

Institution: University of East London
Unit of Assessment: 13 Architecture, Built Environment and Planning
1. Unit context and structure, research and impact strategy

Overview

Located in the historically poorer East End of a global metropolis, our research has, **like the East End itself, dramatic changes in the past few years**. While UEL has always reflected and been part of the multicultural character of the East End, this part of London has in recent years become a vibrant world-leading centre with a global outlook, and this, too, is reflected in the direction and development of our research.

The urban regeneration of East London has provided the social and physical canvas that has inspired and informed many strands of our work, encouraging partnerships that extend from the immediately local to those that extend internationally. The dynamics of regeneration, innovation and increasingly global outlook act as a catalyst for convening multidisciplinary research around the critical question of how change impacts community and environment from local to global, how the dis-benefits of such change can be minimised or avoided, and how the benefits can be focused and harnessed. **The UN Sustainable Development Goals (SDGs) now provide a valuable formal framework for what have long been our core set of ideals and actions.**



Figure 1. Action Research developed over many years by Jungfer and Palmieri with our students and stakeholder groups in Dalston, East London developing relationships and opportunities for impact - the Tropical Isles Carnival group awarded at the Notting Hill and Hackney Carnivals as part of our research engagement and collaboration.

Our collective approach to sustainability and equality generates solutions-based research that is both appropriately shaped and fundamentally practical for application across multiple partnerships. At its heart are knowledge-exchange and innovation geared to “making global goals local business”, as framed by the UN SDGs.

We are increasingly recognised internationally for the way in which our research is driven by the needs of, and challenges faced by, our many and varied external partners, both large and small. **We are funded by this same broad church of end-users** and we are active collaborators in projects worth at least GBP30 million over the reporting period, of which some GBP15 million have come, or will come, directly to the university.

Sustain, retain, restore, regenerate, re-use

As impact drives our research, we operate on the basis that traditional boundaries between disciplines are wholly transparent because genuinely sustainable outcomes require the integration of social, environmental and resource-based actions in defining environment, place and living space, as well as maximising social return on research investment, all within the context of a climate emergency.

“The TURAS project [SRI/Connop] was pioneering on several fronts, including on multi-stakeholder co-design to co-implementation processes, design and development of multifunctional green spaces in urban contexts, and innovative governance and community engagement processes, to cite a few.”
(European Commission)

Partnerships are fundamental

The strength of our research thus comes from the fact that we work through partnerships across disciplines both within UEL (environmental science, materials science, architecture, landscape, social science, engineering, fine and performing arts) and beyond.

Catalyst for change

Though we are a relatively small research unit compared to many key units in other institutions, the power of our work arises from the way in which we act as catalyst for change by providing our much larger partners with solutions to key issues. We do so by empowering and assisting them through innovative approaches to social and business engagement, sustainable design, novel intervention, concepts of people and place, nature-based solutions and landscape management.

Alignment with UN Sustainable Development Goals (SDGs)

Our approach eschews the traditional ‘research group’ framework, replacing it with a collectivised skillset which brings together teams around external opportunities that achieve social, environmental and resource-based sustainability aligned to our commitment to addressing the UN SDGs (Section 3). This enables us within our distinctive research profile to embrace a remarkable variety of ways in which the built environment interacts with the natural environment – ‘from buildings to bogs’.

An open and inclusive research environment

Our open collaborative structure is based on the principle of removing borders to knowledge-sharing through our comprehensive ‘open science’ policy. Our default position with funders and partners is that our outputs will be open-access first and foremost through the university Research Repository but also through partner or journal open-access outlets. Furthermore, our approach to Open Access also extends to research data. Our external collaborations adopt a principle that data generated, first

and foremost, are used to support partners in addressing local and global sustainability challenges, rather than a default position of seeking IPR for our research outcomes. Our 'open research' approach engenders and supports the principle of democratic research. Exceptions to open access only apply where commercial or other legal embargoes are in place.

Inclusiveness rather than exclusiveness

Challenge-driven research demands inclusion. The challenge drives the configuration of our research teams based on skills and bringing key people together around a shared purpose. Organising a 'challenge-based approach' is handled through the **Sustainability Research Institute** led by Professor Darryl Newport, in close collaboration with the UoA Research Leader Alan Chandler and the programme leaders of our professionally accredited Architecture, Landscape, Architectural Technology and Visual Arts courses within our School of Architecture, Computing and Engineering. Our research teams often include teachers, scholars and students who all contributing to our research outcomes. In this way we embed research and new knowledge into our pedagogy and give our students valuable skills, experience and self-worth by participating in, and contributing to, real world issues.

Making a difference – solutions, support, sustainability

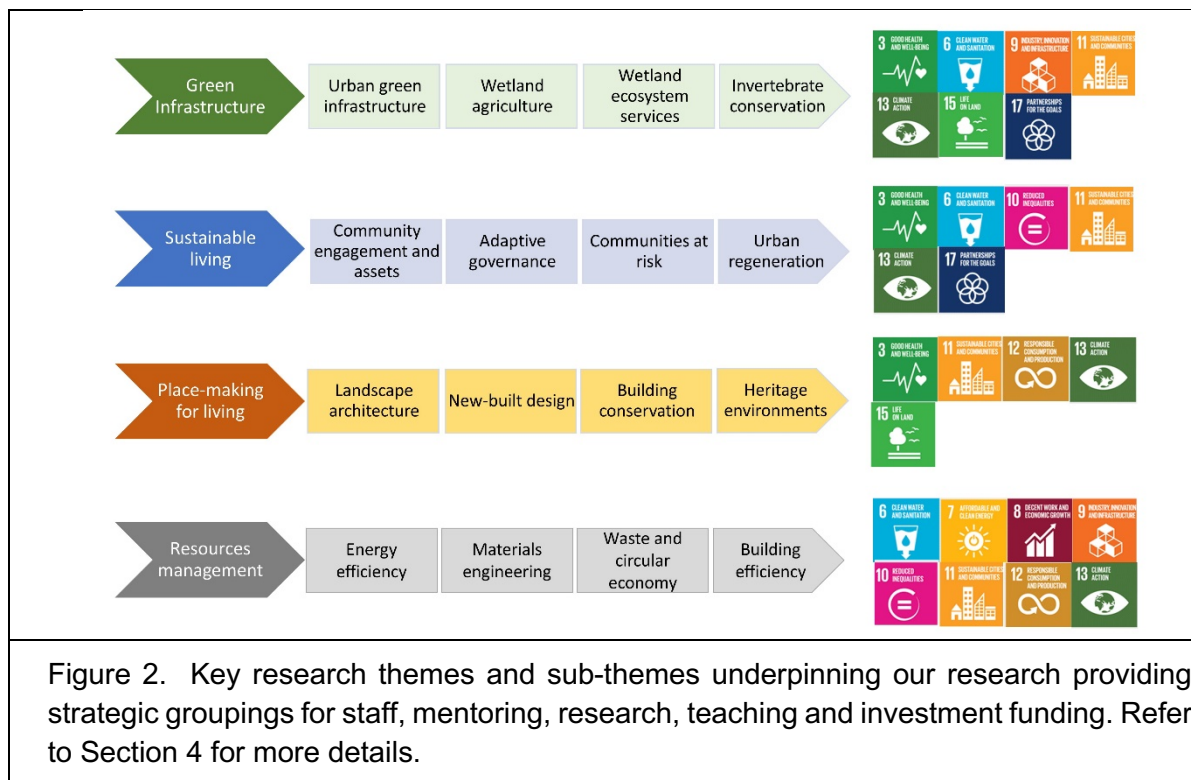
Opportunities to harness scientific research, design skills, live construction, and nature-based solutions give our work unprecedented breadth of engagement, catalysing change in others from the scale of inter-governmental bodies (such as the UN Food & Agriculture Organization) or UK Government departments (such as DEFRA or the Ministry of Justice) to small local communities (such as the Derrybrien Village Cooperative, Co. Galway).

- Our commitment to **Knowledge Exchange** maximises opportunities for multi-disciplinary collaboration and knowledge transfer to ensure that our work benefits communities, businesses and society at large, across the local, regional and global spectrum. Examples of this include the **ERDF projects ENE (GBP10.8M) and ARENA (GBP1M)**, applying our research, knowledge and expertise to support regional businesses in relation to energy, product development, resource management, green infrastructure and nature-based solutions.
- Our work on behalf of the small community of Derrybrien in Co. Galway, Ireland, has led to **rulings in the Irish Supreme Court, rulings from the European Court of Justice** and ongoing EU fines to the Irish Government of EUR 15,000 per day until the harm to the community resulting from catastrophic events arising from poorly planned construction work have been addressed.
- Our research with communities and local government has realised policy and place transformations, redefining areas of sustainable regeneration across multiple municipalities along the **historic River Brenta in Venice**, and the reinvention of former industrial infrastructure in the **Belgian city of Genk**.
- Our global reach enables students to become involved in decision-making and shaping actions associated preparing for **global inter-governmental treaty events such as the UNFCCC COP26**, with staff and post-graduate architecture students collaborating with artist Michael Pinsky in the design of a 'Peatlands Pavilion' in partnership with the UN Environment Programme, the Global Peatland Initiative and the IUCN UK Peatland Programme to showcase the role of peatlands in sustainable water management and carbon capture at the COP 26 in Glasgow 2021.
- Our most significant research-informed teaching involves 'Live Construction' projects for local

user groups via collaborations with **Local Authorities such as Newham and Waltham Forest, NHS Trusts and schools as well as practice collaborations with industry**, generating over GBP130K over the past 12 years to co-create and complete over 90 projects linked to UN SDG 11.

Research Strategy – focus on impact

Within this collaborative research environment, we deliver research solutions which act as catalysts for change through four key research themes and sub-themes (Figure 2).

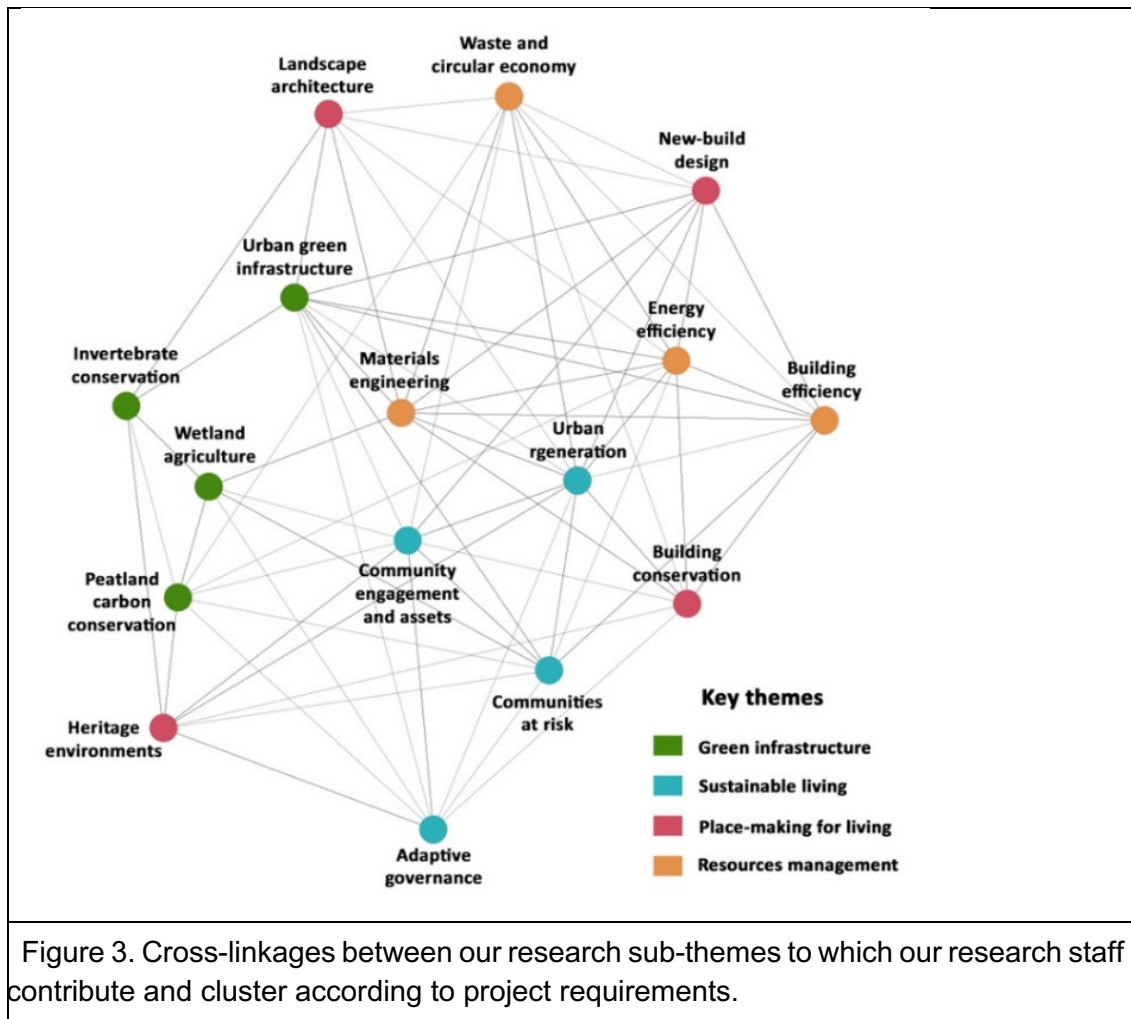


Key Research Themes explained:

- **‘Green infrastructure’** applies both novel and standard development and monitoring processes to an understanding of how we conserve and manage man-made, agricultural and managed semi-natural greenspace as infrastructure that delivers ecosystem-service benefits in sustainable ways.
- **‘Sustainable living’** focuses on a co-production research process that engages with communities and stakeholders to support their voice in policy change, urban regeneration, participatory design, risk management, migration and integration.
- **‘Place-making for living’** applies spatial, cultural, social and environmental research through design practice to deliver transformed, culturally and environmentally sustainable urban buildings, green spaces and managed landscapes.
- **‘Resources management’** defines new efficiencies in processes, materials manufacture, and social housing retrofit with key industry and community partners.

An integrated and active research network

Typically, our research projects are based on clusters of expertise, with all our researchers sharing the conviction that inter-disciplinary technical knowledge, societal impact and public engagement are brought together through research-led design, specification and policy.



The strategic research aims that have given rise to a unifying research strategy since REF 2014 are:

Tangible Impact: maximising the deployment of our research capabilities in real-world environments to bring about tangible change in the UK and internationally – in **policy** terms and **on the ground**:

- *Research capability and capacity*: monitoring and identifying emerging research topics of relevance to our client base to deliver research-based change and grow skills and staff capacity.

We approach these objectives in two distinctive, overlapping and mutually supporting ways:

- *critical analysis* - using rigorous analytical tools and methodologies to advance and re-appraise knowledge about, and understanding of, sustainability; and
- *direct action* - effecting change with, and on behalf of, particular beneficiaries.

Future strategic research aims

Our core commitments articulated in our REF 2014 submission have not changed:

“The Unit’s strategic plans build upon the most successful facets of our current practice-oriented collaborations, based on a hands-on and inclusive approach to non-academic engagement”.

Our ongoing priorities include:

- identifying opportunities for novel collaboration between colleagues to enhance transdisciplinary research delivery.
- increasing our internal capacity and range of multi-disciplinary capability to address more comprehensively the UN Sustainable Development Goals.
- extend our networks to consolidate our local and international reputation.

2. People

Staffing strategy and staff development

Reflecting the community around us, our research-active community extends beyond our formally defined researchers to our wider academic colleagues. Contributors to our teaching and community engaged research include fifteen female colleagues and our staff have origins in twelve different countries, six of which fall outside the HESA definition of ‘White’.

The number of research-active staff has almost tripled since 2014 from 5.2 FTE to 14.4FTE, with professionally accredited built-environment practitioners amongst them counting for 70% of the total. 40% of our submitting staff are female, doubling from four in REF 2014 to eight in REF 2021. Of our eight female researchers, five have full time or 0.8FTE, two on 0.5 FTE, fully embedded in the core of our research environment.

While this improves on the HESA average distribution, more effort is needed to translate the diversity of our students into greater diversity of our submitting staff, and to create greater opportunities to extend research informed practice. Nurturing research within and through teaching benefits researchers, teachers and students – creating a framework to develop that research exposure and contribution into research careers and origination is the challenge we set ourselves.

Our ‘pathways to research’ agenda aim to address this proactively, and we are seeing our research expansion starting to become driven by our own, diverse students reinforcing our skills base. This has been achieved by:

- ensuring fairness in the allocation of research support - through the division of internal research funding between thematic topics and the promotion of a co-developed approach to strategic investment.

- recruiting talented, outstanding researchers, from both within and external to the university, with the Research leader and Innovation and Impact Director using their knowledge of each researcher's work to support colleagues from diverse backgrounds, thereby connecting such researchers both professionally and on a personal level in order to feel valued within the team.
- by providing flexible working environments, impact-driven challenges and blended opportunities across teaching and research to nurture internal researcher development and ensuring teaching is informed by, and remains up-to-date with, current cutting-edge research;
- retaining and rewarding staff who are central to our research strengths – through a comprehensive Professional Development Review process, mentoring and regular promotion application rounds - 12 of the staff within our REF 2021 submission either were also submitted in the previous REF submission or were employed as Research Assistants and have now progressed in their research career to be included in this submission.
- Actively supporting female PhD students into project-based doctorates supporting SRI staff in funded research – currently four of our six SRI PhD students are women – ensuring our tradition of employing and supporting our doctoral students enhances our diversity.

Recruitment

Our researchers have all significantly developed their careers at UEL in the last five years - Vandergert has progressed from Research Fellow to Senior Research Fellow, Connop, who was an ECR at the time of the previous REF, has progressed from Research Fellow to Senior Research Fellow, Chandler and Elsharkawy are now Readers, Newport is now a Professor.

Entering REF 2021 as home-grown Post-Docs are Nash, now a Research Fellow, Ayati and Molineux (promoted from Research Assistant to Research Fellow). Of the nine doctorates achieved within our UoA environment since REF 2014, four are submitting their research with us in REF 2021. Our doctorate students are often working across discipline themes – 'the architecture of hospitals' working jointly with a supervisor in Health and Bio Science, 'sustainable green roof systems' with engineering supervisors, the 'origins of Mycenaean citadels' with Fine Art and Architecture supervisors.

Beyond our annual **Researcher Development Programme**, we have a programme of annual Conferences that ECR's and practitioners submit proposals for and are taken forward via internal and external funding support. Mentoring and support enables our staff with strong research ideas to curate and deliver innovative Conference events focusing on emerging or urgent fields of knowledge, such as '**The Housing Crisis**' (Minton 2016), '**Between Data and Senses**' (Karandinou with ARUP Engineers, 2017), '**Tangible/Intangible Heritage**' (Segantini, 2018) and '**Just Landscape? Diversity, Ethnicity, Representation**' (Snaith, 2019).

Within the School of Architecture, Computing and Engineering, an annual sabbatical scheme funds staff via targeted support for teaching in order to develop or complete key research projects. For example, sabbaticals were awarded to Chandler and Minton to complete books published by Routledge and Penguin respectively.

Mentoring

In addition to the development programme, new staff are mentored by Research Leaders for two years within the School. This provides wayfinding guidance about collaborative partnerships, grant

application support, co-authorship. Attendance at the annual UEL Research Conference is encouraged for staff in order to be exposed to, and be inspired by, colleagues across the University. It also furthers fosters and re-enforces development of one of our core principles - namely interdisciplinary collaboration.

Support and training mechanisms for PGR students

Our postgraduate research is predominantly project-led, offering PGR student opportunities to contribute to, and gain benefit from, participation in project delivery for external partners. Working on a doctorate through 'research practice' brings greater contact time with supervisors, enhanced practical experience of research discipline and delivery, facilitates development of the student's own external network of partners. This approach has helped to create to an inclusive and integrated culture which has enabled us to retain some of our best PhD graduates as colleagues capable of then generating significant research outputs in their own right (Connop, Nash, Ayati and Pace).

In 2015, the University launched a four-year programme of investment in fully funded PhD studentships and bursaries - Minton, Chandler, Vandergert, Newport and Connop are all supervising students through this programme.

Our doctoral student community has grown with our UoA. **In 2014 we had one completion within our UoA whereas since 2014 we have had ten completions**, with seven more students due to viva by the close of 2021.

Our sustainability and partnership principles also underpin our programme of research experience and internships, linked to professional-practice collaborators such as 'Studio Bark' (Architects' Journal 'Sustainable Architect of the Year' 2018). An undergraduate internship programme has **supported implementation of nature-based solutions across EU cities**, green-wall cooling in London, as well as enabling undergraduates to be acknowledged as contributors to critically acclaimed and influential publications.

SRI and Architecture undergraduate students from the programme have been regularly selected as the two undergraduate students representing UEL at the national **Posters in Parliament (PiP) competition**, reflecting engagement of the students with the research team and with real-world topics. Our GBP0.25 million British Council-funded social housing retrofit project with Newham Council (Elsharkawy) gave opportunities to three doctoral students and a post-doc to deliver exemplary, impact-focused research directly benefitting our local communities (<http://newton-sdbe.co.uk/>).

Our research graduates are increasingly recognised for their **high degree of employability**. Several of our research graduates have entered academia (University of East London SRI, University of Bath, UCL, University of Cardiff, University of Derby, University of Madison, Wisconsin) and IUAV Venice, while others have been employed by the construction and engineering industry (Careys Group, ECD, HKS, PDP, PTE and Mott MacDonald) or by ecological consultancies.

Supporting and promoting equality and diversity

Based in a University with 140 mother languages, we know that diversity is an absolute asset. Our students and the communities we work with recognise themselves in our staff and know that partnerships are about mutual respect and benefit. Our non-hierarchical research environment is

fundamental to ensuring that hierarchies underpinned by bias, conscious or otherwise, have no place in our research or practice.

Our work in building community facilities is a vehicle for giving our students tangible understanding of equality, diversity and sustainability. In Barking Riverside, for example, it ensures the **users of the local school and community centre see our research in action** at every level while at the same time inspiring our current students to act directly on improving the kinds of communities they come from. It also encourages possible students of the future **to realise that such educational opportunities exist in their own back yard**, as it were.

The '**Relational States of Dalston**' project (Jungfer, 2018-9) drew on GBP12K of funding from Hackney Council, the Bootstrap Charity as well as support from UEL in order to collaborate with local inclusive carnival group of Caribbean heritage. The collaboration involved developing their creative activities in partnership with our architecture undergraduates. It led to mapping and regeneration proposals presented to Hackney Planning officers and created a 'Mas-Piece' (ref. Figure 1) or procession-leading 'body architecture' to head the groups procession at the Notting Hill Carnival and Hackney Carnival. **It was awarded second place** overall within the highly competitive Notting Hill Carnival and **was the winner** in the Hackney event – and extraordinary, and extraordinarily important, achievement for those involved.

These cultural events are highly significant for the young people and communities that participate, and such participation helps develop bespoke engagement strategies, tools for collaboration as well as fostering a deeper understanding of the need for, and benefits arising from, active engagement with equality and diversity.

3. Income, infrastructure and facilities

Our geographical environment is our infrastructure:

As evident in the projects we have worked on, **the world outside the university is our laboratory** and our engagement with our multiple communities drives much of our research. We focus on impact, in the form of solutions for identified challenges, using research as a means to achieve this. Our commitment to social and environmental goals informs the funding streams we utilise to create positive change. We work with our UEL research development colleagues to identify appropriate grants, collaborations and partnerships that are ethically based and oriented toward the UN Sustainable Development Goals, and **we accept that this policy inevitably excludes particular – potentially sometimes large – funding sources.**

Sustainable funding strategy

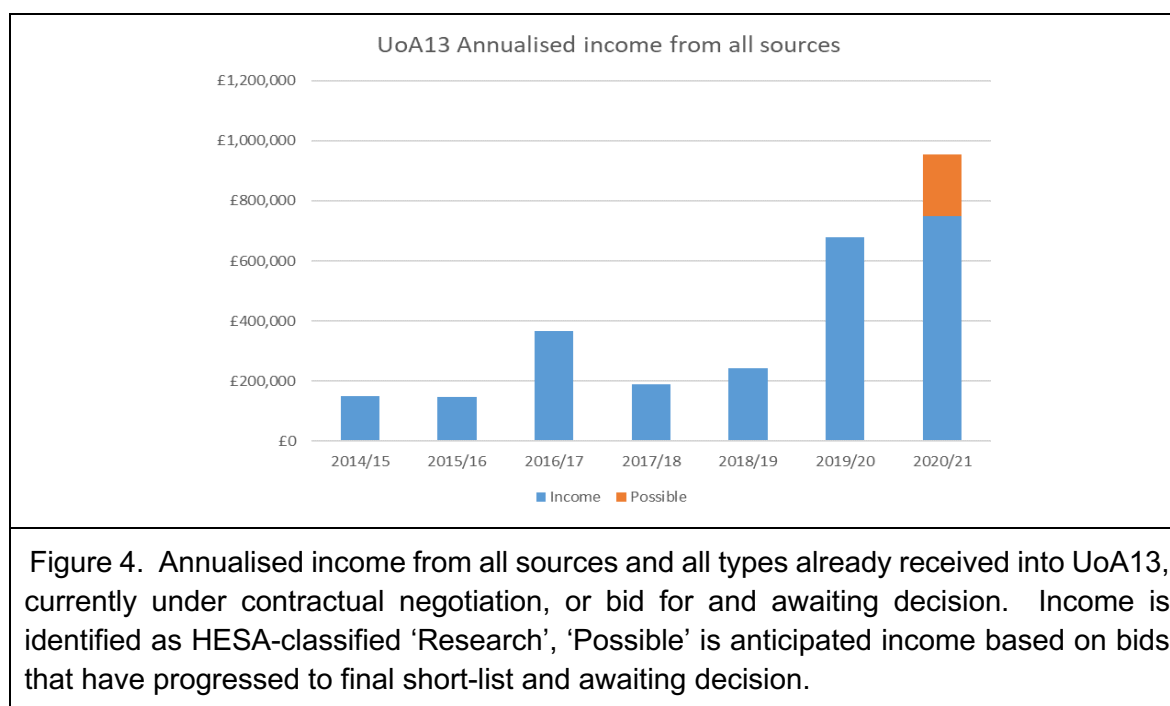
Revenue diversification is one (but by no means the only) important reason for us to maintain effective local engagement in addition to major grant-funded work. A wide funding base provides a means of both addressing the increasingly competitive environment for public funding but also ensures wider societal engagement with our research. Thus, our research project funding portfolio ranges from GBP500, received from Sustrans for evaluating whether a local greenspace has soil suitable for use as a community allotment, through to the GBP10.8M ERDF ENE project (run wholly by UEL).

Income

Research and consultancy income has shown a dramatic increase during the reporting period (see Figure 4). Our funding sources have been diverse in part because sustainability has been increasingly acknowledged as a fundamental principle that must ultimately underpin all aspects of society. Since 2014, we have undertaken projects to the value of GBP1.5 million of which more than GBP850,000 is research income, the remainder being special awards or consultancy funding to assist business and other external organisations in their work. In 2019, we secured two additional projects worth over GBP2 million to UEL and in late 2020 we secured a further project (SENE) worth GBP6.8 million.

Large projects generate funding cascades

Projects associated with the five larger funding, namely EU FP7, EU Horizon 2020, EU ERDF, Innovate UK and the People's Postcode Lottery Dream Fund, are themselves **giving rise to further significant funding opportunities** – FP7 TURAS, for example, has led to the Horizon 2020 Connecting project, while success with Innovate UK led to funding success with the People's Postcode Lottery and further funding opportunities through the Heritage Lottery.



Success in obtaining ERDF funding **represents a major shift in, and expansion of, funding capture**, with two large projects added to the UoA13 income portfolio – the ERDF ENE project provides technical research advice to business (a GBP10.8m project led by the SRI and worth GBP900k to UEL), while ARENA, worth GBP1 million at 50% funding to UEL, is linked to the community-focused Ecology Centre at Barking Riverside, and represents **the world's first urban Nature-based Solution business incubator/accelerator**. Both projects will link the SRI directly with local industry through knowledge-transfer of research outputs designed to support business and product development. This will act as a platform for increasing collaboration with, and income generation both for and from, the local business community.

A third ERDF project, SENE is a **GBP6.8 million project** that has recently been approved that will develop the local energy market and build a stronger local energy economy across the SELEP region (Essex, Kent, Sussex and Surrey).

The SRI is a key player in a **GBP1 million partnership project funded by the People's Post Code Lottery Dream Fund** to establish larger-scale field trials of novel wetland crops ('paludiculture'). Partners and collaborators include The Great Fen Project, Cambridge ACRE, and the Centre for Ecology and Hydrology, and brings GBP68,000 to UEL over a 2-year period. The project builds on the initial pilot research work in which the SRI was a key partner, and which was funded by Innovate UK.

Our success with British Council 'Newton' funding is notable, the GBP0.25 million Sustainable social housing retrofit **being our largest Newton grant to date**.

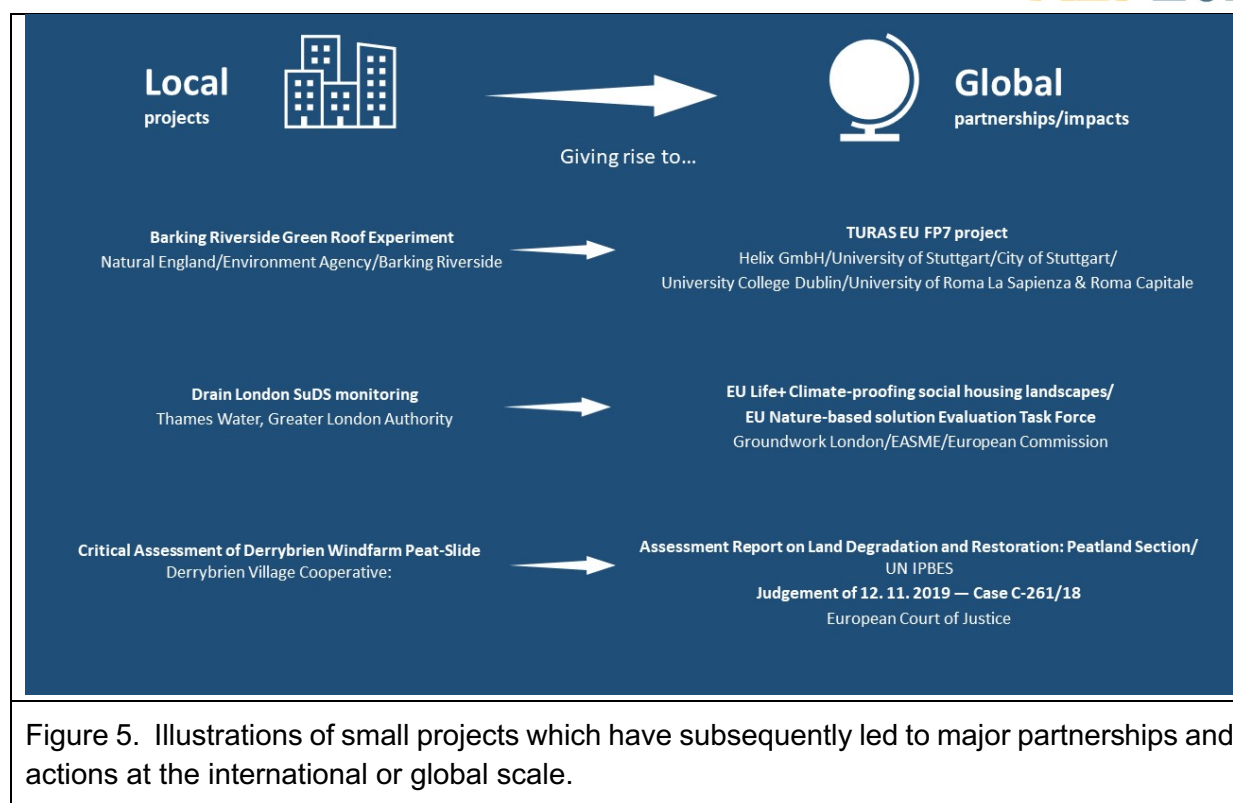
No request is too small

Smaller funding streams are cumulative and are no less significant in terms of the UoA's research strategy of widening its funding base. Some of these have been provided by organisations such as Thames Water, IUCN UK Peatland Programme, Scottish Natural Heritage, Natural England, Scottish Wildlife Trust, Essex County Council, Transport for London, Greater London Authority, London Wildlife Trust, Berkeley Homes, Sustrans, Leverhulme Trust, RIBA, The Tudor Trust, the Newton Fund, the RSA, Natural Resources Wales and the Canal & Rivers Trust.

The other reason for responding to these smaller requests is that **these small groups or communities too often feel excluded from the national research base**. They do not have the funds to compete with industry or research councils and cannot afford the full economic costs often cited by academic research institutions but know that they require specialist knowledge to help them address their particular issue. UEL has been **ranked second in the world for SDG 10: Reduced Inequalities, reflecting, underpinning and highlighting our commitment to addressing inequality in access to quality research**.

Large oaks from small acorns

These smaller funding streams are also a strategic part of our approach to research in part because some initially small, or pilot, projects may on occasion have the potential to grow into very much larger areas of work with much larger associated funding streams. We already have several examples of such expansion, where an initial small 'acorn' of a request has led to active international or global partnerships and actions, as can be seen in Figure 5.



Facilities

Equipment and building infrastructure

The **SRI** is a dedicated research centre with its own administration staff and **new laboratories** established at a cost of more than GBP250,000 to support the work of materials testing and biological sampling and assessment.

Land Surveying equipment mainly supports our fieldwork (green roof monitoring, aggregate testing, molecular ecology, species ID, field survey and surveying tools, virtual reality technology). This equipment has recently **provided vulnerable users in Barking Riverside with a new community building which we co-designed with them**, enabling them to experience the inner workings of the project during the Covid lockdown.

Technical Laboratories also support our fieldwork and are shared with professional programmes of our partners (Geotechnical, Hydraulics, Materials laboratories, Scanning Electron Microscopy, and a Structures Laboratory incorporating dedicated computers and software). In addition, a green roof rain simulator has been developed in the Hydraulics Laboratory which is **used as a knowledge-exchange service for green roof aggregate manufacturers**.

Overall, **more than GBP300,000 worth of equipment and facilities investment has been brought in since 2014**, enhancing our research capabilities and establishing an archive of open access materials innovation to support our sustainable materials research. In addition, we hosted the C2C Biz demonstrator at the London Sustainability Industry Park (Fig 6a), worth GBP250,000, which offered further opportunities for business engagement. We are also **co-managing the Barking Riverside Ecology Centre** (Figure 6b) as a community asset to the new residents at the development. This includes running the ERDF ARENA business support project through the premises.



Figure 6. Images of SRI infrastructure extending beyond the UEL campuses. (a) C2C Biz demonstrator at the Sustainable Industries Park. (b) Barking Riverside Ecology Centre through which ARENA business support is being developed.

University infrastructure alignment and opportunity

UEL provides a well-equipped research environment occupying a range of purpose-built buildings on the University campus, including a series of workshops to enable a hands-on approach to research delivery. These workshops contain facilities for woodworking, plaster and concrete casting, metalwork and a new robotic manufacture laboratory in 2016. **We see new fabrication technology as a disruptive phenomenon that can empower local initiative, with self-build housing design the key focus for our teaching in 2018/9** and enabled sustainability in 2019-20. Workshops are supervised by full-time technicians and full access to researchers is provided on an 'open door' booking basis. The workshops are essential components that underpin the Unit's commitment to the research practice revolving around technical innovation.

The University campus itself provides its own research opportunities, with monitoring of innovative research into renewable energy generation, wildflower meadows, a brownfield nature reserve, herb garden and twenty-one green roofs. This support is evolving through **close collaboration between the University's Facilities team, SRI and Landscape Architecture**. At a strategic level, the university is also looking to invest GBP5.5 million in technical solutions designed to bring UEL close to carbon neutral in its operations, which includes **working with Siemens to set up an Urban Living Lab in green technology**.

Research infrastructure opportunity also extends beyond the campus boundaries: **SRI and Architecture staff utilise a network of 'Living Laboratories' as research and knowledge exchange hubs**. From brownfield sites to neighbourhoods and entire cities, research infrastructure is realised across real-world locations and challenges, whether in the Great Fen 'Water Works' Project of Cambridgeshire or the green spaces of Poznan in Poland.

4. Collaboration and contribution to the research base, economy and society

Mutual quality control

Collaboration, both internal and external, is essential to the operation of a research grouping focused on delivering ethical, sustainable impact across a range of sectors and communities. This results in

delivery of social and monetary value through being effective, positive influencers of behaviour and ecology, whether working with Natural England to improve strategies for biodiversity or with the Ministry of Justice to design prisons as places of effective, humane rehabilitation. Were we to stray from the principles of ethical and sustainable impact, our partners would be sure to take us to task, thus providing a form of **continuous quality control on everything we do**. Equally, however, we assist and enable our partners to recognise when they are straying from these principles, so it is a mutually beneficial relationship.

The work of Chandler, Charif, Karthaus, Meynell, Minton, Pollak, Segantini, Snaith, Charif, and Vandergert focus on ways in which design, policy and practice-based processes impact on the societal and community experience of place, its sustainability and its heritage. Minton's Leverhulme-funded collaboration project 'Regeneration Songs' worked with UEL Music Technology staff to develop a series of music compositions with Newham-based bands exploring the neo-liberal globalised regeneration strategies overlaying one of the most deprived boroughs in the UK - *"It's full of rage and hope and casts a critical light on those profiting. Most of all, it acts as an archive of people and place and as a radical form of bottom-up placemaking that is so important in the battle for the city"* (K. Paton, *The Sociological Review* 24.10.19).

Major infrastructure and policy-level research projects such as the FP7 'TURAS' engage with society at many levels of decision-making, **from EU policy development to community groups engaging with their local areas of green infrastructure**. Large projects also tend to spawn a great many spin-offs which may include delivering localised social benefit. For example, the EU-wide TURAS project has led to the co-designing and building facilities for local schools and community groups in Barking Riverside. This helps to make district-scale sustainable policy mean something to people on the ground, further emphasising our commitment to ensuring that our work is inclusive and not merely for high-level decision-makers.

Research collaborations, networks and partnerships

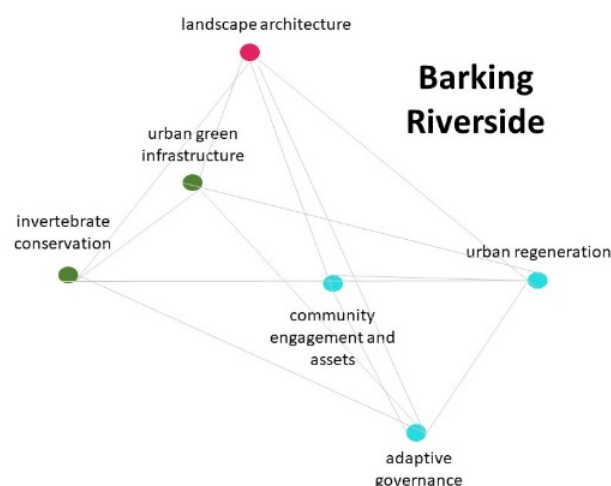


Figure 7 gives a sense of the range of networks, partnerships and groups with whom we work, from community-based groups to large global networks. The full range is much larger than this but the types of partners and the types of engagement that we have with these partners should be evident from this selection.

Taking a few examples from this larger list, it is possible to examine in more detail the nature of our partnership working. Our increasingly multi-disciplinary collaborative and creative approach through these partnerships is highlighted within the following three case studies:

Barking Riverside: Our long-term involvement at Barking Riverside optimises the local to global approach of our research strategy. Beginning as a small-scale action-research project in partnership between Bellway Homes, the London Borough of Barking and Dagenham, the Environment Agency, Natural England, and the Green Roof Company, research at the development evolved to include a focus on urban green infrastructure, invertebrate conservation, community engagement and assets, adaptive governance, urban regeneration, and landscape architecture research through the EU FP7 project TURAS. Research outputs from TURAS are now underpinning the design of this major urban development, including support for landscape design and local business incubation, and are being fed into global nature-based solution delivery support through ICLEI's UrbanByNature programme.

Ongoing collaboration at Barking Riverside includes architecture and landscape students working with local partners to improve the environment of school, ecologists working on innovative designs to marry conservation and amenity use of greenspace, and community engagement around the benefits of blue spaces, and the development of a wellbeing retreat space for men, young people and volunteers.



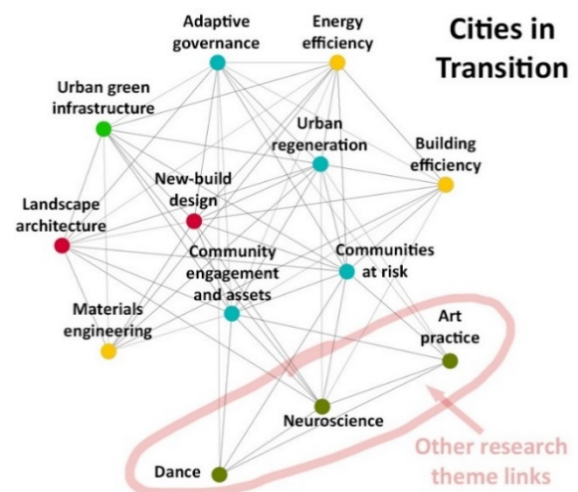
Core SDGs:

Sustainable Development Goals



Cities in Transition: A core strand of our research sees the built environment as a social construct requiring sensitive and multi-disciplinary approaches to understand and uncover what critical questions need to be asked – research to reveal what requires researching. This approach to ‘Action Research’ is simultaneously qualitative and quantitative, and the REF 2014 work of Chandler and Clarke has been significantly strengthened through Charif’s expertise in researching play as a place making strategy with refugees in Palestine (‘Creative Refuge’) and Pollak’s work with favela communities in Chile, her PAN project using a unique mobile bakery as a constructed situation to enable public engagement on social justice issues. Our ‘Newton Fund’ project led by Chandler with Karandinou, Snaith, Pollak and Charif brought together architecture, urban planning, landscape, art practice, dance and neuroscience to look at the situation of migrant communities in Ankara, Turkey with the Middle Eastern Technical University (METU).

Our work in Ankara catalysed the ‘Proverbs’ project, exploring the understandings of shared and particular proverbs to broker a dialogue across languages and cultures that share geographic space. The work with local academics at the METU led to joint conference papers in Turkey and London, presentation of the project and participants contributions at Tate Modern and a series of publicly engaged research projects within METU mapping the issues of place provision and spatial justice for refugees in Turkey. Pollak is continuing this work in her current PhD, Charif is collaborating with the artist Sharone Lifschitz on memory and place.



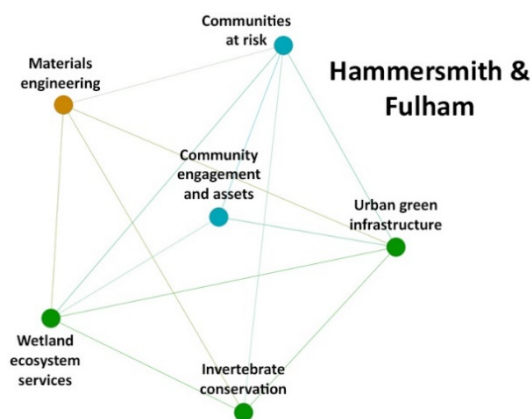
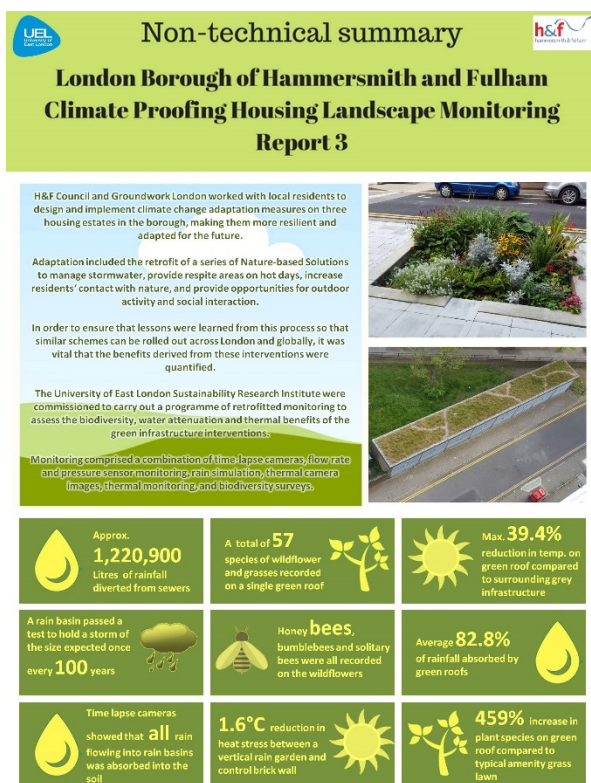
Core SDG's:

Sustainable Development Goals



Hammersmith & Fulham - part of an EU Life+ project: Connop, Clough and Nash developed novel monitoring methodologies to explore the multifunctional benefits of Sustainable Drainage System (SuDS) retrofit across a social housing estate in West London. This was delivered through a multidisciplinary approach bringing together research across a number of our research sub-themes. The award-winning project is now impacting climate adaptation initiatives nationally including underpinning the work of the Committee on Climate Change and a new Horizon 2020 project GrowGreen where residents are being twinned with the H&F project.

The monitoring results from the project supported Groundwork to secure funding for a scaled-up version of the programme retrofitting SuDS on the largest housing estate in London, White City, and the Greater London Authority in securing a pan-London SuDS initiative. In addition, evaluation methodologies developed during the project are currently being fed into a European Commission Guidebook for evaluating nature-based solutions, for which Dr Connop is one of the authors



Core SDG's:



Key research audiences, users and beneficiaries***Communicate, disseminate, integrate***

Dissemination has a high priority for us. It ensures that research complements teaching and, through direct collaboration in the field, ensures that research is tested and shared with external participants and beneficiaries beyond students and staff. Wider impact beyond projects is delivered through practitioner-oriented texts, publications in leading environment journals, seminars and conferences, as well as through development of learning resources and catalogues of research.

“From experience, I know the importance of making complex science accessible to policy- and decision-makers – as well as a wider interested public. Richard [Lindsay’s] work on communicating through animation how peatlands are formed, how they function and how they are damaged is an excellent example. I only wish that such excellent material was available for other complex topics!”

Liam Cashman, Senior Expert, European Commission

Directorate-General for Environment.

Critical to the successful delivery of impact, however, has been a strong focus on applied research and **the active embedding of stakeholders into projects as delivery partners from project inception**. Again, this represents, amongst other things, an example of **continuous quality control whereby stakeholders can monitor progress and direction of the research and help to guide it towards the most effective and implementable outcome for them**. TURAS represented an excellent example of this, with stakeholders embedded in the project as key delivery partners helping to shape the research, rather than solely being end-users.

Connecting Nature has gone one step further with one project output being **a co-developed learning academy (UrbanByNature)** delivered through ICLEI - Local Governments for Sustainability - to provide knowledge transfer and training to urban policymakers globally. Connop presented his work to a global audience as part of the TURAS project, both in relation to hosting international visitors (e.g., Spain, China, Australia) to the Barking Riverside project and through international workshops and conferences (Ljubljana, Dublin, Yerevan, Stuttgart, Rome, Sao Paulo).

Nash has been invited to present her research at a variety of national and international conferences while our work with Glasgow City Council on sustainable green infrastructure has been **shortlisted for an RTPI award in 2021**.

Impact through network partnerships**Partnerships, from local to global**

As is evident from Figure 6, we have collaborated with, or secured co-operation and long-term collaborative agreements with important partners ranging from local boroughs to government departments to national NGOs to multi-national companies to inter-governmental bodies and, **perhaps most significantly for our commitment to the Sustainable Development Goals, to the UN itself**.

In order to maximise our research effectiveness, and to reach local as well as international social contexts in order to fulfil our goal of offering inclusive access to research, we deliberately target diverse funding sources, maximising our contact with users whilst having the added benefit of providing a fulfilling working environment for researchers. Our **partnership-funding pattern geared to maximising potential benefit to the end-users of our research** is illustrated by the following examples:

- Working with community groups and local/regional authorities globally to shape the development and adoption of urban green infrastructure via FP7- and H2020-funded collaborations.
- Supporting national and supra-national NGOs, agencies and inter-governmental bodies with technical evidence to shape policies around peatland ecosystems – the UK Office for National Statistics has stated that GBP22bn investment in peatland management has the potential to generate an estimated GBP109bn in carbon benefits, while the UN FAO and IPBES have identified peatlands as key components of global climate strategies.
- Working with the Royal Society of Arts and the Ministry of Justice to develop and adopt humane design codes for prison design via Innovate UK funding, winning the RIBA Ethical Research award 2018.
- Investigating with farmers, land managers and government departments through Innovate UK and People's Postcode Lottery funding the agricultural potential for production of novel wetland crops and new forms of sustainable agriculture on currently drained wetland soils in order to halt major soil-carbon emissions, reduce flood risk and open new markets for agricultural products.
- Leading a GBP250K Newton Fund programme developing modelling and delivery innovation for community engaged social housing retrofit programme partnering with the London Borough of Newham 2016-9.
- Ongoing commercial sponsorship of PhD studentships either entirely funded by industry or through CASE studentship agreements with the University, external partners including Augean Ltd, Natural England, Buglife, and the Back from the Brink project.
- Sustainability auditing and policy delivery for festivals and mega-events such as Glastonbury, developing best practice around sustainability and waste management, leading directly to the plastic bottle ban in Glastonbury 2019.
- Supporting collaborative, sustainable construction innovation such as the self-build system 'U-Build' to create award winning housing features on Kevin McCloud's 'Grand Designs' programme on Channel 4, whilst simultaneously defining a new 'protest architecture' which underpinned the October 2019 XR rebellion in Trafalgar Square. U-Build is now a partner SME in the SRI ARENA framework.

Public voice

We manage active Twitter/Instagram accounts with over **3,500** followers, with some 'likes' reaching **40,000**. Since establishing the SRI blog in 2017 it has **over 3600 reads from 1370 visitors from across 64 countries**.

Connop, Nash and Vandergert are regular invited authors to [The Nature of Cities](#), the international platform for transdisciplinary dialogue and urban solutions. With over a million visits from over **3,700 cities and 150 countries**, the platform has a diverse readership and represents a truly global voice.

Lindsay has created research-based animations for the IUCN UK Peatland Programme YouTube Channel and these animations have had almost **4,000 views** in just 12 months. He has also been a partner in creating a public exhibition at the **Tate Modern** in London, highlighting the importance of peatlands for climate change adaptation and mitigation, and has been interviewed for the '**99% Invisible**' California-based radio show, which has a global audience of **several million**.

Minton is a regular Guardian Newspaper columnist and guest editor for City Journal, her book on gentrification '**Big Capital**' has sold over 12,000 copies (04.02.21).

Our staff have played major roles in public exhibitions such as curating and exhibiting at the **Venice Architecture Biennale** and at the **Courtauld Institute** (Trapp, Segantini, Cappai and Chandler), using these events as platforms to discuss our research and spreading the message into the educational, social and political spheres of public life.

Contributions to the research base, economy and society

Within the disciplines of Architecture and the Built Environment, staff hold strategic roles that allow for an enhanced two-way dialogue between industry, the economy and research.

Chandler **chairs an RIBA committee** steering the accreditation of Conservation Architects in the UK and has acted as an expert witness at a House of Lords Select Committee on HS2.

Connop is an **expert reviewer for the European Commission**, is a member of the UK Green Building Council Nature-based Solutions Framework steering group, and has sat on the Brownfields national expert group, Shrill Carder Bee Recovery Group, and the All of a Buzz National Expert Group. He is also Editor of the Essex Naturalist journal.

Connop and Lindsay have been members of the **European Commission's Green Infrastructure Working Group**.

Elsharkawy is a membership reviewer for the **Chartered Institute of Architectural Technologists** and has been selected by the Institute with three others to act as role models.

Karthus, Vandergert and Snaith are **Design Council Built Environment Experts**. Karthus is a **High Street Task Force Expert** under MHCLG and a RIBA Planning Advisory Group member.

Lindsay is a member of the **IUCN Commission for Ecosystem Management**, is **Senior Research Advisor to the IUCN UK Peatland Programme** and its Commissions of Inquiry and is a member of Defra's Lowland Peat Soils Strategy Group. He was responsible for writing the Peatland section of the **UN's IPBES report on Land Degradation** and was also chief science advisor for the award-winning film '[The Carbon Farmer](#)'. He is currently working with UNEP and the IUCN UK Peatland Programme to develop a **Virtual Peatland Pavilion for Climate COP26**.

Meynell and Chandler working with postgraduate architecture students created 'protest architecture' that significantly contributed to the **Extinction Rebellion** demonstrations in Trafalgar Square in October 2019.

Minton is an **award-winning journalist** focused on the issues of the ownership of public space, with effective links to the Arts Council, The Joseph Rowntree Foundation, CABI, Demos, and the New Economics Foundation, the Labour Party and the GLA, providing her with substantial platforms to broaden policy level debate.

Newport is A UK Green Building Council member, **Chair of the London and South-East Housing Expert Panel**, **Chair of the National Industrial Symbiosis Programme** project advisory group and has contributed to the All-Party Parliamentary Sustainable Resources Group for Waste Policy Development.

Segantini and Cappai worked on internationally acclaimed projects, their work on innovation and standards in Italian School building creating policy change for school buildings (Article 1449) and led to the **award of the Agibile e Balla of the Italian Ministry of Education**, the Piranesi Award 2014

and an invitation to present the work at the **2016 Venice Architecture Biennale which itself won the Italian 'Architect of the year 2017'** for its design.

Trapp curated the **Austrian Pavilion at the 2016 Venice Architecture Biennale** and a bicentenary exhibition on Karl Marx called 'Capital Architecture – investigations into the production of space' in Trier, forming part of a global exhibition beginning in Kreuzberg in 2018, then to the Carnegie Mellon University, Pittsburg - touring until 2029.

Vandergert contributes to the **Highways England Design Review Panel**. She is also a Fellow of the Royal Geographical Society.

Taking forward our strategic research aims

SRI is maturing as a grant-winning centre within UEL, bringing in close to GBP3 million in the reporting period. It will continue to build on its European, community and commercial-partner successes. There is **significant capacity for growth** as increased international recognition and consequent connectivity with a range of respected institutions allows expertise within the Unit's small research groups to find larger-scale partners with whom to develop innovation and enhanced ability to deliver results.

Looking towards the future

During the space of the past five or six years it is evident that our research has developed an extraordinary momentum that continues to grow, **reflecting the increasing vibrancy of the East End community around us**. Our commitment to engagement – both externally and within our university – is total, and through our educational innovations we are establishing a Pedagogy Research Group to integrate our impact research into our curriculum even more effectively. Through this we share best practice within our communities and share publications that actively use our experience as one of the most culturally diverse universities in the UK. In doing so **we substantially enhance the potential of our students to become future drivers for sustainable change**.

Our work now **touches on and helps to shape societal actions ranging from the intensely local to the urgently global**. On the one hand there is our multi-million-pound urban living laboratory space within the community working at Barking Riverside Ecology Centre as well as The Siemens ULL at Docklands Campus, while on the other we are helping to shape actions across the European Union, and, yet wider still, we, our students, and our partners are catalysing actions within the deliberations of a climate COP which is attempting to address a climate emergency that affects us all.

Ultimately, our research is driven by the belief that we cannot, indeed we dare not, fail the societies that we serve.