

A new metric

Simon Sturgis of Sturgis Carbon Profiling (SCP) talks to Make about ‘whole-life carbon’, the future of sustainability in the built environment, and providing carbon consultancy to some of the world’s best-known businesses.



What led you to set up SCP?

I'm an architect by training and had a practice for nearly 20 years. We were doing a lot of work with existing buildings, and it became apparent that there was a huge amount of waste. That got me thinking. Can you avoid throwing stuff away all the time? Can you keep it? Can you recycle it better? That led to the idea of carbon cost. If you can calculate the carbon cost of materials, you can put it side by side with the energy costs of running the building and they become a sort of unifying thing. It was thinking about how buildings are made for their life and future life cycle.

You're describing the 'whole-life carbon' concept SCP advocates.

Exactly. I think it could fundamentally change the way we design buildings. Starting at concept design stage, it's thinking about where the bits have come from, where the bits are going, how you take the building apart, whether you can use the same materials assembled in a different way, about redundancy and longevity, or short-term but recyclable.

Particularly if they're public buildings, should they last 100 years? 200? At the moment we get warranties for components that are 25 years. With certain buildings you have to replace all the cladding 40 years down the line. In carbon terms, if you can

efficiently replace cladding as necessary, that's not a bad thing. But if you're talking about public buildings, then maybe you should only be replacing, say, the windows. Then you make buildings much more substantial and long-lasting.

What's the last year been like for SCP?

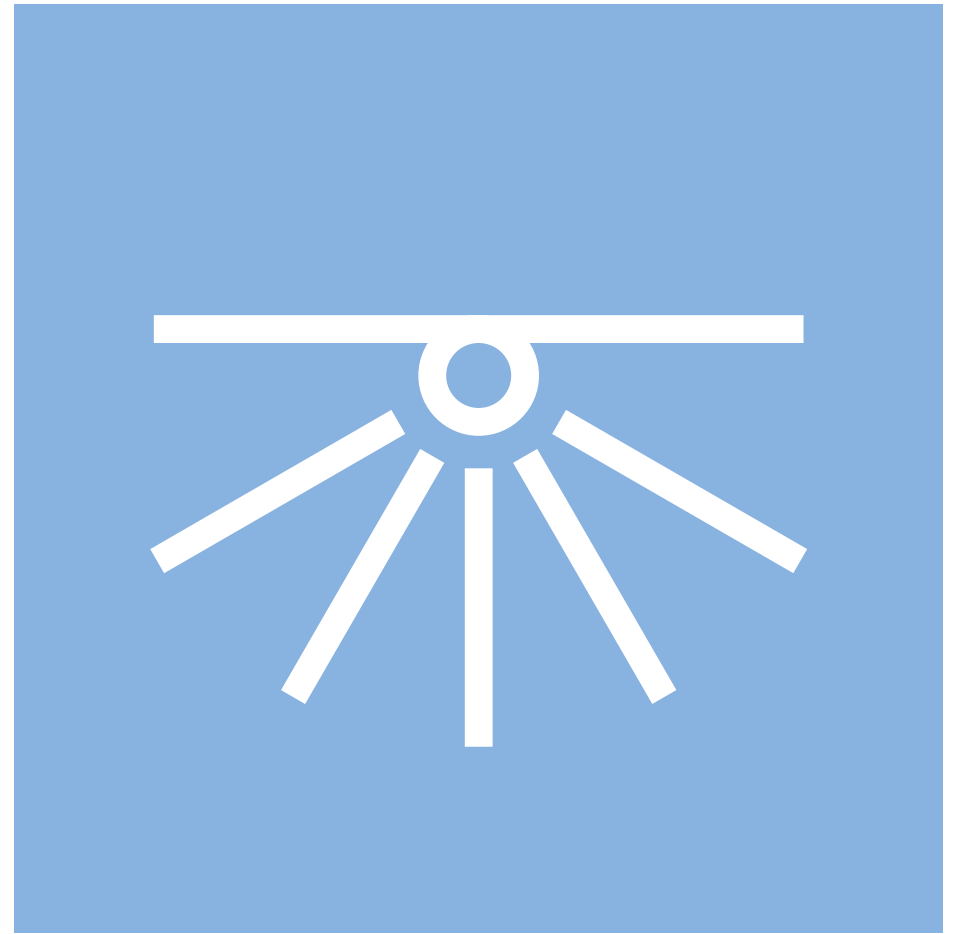
We've been getting increased traction from clients like Land Securities, Argent, Google. They're beginning to realise that getting involved in carbon reduction practice and assessments after planning is too late, that the real fundamentals are at concept stage.

The work we're doing with Argent at King's Cross includes a project where we're helping the architects think about what they can do to bed down a low-carbon culture from the outset. Is the building capable of modification down the line? Is it easy to adapt and change? Should the cladding be coated aluminium or timber? Can you recycle it easily? And so on. It's getting people to think about it right from the outset.

We're also working for clients such as Grosvenor on creating overarching strategies in pure operational energy reduction. That includes improved energy use, or energy reduction, but also the way they build buildings. Things like introducing Passivhaus/ EnerPHit technology into the mix.



Simon Sturgis is managing director of Sturgis Carbon Profiling and has over 30 years' experience as an architect. He is a member of numerous industry organisations, including Design Council CABE, the RIBA Sustainable Futures Group and the BCO's Environmental Sustainability Group.



What are the most recent developments in carbon policy that affect this space?

I think there are two directions here. One is that the government seems to be removing elements of legislation that have supported a green agenda. On the other hand, the trajectory of industry leaders is moving to a lower carbon approach.

I'm currently leading a team which includes RICS, Cambridge University, Laing O'Rourke, Land Securities, Arup and others to write the rules for carbon assessment across UK properties. We recently got Innovate UK funding for it. We're taking the current British standards and sorting out all the little gremlins that currently make different practitioners do different things, and which undermine the credibility of carbon analysis. The idea is to come up with something that will ultimately have RICS certification. The BRE is also evolving in this direction.

What sort of incentives could help carbon-efficient buildings become the norm?

Invariably, legislation is always a good one, but in the absence of legislation, what's happening at the moment with some of the market-leading property companies is that they want to future-proof their asset value. That means they're trying to pre-empt expected legislation by doing things now which they'd otherwise expect to have to do in two or three years' time.

Resource efficiency is also impacting positively on costs. We were involved with a development for a big developer in London where everything was going to be anodised. We said, "Does it have to be anodised?" because anodising puts an extra burden on the carbon footprint of the aluminium. But both the client and the architect wanted a shiny building, so we said, "Does it have to be shiny on the inside? Could we powder-coat the internal cladding?" So that was done, and we achieved a six-figure saving in the capital cost of the cladding and substantial carbon savings.

All these things are economics-based. That's quite an important point to make. This is not, for want of a better description, a 'brown bread and sandals' exercise. These are people who are very concerned about budget and efficiency. And in a way, I think carbon reduction is another term for 'resource efficiency'. It's about improving the way we use resources.

Do you think sustainability standards ever impede the design process or limit the full aesthetic potential?

I think initially people's immediate reaction is, "Oh, it's more legislation." But when architects start to get their heads around these issues, they realise that constraints can be liberating. That may seem counterintuitive, but the same



thing could be said of Part L, which was initially seen as a bit of an irritant and an extra cost. But once it all becomes part of the whole process, it's not a problem. We're also finding that architects we work with like that their buildings are inherently better for the environment.

How much influence does the UK have in sustainable design globally?

The UK has certain things – for example, the BCO does an office guide, and we have things like BREEAM. Both of those things are used well out of area. The BCO office guide, I'm told, crops up on architects' desks all over the world because it kind of is a standard.

Different standards occur worldwide, but a key feature of our Innovate UK-funded project is that the UK standard (BSEN 15978) is the same as the EU standard (CENTC 350). This means that our work has the capability and objective of becoming usable EU-wide.

How does the UK's approach to sustainability compare to other countries'?

I think different societies have different attitudes. In the UK, people are concerned about carbon emissions a bit more than they are in France, where they have a high nuclear-dependent grid, so carbon emissions are less of an issue.

Interestingly, places like China are realising that resources of the planet are not infinite, and to be able to breathe air in Beijing and keep their economy going, they've got to find ways of reusing material, and are doing incredible things already. In India water is a key concern, so that's more of a priority for them than for us.

Do you think that the BREEAM and LEED codes are stringent enough?

Not at the moment. I think BREEAM 2014 has some aspects that are leading towards a low-carbon view of life. My guess is they'll have a lot more in the next iteration, but at the moment you kind of get punished if you're reusing a building.

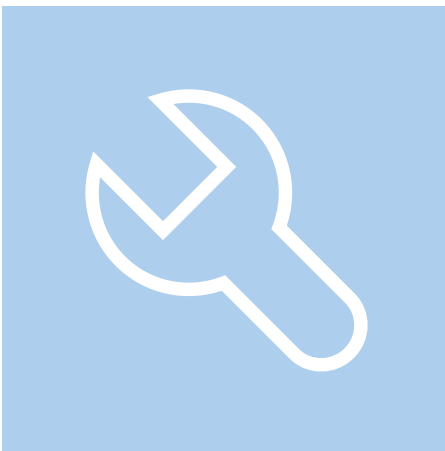
1 Chart showing relative carbon emissions from all sources in a typical occupied office building over 60 years.

Where does a building's carbon come from?

- Key**
- Business travel
 - Commuting
 - Operations
 - Refurbishment, replacement and maintenance
 - Construction to practical completion
 - Furniture
 - Consumables



“We need to think about where the bits have come from, where the bits are going, how you take the building apart, whether you can use the same materials assembled in a different way.”



It's generally easier to get a BREEAM 'Outstanding' by building new, because it's more about performance. BREEAM tends to be slanted towards performance, and to get an existing building to perform as well as a new building is more difficult. From my perspective, the fact you're retaining and recycling an entire structure, and thus reducing emissions, should have a significant recognised impact.

If you go back to BREEAM 2008, which was for the Olympics, some buildings there – and I think they are all BREEAM 'Excellent' – used huge quantities of material compared to others. None of that showed up in the assessments. These things evolve, so I'm not criticising particularly, but there are huge quantities of energy being used up to make buildings, which is not yet being reflected in BREEAM.

Do you have a vision of what things might look like from a carbon perspective 5, 10, 20 years down the line?

We'll get buildings that are really substantially built with, say, brick. It's quite carbon-expensive to make, but if brick lasts hundreds of years, and the building is designed to deal with that, then I think that's one direction. So durability, with the ability to easily change those bits that need to be changed.

Alternatively, the way forward might also be short-life but high recyclability. We did a scheme for a 25-storey tower designed so that the cladding would be changed every 30 years, in line with lease cycles. That would mean the cladding has to be inherently low-carbon and recyclable. It's the overall carbon life-cycle costs of the building's components that matter. So the question then is what do you clad a building in for the next 30 years that can be reused in the future with minimal carbon cost? That's quite an interesting thought process.