**Resources are finite**

**Home environmental impact**

In 1997 the joseph Rowntree foundation produced a report based on the state of the environment and the impact UK housing is having, in a push for change. At the time there was no pressure or requirement in the UK by the government to design houses which minimise the use of non-renewable building materials, conserve energy or reduce water consumption. They also stated that “It is almost impossible for consumers to judge the environmental credentials of individual houses” (Reducing the impact of housing on the environment, 1997). They also talk about energy consumption, with housing taking up 30 per cent of the UK’s total energy consumption each year. Between this stat and more recent stat it shows growth in the problem, this increase is n expected naturally as population is much higher since 1997 but still needs addressing.

A paper called Environmental impacts of the UK residential sector: Life cycle assessment of houses covers the first-time results of a full life time cycle study of the 3 most common types of housing in the UK, detached, semidetached and terraced houses. This study covers all the life cycle stages including construction, use and demolition within 50 years. Interestingly the stage with the highest environmental impact is the use stage, they state that “the global warming potential (GWP) over the 50-year lifetime of the detached house is 455 t of CO2 eq.; 374 t CO2 eq. of the semi-detached; and 309 t CO2 eq. of the terraced house. Around 90% of the GWP is from the use” (Cuéllar-Franca and Azapagic, 2012).

A research paper created by the UK environment agency called Sustainable homes – the financial and environmental benefits looks at the research on the financial and environments costs and benefits of building future homes to be more resource efficient. They had some pretty interesting case points for sustainable homes some of those being based on the amount of resources we consume. They state that the demand for energy is always increasing and that “Houses account for 30 per cent of the UK’s total energy use, 27 per cent of UK carbon dioxide emissions and around 24 per cent of greenhouse gas emissions” (Environment Agency, 2005), they also state that even though there is shortage of water in some parts of the UK “We each consume about 150 litres of water every day” (Environment Agency, 2005).

BossControlls are a company that provide energy management solutions such as smart plugs and have some interesting facts on the environmental impacts of housing. They are based in the USA but their stats are worldwide. They state that “according to the U.S. Green Building Council (USGBC), buildings account for an average of 41% of the world’s energy use” (BOSS Controls, 2018) they also go on to say that “Buildings are responsible for not just a large percentage of the world’s water use, but a large percentage of wasted water as well. It’s estimated that buildings use 13.6% of all potable water, which is roughly 15 trillion gallons of water per year” (BOSS Controls, 2018).

**Housing Carbon Footprints**

A carbon footprint is defined as the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO2). We all have our own carbon footprints this is the sum of all emissions of CO2 (carbon dioxide), which were induced by your activities in a given time frame. Usually a carbon footprint is calculated for the time period of a year. There are two basic components of a carbon footprint. One component is carbon emissions from ‘direct’ energy use, such as for space heating, hot water and lighting. The other component is ‘embedded’ or ‘indirect’ carbon emissions, which are the emissions that arise in supply chains in the production and distribution of goods and services purchased by households. There is a lot of work and evidence on how much constructing a new home effects its carbon footprint but limited information on the use cycle of a houses impact on carbon footprint. The carbon footprint of a house depends on all kinds of things – including, the size of the house, the types of materials chosen, and number of occupants.

According to the guardian the “carbon footprint for the pollution caused by UK consumption has increased slightly” (Association, 2016) where between 2012 And 2013 it increased by 3%. Included in this number is emissions induced by heating homes and fuelling household vehicles with fossil fuels.

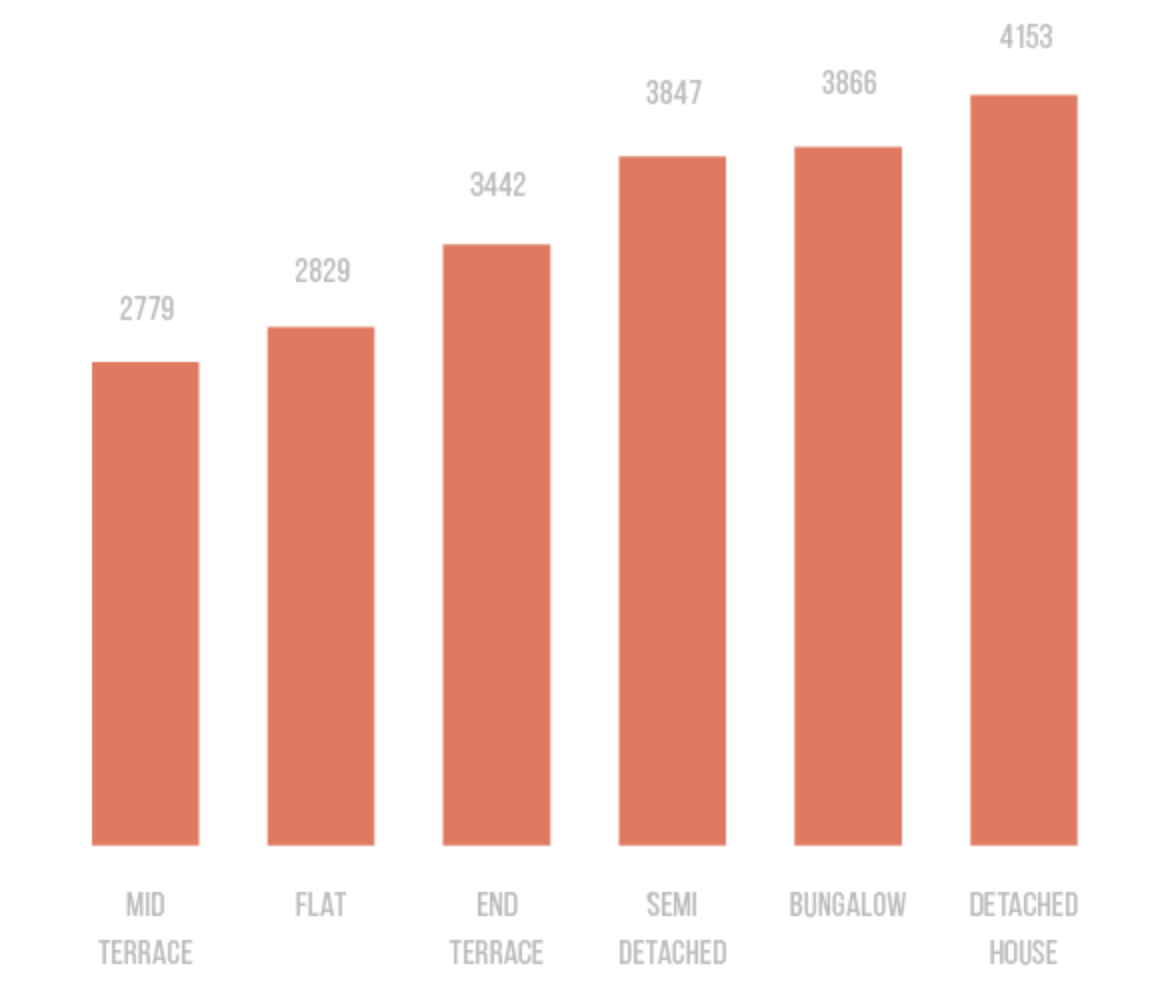
A study and report by resolve explored the carbon footprints of the average UK household and the activities that drives emissions. It represents a good baseline and produced some interesting facts. For instance, households “drivers of over three quarters of UK carbon emissions (76% on average for years 1990-2004)” and “the carbon footprint for an average UK household in 2004 was around 26tCO2e” (Druckman and Jackson, 2010). This report is also worth looking at for the breakdowns in different emissions catalysts within the household and whether they are direct components or not.

**Different Household Resources**

There is not a lot of information of the types of resources you would expect in the average household. In fact, according to the government what equates to Household resources is only the combined annual wages of all adults in full time work living within the household. To come up with the other measurable resources I can look around the home and at other statistics and billables, for example; water, electricity, gas, data, money and consumables.

Water is used for a lot of different tasks in the home, including food preparation, washing and hygiene, outdoors, consumption and heating. According to a website called on average the average water usage for people in the UK is about 150 litres per day (Onaverage.co.uk, 2018). The world health organisation says that “Basic access is the availability of a source of water that is at most 1,000 metres or 20 minutes away that affords the possibility of reliably obtaining at least 20 litres per day per family member” and “Optimal access allows for the consumption of 100 litres per person per day on average, supplied continuously through multiple taps and which meets all consumption and hygiene needs” (Moral, 2015) meaning the maximum we should be using is about 100litres a day per person, which is being greatly exceeded. Some other interesting things to note - Flow rate for Old style ½” basin tap = 10 l/m, Water price = 1000 litres = £3 and Unit = Litres.

Electricity is the most used resource throughout the house. It is used for so much such as lights, devices, cooking, (sometimes heating) etc. The biggest problem is that there are a lot of appliances that are always running for example a fridge freezer, computer or chargers. Electricity is measured in KWH and according to ovo we use an “average of 3,940kWh per home” (Ovoenergy.com, n.d.) however the average is actually different depending on the type of house for instance a detached house consumes on average 4153KWh/y but a flat consumes 2829 KWh/y. the table below is from the same website. the price is about 12.5p per KWh, this is calculated by looking at a home tariff from a comparison sight.



**Current home Resource management/efficiency/impact tech**

**Related projects**

**Other Interesting links**

<http://www.green-alliance.org.uk/resources/Teaching%20homes%20to%20be%20green.pdf>

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