Responding to the Climate Emergency
Natasha Connolly and Adele Carey
About Arup

Arup is an independent firm of designers, planners, engineers, architects, consultants and technical specialists working across every aspect of today’s built environment. Quality, integrity, humanity and usefulness are the underpinning principles – driving forward a firm that constantly strives to make a difference.

Together, we shape a better world

www.arup.com

15,870 Staff globally
92 Offices
30 Years in Leeds
RESPONDING TO THE CLIMATE EMERGENCY

A better way
Shaping a sustainable future

ARUP

A Guide to Implementation
Construction Declares is a global petition uniting all strands of construction and the built environment. It is both a public declaration of our planet’s environmental crises and a commitment to take positive action in response to climate breakdown and biodiversity collapse.
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Everyone is declaring a Climate Emergency
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What should we do?

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You've declared a Climate Emergency... what next?
Guidance for local authorities

1 OWN
Find a senior owner to co-ordinate climate action across different departments and functions.

2 UNDERSTAND
Assess the key contributing causes and local impacts of climate change to inform focus areas.

3 PLAN
Agree targets, set milestones, identify what needs to be done, by when, to meet the target.

4 COLLABORATE
You can't do this alone! Engagement with a wide variety of organisations, individuals, businesses and government will be necessary.

5 PRIORITISE
What action can you take that will have the biggest impact? What has to be done to adapt to unavoidable risks? What existing actions can be modified to help achieve your aims?

6 BUDGET
Cost your actions and prepare your business case.

7 INVEST
Secure investment and procure partners.

8 IMPLEMENT
Set out a detailed implementation programme and stick to it.

9 MONITOR
Don’t skip this step! Obtain good quality data on results and performance, use and share this learning to drive continued progress.
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What does this mean for buildings?

- Prioritising existing buildings before new-builds
- Whole-life carbon modelling
- Regenerative design and net zero carbon
- Low embodied carbon materials
- Minimise wasteful use of resources
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It’s all about carbon

2009 TYPICAL BUILDING EMISSIONS

- Operation Carbon 75% (50 years)
- Embodied Carbon 25%

2018 TYPICAL BUILDING EMISSIONS

- Operational Carbon Regulated 18%
- Operational Carbon Unregulated 15%
- Embodied Carbon in Construction 35%
- Embodied Carbon in use 32%
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How do we get to net zero carbon?

Construction
- Reduce construction impacts

Operational
- Reduce operational energy use
- Increase renewable energy supply
- Offset any remaining carbon

Zero carbon
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Where do we need to be?

- 44% CO$_2$e by 2030…

35% Less Steel
56% Less Concrete
20% Less New Buildings
22% Less Virgin Material
70% Commercial Buildings in Timber
90% Residential Buildings in Timber
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How can we measure embodied carbon?

Example Project

Total CO2
1,146,852 kgCO2e
Benchmarking embodied carbon...
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How can we measure operational carbon?

Baseline
Fabric changes
LZCT
Operational changes
Lighting Changes
Ventilation Changes

Annual Energy Consumption (kWh/m²)

Management Factor
Servers
Catering
Process Cooling
Process Ventilation - Cooling
Process Ventilation - Heating
Process Ventilation - Electrical
Typical Lab Equipment
Other Equipment
IT & AV Equipment
Lifts
Lighting
Auxiliary
Space Heating
Cooling
Hot Water
Thank you & questions?

Adele.Carey@arup.com
Natasha.Connolly@arup.com