



8th International ICARB Conference 2023:
25th - 26th September 2023 Edinburgh

Measuring Net Zero: Carbon Accounting for Buildings and Communities

Sessions taking place in the Council Chamber will be live streamed

Conference Programme		Monday, 25th September 2023		
8.30	REGISTRATION / TEA AND COFFEE			
9.00	COUNCIL CHAMBER	Welcome to the Conference and the Climate Challenge	Sue Roaf & Julio Bros Williamson	Conference Chairs
9.10	COUNCIL CHAMBER	WHO AND WHAT COUNTS? - Chairs: Sue Roaf and Julio Bros Williamson		
		The heat transition – Scotland’s progress	Patrick Harvie	Scottish Minister for Zero Carbon Buildings and Active Travel
		Implementing change to energy performance and emissions through building standards	Stephen Garvin	Head of Building Regulations, Scottish Government
		Building in solar, more than just a transition	John Forster	Chairman of the Forster Construction Group, UK
		Does Net Zero address the seriousness of the climate challenge?	Eliza Hotchkiss	NREL, USA
		Who decides and what really counts?	PANEL DISCUSSION	
10.45	TEA AND COFFEE BREAK			
11.15	COUNCIL CHAMBER	GRID PATHWAYS AND PROTOCOLS TO NET ZERO - Chair: Stuart Hazeldine		
		Key priorities in lowering energy sector emissions in the UK (Video)	Dieter Helm	University of Oxford, UK
		The role of nuclear in a low carbon future - do the metrics matter?	Paul Dorfman	University of Sussex, UK
		Carbon metrics for PV systems	Ian Marius Peters	Helmholtz Institute, Erlangen, Nuremberg, Germany
		Reliably accounting for negative emissions of waste-to-energy with carbon capture and storage	Camilla Thomson, Laura Herraiz, Iain Struthers et al.	University of Edinburgh
		Carbon accounting standards for BECCS	Angela Hepworth	DRAX
		How much can grid decarbonisation help with NZBs?	PANEL DISCUSSION	
13.00	LUNCH			
'A' FORUMS 14.00 - 15.30				
14.00	A1 COUNCIL CHAMBER	BUILDING METRICS AND MODELS - Chair: Daniel Overby		
		Novel local energy mapping for assessment of household capabilities for low carbon technologies	Rajat Gupta and Matt Gregg	Oxford Brookes University, UK
		Carbon accounting using multi-criteria assessment for SLES: challenges and opportunities	Christina Francis, Bjarn Gudlaugsson et al.	University of Edinburgh
		Variations of input parameters in EPCs calculation methodologies across European countries	Mahsa Sayfikar and David Jenkins	Heriot Watt University, Scotland
		Solar cooling integrated façades: towards investigating product applicability	Hamza Hamida, Thaleia Konstantinou et al.	Technical University, Delft, Netherlands
		Remote sensing-based frameworks to quantify city-level carbon fluxes in urban green infrastructures	Oz Kira, Julius Bamah et al.	Ben Gurion University of the Negev, Israel
			PANEL DISCUSSION	

14.00 A2
DUNEDIN ROOM**BEHAVIOURS AND DECISION SUPPORT - Chair: Robyn Pender**

Potential of natural ventilation in heritage buildings: a case study at the Casa Fabiola Museum, Seville	Angela Rosa-Garcia, Jessica Fernandes-Aguera et al.	University of Seville
Decision support for building design to optimise daylight and natural ventilation in an urban context	Fatemeh Yazdandoust and Ulrike Passe	Iowa State University, USA
Green roof and PV panels of public buildings for energy savings and to alleviate climate change	Xiaonan Li and Qingchang He	University of Pecs, Hungary
Visualising carbon in the design and delivery of buildings – a review of the evidence	Luke Gooding and Sonja Oliveira	University of Strathclyde, Scotland
Towards a city sustainability hub: advancing urban sustainability governance through participation	Koran Kandilci, Duygu Aral et al.	İzmir Metropolitan Municipality, Turkey
PANEL DISCUSSION		

14.00 A3
BUSINESS CENTRE**WHOLE LIFE AND EMBODIED CARBON ACCOUNTING - Chair: Rahman Azari**

Impact of location selection on a whole life carbon of a multi-national manufacturing facility	Rosemary Fieldson and Ozlem Duran	University of Lincoln, UK
Carbon evaluation and hygrothermal performance comparisons of stone wall retrofits	Paola Seminara, Andrew Livingston and Julio Bros Williamson	University of Edinburgh
Quantifying the embodied emissions of building envelope systems in a Toronto context	Bofa Udisi, Fatma Osman, Mark Gorgolewski et al.	Toronto Metropolitan University, Canada
Embodied carbon performance gaps in timber production	Joe Sanchez, Bamdod Ayati, Harry Sumner et al.	University of East London, UK
Case study: a low-carbon, mass timber arena	Bruce Hagland	University of Idaho, USA
PANEL DISCUSSION		

14.00 A4**DIAMOND JUBILEE ROOM****NET ZERO COMMUNITIES - Chair: Andrew Peacock**

Accounting for impacts of energy storage systems in urban contexts - a review of the evidence	Laura Moldovan, Sonja Oliveira, Ombretta Romice	University of Strathclyde, Scotland
Remote sensing-based frameworks to quantify city-level carbon fluxes in urban green infrastructures	Oz Kira, Julius Bamah et al.	Ben Gurion University of the Negev, Israel
Achieving zero carbon communities by co-location of marine renewable energy	Iain Andrew Struthers, Andrew Lynden et al.	University of Edinburgh
How circular is a renewable energy supply in existing buildings ?	Matthias Haas	Zurich University of Applied Sciences, Switzerland
Energy use, CO2 emission, and emission reduction potential of cooking fuel substitution in Nepal	Tika Ram Pokharel	Tokyo City University, Japan
PANEL DISCUSSION		

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14.00 A5**MEMBERS' LOUNGE****NET ZERO UNIVERSITY CAMPUSES - Chairs: Keith Baker and Alex McClaren**

Leveraging the voluntary carbon market to invest in deeper carbon reduction

Robert Koester

Ball State University, USA

The sustainable campus - working towards a carbon neutral university

Deirdre van Gameren; Andy van den Dobbelsteen

Technical University of Delft, Netherlands

Managing Net Zero strategies for a complex university estate

Julio Bros Williamson

University of Edinburgh

Measuring the carbon footprint of the University of Navarra, Spain

Sara Dorregaray-Oyaregui, Christina Muñoz Corsini and Maria Clouet

University of Navarra, Spain

PANEL DISCUSSION

14.00 A6**MANDELA ROOM****ADAPTIVE THERMAL COMFORT - Chairs: Fergus Nicol and Eliza Hotchkiss**

Mixed methods approach to understand occupants' acceptance and use of a personal ceiling fan

Romina Risetto, Gesche Heubner

Karlsruhe Institute of Technology, Germany

Reducing operational carbon while maintaining thermal comfort through evaporative cooling

Kai Zheng, Yu Fang Oh and Aceson Han

Singapore University of Technology and Design

Designing local radiant heating devices for different body parts: effects on skin temperatures

Seyed Hooshmand, Mino Rodriguez et al.

Karlsruhe Institute of Technology, Germany

Balancing aesthetics, operational energy and embodied carbon emissions: analysis and guidance

Bernadette Csaszar, Oliver Kinane, Richard O'Hegarty

University College Dublin, Ireland

Jumping the hurdles of a true Net Zero construction

Samantha McCabe, Catriona Kinghorn

Oberlanders Architects LLP, UK

PANEL DISCUSSION

15.30**TEA AND COFFEE BREAK****16.00 COUNCIL CHAMBER****PLANNING AND COSTING THE ENERGY TRANSITION - Chair: Peter Strachan**

Transitioning the world to 100% clean, renewable energy and storage for everything

Mark Jacobson

Stanford University, USA

Merging the metrics for finance and carbon accounting

Jimmy Jia

University of Oxford, UK

17.00**COMFORT BREAK****17.15 COUNCIL CHAMBER****NET ZERO POLICIES – TIME TO GET REAL - Chair: Roger Harrabin**

Navigating the path to Paris-aligned carbon emissions: the triad of knowledge, political will and finance in transforming cities

Prashant Kapoor

IFC / World Bank

The inevitable policy response: how much longer must we wait?

Jonathan Porritt

Forum for the Future

PANEL DISCUSSION

18.15**FINISH OF DAY'S PROCEEDINGS
19.00-22.30 EDINBURGH CASTLE PARTY**

Conference supported by

Ecohouse Initiative

8.30

REGISTRATION / TEA AND COFFEE

9.00 COUNCIL CHAMBER HOW MUCH DOES EMBODIED ENERGY REALLY MATTER? - Chair: Vanessa Gomes

Construction materials shape the environmental footprint of buildings	Rolf Frischnecht	Treeze, Switzerland
The sustainable sourcing of biomass for energy generation	Richard Peberdy	DRAX
Embodied energy - putting theory into meaningful practice	Alice Moncaster	University of the West of England
Living places – a low carbon and high comfort case study in Copenhagen	Ambra Guglietti	VELUX
Is embodied energy a major issue for NZBs?	PANEL DISCUSSION	

11.00

TEA AND COFFEE BREAK

11.30 COUNCIL CHAMBER NET ZERO ENERGY STANDARDS AND ENERGY SUFFICIENCY - Chair: Alice Moncaster

UK's Net Zero Carbon Buildings Standard	David Partridge	Chair of the UK's Net Zero Carbon Buildings Standards Board
Toward passive survivability: optimizing the built environment for greater thermal safety	Daniel Overby	Ball State University, USA
Tackling embodied carbon: a gateway to Net Zero emission aspirations	Rahman Azari	Pennsylvania State University, USA
More is good, high thermal mass for climate change adaptation and mitigation strategies	Timothee Di Toldi	Bouygues Immobilier SAS, France
Free cooling from air movement - a key to Net Zero buildings	Ulrike Passe	Iowa State University, USA
Are the Net Zero tools and strategies fit for purpose?	PANEL DISCUSSION	

13.00

LUNCH

14.00 COUNCIL CHAMBER GLOBAL INSIGHTS INTO NET ZERO - Chairs: Jessica Aguera and Samuel Dom-Amarillo

Energy efficient retrofit strategies towards nearly zero energy educational building in Malaysia	Norhayati Mahyuddin	University of Malaya, Malaysia
When means and ends meet: examining strategies and carbon accounting fit for our global future	Vanessa Gomes	University of Campinas, Brazil
The role of adaptive comfort in India's successes in moving towards Net Zero buildings	Rajan Rawal, Mehta Tarjani, Shukla Yash, Sue Roaf	CEPT University, Ahmedabad, India

15.00 COUNCIL CHAMBER NEW DIRECTIONS FOR NET ZERO - Chairs: Paul Dorfman and Ulrike Passe

What actually works?	Vanessa Gomes	Brazil
Where are we headed?	Rolf Frischnecht	Switzerland
Who needs to lead now?	Daniel Overby	USA
	Ian Marius Peters	Germany
	Julio Bros Williamson	Scotland
	PANEL DISCUSSION	

16.00 CLOSING COMMENTS

FAREWELL AND NEXT STEPS - Chairs: Sue Roaf and Julio Bros Williamson**NON-ATTENDING AUTHORS**

Energy efficiency barriers in public schools: insights from a case study in Argentina	Mariela Inés Lescano	Comisión Nacional de Energía Atómica, Argentina
Analysis overheating in Irish houses: result from a large sample set	Fahimehsadat Sajadiriad, Richard O'Hegarty and Oliver Kinane	University College Dublin, Ireland
Can we shape occupants' actions towards non-wasteful energy behaviour?	Isabel Mino Rodriguez and Andreas Wagner	Karlsruhe Institute of Technology, Germany