

# From Paris to projects: your role in climate action

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# Centre for Research into Energy Demand Solutions (CREDS)

New multi-disciplinary centre, funded by EPSRC and ESRC - £19m over 5 years.







www.creds.ac.uk







Image from Tuvalu courtesy of Climate Visuals



Global Carbon Project (2017) Carbon budget and trends 2017 - www.globalcarbonproject.org



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The headlines this month...

# Final call to save the world from 'climate catastrophe'

Scientists warn of imminent climate catastrophe without massive changes

# We have 12 years to limit climate change catastrophe, warns UN

Urgent changes needed to cut risk of extreme heat, drought, floods and poverty, says IPCC

World to miss Paris climate targets by wide margin, says UN panel





### Agenda

Making the link from Paris to your project Climate action at High Speed Two Cut carbon by cutting complexity Q&A







# What one thing will you do tomorrow in your organisation?

Please respond using the Global Engineering Congress app





### Agenda

#### Making the link from Paris to your project

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### A century of unprecedented growth







Historic data & future projections from UN (2016), Smil (2010), Krausmann et al. (2009) SERI (2012), EIA (2016)

### Global technosphere now weighs in at ~30 trillion tonnes







Estimate by Zalasiewicz et al. (2016) Scale and Diversity of the Physical Technosphere : A Geological Perspective. Photo of Tokyo courtesy of CTG/SF: https://www.flickr.com/photos/27966213@N08/13987969379/

## We need changes in supply and demand





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Global Carbon Project (2017) Carbon budget and trends 2017 - www.globalcarbonproject.org

### **Consequences for the climate**







Global Carbon Project (2017) Carbon budget and trends 2017 - www.globalcarbonproject.org

# Impacts include

#### Increasing global temperature



#### Declining Arctic sea ice



#### Increasing sea levels



#### Widespread impacts on ecosystems







See IPCC (2014) Climate Change 2014 Synthesis report & Royal Society (2017) Climate updates. What have we learnt since the IPCC 5th Assessment Report? for full description of impacts

### Already ~1.2°C warmer where we are today



#### In comparison to 1951-1980





Screenshot from interactive developed by Carbon Brief (2018) https://www.carbonbrief.org/ mapped-how-every-part-of-the-world-has-warmed-and-could-continue-to-warm

### Global carbon emissions continue to rise





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## Emissions from the built environment and its supply chains





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Adapted from Allwood & Cullen (2012) Sustainable materials with both eyes open

### **The Paris Agreement**

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#### Nations Unies Conférence sur les Changements Climatiques 2015

COP21/CMP11



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(A)	Framework Convention on	Ditte United
	Climate Change	12 December 2015
-,		Original: English
Conference Twenty-first s Paris, 30 Novo	of the Parties ession mber to 11 December 2015	
Agenda item 4 Durban Platfo Adoption of a agreed outcom applicable to a	(b) orm for Enhanced Action (decision 1/CP.17) protocol, another legal instrument, or an ae with legal force under the Convention Il Parties	
1	ADOPTION OF THE PARIS AG	REEMENT
1	Proposal by the President	
1	Draft decision -/CP.21	
	The Conference of the Parties,	
t	Recalling decision 1/CP.17 on the establish he Durban Platform for Enhanced Action,	ment of the Ad Hoc Working Group on
	Also recalling Articles 2, 3 and 4 of the Cor	ivention,
	Further recalling relevant decisions of the decisions 1/CP.16, 2/CP.18, 1/CP.19 and 1/CP.20,	e Conference of the Parties, including
F I I I	Welcoming the adoption of United N VRES/70/1, "Transforming our world: the 2030 A varticular its goal 13, and the adoption of the A international Conference on Financing for Devel "ramework for Disaster Risk Reduction,	lations General Assembly resolution genda for Sustainable Development", in ddis Ababa Action Agenda of the third opment and the adoption of the Sendai
t t	Recognizing that climate change represent hreat to human societies and the planet and thus by all countries, and their participation in an esponse, with a view to accelerating the reduction	s an urgent and potentially irreversible requires the widest possible cooperation effective and appropriate international of global greenhouse gas emissions,
t	Also recognizing that deep reductions in gl o achieve the ultimate objective of the Conventio n addressing climate change,	obal emissions will be required in order n and emphasizing the need for urgency
s	Acknowledging that climate change is a c hould, when taking action to address climate cha espective obligations on human rights, the right to	ommon concern of humankind, Parties nge, respect, promote and consider their health, the rights of indigenous peoples,
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Global Carbon Project (2017) Carbon budget and trends 2017 - www.globalcarbonproject.org



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# Implications for built environment







See Giesekam et al. (2018) Aligning carbon targets for construction with (inter)national climate change mitigation commitments *doi:10.1016/j.enbuild.2018.01.023* for detailed discussion















Numbers accurate as of 15/10/18 - see sciencebasedtargets.org for more information

## UK construction company carbon targets

Carbon reduction targets of selected UK housebuilders & construction firms (representing turnover of £88.4bn in 2016) - based on July 2017 review



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Figures from Giesekam et al. (2018) Aligning carbon targets for construction with (inter)national climate change mitigation commitments & UKGBC (2017) Delivering low carbon infrastructure

## Typical breakdowns of whole life carbon emissions



As operational emissions in new buildings reduce, the focus must move towards reducing **whole life emissions**, including embodied emissions





for a primer read Giesekam (2018) Reducing carbon in construction: a whole life approach Figures from UKGBC (2017) Embodied carbon: developing a client brief

### Guidance on embodied/whole life carbon







RIBA (2018); RICS (2017); UKGBC (2015,2016,2017); GCB & CLC (2016); WRAP (2014); GLA(2013); CPA (2012)

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