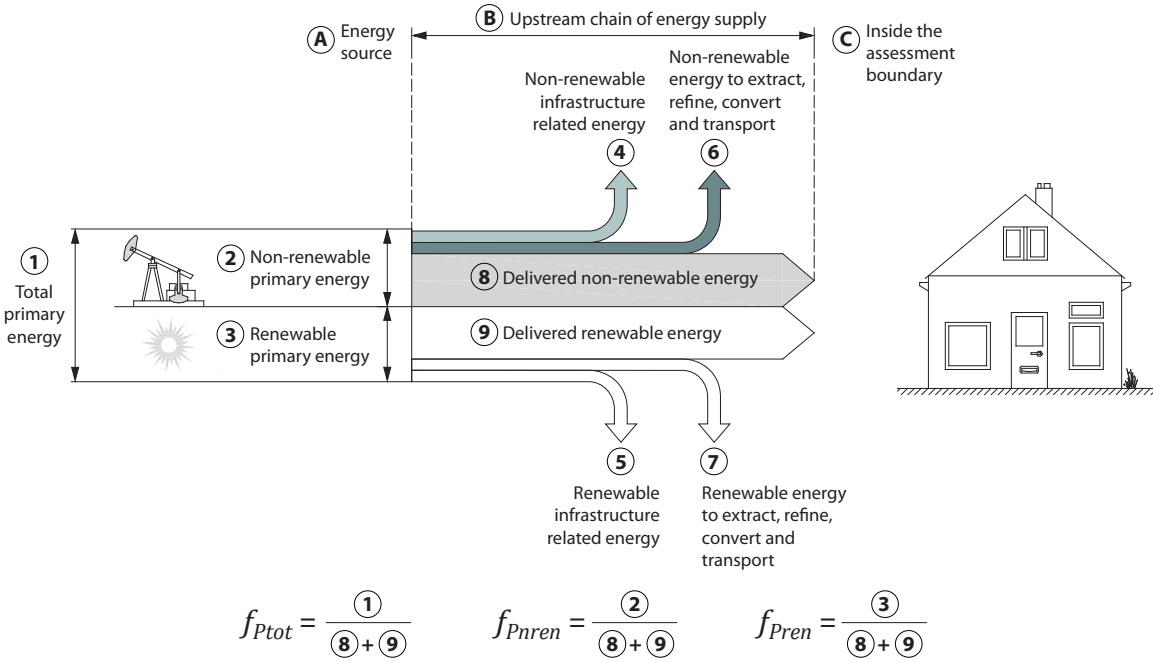


Figure 1. Primary energy factors (see EN ISO 52000-1 clause 9.6.2).

The PEF describes the efficiency of converting energy from primary sources (like fossil fuels...) to secondary energy carriers (e.g. electricity) that provides the services delivered to the end user to heat, cool, ventilate etc.. the building. In the EPBD the PEF is used to calculate the Energy Performance of buildings, which is then expressed in terms of primary energy.

Further explanation on PEF: Annex H of EN ISO 52000-1 explains as follows:

Primary energy is defined as energy from renewable and non- renewable sources which has not undergone any conversion or transformation process. (EPBD art 2). The related primary energy factors (PEF) are defined as:

- non-renewable primary energy factor taking into account only non-renewable energy overheads of delivery to the point of use, excluding renewable energy overheads and primary energy components;
- renewable primary energy factor taking into account only renewable energy overheads of delivery to the point of use, excluding non-renewable energy overheads and primary energy components;
- total primary energy factor. The total PEF is the sum of the non-renewable primary energy factor and the renewable primary energy factor.

The total primary energy use is a coherent way for setting technical building system requirements because some systems (e.g., direct electrical emitters) have some of their systems losses outside the building assessment boundary (e.g., electricity generation). The total primary energy factor takes into account the

losses outside the assessment boundary. Only energies delivered through the assessment boundary from the perimeters defined (e.g., nearby and/or distant) are taken into account to link the total primary energy use with the energy counters. A final note in this annex H expresses already the need for further description of the assessment procedure , which work is now has now started.

Importance of PEF's unambiguous determination for the market

Ensuring fair competition and a level playing field within the market for energy technologies, products and applications for construction is of great importance. In order to achieve this. It is very important that choices and assumptions with regard to the procedure for calculating the relevant PEF's are well established and recorded in an unambiguous and transparent manner. Including in the final energy performance assessment the greenhouse gas emission factors (expressed in kg of CO₂ equivalent per kWh) stimulate the use of environmentally friendly applications. The assumptions and boundary conditions of the calculation and final value of the PEFs is expected to differ between Member States due to the variation in their energy mix, but it is essential that the assessment is done in a transparent and unambiguous way. Changes in the energy market and within the construction sector also require regular recalculation of these PEF values. If the use of PEFs to calculate the Energy Performance of buildings is incorrect this may misguide market and policy makers, they expected calculated energy savings may be misleading. This should be avoided at any cost. ■

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