Sustainability Matters

World Green Building Week (24 – 30th September)

September 2018

World Green Building Week is an annual event in September to promote improving the sustainability performance of buildings. The event, organised by the World Green Building Council, this year the focuses on homes. Did you know that buildings, including the homes we live in, account for around 40% of global energy consumption? That's over a third of the world's greenhouse gas emissions. The average global electricity consumption per household is 3,500kwh; that's 2.6 tonnes of CO_2 or the same as 6,384 miles driven by an average car. If we all reduced our consumption by 20% that would deliver a saving of just over half a tonne of CO_2 per household – that's the equivalent of 1,277 miles of driving or 21.5 propane cylinders used for home barbecues. Check out this handy calculator and work out your carbon footprint https://www.carbonfootprint.com/calculator.aspx .

What is a Green Building?

A 'green' building is a building that, in its design, construction or operation, reduces or eliminates negative sustainability impacts. A green building can create positive impacts, on our climate, natural environment and our wellbeing. Features which can make a building green include:

- Efficient use of energy, water and other resources;
- Use of renewable energy, such as photovoltaics;
- Pollution and waste reduction measures, and the enabling of re-use and recycling;
- Good indoor environmental air quality;
- Use of materials that are non-toxic, ethical and sustainable;
- Consideration of the environment in design, construction and operation (DREAM assessments help us to do this for the ABP project);
- Consideration of the quality of life of occupants in design, construction and operation; and,
- A design that enables adaptation to a changing environment (such as climate change resilience).

Any building can be a green building, whether it's a home, an office, a school, a hospital, a community centre, or garage, provided it includes features listed above. Not all green buildings are, and need to be, the same. Different countries and regions have a variety of characteristics such as distinctive climatic conditions, unique cultures and traditions, diverse building types and ages, or wide-ranging environmental, economic and social priorities; all of which shape their approach to green building.

The Business Case for Green Buildings

Economic - Benefits include savings on utility bills (through energy and water efficiency); potentially lower construction costs and higher property value for building developers; increased occupancy rates or lower operating costs for building owners; and job creation.

At a global level: Global building energy efficiency measures could save an estimated €280 to €410 billion in savings on energy spending (and the equivalent to almost double the annual electricity consumption of the United States) (European Commission, 2015).

At a country level: Canada's green building industry generated $23.45 billion in GDP and represented nearly 300,000 full-time jobs in 2014 (Canada Green Building Council / The Delphi Group, 2016). Building owners have reported that green buildings, whether new or renovated, command a 7% increase in asset value over traditional buildings (Dodge Data & Analytics, 2016). Green building is projected to account for more than 3.3 million U.S. jobs in 2018 (US Green Building Council / Booz Allen Hamilton, 2015).

Environmental - Benefits to our climate and the natural environment are realised by using less water, energy and natural resources while protecting and sometimes enhancing the local environment.

At a global level: The building sector has the largest potential for significantly reducing greenhouse gas emissions compared to other major emitting sectors (UNEP, 2009). The emissions savings potential is estimated to be up to 84 Giga-tonnes of CO_2 ($GtCO_2$) by 2050 through direct measures in buildings such as energy efficiency, fuel switching and the use of renewable energy (UNEP, 2016).

At a country level: Green buildings achieving the 'Green Star' certification in Australia have been shown to produce 62% fewer greenhouse gas emissions than average Australian buildings, and 51% less potable water use than if they had been built to meet minimum Australian industry requirements. Green buildings achieving the LEED certification in the US and other countries have been shown to consume 25 per cent less energy and 11 per cent less water, than non-green buildings.

Social - Green building benefits go beyond economics and the environment, and have been shown to bring positive social impacts. Evidence includes:

- Workers in green, well-ventilated offices record a 101 per cent increase in cognitive scores (brain function) (Harvard T.H. Chan School of Public Health / Syracuse University Centre of Excellence / SUNY Upstate Medical School, 2015);
- Employees in offices with windows slept an average of 46 minutes more per night (American Academy of Sleep Medicine, 2013); and,
- Research suggests that better indoor air quality (lower concentrations of CO_2 and pollutants, and high ventilation rates) can lead to improvements in performance of up to 8 per cent (Park and Yoon, 2011).

ADCW's Green Building Credentials

Green building is very much part of our project. We use the MOD DREAM tool to assess new buildings' performance at each stage. Modular SLA units, incorporating bat bricks in their outer fabric, LED light fittings, aerated taps, covered bike sheds and FSC timber all help our new buildings achieve an 'Excellent' DREAM rating. The solutions are however dynamic. After the original ABP masterplans, additional buildings will now use an updated version of DREAM (version 6.0) which may change some of the green design solutions considered. New UK government building contracts are soon likely to impose a demonstrable commitment to reduce the use of single-use plastics. Local policies are also changing and the Warminster Estates Study confirmed Wiltshire Council now recommends an Ultra-Low Energy Vehicle infrastructure (e.g. electric vehicle recycling points) provision is made across Wiltshire for all new developments. Maybe the next stage for ABP will be to consider recharging points for electric bicycles, or perhaps after the weather so far this year, recommendations for more passive shading to prevent summer overheating and maximise winter solar gain?