

Sustainability and Climate Action Events

Carbon, Climate, Energy & Resources

Monday 22 – Friday 26 June

Monday 22 June Climate	Tuesday 23 June Carbon	Wednesday 24 June Energy	Thursday 25 June Resources	Friday 26 June Summary
9.15am – Welcome and introduction to the week: Professor Pat Bailey.	10am – Introduction to the day.	9.15am – Introduction to the day.	9am – Introduction to the day.	9.45am – Introduction to the day.
9.45am – European Regional Development Fund (ERDF) Projects.	10.15am – Keynote address: ‘Climate Change Emergency Environmental Agency response’. Katherine Ibbotson, Programme Carbon and Cost Manager, Environment Agency.	9.30am – Keynote address: ‘Energy futures – decarbonisation and decentralisation’. Lee Hargreaves, Associate Director, Buro Happold.	9.05am – Keynote address: ‘Utilising waste heat as a resource’: Kartik Amrania, Head of Building Sustainability Department, Sweco UK	10am – Keynote address: How people can make climate action a part of their every day lives – Zion Lights – Spokesperson for Extinction Rebellion and Editor, The Hourglass.
10am – Keynote address: What are the Government’s Plans for COP26? Matt Toombs, Director of Partnerships and Engagement for COP 26, Cabinet Office	10.45am – Measuring SDG Impacts under the ‘Carbon Umbrella’. Using Theory of Change and the Triple Bottom Line to develop new ways of ensuring alignment of stakeholders to drive greater SDG impacts.	10am – London Centre for Energy Engineering. – Advanced Smart Vacuum Insulation Technologies for Sustainable Low Carbon Buildings – Towards Environmental Sustainability through Engineering Management	9.30am – The Great Pause: Breathing art and design into environmental issues.	10.30am – The Major Issues and LSBU’s impact. A panel discussion plus Q&A.
10.30am – LSBU and the Climate Emergency Debate Series. What we have learned and how can we bridge the gaps.	12pm – Lunch break	11am – CEREB framework. Renewable Energy in Buildings.	10.15am – Can digital technology save the world?	11.45am – ERDF Projects. What you’ve seen and how we can work together.
11.30am – Creating Sustainable Development: measuring the positive ecological, economic and social impact of the Katchumbala Maternity Unit.	1pm – Where we were, where we are now and where we want to be. How LSBU reduced its carbon footprint by over 50% over the last 8 years and the challenges faced.	12pm – Lunch break	11.15am – Innovative design workflow through robotic manufacturing.	12.15pm – Lunch break
12.30pm – Lunch break	2pm – Our alumni and their stories.	1pm – CryoHub	11.45am – Novel alternatives to concrete that can be used in construction.	1pm – The Great Pause. A Virtual Exhibition.
1.30pm – Covid19 vs. Sustainability	4.15pm – The World After: Film Screening plus Q&A with director David Blandy.	2pm – Energy-efficient vertical transportation in high-rise buildings.	12.15pm – Lunch break	1.30pm – We all have a part to play in protecting the planet – but how? A look at some of the highlights and key messages of the week as well as myth-busting and practical takeaways.
2.30pm – Engineering the future: Student Successes in Sustainable Development Competitions.	5.15pm – Closing remarks and details of next day.	3pm – GreenSCIES: Green Smart Community Integrated Energy Systems.	1.15pm – Sustainability and the nexus of the built environment and the natural environment.	2pm – Conference summary and details of what’s next in the event series.
3.30pm – How small creative acts every day, like wearing odd socks, can lead to the big paradigm shifts we need in society to tackle climate change.		4pm – Closing remarks and details of next day.	2.15pm – Sustainable Architecture – the implications of sustainability on designing buildings.	2.30pm – Conference closes.
4.15pm – Closing remarks and details of next day.			3pm – Bamboo Structures: Using bamboo as an alternative material in construction.	
			3.30pm – The use of Basalt Fibers Reinforced Polymers BFRP products in concrete structures.	
			4pm – Closing remarks and details of next day.	

Carbon, Climate, Energy and Resources Programme

(Provisional. Subject to change.)

Monday 22 June 2020 – Climate

9.15am **Welcome and introduction to the week**

Professor Pat Bailey, *Provost, LSBU* and Thomas Empson, *Sustainability Project Manager, LSBU*.

9.45am **How is LSBU supporting London startups create sustainable innovation?**

Description: Innovation is key in addressing climate change. At LSBU we support London based SMEs through two ERDF funded projects, Access to Innovation (A2i) and Low Carbon London (LCLDN). These projects support and accelerate SMEs through the product development journey; providing access to workshops, academic expertise, software, and prototyping facilities in a creative environment. This session will introduce the team and the opportunities available. www.sustainableinnovators.com

Session leads: Ellen South, *Senior Project Manager, Sustainable Innovation, Research, Enterprise and Innovation, LSBU*.

10am **Keynote address: What are the Government's Plans for COP26?** Matt Toombs, *Director of Partnerships and Engagement for COP 26, Cabinet Office*

Description: Matt Toombs, Director of Partnerships and Engagement for the COP26 team in Cabinet Office, outlines the Government's plans and priorities for the 26th United Nations Climate Change conference in Glasgow next year – the largest international summit the UK has ever hosted.

10.30am **LSBU and the Climate Emergency Debate Series.** What we have learned and how can we bridge the gaps.

Description: Before COVID-19 stole the headlines, the most pressing global issue was Climate Emergency. That emergency has not gone away. In fact, in the face of global economic disruption, we need to push even harder to make the drastic changes required to reduce greenhouse gases and halt the breakdown of the global climate and its precious biodiversity.

The built environment is a major part of a nation's infrastructure and economy, and a major contributor to climate change. Our buildings account for almost 40% of energy-related carbon dioxide emissions. Therefore LSBU BEA has an increasingly urgent role to play in stimulating change from policy, to planning, building design, construction and through the use and maintenance cycle.

LSBU's Climate Emergency Event series - a lively programme of debates and workshops - have been designed to stimulate debate and help lead the drive to reduce carbon emissions at every stage of the building cycle.

Session leads: Andy Ford, *Professor of Building Systems, School of Built Environment and Architecture, LSBU* and Pippa Palmer, *Curator of LSBU's Climate Emergency Debate Series, School of Built Environment and Architecture, LSBU.*

11.30am Creating Sustainable Development: measuring the positive ecological, economic and social impact of the Katchumbala Maternity Unit .

Description: This session will examine the depletion of global natural resources, carbon footprints of developed and developing nations, the Sustainable Development Goals and national progress. Project partners discuss their contribution to the Kachumbala Maternity Unit and answer a series of questions on the project's success and reflect on what could be done differently if done again. They will also discuss the new definition of creativity being explored within this case study in the context of a climate and ecological crisis for engineers and architects.

Session lead: Thomas Empson, *Sustainability Project Manager, LSBU.*

Speakers: Dan Flower, *Design Director, HKS Architects,* and Ian Flower OBE, *Founder of Engineers for Overseas Development.*

12.30pm Lunch break

1.30pm Covid19 vs. Sustainability

Description: This debate will seek to examine and gather information, views and opinions on how the current global covid 19 crisis will impact the sustainability agenda generally and specifically based on the various conference themes.

Some of the questions posed will include:

- Where does sustainability now feature as a priority
- Is covid-19 and sustainability one of the same?
- What has covid-19 revealed to us about society?

Panellists:

- Hannah Northrop, *Lecturer in Planning, LSBU*
- Dr Hugh Atkinson, *Distinguished Research Fellow, The Schumacher Institute for Sustainable Solutions, Bristol*
- Mark Turner, *Local Authority Development Manager in Planning*

Chaired by: Jaya Gajparia, *Education for Sustainability Course Director, School of Law and Social Sciences, LSBU.*

2.30pm Engineering the future: Student Successes in Sustainable Development Competitions

Description: The presentation is about how LSBU's School of Engineering teaches the wider contexts that engineering has an impact on. Contexts such as the environment, local and global economies, and the importance of engaging with local communities as part of the design process. One of the many ways that this is achieved is through participation in national competitions that focus on sustainable development in real-life scenarios. The presentation will give examples of LSBU engineering student successes in these competitions. The aim of these competitions is for the students to develop teamworking skills and to develop innovative and appropriate engineering solutions that contribute to the sustainable development of a real community. They provide an exciting opportunity to work for a real client; placing engineering and design theories learnt into practice.

Session lead: Alessio Corso, *Head of Division, Mechanical Engineering and Design, School of Engineering.*

3.30pm How small creative acts every day like wearing odd socks, can lead to the big paradigm shifts we need in society to tackle climate change

Description: A paradigm shift describes a profound change in a fundamental model or perception of events. Can the simple act of changing your route home or wearing odd socks when your normal practise is that they should always match lead to the paradigm shift we need now on the planet as we deal with climate and environmental change? I would argue that yes it can and its why creativity, in any subject is more

important now than ever. By taking you through the steps it took to create pollution absorbing sculptures in London from simple sketches and creations using everyday objects, I hope to show you the power that 'thinking with hands' has and how it won't simply help the planet and Her inhabitants but also make each of us future proof in a technological Brave new World.

Session lead: Jasmine Pradissitto, *Artist and Visiting Lecturer, School of Engineering, LSBU.*

4.15pm **Closing remarks and details of next day**

Tuesday 23 June 2020 – Carbon

10am **Introduction to the day**

10.15am **Keynote address: Climate Change Emergency Environmental Agency response.** Katherine Ibbotson, *Programme Carbon and Cost Manager, Environment Agency*

Description: Agency's role in climate change mitigation and adaptation is key to how we as an organisation go about delivering our works as an asset owner. We are addressing this through our e:Mission 2030 strategy and specifically for carbon our Flood and Coast Risk Management (FCRM) Net zero roadmap and development of organisations cost and carbon tool. To enable better decision making in the future.

Katherine Ibbotson is the Programme Carbon and Cost Manager at the Environmental Agency. The Environment Agency looks after over 5,000 kilometres of coastline and the main rivers in England. Katherine ensures low carbon solutions are promoted and implemented over the whole life of built assets and lead the development of the Agency's Carbon Planning Tool: ERIC. Katherine's specialisms include; carbon and cost estimation and benchmarking, low carbon solutions, research, organisational change, behavioural change and continued improvement.

10.45am **Measuring SDG Impacts under the 'Carbon Umbrella'.** Using Theory of Change and the Triple Bottom Line to develop new ways of ensuring alignment of stakeholders to drive greater SDG impacts.

Description: The UN Sustainable Development Goals (SDG) were ratified by 193 nations in 2015. They are a commitment to end poverty, deliver improved health, education and gender equality ... and much more.

They are supported by 169 targets and 232 indicators. This is problematic for measuring impact below the national level. This discussion shares a new approach to measuring global goals at a local level. It has just completed a case study with the Environment Agency, who will adopt the LSBU research models from April 2021, for example on their £5.2Bn flood schemes that will help reduce the negative consequences of extreme events.

The UK Government plans to adopt the LSBU SDG measuring approach – the Cabinet Office has indicated that the new models developed by LSBU could be used to assess all infrastructure investments in future and provide a mechanism to get the greatest 'bang for the buck' for people, planet and profit.

Paul Mansell will chair a panel discussion and a Q&A session that explores how the Environment Agency are measuring their Carbon impacts and how this can be linked to the LSBU research work.

Session lead: Paul Mansell, *Doctoral Researcher, [Nathu Puri Institute](#), School of Engineering, LSBU* and Katherine Ibbotson, *Programme Carbon and Cost Manager, the [Environment Agency](#)*

12pm **Lunch break**

1pm **Where we were, where we are now and where we want to be.** How LSBU reduced its carbon footprint by over 50% over the last 8 years and the challenges faced.

Description: In this session, LSBU's Estates team will examine LSBU's carbon reduction journey relating to scope 1 & 2 emissions since 2010. In 2010, in consultation with HEFCE, universities were asked to agree reductions in Scope 1 & 2 carbon emissions. LSBU pledged to reduce our emissions by 34% by 2020 based upon a 2010 baseline of 11,694 tCO₂.

To achieve this, LSBU has reduced both its electricity and gas consumptions to levels which enabled us to achieve this target by August 2017. This success has continued, with current level of carbon reduction being 54%.

On the 27th June 2019, the UK became the first major economy in the world to pass laws to end its contribution to global warming by 2050. This will require the UK to bring all greenhouse gas emissions to net zero by 2050. Going forward this target of zero emissions will prove very challenging as this also includes scope 3 emissions.

Join us as we share our details about how we achieved our results, discuss our working partnerships with internal and external stakeholders and consider some of the challenges LSBU and other institutions face we face as we move forward into the next phase of this ambitious but crucial target.

Session leads: Chris Barnes, *Maintenance and Energy Manager, Estates & Academic Environment, LSBU.*

2pm Hear some inspirational stories from our alumni working in the fields of sustainability and climate issues

- Nureen Glaves – CEO of FeedMeGood Creator of How to be a Smart Food Shopper. Chef, Food Waste Guru, IKEA Live LAGOM Influencer
- Zoe de Grussa, Energy Saving Design Engineer, British Blind and Shutters Association
- Karl de Leeuw, Chartered Quantity Surveyor, Founder of Let's Live Longer Now! and Author –The Health Spring Code

Hosted by IB Para-Mallam, Alumni Relationship Manager (Volunteering & Individual Giving, LSBU).

Nureen's company, FeedMeGood, provides health and wellbeing services to housing associations, youth services, homeless schemes, the education sector and local councils. She also works with IKEA on the #LIVELAGOM initiative which focuses on sustainable living at home. Nureen will be discussing a number of her projects & initiatives as well as the carbon footprint of food shipping.

Zoe will be discussing how she became aware of 'Sustainability' through her BSc Engineering Product Design Course at LSBU and how this inspired her to continue her work in academia. Zoe passed her PhD Viva earlier this year which was a sponsored research programme in collaboration with the British Blind and Shutter Association. Zoe will explain how these simple products – blinds and shutters – can be considered sustainable as they can offer environmental, health, well-being, and comfort benefits to the people that live and work in buildings.

Did you know that atmospheric methane is 80 times more damaging than CO₂ during the first 20 years it hangs around in the atmosphere? To unlock this Karl de Leeuw will discuss how cutting atmospheric methane is now the most important item not yet on the climate change agenda and how to resolve it!

4.15pm The World After: Film Screening plus Q&A with film-maker David Blandy

Description: Join artist and film-maker David Blandy and Tim Fransen, LSBU Sustainability Steering Group member, for a live screening of 'The World After' followed by Q&A.

'The World After' is set 8,000 years in the future after the Anthropocene era. In this imagined future world, human influence on the planet has faded after a man-made environmental 'cataclysm', with those who remain having to find new ways to survive and form kin.

Filmed over a year on Canvey Wick in Essex using the technology emblematic of the Anthropocene era, the iPhone, Blandy captures the sites remarkable biodiversity – a microcosm of flora and fauna disinterested in human concerns, despite our devastating impact on their environments. There is a joy and wonder in this examination, but also an existential dread, as we understand the incidental nature of humanity's role in relation to geological time.

The film uses macro and slow-motion cinematography, affecting soliloquies and a creeping score written by Blandy and played by the Southend Symphony Orchestra, to create a melancholic meditation on today's climate and ecological emergency, on who we are, and who we could become.

'The World After' was commissioned by Focal Point Gallery, Southend-on-Sea and New Geographies.

Session lead: Tim Fransen, *Technical Tutor in Web Publishing and Design, Technical Support Services, LSBU.*

5.15pm **Closing remarks and details of next day**

Wednesday 24 June 2020 – Energy

9.15am **Introduction to the day**

9.30am **Keynote address: Energy futures – decarbonisation and decentralisation.** Lee Hargreaves, *Associate Director, Buro Happold*

How can we learn from past energy generation and infrastructure design and move to a decarbonised and decentralised energy network? What are the current challenges and key energy technologies for deployment?

Lee is an Associate Director at Buro Happold. Currently, he is the Global Lead of Knowledge and Operations for the Building Environments group, which supports the advancement of the disciplines six strategic focus groups on: health, wellbeing and productivity, building performance, smart buildings, digital design, design for manufacture, and BIM for efficient production.

His specialisms include designing beyond standard environmental assessment, optimisation of heating, ventilation and comfort cooling strategies, building physics, and low energy design with zero carbon technology. He is an advocate of new technologies ahead of mainstream application, including: integrated structural ventilation, ground and water source heat pumps, community and district heating networks using alternative technologies.

10am **London Centre for Energy Engineering**

Session A: Advanced Smart Vacuum Insulation Technologies for Sustainable Low Carbon Buildings

Description: Advancements and integration of novel insulation technologies to smart windows, such as translucent vacuum insulation panel and vacuum glazing along with the integration of semi-transparent photovoltaic layer are one of the new solutions in making the domestic and commercial buildings to net-zero energy buildings (NZEBS) for the drive to achieve net-zero carbon emissions target by 2050. It is widely accepted that in the building sector, energy losses/gain through windows account for more than 30 % of energy consumption compared to any building element. This talk aims to present the novel constructions and thermal performance characteristics of the advanced smart vacuum insulation technologies consists of : (i) Vacuum Glazing (VG), (ii) Triple Vacuum Glazing (TVG), (iii) Electrochromic Vacuum Glazing (EVG), (iv) Semi-transparent Photovoltaic Electrochromic Vacuum Quadruple Glazing (STPV-EVG), (v) Translucent Vacuum Insulation Panel (TVIP), and (vi) Fusion-sealed Vacuum Glazing (FVG).

Session lead: Dr Saim Memon, *Head of Solar Thermal Vacuum Engineering Research Group, London Centre for Energy Engineering and Senior Lecturer and Course Director, Division of Electrical and Electronic Engineering, School of Engineering.*

Session B: Towards Environmental Sustainability through Engineering Management.

Description: One of the major challenges for realising environmental sustainability is to reduce greenhouse gas emissions – electric vehicles and carbon capture & storage (CCS) are two important strategies to achieve this objective. However, both of these approaches have a number of technology and economic issues to be addressed. This presentation adopts an engineering management perspective in order to investigate these issues through conducting a techno-economic analysis for both the adoption of electric vehicles as well as the deployment of CCS.

Session Lead: Prof. Simon Philbin, *Director of the Nathu Puri Institute for Engineering and Enterprise, LSBU.*

11am **Centre for Efficient and Renewable Energy in Buildings (CEREB)**

Description: CEREB is LSBU's unique collaborative resource for the built environment and hosts renewable energy solutions.

The challenge set by the Committee for Climate Change is to decarbonise the built environment to zero impact by 2050. This tight timescale must involve enhanced close co-operation between researchers, industry and educators.

Established in 2008 as a practical demonstration of how renewables can be embedded into a building in central London CEREB provides access to the renewable energy facilities for students and researchers. In the intervening years as our understanding has evolved CEREB has built its brand to become 'the place' for those forward thinkers engaged in any aspect of the three sides of the challenge to come together to meet, to discuss and plan our transition into an environmentally friendly zero carbon city.

To focus minds on the scale of the challenge, CEREB boasts a 360 degree rooftop view of the whole of London.

Session lead: Andy Ford, *Professor of Building Systems, School of Built Environment and Architecture, LSBU.*

12pm Lunch break

1pm CryoHub: Developing Cryogenic Energy Storage at Refrigerated Warehouses as an Interactive Hub to Integrate Renewable Energy in Industrial Food Refrigeration and to Enhance Power Grid Sustainability.

Description: The CryoHub project is investigating the potential of large-scale Cryogenic Energy Storage (CES) for both cooling and energy generation. Intermittent supply of renewable energy sources (RES) is a major obstacle to the power market. In reality, RES are prone to overproducing when demand is low and failing to meet requirements when demand peaks. Cryogenic Energy Storage (CES), and particularly Liquid Air Energy Storage (LAES), is a promising technology enabling on-site storage of RES energy during periods of high generation and its use at peak grid demand. Thus, CES acts as Grid Energy Storage (GES), where cryogen is boiled to drive a turbine and to restore electricity to the grid.

Refrigerated warehouses for chilled and frozen food commodities are large electricity consumers, possess powerful installed capacities for cooling and heating and waste substantial amounts of heat. Such facilities provide an industrial environment to advance and demonstrate the LAES benefits. The aim of the CryoHub project is to balance the power grid, while meeting the cooling demand of a refrigerated food warehouse and recovering the waste heat from its equipment and components.

The session will provide information about this novel H2020 project and the work being carried out by the team at LSBU.

Session leads: Judith Evans, *President of the International Institute of Refrigeration (IIR) commission C2, LSBU* and Graeme Maidment, *Professor of Refrigeration & Air Conditioning, School of Engineering, LSBU.*

2pm **Energy-efficient vertical transportation in high-rise buildings**

Description: Through the ERDF Low Carbon London (LC LDN) Programme, the original aim of this project (awaited subject to the current circumstances) is to undertake a case study to demonstrate the misuse/overuse of the lifts and try to encourage the use of the staircases. This will involve, with a remote IComm system, monitoring vertical traffic in 4 lifts located in the LSBU's flagship Keyworth Building on the Elephant and Castle campus.

That being said, we will present a prior theoretical approach based on the survey of a similar building (In this case residential) through the work produced both by our external consultant (Ruth Tatanga) and a UG student working on the project for his Research Project. Furthermore, we will present some further and in-depth data analysis based on statistics.

Overall objective is to create an interesting debate based on the three principals of sustainability: environmental (carbon emissions), economics (energy savings) and social (Improvement of awareness) sustainability.

Session leads: Carlos Gonzalo, *Senior Lecturer, Civil & Building Services Engineering , School of Built Environment and Architecture, LSBU* and Vireen Limbachiya, *Senior Lecturer, Civil and Building Services Engineering, School of Built Environment and Architecture, LSBU.*

3pm **GreenSCIES: Green Smart Community Integrated Energy Systems**

Description: The GreenSCIES project aims to deliver low carbon, affordable energy to the local community in the London borough of Islington. The novel integrated heat, power and transport network is a smart system that connects flexible electricity demands (heat pumps and electric vehicles) to intermittent renewable energy (solar power).

The smart network facilitates the transition to electric vehicles and vehicle to grid supply to make the most of intermittent renewable energy and ensure end-users always get the best tariff. Heating and cooling are provided by heat pumps in buildings connected to a local network, which integrates thermal energy storage and waste heat recovered from local datacentres and the London Underground. Artificial intelligence underpins the system optimisation and demand side response.

The scheme will result in an 80% reduction in carbon emissions compared to today's baseline (with gas boilers, chillers and grid electricity), addressing fuel poverty by reducing energy bills by up to 25%. GreenSCIES is in the detail design stage, once constructed the low carbon integrated whole energy system will serve 33,000 urban residents and 70 local businesses. The GreenSCIES concept is suitable to be replicated throughout the country and has the potential to become a world-leading example.

Session leads: Cat De Almeida Marques, *Research Fellow, School of Engineering, LSBU* and Graeme Maidment, *Professor of Refrigeration and Air Conditioning, School of Engineering, LSBU*.

4pm **Closing remarks and details of next day**

Thursday 25 June 2020 – Resources

9am **Introduction to the day**

9.05am **Keynote address: 'Utilising waste heat as a resource':** Kartik Amrania, Head of Building Sustainability Department, Sweco UK.

Description: The topic will cover various generation of energy networks for buildings and outline the concept of Scandinavian ambient loop network, utilising waste heat as a resource for providing its energy need. The concept has a deep connection with wellbeing as it mitigates the need of burning fossil fuel and also absorbs low streams of heat which otherwise would be lost into the atmosphere creating urban height island effect. I will conclude the presentation with a short case study.

Under Kartik's leadership, the Sweco building sustainability team has have delivered some of the most significant sustainable buildings in the UK and hence allocated three times BREEAM Company of the year (2014/2016/2017). Specialising in the sustainable design of the built environment, Kartik has over 16 years of experience in commercial, retail, industrial, military, educational and residential developments for new and refurbishment works.

Kartik plays key roles in prestigious projects, developing energy strategies that evaluate solutions relative to cost, logistics, energy and carbon reductions, green rating certifications, savings and payback time for new and existing master plans and buildings. He actively pursues innovative thinking in projects to achieve the highest sustainable performance: some of this thinking results in early design guides for architects as well as research and testing in practice. His involvement in academia through lecturing at the University of Bath (UK) provides another platform for him to develop new ideas and obtain insights to define practical, sustainable solutions for buildings further.

9.30am The Great Pause: Breathing art and design into environmental issues

Description: In a lifetime, the average person will take 700 million breathes but for 7 million people each year these are cut short due to high levels of atmospheric pollution. Clean air, like water, food, and shelter represent the most fundamental of our needs; when these become unsustainable we suffer as a species; something the global pandemic has brought home.

And yet we are capable of immense and rapid change, demonstrated by the mobilisation on a planetary scale as we deal with a virus that robs us of the breath. By combining the art, science, and engineering in my own practice, I hope to show how we could use this 'pause' to create -through STEAM- more sustainable practices for future generations.

Session lead: Jasmine Pradissitto, Artist and Visiting Lecturer, School of Engineering, LSBU

10.15am Can digital technology save the world?

Description: Resource use and impact is inseparable from that from energy, carbon and climate. The panel discussion / workshop will consider this in light of the shift from physical objects and services to digital technology using the data centre industry as a case study. I propose an interactive Q&A quiz as an introduction, a brief overview of the challenges and panel discussion to raise awareness of the challenges and opportunities for business and end users (including the general public) while simultaneously showcasing the CEDaCI project. The panel will be comprised of project partners from across the data centre sector which will also promote women in tech and STEM.

Panellists:

- Julie Chenadec, *Project Manager, Green IT Amsterdam*
- Carolina Szablewski, *Project Manager, WeLOOP Sustainability Consultants*
- Emma Fryer, *Associate Director, Data Centres, TechUK*
- Astrid Wynne Rogers, *Sustainability Manager, Techbuyer*

Session lead: Deborah Andrews, *Associate Professor in Design, School of Engineering, LSBU and CEDaCI project lead.*

11.15am The uses of 3D printing in a sustainable landscape e.g. using recyclable materials in construction.

Description: Federico will introduce DARLAB – Digital Architecture and Robotic Lab – and a series of projects where robotic manufacturing is playing a key role using sustainable materials combined with

innovative design computation techniques to reduce the waste of materials. Showcases of various projects developed for Titan Reality, European Space Agency, SCMGroup and Southwark Council.

Session lead: Federico Rossi, *Academic Leader, Digital Architecture Robotics, School of Built Environment and Architecture, LSBU.*

11.45pm Novel alternatives to concrete that can be used in construction

Description: Given that concrete construction alone accounts for approximately 13% of total carbon emissions in the UK, there is an urgent need to develop and promote alternative building materials that reflect considerable savings in embodied carbon. LSBU has been proactive in recent years in researching a number of novel construction materials and processes that are far less carbon intensive than conventional concrete construction, including recycled glass bead panels, automated manufacture of timber-framed structures, recycled plastic structural components, cross-laminated shear walls, bamboo structures and the utilisation of recycled concrete aggregates. This presentation will highlight the testing and development activities that researchers at LSBU are undertaking to ensure the efficacy and reliability of these environmentally friendly building solutions.

Session lead: Finian McCann, *Senior Lecturer, Civil and Building Services Engineering, School of the Built Environment and Architecture, LSBU.*

12.15pm Lunch break

1.15pm Sustainability and the nexus of the built environment and the natural environment

Description: LSBU's Professor Ebohon will discuss his expertise on sustainability in terms of the relationships between the built environment and the natural environment. Mitch Cooke, Director of Greengage Environmental, will discuss the advice his professional firm gives to companies impacted by sustainability e.g. housing associations etc.

Session leads: John Ebohon, *Professor of Sustainability and Environmental Law, School of the Built Environment and Architecture, LSBU* and Mitch Cooke, *Director, Greengage Environmental.*

2.15pm Sustainable Architecture: the implications of sustainability on designing buildings

Description: LSBU Architecture reintroduces some neglected but fundamental principles of sustainable design relevant to architectural design and the built environment. The challenges which were rapidly

approaching before the pandemic reinforce our vision of a sustainable future relying on resource efficiency, and the use of natural low embodied energy materials. Working with environmental conditions as an integral factor of design development, this process emphasises symbiosis between nature and man, and a balanced approach towards existence in harmony with nature.

This presentation focuses on the comparison and assessment of established and non-established but innovative design strategies, significantly reducing energy demand, and shifting us closer to a carbon neutral future.

Our goal establishes residential and other building typologies which set new standards for efficiency and sustainability in the UK, contributing a message to the world for a better, cleaner environment.

Session lead: Todor Demirov, *Senior Lecturer, School of Built Environment and Architecture, LSBU.*

3pm Bamboo Structures: Using bamboo as an alternative material in construction

Description: This session will examine our hands-on Bamboo Tensegrity Pavilion experience that we've carried out in partnership with Dr Andry Widyowijatnoko and colleagues from Institute Technology of Bandung in Indonesia as part of the Royal Academy of Engineering funded project.

Students from architecture, engineering and construction courses at LSBU joined forces to give a helping hand to build this pavilion in three days. This session will also discuss the opportunity and challenges in using bamboo within UK's climate.

Session lead: Jennifer Hardi, *Course Director, BSc Architectural Engineering and BSc Architectural Technology, School of Built Environment & Architecture, LSBU.*

3.30pm The use of Basalt Fibers Reinforced Polymers BFRP products in concrete structures

Description: One problem that faces the engineering practitioners is the corrosion of reinforcing steel that occurs when water and aggressive agents penetrate through the cracking concrete which results in reducing the overall durability, increasing the repairing expenses, and decreasing of reliability and safety of deteriorated structures. Basalt Fibre reinforced polymers (BFRP) provide an alternative reinforcement that does not corrode, has high strength-to-weight ratio and has many other advantages over the glass FRP (GFRP) such as (1) they do not required addition of special additives or hazardous materials in production; therefore, it is easier ,cheaper and safer to produce, (2) their chemical stability is better than GFRP, especially in acids exposure attack, and (3) they have higher resistance to alkaline environment associate with concrete than GFRP, and excellence anti-seawater corrosion properties.

This session is to discuss the recent tests on the basalt FRP products for the possible use in construction, namely basalt bars BFRP, micro-basalt rebars, and chopped basalt fibres to full/partially replace steel reinforcement. The BFRP bars and basalt fibres used as reinforcement in concrete elements exhibit high tensile strength, excellence anti-corrosion and anti-chemical properties, and light weight compared steel bars and fibres.

Session lead: Rabee Shamass, *Senior Lecturer in Structural Analysis, School of Built Environment and Architecture, LSBU.*

4pm **Closing remarks and details of next day**

Friday 26 June 2020 – Summary of the Week

9.45am **Introduction to the day**

10am **Keynote address: How people can make climate action a part of their every day lives.** Zion Lights, *Spokesperson for Extinction Rebellion and Editor, The Hourglass.*

Zion Lights is a TEDx speaker and author of *The Ultimate Guide to Green Parenting* and the poetry collection *Only a Moment*. She is also a spokesperson for Extinction Rebellion UK and the Editor in Chief of the XR UK newspaper *The Hourglass*.

10.30pm **The Major Issues and how communities can take more climate action. A panel discussion plus Q&A.**

Panellists:

- Zion Lights, *Spokesperson for Extinction Rebellion and Editor, The Hourglass*
- Councillor Graham Neale, *Opposite Environment Spokesman, Southwark Council*
- Elisa Puccinelli Rebelo, *Final Year Student, Product Design, LSBU*
- Andy Ford, *Professor of Building Systems, School of Built Environment and Architecture, LSBU*
- Deborah Andrews, *Associate Professor in Design, School of Engineering, LSBU and CEDaCI project lead*

Hosted by: Thomas Empson, *Sustainability Project Manager, LSBU.*

11.45am ERDF Projects: what you've seen and how we can work together

Description: LSBU supports London's low carbon innovators through two ERDF funded projects, Access to Innovation (A2i) and Low Carbon London (LCLDN). These projects support and accelerate SMEs through the product development journey; providing access to workshops, academic expertise, software, and prototyping facilities in a creative environment. This session will showcase some of our current collaborations, discuss why projects such as these enable LSBU to stay at the forefront of research, and explain how you can apply to join A2i or LCLDN. www.sustainableinnovators.com

Session lead: Ellen South, *Senior Project Manager, Sustainable Innovation, Research, Enterprise and Innovation, LSBU.*

12pm Lunch break

1pm The Great Pause: A Virtual Exhibition

Description: In a lifetime, the average person will take 700 million breathes but for 7 million people each year these are cut short due to high levels of atmospheric pollution.

This global 'breathe' has become never more meaningful than it is now at a time of global pandemic and yet the mobilisation that has been achieved to save those closest to us has been remarkable and as result, the planet has had a chance to 'pause' to inhale and exhale, so that the skies are cleaner than they have been in decades.

To mark this, and more importantly so that we can start a similar mobilisation for climate change, we asked our staff, students and local community submit a photo that captures a moment in time of their experience of lockdown/quarantine. It could be anything from a noticeable positive change in the environment, something they've created or an act of kindness or an image that captures their feelings.

This is an opportunity to see some of the photos they have taken during this period of relative stillness. Jasmine Pradissitto also shares her video '700 Million Breathes'.

Session lead: Jasmine Pradissitto, *Artist and Visiting Lecturer, School of Engineering, LSBU.*

1.30pm We all have a part to play in protecting the planet - but how? A look at some of the highlights and key messages of the week as well as myth-busting and practical takeaways

Description: We look back at some of the highlights and pivotal messages from the week as Jasmine

Pradissitto tackles some myth busting and shares some practical takeaways so that we can all play our role in protecting the future of our planet - as institutions, as communities and as individuals.

Session lead: Jasmine Pradissitto, *Artist and Visiting Lecturer, School of Engineering, LSBU.*

2pm **Conference summary and details of what's next in the event series.** Professor Pat Bailey, *Provost, LSBU* and Thomas Empson, *Sustainability Project Manager, LSBU.*

2.30pm **Conference closes**