## Primary Energy Factors

### What is a Primary Energy Factor?

Primary Energy Factors (PEFs) are a means of combining the energy delivered to a building in various forms such as gas, electricity, and oil, into a single figure. (Another way is in terms of the CO₂ emissions that result from their use.) In most of Europe, building energy performance ratings are based on PEFs rather than CO₂ emissions. The 2018 revision of the EPBD requires the use of PEFs for EPCs so the UK may have to amend its methodology. Some other Directives also use PEFs.

The underlying idea behind Primary Energy is that it represents energy in its “raw state” before any processing or extraction has been carried out. The amount of primary energy consumed is calculated by multiplying the amount of energy delivered to a building by the PEF for that form of energy. The values can be different in different countries because, for example, longer pipelines and therefore more pumping energy may be needed to bring gas to market. There are several competing calculation conventions, especially for non-fossil fuel supplies such as renewable energy or electricity generated by nuclear reactors. The EPBD allows each Member State to use its own methodology, so declared national PEF values can differ from each other, even if their circumstances are identical.

Roger Hitchin, independent consultant, 2019

### Key Issues

- Primary Energy Factors are used in most European building energy performance ratings
- Ratings based on PEFs will generally be different from those based on carbon emissions
- PEF values differ between countries, sometimes for logical reasons but sometimes not
- The 2018 revision of the EPBD says “The energy performance of a building shall be expressed by a numeric indicator of primary energy use in kWh/(m².year)” instead of CO₂ emissions, as is current UK practice. This could result in a change to basis of UK EPCs.
- Some countries declare non-renewable PEF values that exclude renewables: others include them
- Values in the context of other Directives may differ from those used for EPBD compliance
- A template for reporting methodologies is being developed by CEN

### LINKS


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