



# The Circular Economy: New Opportunities in Design and Construction



## The Circular Economy: New Opportunities in Design and Construction

The one-day conference will explore opportunities for Scottish SMEs involved in the design and construction industry around a new emergent economy based on design and innovation. The **circular economy** is a generic term for an industrial economy that invites businesses to transform their approach to the use of materials and energy, such that products and services can be provided with minimal depletion, or better, the restoration of natural resources.

A multidisciplinary practice, this challenges businesses to design goods so that their component parts may be disassembled at the end of their useful life, re-used, or re-processed and manufactured, utilizing renewable energy sources to do so. Collaboration with scientists, engineers and architects is important to this, and innovation will be needed.

In some cases, these far-reaching changes will require the coordinated action of governments, suppliers and competitors; in others, very different business models – for example, goods may be leased rather than sold. In broader terms, the circular approach is a framework that takes insights from living systems. It considers that our systems should work like organisms, processing nutrients that can be fed back into the cycle – whether biological or technical - hence the “closed loop” or “regenerative” terms usually associated with it.



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# Conference Programme

09:00	Breakfast and Registration	
09:25	Welcome and Introduction	David Grierson University of Strathclyde Glasgow
09:30	The Ellen MacArthur Foundation	Dame Ellen MacArthur
10:30	The Circular Economy: Practice and Opportunities	Jamie Butterworth CEO, Ellen MacArthur Foundation
11:15	Towards Zero Waste in Scotland	Iain Gulland Director, Zero Waste Scotland
11:45	Tea & Coffee Break, Presentation of Sponsor's videos	
12:00	Introduction to Research Work	Karen Munro University of Strathclyde Glasgow
12:05	<i>Research Work:</i> Circular Economy for Product Development SMEs	Hilary Grierson & Ivan Hall Barrientos University of Strathclyde Glasgow
12:25	<i>Research Work:</i> Low Technology / High Performance Architecture	Bianca-Daniela Ion University of Strathclyde Glasgow
12:45	<i>Research Work:</i> Circular Economy Game and Tour	Claire Hyland University of Strathclyde Glasgow
13:05	Lunch, Exhibition and Networking	
13:50	Mean, Lean, Green	Karen Pickering Page\Park Architects, Glasgow
14:20	National Grid and the Circular Economy	Stuart Bailey, Head of Sustainability & Climate Change, National Grid
14:50	Circular Economy Workshops - Introduction	Jamie Butterworth CEO, Ellen MacArthur Foundation
15:00	Circular Economy Workshops:  Skills in Product Design (HG) New Business Models (JB) Reverse Cycles and Cascades (KM) Cross-Cycle and Cross-Sector Collaboration (DG)	
16:00	Final Plenary Session & Ongoing Engagement	David Grierson University of Strathclyde Glasgow
16:30	Thanks and Close	
	Wine Reception	

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## Our Speakers

### Dame Ellen MacArthur Ellen MacArthur Foundation



Dame Ellen MacArthur first hit the headlines in 2001 when she raced single-handedly non-stop around the world in the Vendée Globe when only 24 years old, finishing second in one of the hardest races in offshore sailing. Her role as one of the world's greatest ever offshore sailors was confirmed in 2005, when after 71 days, 14 hours, 18 minutes, 33 seconds at sea, she became the fastest person to circumnavigate the globe single-handed.

She was knighted by the Queen in 2005 and has received the Legion d'Honneur from French President, Nicolas Sarkozy.

Ellen's experiences at sea gave her a very real understanding of what it means to rely on a finite supply of resources, as on the boat food, water and fuel were inescapably linked to her success or failure. As a result, Ellen was compelled to end her professional racing career and embark on a new five-year journey, working with governments, scientists and across key industry sectors to understand the impact of society's reliance on such finite resources and to find solutions to this immense economic challenge.

Having uncovered a framework moving from a limited linear economy to one that is re-generative by nature, Ellen launched the Ellen MacArthur Foundation in September 2010.

The Foundation has a goal of "accelerating the transition to a regenerative, circular economy" and it works in the three areas of business, education and communication. More information is available at [www.ellenmacarthurfoundation.org](http://www.ellenmacarthurfoundation.org)

### Jamie Butterworth CEO, Ellen MacArthur Foundation



Jamie Butterworth is CEO of the Ellen MacArthur Foundation, a not for profit organisation with the aim of accelerating the transition to a circular economy. He reports to the Foundation's board of trustees and is responsible for overseeing the Foundation's three key areas of focus: business, education and communication.

He has worked for the Foundation since its initial conception and launch, along with Ellen MacArthur. Before working with Ellen and the team at the Foundation, Jamie managed a global distribution and support channel network for the leading marine electronics manufacturer B&G/Navico, living in France & Italy and before returning to the UK.

## Iain Gulland

### Zero Waste Scotland



Iain Gulland is Director of Zero Waste Scotland, the new programme created by the Scottish Government to support delivery of its Zero Waste policy goals. Zero Waste Scotland provides a 'one stop shop' for advice and support to businesses and individuals looking to reduce waste and recycle more. The programme is linked to the UK-wide resource efficiency body WRAP, of which Iain sits on the Executive Committee.

Iain has more than 17 years experience in recycling and waste management, including initiating recycling systems with East Lothian and Orkney Islands Councils, with Lothian & Edinburgh Environmental Partnership (LEEP) and with Alloa Community Enterprises (ACE). Iain was previously Network Director for Community Recycling Network for Scotland (CRNS) where he established the CRNS as a key Government delivery partner and helped secure over £17 million investment in community recycling through the Government's INCREASE programme.

He was a member of the Scottish Government's Zero Waste Think Tank and is a member of the Chartered Institute of Waste Management (CIWM).

## Karen Munro

### University of Strathclyde Glasgow



Karen Munro is a postgraduate research student in the Department of Architecture at the University of Strathclyde. She has recently completed her Masters in Building Design and Management for Sustainability, having graduated from BSc (Hons) in Architectural Studies from Strathclyde in 2010.

Karen's Masters dissertation focused on the role of architecture in the creation and mitigation of the Urban Heat Island (UHI) effect seen in cities worldwide. Since completing her dissertation, Karen has been working on organising the Circular Economy conference with Dr David Grierson, the Ellen MacArthur Foundation and CIC Start Online. In the coming months she will be continuing to work with Dr Grierson on projects establishing CPD modules within the University of Strathclyde. In the future she hopes to continue to establish a career in architectural research by studying for a PhD.

## Hilary Grierson

### University of Strathclyde Glasgow



Dr Hilary Grierson is an architect and teaches Product Design Engineering at the Department of Design Manufacture and Engineering Management (DMEM) at the University of Strathclyde, Glasgow. For many years now, DMEM has strong working links with industry and companies (e.g. Rolls Royce; BAE Systems; Weirs; Hoover Candy, etc.) Hilary is currently teaching 3rd, 4th and 5th year students with a focus on global design education/distributed working and product design development methods for engineers.

As Director of UG Individual Projects she has responsibility for all 4th and 5th year final individual student product design projects. Within the projects a strong emphasis is placed on sustainable product development and a sustainable approach to design. She also supervises research dissertations (one recently on Circular Economy) and degrees. Her PhD focused on distributed design information management for global collaborations, working on this area with colleagues at Stanford University. She has published in over 40 journal and conference papers, both nationally and internationally.

Hilary is currently Principle Investigator on an EPSRC grant investigating the visualisation and handling of large secure data sets and on a funded-research proposal for online CPD for industry and practice in area of design methods including Design for the Environment.

## Ivan Hall Barrientos

### University of Strathclyde Glasgow



22 year old Product Design Engineering student currently completing a masters in engineering in the design, manufacture and engineering management department in the University of Strathclyde.

Final year projects included a research study into Circular Economy within product development SMEs and a design project in designing and lighting system for remote African communities.

## Bianca-Daniela Ion

### University of Strathclyde Glasgow



Bianca-Daniela Ion is a recent graduate of Strathclyde University, where she focused her research on the suitability and potential implementation of alternative benign materials in the residential sector in Scotland. Based on her experience in architecture practice, the research pinpointed feasibility in construction and overall improvement of housing conditions and their effects on all levels.

Prior to her degree at Strathclyde, Bianca finished an undergraduate course in architecture studies – with her dissertation in the field of sustainable design and use of locally available materials and traditional crafts in Morocco - at the Vienna University of Technology, Austria, where she plans to further her education in autumn. During her studies she was able to gain extensive experience in practice by working in various-sized architecture and civil engineering offices focusing on residential design, passive houses and state-aided council housing in Austria, as well as by interning in an office for urban planning and sustainable and economic studies in Tunis, Tunisia. In the future, she hopes to be able to put sustainable design into architecture practice.

## Karen Pickering

### Page\Park Architects



Karen is the Workplace Sector Team Leader at Page\Park and has been with the practice since 1992. She studied architecture at the University of Newcastle upon Tyne and the Mackintosh School of Architecture.

She leads teams delivering Education and Commercial projects and is involved with the initial concept through to the completion of the building. Karen has a particular interest in sustainability and has RIAS Accreditation in Sustainable Building Design.

Lead Architect on a number of award winning projects, such as:-

- School of Computing, University of Dundee,
- Scene Field Station, University of Glasgow  
(BREEAM Excellent rating, Carbon Trust Low Carbon Building of the Year Award 2007)
- National Park Authority HQ, Balloch  
(BREEAM Excellent rating, Carbon Trust Low Carbon Building of the Year Award 2009)
- Bluebell Views Student Residences, University of Warwick  
(BREEAM Excellent rating)

She is currently working on the refurbishing the Category A listed David Hume Tower complex of projects for the University of Edinburgh, with the aim of achieving a BREEAM Excellent rating on these 1960's buildings.

## Claire Hyland

### University of Strathclyde Glasgow



Claire is a second year PhD student in the Department of Architecture at the University of Strathclyde and is funded by a scholarship from the University. Her research focuses on school design and aims to contribute towards the creation of a more inclusive and sustainable environment for 21st century education.

For more than 4 years she has held a part-time position with the University's Disability Service as a study support assistant and mentor. During this time she spent 3 years working as an assistant for a visually impaired PhD student in the Department of Architecture, allowing her to gain an understanding of the barriers which can present themselves to a person with an impairment and knowledge of the area of accessible design.

She has 6 international publication contributions and experience tutoring university students, as well as designing and delivering workshops to children of varying ages and abilities. In her spare time she volunteers with the Royal National Institute of Blind People (RNIB) helping at fund-raising events and teaching Spanish at their Centre for Sensory Impaired People in Glasgow.

## Stuart Bailey

### National Grid Plc



After leaving school, Stuart joined the Central Electricity Generating Board and was based at Aberthaw power station whilst studying Energy Technology at Aston University. After graduating with First Class Honours, Stuart joined CEGB Transmission at Guildford as a technical specialist.

Since then Stuart has worked for various companies within the energy industry and, prior to his current role, has held managerial positions within National Grid across technical and commercial disciplines, covering both electricity and gas. Recently appointed to the post of Head of Sustainability and Climate Change, Stuart is tasked with bringing his technical and commercial experience to the role to accelerate National Grid's journey to becoming more sustainable and deliver tangible business benefits. With a large capital investment plan required to decarbonise the UK energy networks, a key step towards achieving this goal is ensuring that the value of its assets is retained within National Grid's business, as far as practicable. The principles of the circular economy provide a means of achieving this.

National Grid is proud to be a Founding Partner of the Ellen MacArthur Foundation

## David Grierson

### University of Strathclyde Glasgow



Dr David Grierson is Chair of the Graduate School of Engineering, and Deputy Head of Architecture, at the University of Strathclyde Glasgow. He has directed the Faculty-wide postgraduate programme in Sustainable Engineering since 2004.

A recent member of University Court, and Senate's Education Strategy Committee, he is active in promoting cross-disciplinary teaching and learning activity across the University's postgraduate community, and in promoting increased engagement with business, industry, the professions, and other academic institutions. His own research interest in sustainable design has led to the publication of more than fifty international papers in this area, to editorial board positions on three international journals, and he has secured substantial funding for knowledge exchange projects (consultancy, CPD, feasibility studies), postgraduate scholarships, and skills training development from the EU, Scottish Government, Scottish Enterprise, EPSRC, and RCUK.

David is a Fellow of the Higher Education Academy and a recent visiting professor at universities in Rome and Florence. He is currently external examiner for the built environment programme at the Bartlett, University College London (UCL), and a former resident of Arcosanti in Arizona, USA.