

The table below explains why the amount of embodied energy that goes into a domestic dwelling is of increasing importance if it is looked at as a percentage of the primary energy use of a building over a sixty-year lifespan.

There is an argument that an increase in embodied energy is justified if it results in an overall reduction in energy used, and the figures below bear that out. The extra embodied energy involved in building to Code for Sustainable Homes Level Six (CSH 6), or PassivHaus has resulted in a significantly lower total energy use. But looking the embodied energy as a percentage of the total then forty percent of the carbon debt of that building over sixty years is tied up in the fabric. A dwelling built with timber and straw as the principle materials, and avoiding the use of other high energy materials where possible could perform to the same standards as the CSH 6 house (Carfrae *et al.* 2008) but with a further reduction in total energy use, and the percentage of the total taken up in the fabric is reduced to 5%.

Theoretical 120m² House	Embodied Energy (kWh)	Annual Heat Energy	Heat Energy used over 60 years	Total Energy Use (Embodied plus Heat)	Embodied Energy as percentage of total
Housing stock	100,000	30,000	1,800,000	1,900,000	5%
Current new build	100,000	13,200	792,000	892,000	11%
PassivHaus/ Code level six	130,000	3,000	180,000	310,000	40%
Straw House	10,000	3,000	180,000	190,000	5%