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Output from the sixth Carbon Crunch seminar hosted by Mott MacDonald on 14 November 2018 at the Institution of Civil Engineers, London

Achieving net zero

The investor angle

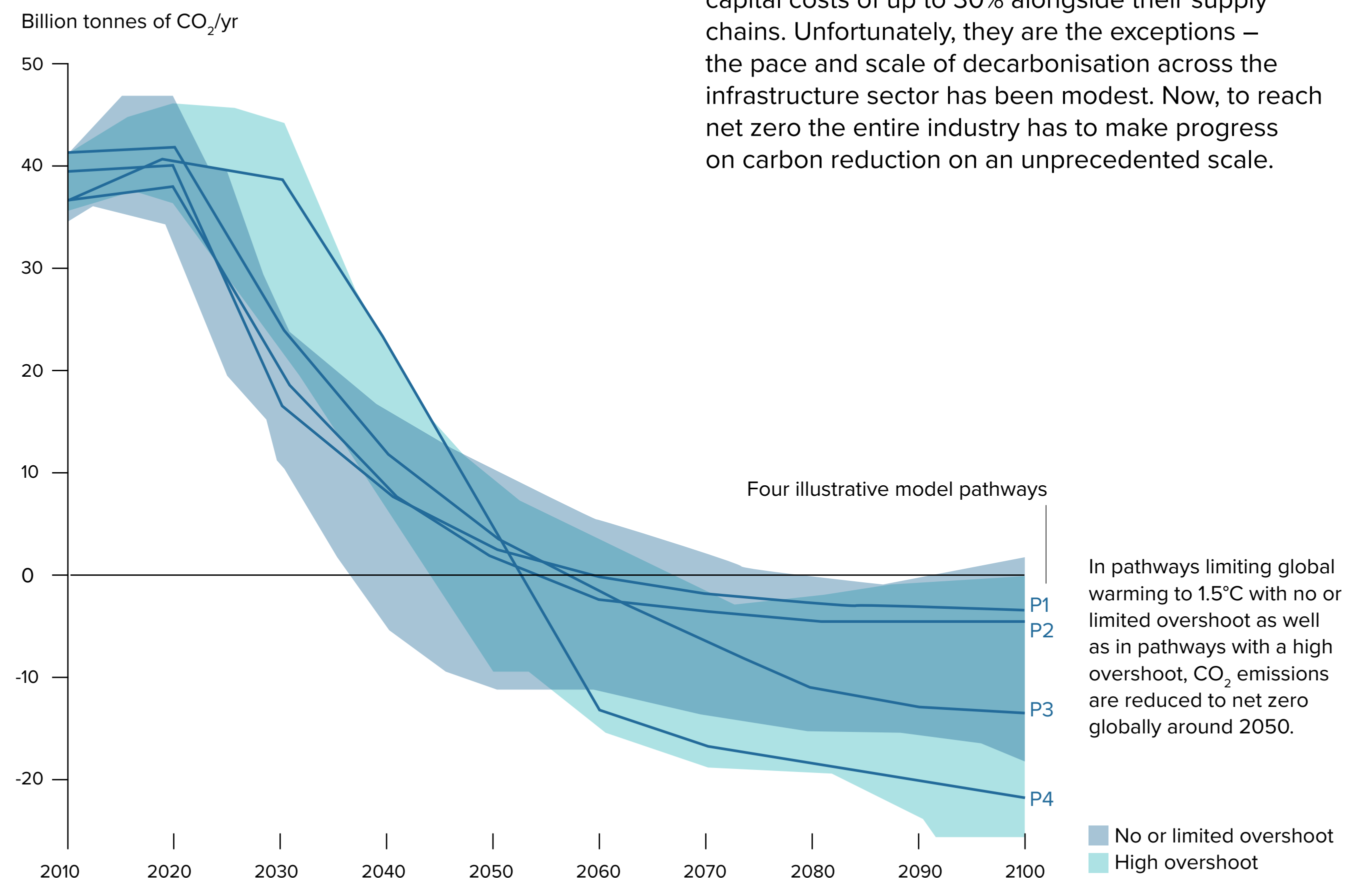
Time to act

Mark Crouch
Carbon management team leader
Mott MacDonald

Reaching net zero carbon emissions is the new reality. In May 2019, the Committee on Climate Change recommended a greenhouse gas emissions target of net zero by 2050. In June, the prime minister delivered a speech committing the UK government to this new target, with signs that similar targets will be legislated across the EU and internationally.

The level of ambition has ramped up and we need to take action. If legislation and regulation is the proverbial stick, then the carrot is the fact that cutting carbon has been shown to cut costs by driving more efficient planning, design, construction and asset management. Some leading infrastructure owners and operators are cutting capital or embodied carbon by up to 60% and achieving cuts in average capital costs of up to 30% alongside their supply chains. Unfortunately, they are the exceptions – the pace and scale of decarbonisation across the infrastructure sector has been modest. Now, to reach net zero the entire industry has to make progress on carbon reduction on an unprecedented scale.

Global total net CO_2 emissions



4°C

Average global temperature rise by 2100 on current levels of carbon emissions

<2°C

An average global temperature rise above 2°C will develop its own momentum with catastrophic results

Investors are taking notice

Another powerful impetus is coming from investors. They see climate change as a major threat to financial stability and shareholder return, with carbon-intensive businesses posing the biggest risk. A growing number of investors, lenders and insurers are pledging to divest holdings in firms that refuse to curb emissions, instead financing companies that are committed to action.

This is being made all the easier by the increasing demand for carbon disclosure. The Financial Stability Board established the Task Force on Climate-related Financial Disclosures (TCFD) to encourage more consistent and comparable metrics on carbon emissions, future targets, action on climate risks and alignment with the Paris Agreement. More than 500 organisations expressed support for the TCFD's recommendations, including almost 300 financial firms managing assets worth nearly US$100trn – roughly one third of total global wealth, showing that carbon disclosure has become a mainstream international issue.

A clear choice

Current levels of carbon emissions are set to warm average global temperatures beyond 4°C compared with pre-industrial levels by the end of this century. Climate science indicates that above 2°C is the tipping point at which climate change will develop its own momentum, with potentially catastrophic results. The signatories to the Paris Agreement in December 2015 pledged to prevent the global average temperature exceeding the 2°C threshold, and there is now a strong impetus to achieve a much more challenging limit of 1.5°C.

The world is moving in a clear direction on carbon reduction, and organisations face huge financial risks if they don't adapt quickly enough. There is one choice for everyone that owns, operates, creates and manages infrastructure: will you lead in adding value to your business, or wait for external pressures to force your hand?

What we have learned in 10+ years of the Climate Change Act

Chris Stark
Chief executive
Committee on Climate Change

When the Climate Change Act was passed by Parliament on 26 November 2008, it committed the UK to cutting carbon emissions by 80% against 1990 levels by 2050, with interim targets in five-year carbon budgets to ensure governments don't kick the commitment down the road. We were established to act as an independent arbiter on its progress. Over the past 10 years, UK greenhouse gas emissions have declined by an impressive 43%. Here are nine key takeaways from the last decade.

1. Low-carbon energy is key

Low-carbon energy has fuelled the reduction over the past decade. Steady electrification makes it possible to decarbonise the economy in a way unimaginable 10 years ago – and even to imagine an energy system that no longer uses fossil fuels.

2. It's cheaper than we thought

Our early advice to government was that decarbonising the economy would be costly, but a price worth paying. Happily, we underestimated how developments in renewable energy technology would cause prices to plummet, with further falls expected.

3. Decarbonisation boosts the economy

We've seen great innovations and positive economic effects where we have begun to decarbonise. UK GDP has grown by 70%, while emissions declined by 43%, demonstrating you can have a strong economy and pursue a low-carbon agenda.

4. The infrastructure industry has a vital role

The National Infrastructure Commission says about £30bn a year must be invested in infrastructure between now and 2050 – just under 1% of UK GDP. If we ensure low capital and operational carbon and climate resilience are core to projects, then we can support the UK's carbon emissions targets while delivering great savings to the public purse and private investors.

5. It's not just about the power sector

Over the last five years, more than half the reduction has been generated by the power sector – mainly from closing coal-fired power stations. Now, the rest of the economy needs to catch up.

6. We understand the risks better

Events over the past decade demonstrate just how damaging climate impacts can be. People can now link the need to decarbonise with tangible events, such as the 2017 heatwave and the 2014 winter floods.

7. It's a global issue

Global collaboration to reduce emissions is crucial – the size of the world economy is predicted to double over the next 20 years, with its infrastructure base set to double within 15 years. Countries need to work closely together to cut carbon emissions by between 20% and 50% by 2040.

8. We need the support of the global financial system

The Intergovernmental Panel on Climate Change calculates the global carbon budget is 125-225GtCO_2 if we are to limit global temperature rise to 2°C. Yet the Carbon Tracker Initiative estimates total coal, oil and gas reserves listed on the world stock exchanges equate to 762GtCO_2. Clearly, the international financial system has a major role to play in supporting the move to a low-carbon global economy.

9. The problem is political

There's no question that we're able to minimise the rise in global temperature – and that we can afford it. The main barrier is political will. The infrastructure industry can support the UK's decarbonisation agenda by building infrastructure that is compatible with a low-carbon economy, is climate-resilient and minimises capital carbon. The success of offshore wind power has shown policymakers can help by ensuring policy delivers long-term stable returns. The benefits to the bottom line of resilient, low-carbon infrastructure must be brought into the business case for development.

Elevating carbon to board level

Sir Roger Gifford
Chair
UK Green Finance Initiative

Increasingly, business leaders are looking at how to decarbonise their firms, including at board level. This is because the threat of climate change can affect a company's operational risks, reputation and profitability.

This is a matter for shareholders as well as treasury, so boards are getting involved, despite the fact that some businesses have considered the green agenda more of a box-ticking exercise to date.

However, insured and uninsured global losses due to catastrophic events, including those which are seen to have emanated from climate change, have risen dramatically over the past 40 years, topping US$100bn in 2015. Add to that the regulatory and legislative changes made by governments in their efforts to meet the commitments of the Paris Agreement, and business has finally woken up to smell the coffee, as they say.

Green finance is a means to address this and promote change through risk mitigation and the financing of carbon reduction and environmentally beneficial projects. Loans are made and bonds are issued to help develop low-carbon, sustainable assets, driven by the investor community which wants to see real change. And with no reduction of returns from green finance, there is every incentive for the investment community to get on board.

US$100bn

Global losses in 2015 due to catastrophic events including climate change

Offering incentives

Harnessing the power of investment institutions behind green infrastructure and shifting them away from brown infrastructure will be hugely beneficial. For example, a green mortgage system would encourage home-buyers to spend on introducing better energy and insulation in return for a cheaper loan. Experience has shown that the incentive needs to be sufficiently tempting. In the US, the Federal National Mortgage Association introduced a scheme to help develop multifamily apartment blocks with reduced water and energy needs. When it only offered a 0.125% discount over regular development loans, few people took up the offer. When the discount was raised to 0.25% and the level of cover increased, the scheme became dramatically more popular. Green finance is also a great opportunity for the UK. Our expertise in developing low-carbon infrastructure is internationally renowned, while London is the world's foremost international financial centre. The UK could become a hub for green finance, with domestic businesses well placed to advise other markets on decarbonisation and the financing behind it.

Use internal carbon pricing to drive change

Nicky Conway
Sustainability manager
National Grid

"My advice – whether you are an investor, part of the supply chain, or a site worker – is to keep on asking the key question: how are you responding to climate change opportunities, and how are you managing the risks?"

10% › 5%

For every 10% reduction in carbon there is up to 5% reduction in cost

Feedback from investors is clear. They expect us to make our investment decisions based on whole-life carbon as well as whole-life cost.

And it's no surprise, as the financial implications of climate change on our assets alone are sobering, including:

- Lower returns
- Impacts on share price
- Loss of trust
- Fines or stranded assets

To answer their questions, it helps to talk about carbon in a way that dovetails with our financial reporting. This is why we've adopted carbon pricing to spearhead development of greener assets.

As our investments are long term, we have set a price of £45 per tonne for 2030. This put in place a price we are likely to be exposed to in future and helps us understand our future ability to meet our targets. This will also help emissions become more visible and meaningful to financial decision makers, so decisions made today will take into account our future ability to meet targets.

We're a large organisation, effectively made up of multiple interlocking businesses, so it's been a big challenge to embed our carbon pricing policy in all our processes. We've trained people to ensure they can generate carbon prices and track the outcomes of it.

Carbon pricing brings environmental impacts to the optioneering stage of asset development, enabling us to add carbon as a 'cost' in pounds and pence on top of the standard capital and operational costs. Doing this will highlight clear capital and operational savings from lower-carbon assets. Where a lower-carbon asset has a higher capital cost, we can assess whether reducing carbon emissions over the lifecycle for a specific asset is a price worth paying.

Even though we have yet to apply the carbon price, we are working with our supply chain to improve carbon performance through our tenders. These tenders include a weighted element for sustainability and we ask suppliers to commit to our targets and provide evidence of how they will drive down carbon. So far, we've found that in 75% of cases, bids with better carbon performance were chosen, showing that lower-carbon schemes are better value. Meta-analysis of our figures demonstrated that for every 10% reduction in carbon, there is up to a 5% reduction in cost.

A framework for action

Dominic Burbridge
Associate director
Carbon Trust

The UK has a pipeline of more than £460bn in infrastructure projects to build over the next four years. These must be designed, financed, built and operated in a way that works well for the people they serve and supports our transition to a low-carbon economy.

Companies gain a competitive advantage which is achieved through greater resource efficiency and reduced energy costs. They can also find ways to develop new lower-carbon products or services, expand access to markets, and build resilience to the impacts of a changing climate.

"Cutting carbon is not a burden – it drives savings and creates new opportunities for profit."

As an organisation adapts to a low-carbon economy, it will commonly do so through five streams of activity.

1. Contextual analysis

Understanding the business's drivers, market opportunities and core challenges is the key to developing a successful pathway for cutting carbon.

2. Target setting

Pathway to carbon reduction requires a baseline for current operations and setting targets and timeframes for action.

3. Implementation

Once a strategy has been established, it must be embedded in processes across the organisation, with training to equip people with the skills to deliver it.

4. Innovation

The new, robust targets stimulate innovation as your teams strive to find new ways of working which maintain service while cutting carbon.

5. Influencing

Share lessons learned throughout the organisation, across the supply chain and in the wider industry to embed change and create conditions for further progress.

Green impact investment

Hayden Morgan
Senior manager
Green Investment Group

The Green Investment Bank was the first institution of its type in the world. A pioneering business – created and initially capitalised by the UK government with £3.6bn of public funding, with a mission to accelerate the transition to a greener economy. The institution was mandated with a double bottom line, to be both green and profitable, and attract private investment into underserved green sectors.

In 2017, the Green Investment Bank was privatised, bought by the world's largest infrastructure investor, the Macquarie Group, and renamed the Green Investment Group (GIG). Our mission remains the same but we now have a global reach.

For every investment we make, we publish a Green Impact Report. It provides quantified positive environmental impacts such as avoided emissions of greenhouse gas and air pollutants, as well as fossil fuels saved. Annually, we publish a Green Impact Statement, which shows the aggregated impact of our whole investment portfolio.

The GIG has been leading efforts in standardising carbon accounting and sustainable finance principles. The Harmonised Approach for GHG Accounting, which we chair, means financial institutions can use the same criteria in reporting, enabling investors to compare the impact of projects on a like-for-like basis.

Other initiatives include our collaboration with the City of London and the Green Finance Initiative's Strategic Advisory Group, our work to develop an international standard on green bonds/loans (ISO 14030), and acting as lead convener for the proposed ISO sustainable finance global standard.

We invest according to our Green Investment Principles:

1. **Positive contribution to a recognised green purpose**
2. **Reduction of global greenhouse gas emissions**
3. **Enduring green impact**
4. **Clear and firm investment criteria**
5. **Robust green impact evaluation**
6. **Effective covenants, monitoring and engagement**
7. **Transparent reporting**

Financing water projects using green bonds

Jane Pilcher
Group treasurer
Anglian Water

2030

Deadline the water sector in England has set itself to achieve net-zero carbon emissions and to triple leakage reduction

61%

Reduction in carbon emissions compared with our 2010 baseline

Over the next five years, we expect to finance about £3bn of investments. We're hoping to raise most of this money through green financing.

Anglian Water serves an area at risk from the effects of climate change – reduced rainfall and sea level rise among them. Our region's population is also growing. The challenge we face is to serve 6M customers in one of the most vulnerable areas for water in the UK. Because climate change is such a significant issue for our region, we feel that it is imperative for us to act responsibly by avoiding greenhouse gas emissions. We have to do that in a cost-efficient way: political instability and economic volatility are creating uncertainty around household incomes. We have to balance the desire to keep bills affordable with the need to invest to maintain levels of service for our customer base.

So, what are we doing to meet the challenges of running a green business?

In 2010, we set out to halve the carbon footprint of all new assets within five years. We exceeded this goal, with the help of PAS 2080 – the carbon management standard for infrastructure assets. We looked for an equivalent carbon management standard in the green finance sector and chose the Green Bond Principles, which have been adopted by the International Bond Markets Association. We've raised over £700M through green bonds and our first Green Bond Annual Report issued in 2017 provides information on about 200 projects.

Keep investors involved

It's important to let investors know exactly how their money is making a difference. The report informed investors in our first green bond that, on average, every £1M reduced emissions by 339tCO_2, created £315,000 in efficiency savings and secured or created 20 jobs. Overall, this £250M helped us achieve a 61% reduction in carbon in comparison with our 2010 baseline.

Information is broken down so each investor can see exactly what their investment achieved, whether that was reducing ammonia in effluent, cutting material waste in a new asset or climate adaptation. The next edition will go further, highlighting which of the 17 UN Sustainable Development Goals each project is helping to achieve.

The Green Bond Framework has been a win for us and our investors. No project gets the go-ahead unless it cuts carbon and costs. Our ability to leverage this form of finance, with all the benefits it brings, can be traced directly back to the action and governance systems we have taken to cut carbon over many years.

Disclosure supports financial decision making

Sonya Bhonsle
Head of supply chain
CDP

Investors have started to place more importance on companies' carbon credentials. Many have upped the ante from enquiring: "What are your sustainability metrics?" to: "What are you going to do about them?"

329

Number of investors which asked companies to undertake climate-related scenario planning assessments in 2017

In our work collecting companies' environmental and climate-related information and passing it to investors worth a combined US$87trn, this is a trend we have increasingly observed.

CalPERS, the US$300bn Californian public employees' pension fund, has taken a proactive approach. It assessed 10,000 companies and worked out that 70% of emissions were produced by just 340 companies. So, it looked at the environmental targets these companies reported and calculated that if achieved, the overall emissions of the CalPERS' portfolio would be reduced by 6%. CalPERS is engaging with these companies to drive further action.

Last year, 329 investors representing US$25trn wrote to companies asking them to undertake climate-related scenario planning assessments, report commitments on emissions reductions, and show their future pledges – specifically by signing up to targets set by the We Mean Business coalition.

Investors increasingly consider sustainability a good benchmark for operational excellence. Companies with robust sustainability practices demonstrate better operational performance, which translates into better bottom-line returns.

Indices are being created to reflect this information to investors; for example, the Global Climate Change Leaders Index from STOXX, which uses CDP scores. The index outperformed its parent index (STOXX Global 1800) by 5.4% between 2011 and 2018.

Rise of the activist investors

Margaret-Ann Splawn
Executive director
Climate Markets and
Investment Association

Nationally determined contributions (NDCs) are key to achieving the Paris Agreement. Each country that signed the agreement has set itself targets for reducing emissions. The NDCs could be a trigger for investment.

At present they're simply political goals and we need financiers and industry to help translate them to tangible, low-risk projects able to attract funding.

If we make finance work for a low-carbon economy, then it shifts from being just a 'good thing' to being profitable. The investment world is changing to create this impetus. Fifteen of the world's largest insurers are moving away from coal. Allianz says it will no longer offer insurance for constructing new coal mines and will not renew existing contracts, while Aviva states it will not invest in mining companies that do not disclose how they manage climate risk.

In fact, global fossil fuel divestment has reached US$6.24trn from almost 1000 institutional investors. Ireland has become the first country to sell off all investment from fossil fuels, while Norges, the world's largest sovereign wealth fund, has advised the Norwegian government to take similar action. Several banks, including Deutsche Bank and Royal Bank of Scotland, have also stopped lending to coal mines.

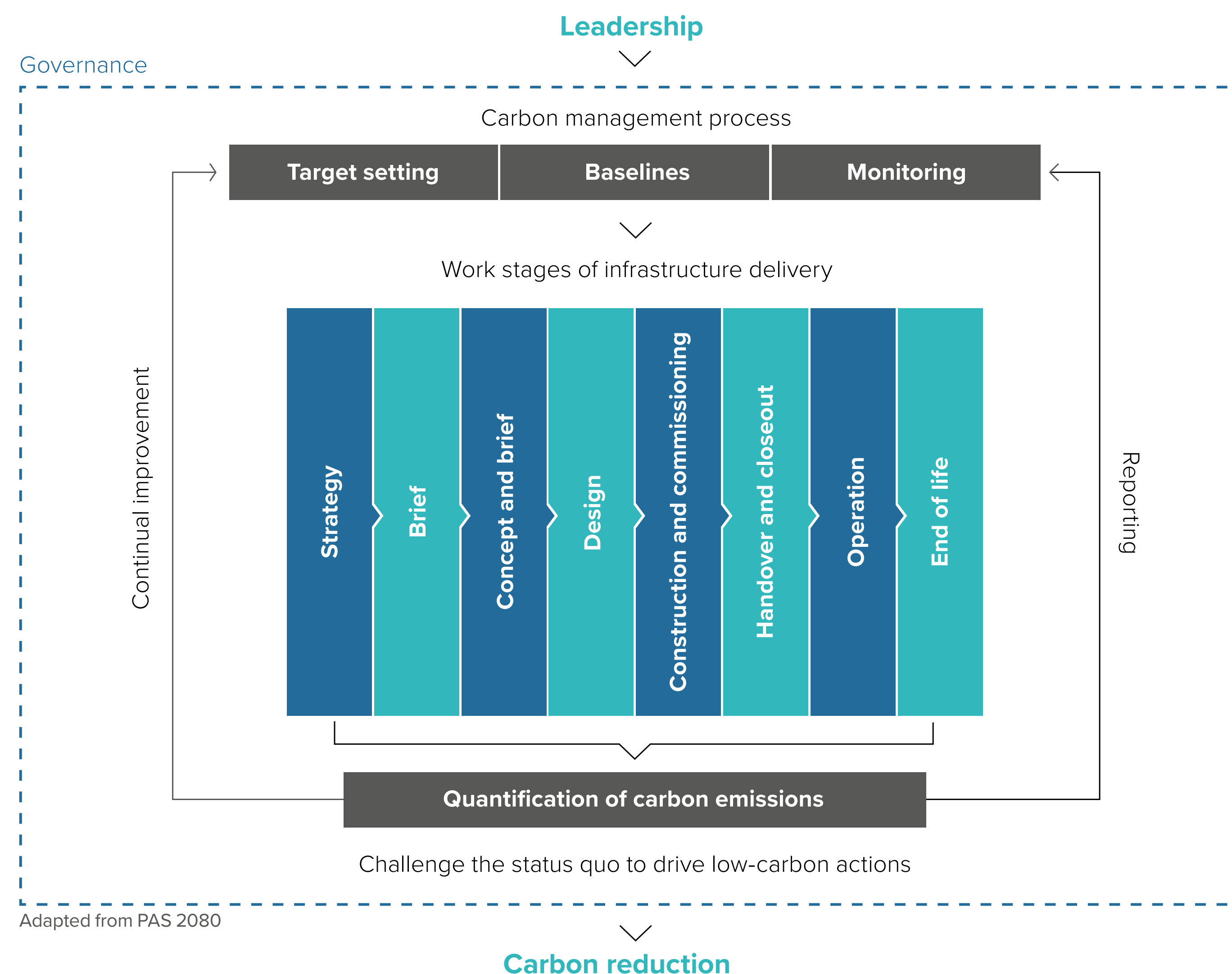
US$6.24trn

Global fossil fuel divestment by almost 1000 institutional investors

Low-carbon leadership

Defining the issue

The UK government's Green Construction Board commissioned us to produce the Infrastructure Carbon Review (ICR), a milestone report setting out the opportunities to cut carbon and cost in infrastructure. Drawing on the experiences of more than 100 leading infrastructure companies, the review maps out the most effective strategies and actions to achieve low-carbon solutions.



Adapted from PAS 2080

Setting the standard

Our work on the ICR led to the lead author role in creating PAS 2080, the world's first carbon management standard for infrastructure, launched in 2016. PAS 2080 addresses whole-life carbon (capital and operational greenhouse gas emissions) and provides practical 'how to' guidance on implementing the ICR recommendations. We put theory into practice by becoming the first consultancy to be independently certified to PAS 2080 – we know what it takes, and are well placed to support you.

Guiding investment

The International Finance Corporation (IFC, part of the World Bank) appointed us to revise its environmental health and safety guidelines for the thermal power sector, including carbon performance standards. The guidelines influence investment decision making across the power sector.

Finding the hot spots

Carbon Portal is our industry standard carbon assessment tool. It has been created for use in the project optioneering phase, when big decisions are being made and there is maximum control over carbon and cost. It uses cost and carbon data to improve the performance of building, power, transport and water projects, internationally. Carbon Portal is BIM-compatible, making the carbon and cost impacts of design decisions immediately visible.

Creating a community

We've championed the low-carbon agenda by organising and hosting a Carbon Crunch event every year since the launch of the ICR in 2013, working with infrastructure industry leaders to shine a light on leadership, culture, governance, contractual and commercial arrangements, metrics and standards – and celebrating achievements and successes along the way. We plan to keep on going!

Ask the right questions to help your organisation drive down carbon

1.

Is your organisation resilient to changes in investor attitudes?

2.

Does your organisation understand its carbon impact, and where the greatest opportunities for cost-effective reduction are?

3.

Does your organisation have a framework in place to demonstrate to investors the carbon mitigation value their investments make?

4.

Is your organisation doing all it can to maximise its green credentials and attract investment?

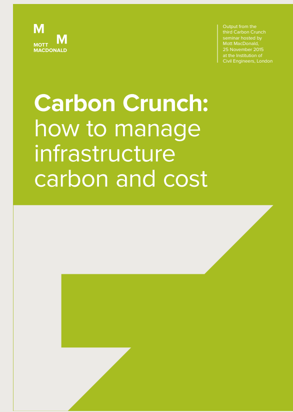
5.

Can your organisation afford not to take action?

2013
Click to view

2014
Click to view

2015
Click to view



2016
Click to view

2017
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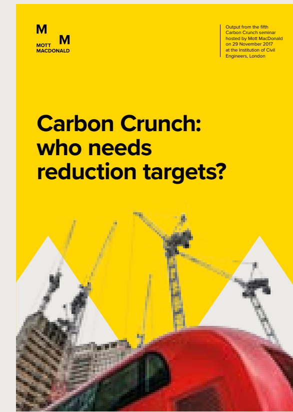

Opening opportunities with connected thinking.

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