

Sustainability Matters

Climate Change and Counting Carbon

December 2018

ZERO HARM
courage to care

KBR
Aspire defence

Our wonderful, sizzling summer this year is now but a distant memory. The good news, for many of us, is that summers with the warmth of 2018 are much more likely in the future. In November, the Met Office published an assessment of how the UK climate has changed since the 1960's (<https://www.metoffice.gov.uk/news/releases/2018/climate-extremes-report-supplement>). The hottest day of each year over the most recent decade (2008-2017) has been on average 0.8 °C warmer than the hottest day of each year over the period 1961-1990.

Warmer summers, although potentially a short term climate change opportunity for many of us, are linked to other changes in our climate which could be much more difficult to live with. Met Office long term forecasts estimate the average summer rainfall could drop by upto 47% by 2070. Winters too could be warmer, by upto 4.2 °C. Winters will also have much more rainfall, with estimated increases of upto 35% by 2070. Raised sea levels are a consequence, and forecasts predict the UK is set to see an increase in both the frequency and magnitude of floods.

Summer heatwaves, heavy rainfall, rising sea levels, and storms present both opportunities and risks for the construction industry and our home lives. How will our buildings, roads, railways, power stations, reservoirs, farms and other critical infrastructure cope with these changes in climate during our lifetime and what do we now need to design and build to make them cope?



Images 1 & 2: UK Summer Heatwave of 2018, Flooding in 2014 (photo credits: (1) bbc.co.uk / (2) Getty Images)

The Climate Change Opportunity

There is a real business opportunity for the construction industry from climate change. Use of renewable fuels, more sustainable materials, innovative, climate resilient designs and landscaping will be an increasingly important requirement. It is estimated by 2030 that the market for low carbon technologies will exceed £1.8 trillion a year globally. Extreme weather conditions will need to be factored into delivery programmes. Our knowledge of modular construction and KBR's construction experience in extreme climates across the globe will become even more relevant in the UK. The current Sustainable MOD Strategy has set a strategic objective to adapt and prepare activities, infrastructure and equipment assets to become resilient to the impacts of current and future climates.



Image 3: Green walls, healthier cities, reduced run-off? (photo credit: UK Green Building Council)

Counting Carbon

Carbon footprinting is a technique which is used to estimate emissions of the greenhouse gases (GHG) contributing to climate change. For simplicity, carbon footprinting is usually expressed in tonnes of carbon dioxide equivalent (CO₂e) but includes the many different GHG which contribute to climate change. There has been a consolidation in UK carbon footprinting estimating methods. Notably, the UK Government's 'Act on CO₂' website, with its excellent calculator, was archived and taken off the internet in 2012. Recently international standards have been released which cover reporting carbon footprints including ISO 14026:2017 Environmental labels and declarations — Principles, requirements and guidelines for communication of footprint information and ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification.

If you want to calculate your own carbon footprint, a similar free, detailed calculator to the old 'Act on CO₂' calculator can be found on the carbonfootprint.com website, but you will need to know your detailed utilities and travel figures over the past year: <https://www.carbonfootprint.com/calculator.aspx>

For a simpler, quick, personal footprint calculation, the World Wide Fund for Nature provides a personal footprint calculator: <https://footprint.wwf.org.uk/>

This calculator is divided into four sets of questions which will help calculate your impact on the planet:

- 'Food' covers diet, food waste and buying habits.
- 'Home' covers energy type and usage in the house and the presence of energy-saving measures.
- 'Travel' covers personal and public transport usage for leisure and work, and flights.
- 'Stuff' covers the purchases of consumable items.

Footprinting our project

We have for many years at ADCW calculated carbon footprints. During Project Allenby / Connaught we calculated the embodied carbon (the total emissions from raw material extraction, processing and manufacturing of a product) of all materials supplied for construction as well as the carbon emissions from active functions in the design and construction of the project. The carbon emissions for Project Allenby / Connaught construction works were 216,706 tonnes CO₂e, which when averaged over built area were 0.39 tCO₂e per m². Our studies also reported a 30% like for like saving in the embodied carbon for modular accommodation buildings compared to traditional construction. We are currently reviewing some designs for ABP against this assessment and updating the assessment to emission factors relevant for 2018.

Our current designs address the challenges of climate change through their emphasis on energy efficient buildings which meet the requirements of the Defence Related Environmental Assessment Method (DREAM) 'Excellent' standard for New Build and 'Very Good' for Major Refurbishments. To achieve these requirements new assets normally incorporate natural ventilation, energy efficient lighting, photovoltaic solar panels, low water consuming devices and sustainable drainage systems (SuDS) which are designed to protect assets during significant rainfall events.

As part of our current carbon footprinting work we are asking again for **YOU to complete the travel questionnaire** (attached with this e-mail separately). This asks details about the mode of transport (car, motorcycle, bicycle, bus, walking etc.) each person uses to get to and from work and then, based on how far you travel, calculates a CO₂e. This data when combined with utilities consumption, use of water and waste generation data will help develop the carbon footprint for our business. Please return the questionnaire to the ADCW Environmental Team at:

environmental.mailbox@aspiredefence.co.uk



The theme for this edition of Sustainability Matters is covered in more detail by UN Sustainable Development Goal 13. There will be an important UN Climate Summit in Poland in December. More information and a summary video can be found at:

<https://www.un.org/sustainabledevelopment/climate-change-2/>