

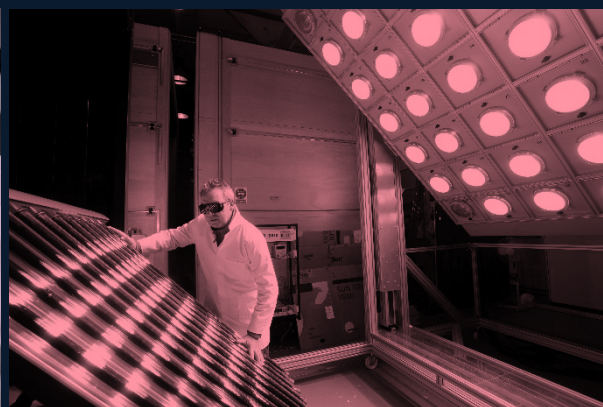
Belfast School of Architecture and the Built Environment

Research and Innovation Annual Report
1 August 2024 - 31 July 2025



CONTENTS

1. Foreword: Research Director, Prof. Jayanta Mondol	1
2. Research Students	5
3. Research Outputs	10
3.1 Journal Articles	
3.2 Books/Chapters in Books	
3.3 Research Reports	
3.4 Conference Contributions	
4. Research Funding	25
5. Note from the Associate Dean	27



1. FOREWORD

Research Director
Prof. Jayanta Mondol



It is with great pleasure that I present the Annual Research Report for Architecture, the Built Environment and Planning for the 2024-25 academic year. This has been an extremely successful year, marked by strong performance across research grant income, high-quality publications, demonstrable research impact, and the expansion of external collaborations at both local and international levels. Our staff and research students have also maintained a significant commitment to community engagement and outreach, reinforcing the societal relevance of our work.

This foreword provides a brief overview of the activities and achievements of the six research centres within the School: the Centre for Sustainable Technologies (CST), the Fire Safety Engineering Research and Technology Centre (FireSERT), the Hydrogen Safety Engineering and Research Centre (HySAFER), the Centre for Research on Property and Planning (RPP), Architecture Research Group (ARG) and the newly formed Digital Built Environment Research Group (DBERG).

2024-25 has been a landmark period for HySAFER, with the centre coordinating and contributing to eight major projects dedicated to hydrogen safety: three national initiatives (including two EPSRC-funded projects and one Invest NI project) and five European collaborations (spanning Horizon 2020 and Horizon Europe frameworks). At the heart of HySAFER's mission lies the critical challenge of liquid hydrogen (LH₂) safety, a “burning topic” addressed through flagship projects such as the EU-funded DelHyVEHR (*Delivery of Liquid Hydrogen for Various Environments at High Rate*) and the UK's National Clean Maritime Research Hub (UK-MaRes). These initiatives extend beyond hydrogen to explore ammonia safety, innovative storage solutions, and ventilation systems, providing the scientific foundation for the IGF Code governing hydrogen systems in maritime applications, refuelling, and bunkering. The HyAcademy project reinforces Ulster University's international leadership in hydrogen safety education, complementing the UK EPSRC CDT in Sustainable Hydrogen, where Ulster champions doctoral training in this critical field.

HySAFER's research outcomes actively shape Regulations, Codes, and Standards (RCS) worldwide. The centre contributed to CEN/CLC/JTC6 standards on hydrogen safety in enclosed spaces, informed by insights from the EU HyTunnel-CS project, coordinated by Ulster University. HySAFER researchers have made a significant contribution to CFD and FEM simulations. This robust methodology strengthens HySAFER's competitive edge and positions the centre to lead future national and EU projects.

The CST continued to deliver high-impact research aligned with net-zero ambitions, sustainable innovation, and policy engagement across the Island of Ireland and beyond. A flagship project during the reporting period was GEMINI, a €20 million cross-border research initiative exploring the potential of geothermal energy across the Island of Ireland. Led by Codema, Dublin's Energy Agency, and supported by the PEACEPLUS programme, GEMINI brings together fifteen project

partners. The project is endorsed by both the Department of Climate, Energy and the Environment (Ireland) and the DfE, positioning CST at the forefront of large-scale renewable energy research with direct implications for regional decarbonisation strategies.

CST research continues to translate into tangible innovation and commercial impact. Research on thermal diode technology has evolved into the development of Switchable Insulation, a novel passive façade solution. This innovation has successfully progressed to a spin-out company, demonstrating CST's ability to translate fundamental research into market-ready solutions for the built environment.

The Centre also strengthened its international research profile through high-level outreach and knowledge exchange, including a keynote address at CoMSO 2024 at NIT Silchar, India, which showcased cutting-edge retrofit building technologies developed at CST, thereby reinforcing the Centre's global influence in sustainable building research.

Strategic collaboration with government and policymakers remained a key focus. CST worked closely with the DfE on critical studies, including the Single Electricity Market under a Net-Zero Energy System and Demand Flexibility for Efficient Northern Ireland Energy Systems. These collaborations directly inform energy policy development and support Northern Ireland's transition toward a resilient, low-carbon energy system. Research excellence was further strengthened by doctoral research aligned with sustainability and circular economy goals. CST's research addresses nutrient and energy efficiency in controlled environments, advancing vertical farming concepts that support circular bioeconomy objectives, urban food security, and resource-efficient food and energy systems.

“This has been an extremely successful year, marked by strong performance across research grant income, high-quality publications, demonstrable research impact, and the expansion of external collaborations”

Over the past year, FireSERT has delivered a step-change in research excellence and societal impact across its four core research pillars: fire dynamics and materials, structural fire engineering, fire protection, numerical modelling, and human behaviour in fire. FireSERT's growing reputation as a global leader in fire safety research and education is now formally recognised on the UKRI Science and Technology Facilities Council platform, positioning Ulster University at the forefront of innovation in this critical field.

FireSERT has established a significant collaboration with UL Research Institutes (USA) to investigate the transfer of toxic chemicals through firefighter protective clothing, with immediate implications for occupational health and safety standards worldwide. In the EU-funded Horizon MSCA project “Transforming Concrete Resilience: Investigating High-Temperature Effects on Self-Healing Properties (TraaSH)”, FireSERT researchers are advancing next-generation resilient construction materials for fire-exposed infrastructure. FireSERT is continuing façade assessment and hazard identification for high-rise buildings in partnership with the Northern Ireland Housing Executive, addressing post-Grenfell fire risk and regulatory reform.

FireSERT researchers delivered invited lectures and keynote speeches at IFE Dublin, IFE Belfast, IFireSS 2025, Interflam 2025, the China University of Petroleum, the University of Coimbra, Portugal, and at international workshops organised by the Asian Civil Engineering Coordinating Council (ACECC), thereby strengthening academic engagement nationally and globally. A FireSERT researcher undertook a research exchange at Victoria University, Melbourne, supported

by the RSC Researcher Collaboration Grant. This project advanced international collaboration to improve the fire safety of lithium-ion batteries, with a particular emphasis on electrolyte thermal degradation and combustion behaviour. In June 2025, FireSERT hosted the International Fire Safety Symposium (IFireSS 2025), which attracted 200 delegates from 42 countries, fostering international collaboration and knowledge sharing.

RPP maintained its position as a global leader in property and planning research, working closely with industry and policymakers to address critical challenges in the built environment. A significant achievement was the launch of Northern Ireland's first Intermediate Rental Scheme in March 2025, delivering over 300 affordable homes in the private rented sector over three years. RPP also served as lead research partner for the Forum for Better Housing Northern Ireland and contributes actively to CACHE, the UK Collaborative Centre for Housing Evidence.

Internationally, RPP strengthened its reputation in property taxation research through keynote presentations and award-winning outputs, including the IAAO's Bernard L. Barnard Award. Collaborative work with IAAO has influenced global valuation standards and informed policy innovation. Significant funding success was achieved through the PEACEPLUS II 'PEACE-Air' project, bringing together a multidisciplinary team to tackle air pollution across Ireland.

“[T]he leadership shown by early career researchers [...] in developing funding proposals and harnessing national and international research collaborations has been particularly encouraging.”

Outreach was further amplified by hosting the UK and Ireland Planning Conference at Ulster University, attracting over 150 delegates from Europe and beyond. The event highlighted planning's critical role in societal resilience and climate adaptation, reinforcing RPP's leadership in shaping future built environments.

During this reporting period, the leadership shown by early career researchers within the centre in developing funding proposals and harnessing national and international research collaborations has been particularly encouraging.

During the reporting period, the ARG advanced architectural research through funded projects, international collaboration, and extensive outreach. Two major AHRC-funded initiatives, Innovating Interface Architecture and Hidden Architectures, anchored its research profile, complemented by global engagement, including a competitive scholarship at Waseda University, Tokyo, for comparative urban and low-carbon design studies. ARG's research integrated critical urban inquiry, sustainability, and theory-led scholarship, creating a globally engaged research profile rooted in real-world challenges. The group strengthened its impact through media dissemination, exhibitions, and advisory roles on Belfast's £100m cultural regeneration project. Outreach and collaboration extended to government bodies, cultural institutions, and leading academic partners, including Trinity College Dublin, Harvard GSD, TU Dublin, RIBA, and RSUA. Research leadership was further evidenced through editorial roles on major international publications, including two forthcoming special issues: 'Urbicide and the City' (Journal of Urban Affairs) and 'Drawing on Sketchbooks / The Sketchbook as an Unseen Curator' (DRAWING: Research Theory Practice).

During the reporting period, the DBERG delivered a major industry-facing research success by completing KTP, *“Marine Digital Twinning Platform”*, in February 2025 in partnership with MJM Marine Group and in collaboration with the School of Computing at Ulster University. The project developed an advanced digital twinning platform tailored to the marine sector, strengthening data-

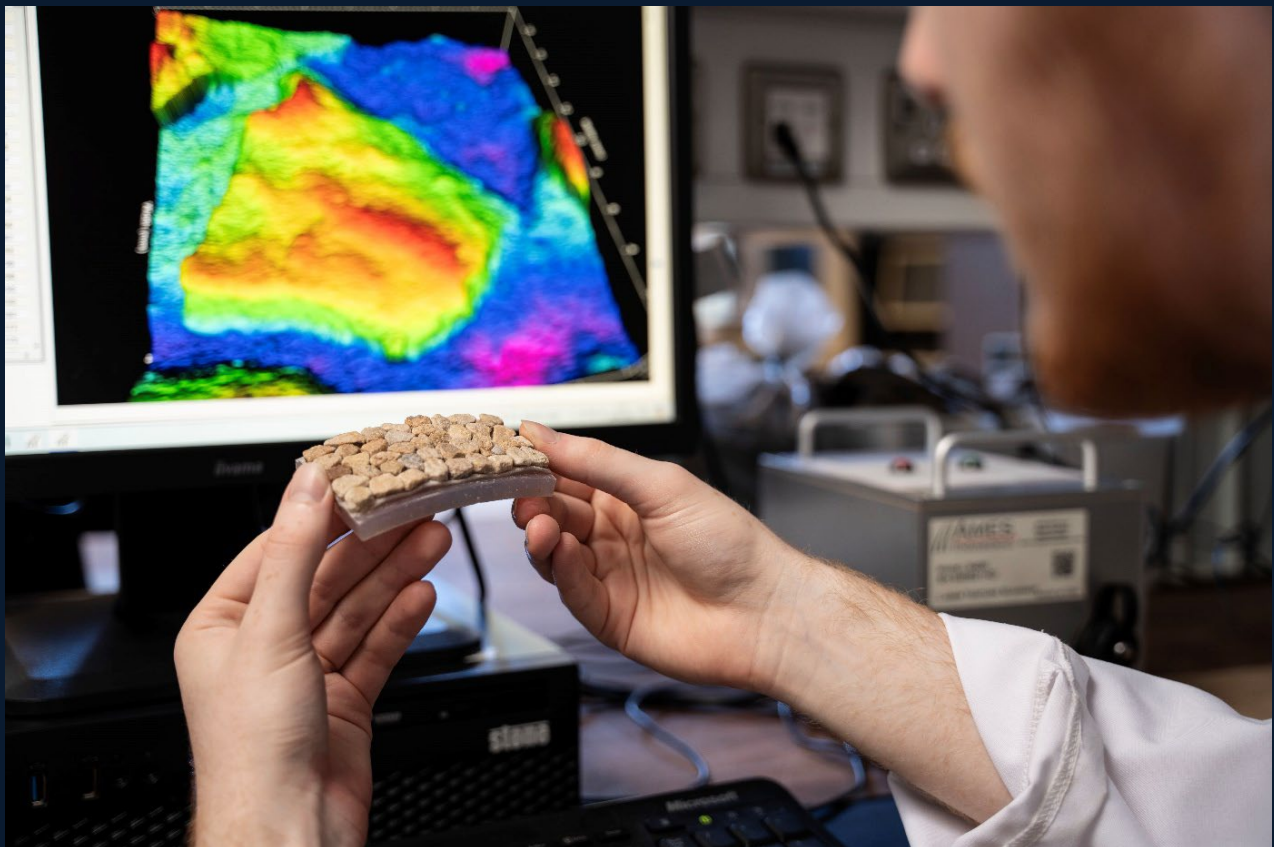
driven design, operational efficiency, and lifecycle decision-making. The KTP was formally assessed and awarded an “Outstanding” grade, the highest possible rating, underscoring both the quality of the research and its tangible industrial impact. DBERG developed active research links with Northumbria University (UK) and Universiti Malaysia Perlis (Malaysia). Doctoral research remains a key pillar of the Centre’s research strategy. Within this centre, a PhD researcher is advancing work on Circular Economy applications in Building Services Engineering, focusing on how engineering research and technology can support more resource-efficient, sustainable built environments.

Further details of our research, facilities, staff profiles, and research expertise can be found at [Architecture, Built Environment and Planning Research](#) or by contacting **Marcella McCann** (Academic Excellence Executive Assistant) at: **Email:** m.mccann1@ulster.ac.uk; **Tel:** +44 28 9536 7356.

Jayanta Deb Mondol

Professor Jayanta Deb Mondol

Research Director, Belfast School of Architecture and the Built Environment



2. RESEARCH STUDENTS

NAME	PROJECT TITLE
Abdulai, Yahaya	Fire Safety for Vulnerable Groups (FSVG)
Affoh, Peter	Fire Defence/Factors contributing to rate of death and loss of properties in high rise buildings fire outbreak in UK
Akpomie, Frederick	The Protection of the Natural Aquatic Heritage from Wastewater Discharges in Northern Ireland in Line with UN Sustainability Goals
Alawadi, Fatemah	Impact of Adopting AI in Architecture on Building Construction Costs
Amponsah, Richmond	An investigation of risk perception and behaviour in communicable disease control
Bitrus, Irmiya	Energy positive Multifunctional Building Facades Incorporating Energy Storage for nearly Zero Energy Building standards
Bray, Robert	An experimental and computational study of flame ignition and extinction of polymeric materials in under-ventilated environments
Cooke, Helen	Spatial planning on the island of Ireland: developing the Dublin-Belfast Economic Corridor (DBEC) concept
Corbett, Hayley	Sustainable means for the removal of emerging pathogens in the tertiary treatment of wastewaters in western and emerging economies
Cui, Shiqi	Safety of hydrogen and natural gas blends
Darvishvand, Leila	Implementation Digital twins technology to building energy management with Heat Pump
Davidson, Sean-Luc	What's happening in your marine backyard? The role of Marine Spatial Planning in Marine Renewables on the island of Ireland
Evans, Gemma	Examining the links between health and planning on the island of Ireland
Farmer, Michelle	Net-zero vertical farming
FitzLarkin, Tiernan	Digital urban planning: reimagining planning processes through the utilisation of generative AI

Fitzmaurice, Laura	Next Generation 'circular' net zero carbon concrete for the UK's offshore wind energy sector
Gawale, Atish	Safety strategies and engineering solutions for hydrogen heavy-duty vehicles
Gibson, Zoe	The Vertical Studio: A Learning Ecology in the Context of Architectural Education
Hasnain, Syed Ali	Experimental and Numerical Investigation of Fire in Li Ion Battery Energy Storage System
Hermans, Lucas	Model-to-Model Validation: An Extended Framework for Quality Assessment and Comparison of Automated Valuation Models for Residential Real Estate
Itanola, Moses	Digital Construction and the Circular Economy in Building Services
James, Ben	Climate Resilient, Net and Autonomous Zero Emission Buildings and Communities (NZEB) – Definitions and Prototypes for the UK/Northern
Johnston, Ryan	Visualisation and Immersive technology to improve stakeholder participation in net Zero Emission Buildings and Neighbourhoods (ZEN) in Smart Cities
Kamboj, Mayank	Modelling heat and mass transfer during liquid hydrogen refuelling
Kennedy, Robert	Urban Design, Legibility and the Management of Change in Historic Environments
Kishel, Katlin	Influence of racetrack surface attributes on braking patterns, overall racing performance
Kumar, Rabinder	Computational studies on the response of structural elements in travelling fires.
Liang, Hongyuan	The Development of a Strategic Performance Measurement Framework for Assessing Xiongan New Area in China
Lynch, Frances	Healthy place-making and youth wellbeing: Role of neighbourhood heritage
MacIntyre, Sean	Solar PV in NI. An examination of the user profile and experience together with an assessment of its future potential for household generation and use via behavioural and technological changes

Mackel, Aeden	Architecture, Planning and Desegregation: An evaluation of current practice
Mairs, Kirsty	Built Heritage Education for Children
McGuinness, Siobhan	Co-Designing Child Friendly Places: Growing the Resilience of Children through Inclusive Planning
McNeill, Jude	Exploring the architecture of interfaces and barriers in Northern Ireland's rural communities and towns
McVeigh, Nicola	Built Heritage at Risk in Northern Ireland
Mokim, Md	Biowaste to hydrogen via direct biogenic electrolysis
Negash, Alemtsehay Nekere	Safety of compressed hydrogen storage systems for maritime applications
Parke, Daniel	Renewable Energy and Storage for Outdoor Events Sector (RESOES)
Parke, Egle	The Future of Domestic Energy: Assessing the Impact of Solar PV and Battery Energy Storage Adoption in Northern Ireland (FDENI)
Pillai, Rahul Sajith	New electricity market participants. Integration of the distributed energy resources into the Single Electricity Market (SEM)
Reynolds, Kevin	Architectures of Gentrification: Property Development, Heritage, and Community Identity
Shahzadi, Iram	Energy system model for Northern Ireland
Sivaraman, Srinivas	Safety of ammonia as hydrogen carrier
Son, Kwangho	Development of Emergency Response Training Facilities for Alternative Vehicles under Fire
Tosh, Calum	Next generation 'circular' net zero carbon concretes for the UK's offshore wind energy sector
Wasson, Jonathan	Architectures of Gentrification: Urban Regeneration and Community Identity
Wilson, Bailie	Energy positive Multifunctional Building Facades Incorporating Energy Storage for nearly Zero Energy Building standards

Woodward, Rachel	NECESSARY – Net zEro CEments for Soil Stabilisation via wAste RecoverY
Zehra, Bintul	3D printed cementitious architectures to deliver sustainable infrastructure assets with enhanced structural and durability resilience



GRADUATED DEC 2024

NAME	PROJECT TITLE
Ebne Abbasi, Hazhir	Heat and Mass Transfer in Hydrogen Fuelling Systems: CFD Studies of Refuelling Process in the Entire Equipment of a Hydrogen Refuelling Station and Dispersion Analysis
Kazemi, Mina	Stability of Non-Premixed Gaseous Fuel Flames

GRADUATED JULY 2025

NAME	PROJECT TITLE
Cassidy, Peter	Who is at Risk from Accidental Dwelling Fire Fatalities, What Can Be Done to Reduce this Risk and How Can This Be Delivered in the Community?
Chang, Roma	Investigating the Thermal Impact of a Novel Concentrated Photovoltaic Glazing (CoPVG) System on Buildings
Obasi, Gerard	Optimising Energy Storage with Enhanced PCM Composites in Solar Collectors and Underfloor Heating, Coupled with Heat Pump Technology
Umer, Muhammad	Biohydrogen from Waste Through Biomass Electrolysis: Challenges and Opportunities

3. RESEARCH OUTPUTS

This section reports those outputs published and/or delivered over the period of this report and classified as either: journal articles, books/chapters in books, research reports, published conference papers, or live conference contributions. <https://pure.ulster.ac.uk/>.

3.1. JOURNAL ARTICLES

Abudu, LA, Bhosale, R, Arnscheidt, J, Tretsiakova-McNally, S, O'Hagan, B, Adeyemi, D, Oluseyi, T, Luqman Adams, L & Coleman, HM 2025, 'Tackling Antimicrobial Resistance: A Sustainable Method for the Removal of Antibiotics from Water', *Antibiotics*, vol. 14, no. 3, 324, pp. 1-22.
<https://doi.org/10.3390/antibiotics14030324>

Ademulegun, OO, Flynn, D & Hewitt, N 2025, 'Designing Tariff for Charging Electric Vehicles at Home with Equity in Mind – The Tripartite Tariff', *Sustainable Cities and Society*, vol. 118, 106018, pp. 1-17.
<https://doi.org/10.1016/j.scs.2024.106018>

Al Enzi, D, Motawa, I & Labib, L 2025, 'The Development of an AI-Based Fire Detection System for Hospital Buildings', *Journal of Information Systems Engineering and Management*, vol. 10, no. 3, pp. 489-505.
<https://doi.org/10.52783/jisem.v10i3.5363>

Alam, N & Nadjai, A 2025, 'Lateral Impact of Travelling Fires on Structural Elements in Large Compartments: Insights from Test 1', *Fire*, vol. 8, no. 7, 244, pp. 1-22.
<https://doi.org/10.3390/fire8070244>

Amponsah, R, Vaganay, M, McConnell, NC & Lawson, A 2025, 'COVID-19 lived experiences among informal settlement dwellers in the global south: a scoping review', *Cities & Health*, pp. 1-16.
<https://doi.org/10.1080/23748834.2025.2513775>

Autiero, M, de Silva, D, Alam, N & Nigro, E 2025, 'Structural Performance of Steel Automated Rack-Supported Warehouses Under Fire', *Fire Safety Journal*, vol. 156, 104475, pp. 1-22.
<https://doi.org/10.1016/j.firesaf.2025.104475>

Balsas, C 2025, 'Buffalo's waterfront Renaissance – Citizen activists, NGOs, and the canalside project: by Gene Bunnell, Albany, New York, Excelsior Editions – SUNY Press, 2024', *Community Development*.
<https://doi.org/10.1080/15575330.2025.2531689>

Balsas, C 2025, 'Many urbanisms: Divergent trajectories of global city building, by Martin J. Murray', *Journal of Urban Affairs*, pp. 1-2.
<https://doi.org/10.1080/07352166.2025.2452827>

Balsas, C 2025, 'Times Square Remade: The Dynamics of Urban Change', *Journal of the American Planning Association*, vol. 91, no. 3, pp. 499-500.
<https://doi.org/10.1080/01944363.2025.2466403>

Balsas, CJL & Blair, N 2025, 'Walkable and Sustainable City Centre Greenway Planning', *Sustainability*, vol. 17, no. 7, 2897, pp. 1-19.
<https://doi.org/10.3390/su17072897>

Balsas, CJL & Piracha, A 2025, 'Strategic Planning for Urban Sustainability', *Land*, vol. 14, no. 7, 1458, pp. 1-6.
<https://doi.org/10.3390/land14071458>

Balsas, CJL 2024, 'Making Hidden Sustainable Urban Planning and Landscape Knowledge Visual and Multisensorial', *Land*, vol. 14, no. 1, pp. 1-24.
<https://doi.org/10.3390/land14010001>

Balsas, CJL 2025, 'Reconsidering Waterfront Regeneration and Cruise Tourism in Hamburg, Germany', *Sustainability*, vol. 17, no. 1, 67, pp. 67.
<https://doi.org/10.3390/su17010067>

Beigi, M, Jalalizadeh, M, Karami, M, Fayaz, R, Jalalizade, M, Sadeghi, S & Mondol, J 2024, 'A novel liquid desiccant-based hybrid system of building integrated photovoltaic-thermal system and ground heat exchanger for buildings in hot and humid climate', *Energy Conversion and Management*, vol. 317, 118807, pp. 1-23.
<https://doi.org/10.1016/j.enconman.2024.118807>

Bidanset, P, McCord, M, Davis, P & Hermans, L 2024, 'Delineating Market Areas Used for Mass Valuation Using Geographically Weighted Regression (GWR) and Hierarchical Cluster Analysis (HCA)', *Journal of Property Tax Assessment and Administration*.

Brandoni, C, Kaldis, S, Lappas, A, Snape, C, Jaffar, M, Rolfe, A, Hewitt, N, Martinez, JC, Lysiak, B & Huang, Y 2025, 'Process design and techno-economic risk assessment of a solid sorbent silica polyethyleneimine (Si-PEI) CCS process integrated into a cement plant', *Energy*, vol. 322, no. 135482, 135482, pp. 1-11.
<https://doi.org/10.1016/j.energy.2025.135482>

Brennan, S, Brauner, C, Davis, D, De Backer, N, Dyck, A, García-Hernández, C, Gaathaug, AV, Kupka, P, Grand-Clement, L & Havret, E et al. 2024, 'European hydrogen train the trainer framework for responders: Outcomes of the HyResponder project', *International Journal of Hydrogen Energy*, vol. 79, pp. 448-455.
<https://doi.org/10.1016/j.ijhydene.2024.07.038>

Brennan, S, Brauner, C, Davis, D, De Backer, N, Dyck, A, García-Hernández, C, Gaathaug, AV, Kupka, P, Grand-Clement, L & Havret, E et al. 2025, 'European hydrogen train the trainer programme for responders: The impact of HyResponder on training across Europe', *International Journal of Hydrogen Energy*, vol. 105, pp. 1320-1327.
<https://doi.org/10.1016/j.ijhydene.2025.01.440>

Buck, M 2025, 'A new model of place-making and keeping? The emergence of 'rentcharges' on new residential housing estates in the United Kingdom', Town Planning Review.
<https://doi.org/10.3828/tpr.2025.12>

Buck, M 2025, 'Living on the edge: how do perceptions of coastal erosion risk affect residential mobility decisions?', Local Environment, vol. 30, no. 10, pp. 1279-1293.
<https://doi.org/10.1080/13549839.2025.2467868>

Cirrone, D, Makarov, D & Molkov, V 2025, 'Hydrogen safety for systems at ambient and cryogenic temperature: A comparative study of hazards and consequence modelling', Journal of Loss Prevention in the Process Industries, vol. 95, 105606, pp. 1-11.
<https://doi.org/10.1016/j.jlp.2025.105606>

Cirrone, D, Makarov, D, Proust, C & Molkov, V 2024, 'Numerical study of the spark ignition of hydrogen-air mixtures at ambient and cryogenic temperature', International Journal of Hydrogen Energy, vol. 79, pp. 353–363.
<https://doi.org/10.1016/j.ijhydene.2024.06.362>

Cirrone, D, Makarov, DV & Molkov, V 2025, 'The multi-peaks structure of the blast wave generated by a liquid hydrogen storage tank BLEVE', International Journal of Hydrogen Energy, vol. 133, pp. 416-430.
<https://doi.org/10.1016/j.ijhydene.2025.04.222>

Cirrone, D, Makarov, DV & Molkov, V 2025, 'Towards CFD Modelling of Multi-Peak Structure of Liquid Hydrogen Storage Tank “BLEVE”', Chemical Engineering Transactions, vol. 116, pp. 247-252.
<https://doi.org/10.3303/CET25116042>

Diab, E, Motawa, I & Elshikh, M 2025, 'Improving the performance of phase-change microcapsules for application in single spaces in hot climates', International Journal of Building Pathology and Adaptation.
<https://doi.org/10.1108/IJBPA-09-2024-0203>

Eadie, R & Ivanov, Y 2025, 'ON THE SOLIDIFICATION OF POINT CLOUDS FOR BUILDING INFORMATION MODELLING, AUGMENTED AND VIRTUAL REALITY APPLICATIONS IN CONSTRUCTION', Engineering Sciences, vol. LXI, 2024,04, no. 01, 04-01, pp. 3-15.
<https://doi.org/10.7546/EngSci.LXI.24.04.01>

Eadie, R, Murphy, M, Downey, E & Stoyanov, V 2025, 'Briefing: Will government application of a 10% award value for social initiatives lead a change?', Proceedings of the ICE - Management, Procurement and Law, vol. 178, no. 1, pp. 50-56.
<https://doi.org/10.1680/jmapl.24.00050>

Ebne-Abbasi, H, Makarov, D & Molkov, V 2024, 'Modelling of refuelling through the entire equipment of HRS: use of dynamic mesh to simulate heat and mass transfer during throttling at PCV', Hydrogen Safety, vol. 1, no. 1, pp. 12-32.
<https://doi.org/10.58895/hysafe.4>

ElSaadany, M, Motawa, I & Sheikh, AE 2025, 'Integrating Natural Language Processing with 4D BIM: A Review and Thematic Synthesis', *Information*, vol. 16, no. 6, 457.
<https://doi.org/10.3390/info16060457>

Fadeyi, O, McCord, M, Haran, M, Davis, PT, Brown, L, Lim, JL-C & Hemphill, L 2025, 'Global Capital Inflows into the London Office Market: The Brexit Effect?', *Journal of European Real Estate Research*.

Gibson, ZV 2025, 'Vertical Teaching Ecologies: Vertical Teaching in the Belfast School of Architecture and the Built Environment', *Stoà*, no. 13, pp. 72-89.

Gibson, ZV 2025, 'Vertically Challenged: The Pedagogy of the Vertical Design Studio at Ulster University', *Perspective: The Journal of the Royal Society of Ulster Architects*, vol. 34, no. 3, pp. 36-37.

Gibson, ZV 2025, 'Vertically Challenged: The Pedagogy of the Vertical Design Studio in Ulster University' *Perspective Magazine*, vol. 34, no. 3, pp. 36-37.

Griffiths, P, Itanola, M, Andabaka, A & Atstāja, D 2025, 'Hurdles to a circular built environment: A look at the economic and market barriers', *Buildings*, vol. 15, no. 8, 1332, pp. 1-18.
<https://doi.org/10.3390/buildings15081332>

Gupta, A, Das, B & Mondol, J 2025, 'Utilizing a novel method of sand-filled thermal energy storage system for performance enhancement in PVT solar dryer', *Solar Energy Materials and Solar Cells*, vol. 283, 113450, pp. 1-14.
<https://doi.org/10.1016/j.solmat.2025.113450>

He, L, Xie, H, Yao, Z, Dong, Z, Zong, Y, Zhao, L & Dai, G 2025, 'Understanding the Hydrodynamic and Mass Transfer Performance of Newtonian and Non-Newtonian Twin-Liquid Film Flow', *Industrial and Engineering Chemistry Research*, vol. 64, no. 27, pp. 13847-13869.
<https://doi.org/10.1021/acs.iecr.5c01410>

He, L, Xie, H, Zong, Y, Zhao, L & Dai, G 2025, 'Enhancing interfacial mass transfer for high-viscosity fluids: Hydrodynamic and mass transfer by twin-liquid film', *AIChE Journal*, vol. 71, no. 4, e18708, pp. 1-27.
<https://doi.org/10.1002/aic.18708>

Hengstermann, A, McElduff, L & Ritchie, H 2025, 'Capturing or compensating? Comparing legitimacies, legitimations and rationales of added value capture instruments', *Land Use Policy*, vol. 150, 107464, pp. 1-11.
<https://doi.org/10.1016/j.landusepol.2024.107464>

Hermans, L, Davis, PT, McCord, M & Bidanset, P 2025, 'The Effects of Monte Carlo Sampling on Automated Valuation Model Performance in Real Estate Assessment', *Journal of Property Tax Assessment and Administration*, vol. 22, no. 1, pp. 29-50.
<https://eurekamag.com/research/093/564/093564487.php>

Hewitt, N 2024, 'Electrification of Heating – Requirements for Successful Wide-Scale Deployment', *WIREs Energy and Environment*, vol. 13, no. 6, e542, pp. 1-8. <https://doi.org/10.1002/wene.542>

Hewitt, N, Huang, M, Kamkari, B & Darvishvand, L 2025, 'A Systematic Review of Explainable Artificial Intelligence in Urban Building Energy Modeling: Methods, Applications, and Future Directions', *Sustainable Cities and Society*, vol. 128, 106492, pp. 1-22. <https://doi.org/10.1016/j.scs.2025.106492>

Hewitt, N, Yang, Y, Adhikari, R, Sui, J, Lou, Y, Ye, Y, O'Donnell, J & Zuo, W 2025, 'Leveraging online housing data for large-scale building energy modeling', *Building and Environment*, vol. 277, no. 112929, 112929, pp. 1-17. <https://doi.org/10.1016/j.buildenv.2025.112929>

Hewitt, N, Zuo, W, Adhikari, R, Lou, Y, O'Donnell, J & Yang, Y 2025, 'Long-term impact of electrification and retrofits of the U.S residential building in diverse locations', *Building and Environment*, vol. 269, no. 112472, 112472, pp. 1-19. <https://doi.org/10.1016/j.buildenv.2024.112472>

Hu, Z, Zhao, J, Zhang, S, Ma, H & Zhang, J 2025, 'Development and Validation of a Novel Method to Predict Flame Behavior in Tank Fires Based on CFD Modeling and Machine Learning', *Reliability Engineering & System Safety*, vol. 264, 111368, pp. 1-14. <https://doi.org/10.1016/j.ress.2025.111368>

Huang, MJ & Hewitt, NJ 2024, 'An experimental investigation into the use of biomimetic methods for thermal regulation and heat retention with PCMs in buildings', *Renewable Energy*, vol. 236, 121435. <https://doi.org/10.1016/j.renene.2024.121435>

Huang, MJ, Obasi, G, McCormack, S & Hewitt, NJ 2025, 'Experimental investigation of the PCM-EG radiant floor heating driven by ASHP with advanced heat transfer enhancement', *Applied Thermal Engineering*, vol. 267, 125781, pp. 1-10. <https://doi.org/10.1016/j.applthermaleng.2025.125781>

Itanola, M & Whang, S-W 2024, 'The impact of digital technologies on energy-efficient buildings: BIM and AI-based study', *International Journal of Sustainable Building Technology and Urban Development*, vol. 15, no. 3, pp. 392-412. <https://doi.org/10.22712/susb.20240028>

Itanola, M, Griffiths, P & Motawa, I 2024, 'Closing the Loop in Building Services: A Systematic Review of Circular Economy Applications', *Building Services Engineering Research and Technology*, vol. 46, no. 3, pp. 293-315. <https://doi.org/10.1177/01436244241296762>

Jia, L, Huang, J, Zhang, M, Arvelli, S, Oh, EJ, Huang, Y, Cunha-Neves, A, Lan, K & Zhao, J 2025, 'One-Pot Biomass Pretreatment for Ethanol Production by Engineered *Saccharomyces cerevisiae*', *ACS Sustainable Chemistry and Engineering*, vol. 13, no. 14, pp. 5201–5209. <https://doi.org/10.1021/acssuschemeng.4c10101>

Jia, L, Huang, J, Zhang, M, Arvelli, S, Oh, EJ, Huang, Y, Neves, AC, Lan, K & Zhao, J 2025, 'Experimental, Technoeconomic, and Life-Cycle Evaluation of One-pot Biomass Pretreatment for Ethanol Production', *ACS Sustainable Chemistry and Engineering*, vol. 13, no. 19, 19, pp. 7267-7275.
<https://doi.org/10.1021/acssuschemeng.5c02101>

Kang, S, Kwon, M, Choi, JY & Choi, S 2025, 'Full-Scale Fire Testing to Assess the Risk of Battery Electric Vehicle Fires in Underground Car Parks', *Fire Technology*, pp. 1-31.
<https://doi.org/10.1007/s10694-024-01694-7>

Kazemi, M, Brennan, S & Molkov, V 2025, 'Hydrogen-methane blends: Critical diameters and flame stability curves for non-premixed turbulent flames', *International Journal of Hydrogen Energy*, vol. 105, pp. 693-700.
<https://doi.org/10.1016/j.ijhydene.2025.01.345>

Kumar Donthu, EVSK, Shashwat, S, Zingre, KT, Srinivasan, S & Wan, MP 2024, 'An Investigation of Globe Temperature in Street Canyons: A Scaled Model Study Implementing Cool Materials', *Buildings*, vol. 14, no. 10, pp. 1-11.
<https://doi.org/10.3390/buildings14103054>

Kumar, R, Alam, N & Nadjai, A 2025, 'Structural response of a column under eccentric loading in a travelling fire scenario with open ventilation conditions', *Fire Safety Journal*, vol. 156, 104474, pp. 1-14.
<https://doi.org/10.1016/j.firesaf.2025.104474>

Lawson, A, Stewart, J, Turner, E, Passmore, P & Costley, C 2024, 'Re-thinking housing inspection and regulation: using 360 technology as a new approach in environmental health practice training', *Compass: Journal of Learning and Teaching in Higher Education*, vol. 17, no. 1, 5, pp. 101-117.
<https://doi.org/10.21100/compass.v17i1.1503>

Lo, D, Huang, Y, McCord, M, Yau, Y, McCord, J, Haran, M, Aziz, T & Al-haddad, L 2025, 'Property price and anti-social behaviour: An empirical study of Northern Ireland', *International Journal of Strategic Property Management*.

Lo, D, McCord, M, Haran, M, Aziz, T & Al-haddad, L 2025, 'Environmental, Social and Governance in the listed real estate sector: A Latin American Perspective', *International Journal of Strategic Property Management*, pp. 1-25.

McCord, M, McCord, J, Lo, D, MacIntyre, S, Brown, L & Squires, G 2024, 'The value of Green and Blue space: walkability and house prices', *Cities*, vol. 154, 105377.
<https://doi.org/10.1016/j.cities.2024.105377>

McKinley, E, McElduff, L & Ritchie, H 2024, 'Putting people at the centre of marine governance across the UK and Ireland: 20 years of society and the sea', *Ocean and Coastal Management*, vol. 255, 107235, pp. 1-13.
<https://doi.org/10.1016/j.ocecoaman.2024.107235>

Molkov, V, Ebne-Abbasi, H & Makarov, D 2024, 'Liquid hydrogen refuelling at HRS: Description of sLH2 concept, modelling approach and results of numerical simulations', *International Journal of Hydrogen Energy*, vol. 93, pp. 285-296.

Murphy, M 2024, 'Architectural Endeavors Beyond Borders: Ulster University Alumni', *Perspective: The Journal of the Royal Society of Ulster Architects*, vol. 33, no. 5, pp. 1-4.
<https://rsua.org.uk/product/perspective-magazine-november-2024/>

Murphy, M 2024, 'Belfast SiteDATE: a sympoietic site analysis for architecture students', *Perspective: The Journal of the Royal Society of Ulster Architects*, vol. 33, no. 06, pp. 1-4.
<https://rsua.org.uk/product/perspective-magazine-volume-33-issue-6-2024-2025/>

Murphy, M 2025, 'Exploring Leadership: Reflections of Ulster University students', *Perspective: The Journal of the Royal Society of Ulster Architects*, vol. 34, no. 01, pp. 1-2.
<https://rsua.org.uk/product/perspective-magazine-volume-34-issue-no-1-2025/>

Musa, M, Moughalu, C, Brandoni, C, Fitzsimons, L, Reade, A, Salzberg, A & Brown, J 2024, 'From sludge to resource recovery: geotextiles for efficient dewatering and sustainable utilization of faecal sludge', *Energy, Ecology and Environment*.
<https://doi.org/10.1007/s40974-024-00344-6>

Nair, AM, Wilson, C, Kamkari, B, Hodge, S, Huang, M, Griffiths, P & Hewitt, N 2024, 'Energy and exergy analysis of a multipass macro-encapsulated phase change material/expanded graphite composite thermal energy storage for domestic hot water applications', *Energy Conversion and Management:X*, vol. 24, 100788, pp. 1-14.
<https://doi.org/10.1016/j.ecmx.2024.100788>

Nakkasunchi, S & Brandoni, C 2025, 'Energy decarbonisation of wastewater treatment plants in Murcia- case study', *Journal of environmental management*, vol. 387, 125874, pp. 1-12.
<https://doi.org/10.1016/j.jenvman.2025.125874>

Omar, M, Ismail, Z & Motawa, I 2024, 'Application of BIM Technology in Facility Management (FM) to Complement the Building Maintenance Performance and Operational Information: A Systematic Literature Review', *Journal of Advanced Research in Applied Sciences and Engineering Technology*, pp. 1-13.
https://semarakilmu.com.my/journals/index.php/applied_sciences_eng_tech/article/view/6987

Ravindran, RV, Cotter, D, Wilson, C, Huang, MJ & Hewitt, N 2025, 'An evaluation of the performance of a scroll machine in a reversible high-temperature heat pump - organic Rankine cycle system using R1233zd(E) as the working fluid', *International Journal of Refrigeration*, vol. 174, pp. 321-332.
<https://doi.org/10.1016/j.ijrefrig.2025.03.013>

Rezvani, S, Rolfe, A, Franco, F, Brandoni, C, Boege, K, Hewitt, N & Huang, Y 2025, 'Indirectly Heated Carbonate Looping Cycles in Cement Plants for CO₂ Capture and Storage', *Applied Thermal Engineering*, vol. 263, no. 125349, 125349, pp. 1-13.
<https://doi.org/10.1016/j.applthermaleng.2024.125349>

Ronchi, E, Kapalo, K, Bode, N, Boyce, KE, Cuesta, A, Feng, Y, Galea, E, Geoerg, P, Gwynne, S & Kennedy, E et al. 2024, 'Determinants of Gaps in Human Behaviour in Fire Research', *Fire Technology*.
<https://doi.org/10.1007/s10694-024-01625-6>

Saeid, MHS, Khadem, J, Emami, S, Li, M & Xiao, H 2025, 'Effect of Blockage Ratio on the Deflagration-To-Detonation Transition in the Supersonic Jet Created by the Obstruction: A Study on Mixtures with Transverse Concentration Gradient', *Combustion Science and Technology*, pp. 1-25.
<https://doi.org/10.1080/00102202.2025.2497062>

Saeid, MHS, Oh, CB & Lee, CY 2025, 'Numerical Study on the Effects of Obstacle Shape and Thickness on Deflagration-to-Detonation Transition in Hydrogen–Air Mixtures with a Transverse Concentration Gradient', *Case Studies in Thermal Engineering*, vol. 66, 105726, pp. 1-18.
<https://doi.org/10.1016/j.csite.2024.105726>

Schiaroli, A, Claussner, L, Campari, A, Cirrone, D, Linseisen, B, Friedrich, A, Torres de Ritter, EL, Kuznetsov, M & Ustolin, F 2025, 'A comprehensive review on liquid hydrogen transfer operations and safety considerations for mobile applications', *International Journal of Hydrogen Energy*, vol. 107, pp. 164-182.
<https://doi.org/10.1016/j.ijhydene.2024.12.266>

Shentsov, V, Giuliani, L, Liu, W & Markert, F 2025, 'Assessment of Tunnel Explosion Mitigation Techniques for Fire Scenarios Involving Hydrogen Tank Rupture', *Energies*, vol. 18, no. 13, 3368, pp. 1-14.
<https://doi.org/10.3390/en18133368>

Shorrocks, W, Wang, Y & Huang, Y 2025, 'Sustainable agriculture: Assessing the feasibility of biogas derived energy generation on a UK mixed-model farm', *Energy Reports*, vol. 13, pp. 1537-1547.
<https://doi.org/10.1016/j.egyr.2025.01.018>

Sivakumar, V & Solan, B 2025, 'Validation of an experimental system for testing monopile', *Geotechnical Engineering*.

Sreekumar, S, Pugsley, A, Chakrabarti, S, Hewitt, N, Mondol, J & Shah, N 2024, 'Experimental investigation on the performance of MXene/C-dot hybrid nanofluid-based photovoltaic/thermal system: An Energy, Exergy, and Enviro-Economic analysis', *Solar Energy Materials and Solar Cells*, vol. 272, 112904, pp. 1-23.
<https://doi.org/10.1016/j.solmat.2024.112904>

Tang, Z, Vallabh, D, Wang, Y, Huang, Y, Han, J-C, Zhou, Y, Wang, L, Ahmad, M, Yousaf, M & Wang, Y et al. 2025, 'Net-Zero Farming: Trigenation with Carbon Capture and Storage', *Renewable Energy*, vol. 238, 121898, pp. 1-13.
<https://doi.org/10.1016/j.renene.2024.121898>

Umer, M, Brandoni, C, Tretsiakova-McNally, S, Hewitt, N, Dunlop, PSM & Huang, Y 2025, 'Optimising polyoxometalate catalysed hydrogen generation from poultry litter-biomass electrolysis through response surface methodology', *Biomass and Bioenergy*, vol. 197, no. 107821, 107821, pp. 1-12.
<https://doi.org/10.1016/j.biombioe.2025.107821>

Umer, M, Brandoni, C, Tretsiakova-McNally, S, Hewitt, N, Dunlop, PSM, Mokim, M, Zhang, K & Huang, Y 2024, 'Hydrogen Production through Polyoxometalate Catalysed Electrolysis from Biomass Components and Food Waste', *Results in Engineering*, vol. 23, no. 102803, 102803, pp. 1-9.
<https://doi.org/10.1016/j.rineng.2024.102803>

Velanparambil Ravindran, R, Hewitt, N, Huang, MJ, Cotter, D & Wilson, C 2024, 'Experimental investigation of a small-scale reversible high-temperature heat pump – organic Rankine cycle system for industrial waste heat recovery', *Applied Thermal Engineering*, vol. 257, no. Part A, 124237, pp. 1-15.
<https://doi.org/10.1016/j.applthermaleng.2024.124237>

Wang, S, Mo, J, Yang, J, Liu, M, Pan, J, Shi, X & Huang, Y 2025, 'Scenario-based projections of electricity prices in China's carbon-neutral transition', *iScience*, vol. 28, no. 7, 112958, pp. 1-17.
<https://doi.org/10.1016/j.isci.2025.112958>

Xu, T, Tang, F & Zhang, J 2024, 'Experimental study on the ceiling jet characteristics caused by carriage fire in an inclined tunnel: Temperature distribution and flame extension', *Proceedings of the Combustion Institute*.
<https://doi.org/10.1016/j.proci.2024.105274>

Zhang, S, Zhao, J, Hu, Z, Zhang, J & Jiang, H 2025, 'Study on the evolution of flame morphology and burning rate of pool fires under the combined influence of crosswind and ullage height', *Energy*, vol. 322, 135722, pp. 1-13.
<https://doi.org/10.1016/j.energy.2025.135722>

Zhang, X, Zhao, J, Li, X, Huang, H & Zhang, J 2024, 'Experimental investigation of effects of ullage height on the burning rate and heat feedback in pool fires', *Case Studies in Thermal Engineering*, vol. 62, 105175, pp. 1-12.
<https://doi.org/10.1016/j.csite.2024.105175>

Zhao, J, Zhang, S, Pan, Y, Hu, Z & Zhang, J 2025, 'Experimental investigation and theoretical analysis of effects of crosswind on flame lengths and tilting behaviors of pool fires with large ullage heights', *Fuel*, vol. 388, 134453, pp. 1-10.
<https://doi.org/10.1016/j.fuel.2025.134453>

3.2. BOOKS/BOOK CHAPTERS

Balsas, C 2025, Regional Greenway Systems: A Study of Best Practices in Socio-Ecological Governance. in A Cilek & M Unal (eds), Landscape Planning : Sustainable Practices, Design and Urban Development. 2025 edn, Nova Science Publishers, Inc., Hauppauge, NY USA, pp. 35-67.

Balsas, C 2025, The Ibero-American and Lusophone geospatial tradition: The creation of a legacy in Latin America and Asia. in Creation, Transformation and Metamorphosis. PHI - Book Series, CRC Press, pp. 290-298.
<https://doi.org/10.1201/9781003260585-45>

Güngör, B, Agibayeva, A, Karaca, F, Askar, R, Giarma, C, Rosado, L, Pineda-Martos, R, Griffiths, P & Bragança, L 2024, Circularity Tools and Frameworks for New Buildings. in L Braganca, P Griffiths, R Askar, A Salles, V Ungureanu, K Tsikaloudaki, D Bajare, G Zsembinszki & M Cvetkovska (eds), Circular Economy Design and Management in the Built Environment: A Critical Review of the State of the Art. Springer Tracts in Civil Engineering, Springer, Cham, Switzerland, pp. 431-458. https://doi.org/10.1007/978-3-031-73490-8_16

Johnston, R, Mondol, J, Coyle, B & Wiberg, A 2025, Extended Reality for Sustainable Key Performance Indicators: Creation of a Virtual Environment Fidelity Index Matrix. in XR and Metaverse - Proceedings of the 9th International XR-Metaverse Conference 2024. Springer Proceedings in Business and Economics, Springer, pp. 371-382.
https://doi.org/10.1007/978-3-031-77975-6_28

Johnston, R, Mondol, J, Wiberg, A & Coyle, B 2025, XR & Visual Communication Survey of Sustainable Built Environment KPIs: Including Both AEC and Non-AEC Industry Professionals. in XR and Metaverse Proceedings of the 9th International XR-Metaverse Conference 2024, Busan, South Korea. Springer Proceedings in Business and Economics, Springer, Switzerland, pp. 413-424.
https://doi.org/10.1007/978-3-031-77975-6_31

Mondol, J, Buonomano, A & Das, B 2025, Advances in Solar Technologies. MDPI.

Pandohee, J, Ghosh, R, Balyan, P, Shaikh, Z & Ali, A 2024, Nanoremediation Associated with Microorganisms: In book:Sustainable Nanoremediation. in Nanoremediation Associated with Microorganisms: In book: Sustainable Nanoremediation. first edn, Apple Academic Press, New York.
<https://doi.org/10.1201/9781003468950-4>

Shashwat, S, Zingre, K & Thurairajah, N 2025, The Effect of Building Façade Materials in Mitigating UHI Effect: An Urban City Centre Study. in Sustainable Communities through Digital Transformation. 1st Edition edn, Routledge, UK, pp. 180-198.
<https://doi.org/10.1201/9781003380559-11>

Simone, MD, Griffiths, P, Campagna, D & Itanola, M 2024, Energy Systems and Building Services Level. in L Braganca, P Griffiths, R Askar, A Salles, V Ungureanu, K Tsikaloudaki, D Bajare, G Zsembinszki & M Cvetkovska (eds), Circular Economy Design and Management in the Built Environment: A Critical Review of the State of the Art. Springer, Cham, Switzerland, pp. 43-68.
https://doi.org/10.1007/978-3-031-73490-8_3

3.3. RESEARCH REPORTS

MacIntyre, S, McCord, M, McCord, J, Davis, PT, Parke, D & Zacharopoulos, A 2025, An assessment of the potential for solar PV electricity generation from rooftops in Northern Ireland. Department for the Economy.
<https://doi.org/10.13140/RG.2.2.11121.39521>

McCord, J, McCord, M, MacIntyre, S & Hinch, M 2024, Performance of the Private Rental Market in Northern Ireland: Issue 23 H1 2024 .

Mohanty, S, Brennan, S & Molkov, V 2025, CFD modelling of methane dispersion from buried pipeline leaks: Experimental validation and hazard distance estimation. 90th edn, Fire and Blast Information Group.

Rafferty, G 2024, The changing spatial relationship between homes and workplaces – research on the impacts of rural commuting in Ireland.

Rafferty, G, Creamer, C, Keaveney, K, McCafferty, D & O’Keeffe, B 2024, InPLACE: Investigating Planning, Place-Making and Commuting: The changing spatial relationship between homes and workplaces.



3.4. CONFERENCE CONTRIBUTIONS

Alam, N & Nadjai, A 2025, 'Evaluating the effects of travelling fires on entire compartment spaces', Paper presented at International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25 - 27/06/25 pp. 154-161.

Balsas, CJL & Alamin, A 2025, 'When the interstate comes down: constructing a more walkable, equitable, and healthier downtown Syracuse, New York', *Cities & Health*, pp. 1-7.
<https://doi.org/10.1080/23748834.2025.2481340>

Bragança, L, Griffiths, P, Askar, R, Salles, A, Ungureanu, V, Tsikaloudaki, K, Bajare, D, Zsembinszki, G & Cvetkovska, M (eds) 2024, *Circular Economy Design and Management in the Built Environment: A Critical Review of the State of the Art*. in *Circular Economy Design and Management in the Built Environment: A Critical Review of the State of the Art*. Springer Tracts in Civil Engineering, Springer, Cham, Switzerland. <https://doi.org/10.1007/978-3-031-73490-8>

Bray, R, Gong, W, Tretsiakova-McNally, S & Zhang, J 2025, A Comparison of Species Yields in Ventilation-controlled and Fuel-controlled Fires Using a Medium-Scale Compartment With Measured Global Equivalence Ratios. in 5th International Fire Safety Symposium (IFireSS 2025): IFireSS 2025., 17, Ulster University, Belfast, pp. 174-185, 5th International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25.
<https://doi.org/10.21251/03828a0d-6ceb-4fce-ba02-e93ccb60d4fc>

Bray, R, Singh, A, Tretsiakova-McNally, S & Zhang, J 2025, The Use of Quasi-Steady State Experimental Methods for the Purpose of Measuring Chemical Yields for use in Fire Hazard Assessment. in 16th International Conference and Exhibition on fire science and engineering (INTERFLAM 2025). vol. 1, 293, Royal Holloway, University of London, pp. 307, 16th International Conference and Exhibition on fire science and engineering (INTERFLAM 2025), Londod, United Kingdom, 30/06/25.

Cirrone, D, Makarov, DV & Molkov, V 2025, 'Numerical Investigation on the Pressure Multi-Peaks Structure of a LH2 Storage Tank "BLEVE"', pp. 728.
<https://doi.org/10.5281/zenodo.16621853>

Eadie, R & Ivanov, Y 2024, 'КОНСОЛИДИРАНЕ НА ОБЛАЦИ ОТ ТОЧКИ ЗА СТРОИТЕЛНО ИНФОРМАЦИОННО МОДЕЛИРАНЕ, ДОБАВЕНА И ВИРТУАЛНА РЕАЛНОСТ С ПРИЛОЖЕНИЕ В СТРОИТЕЛСТВОТО / SOLIDIFICATION OF POINT CLOUDS FOR BUILDING INFORMATION MODELLING, AUGMENTED AND VIRTUAL REALITY APPLICATIONS IN CONSTRUCTION', Paper presented at XIII International Conference CIVIL ENGINEERING DESIGN AND CONSTRUCTION XIII Международна научна конференция "ПРОЕКТИРАНЕ И СТРОИТЕЛСТВО НА СГРАДИ И СЪОРЪЖЕНИЯ", Varna, Bulgaria, 12/09/24 - 13/09/24 pp. 6-14.

IFireSS2025 2025, 5th International Fire Safety Symposium (IFireSS 2025). in 5th International Fire Safety Symposium (IFireSS 2025). Ulster University, Belfast, pp. 1-911, 5th International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25.

<https://doi.org/10.21251/03828a0d-6ceb-4fce-ba02-e93ccb60d4fc>

Kumar, R, Alam, N & Nadjai, A 2025, Structural response of restrained columns under nonuniform heating during travelling fire scenarios. in IFireSS 2025 – 5th International Fire Safety Symposium Ulster University, Belfast, United Kingdom, June 25-27, 2025. vol. 1, pp. 687-694.

Lo, D, McCord, M & Haran, M 2024, Reforma do Mercado Imobiliário da Argentina: A Estratégia de Desregulamentação do Presidente Milei pela Lente da Economia Coasiana: Reforming Argentina's Housing Market: President Milei's Desocialisation Strategy through the Lens of Coasian Economics. in Reforma do Mercado Imobiliário da Argentina: A Estratégia de Desregulamentação do Presidente Milei pela Lente da Economia Coasiana.

Murphy, M, Itanola, M & Griffiths, P 2025, 'Lessons in circular economy from the Global South towards a new pedagogy for architectural education', Paper presented at Critical Futures: Designing Sustainable Ecologies, Karachi, Pakistan, 7/02/25 - 8/02/25 pp. 1-12.

Nadjai, A, Alam, N & Gillespie, M 2025, 'Thermo mechanical analysis of walling systems using advanced finite element method', Paper presented at International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25 - 27/06/25 pp. 362-370.

Nadjai, A, De Silva, D & Allam, A 2025, 'CASE STUDY: FEASIBILITY STUDY 3-D NUMERICAL MODELLING OF MIXED USE MULTISTOREY BUILDINGS', Paper presented at International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25 - 27/06/25 pp. 355-361.

Nadjai, A, Rajan, M, Thatheus, NA & Ahmed, A 2025, 'PERFORMANCE OF MODULAR TIMBER ASSEMBLY IN FIRE CONDITIONS', Paper presented at International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25 - 27/06/25 pp. 766.

Nadjai, A, Thatheus, NA, Rajan, M & Allam, A 2025, 'FIRE INVESTIGATION OF ESCALATOR USED IN DIFFERENT CATEGORIES OF BUILDINGS', Paper presented at 5th International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25 - 27/06/25 pp. 70-81.

Tretsiakova-McNally, S, Chen, YK, Zhang, J, Rasouli Sadabad, H & Nadjai, A 2025, THE NATURE OF TOXICANTS MOVING ACROSS THE LAYERS OF FIRE SUITS. in 16th International Conference and Exhibition on fire science and engineering (INTERFLAM 2025). vol. 1, 118, Royal Holloway, University of London, Royal Holloway, University of London, UK, pp. 331-342, 16th International Conference and Exhibition on fire science and engineering (INTERFLAM 2025), Londod, United Kingdom, 30/06/25.

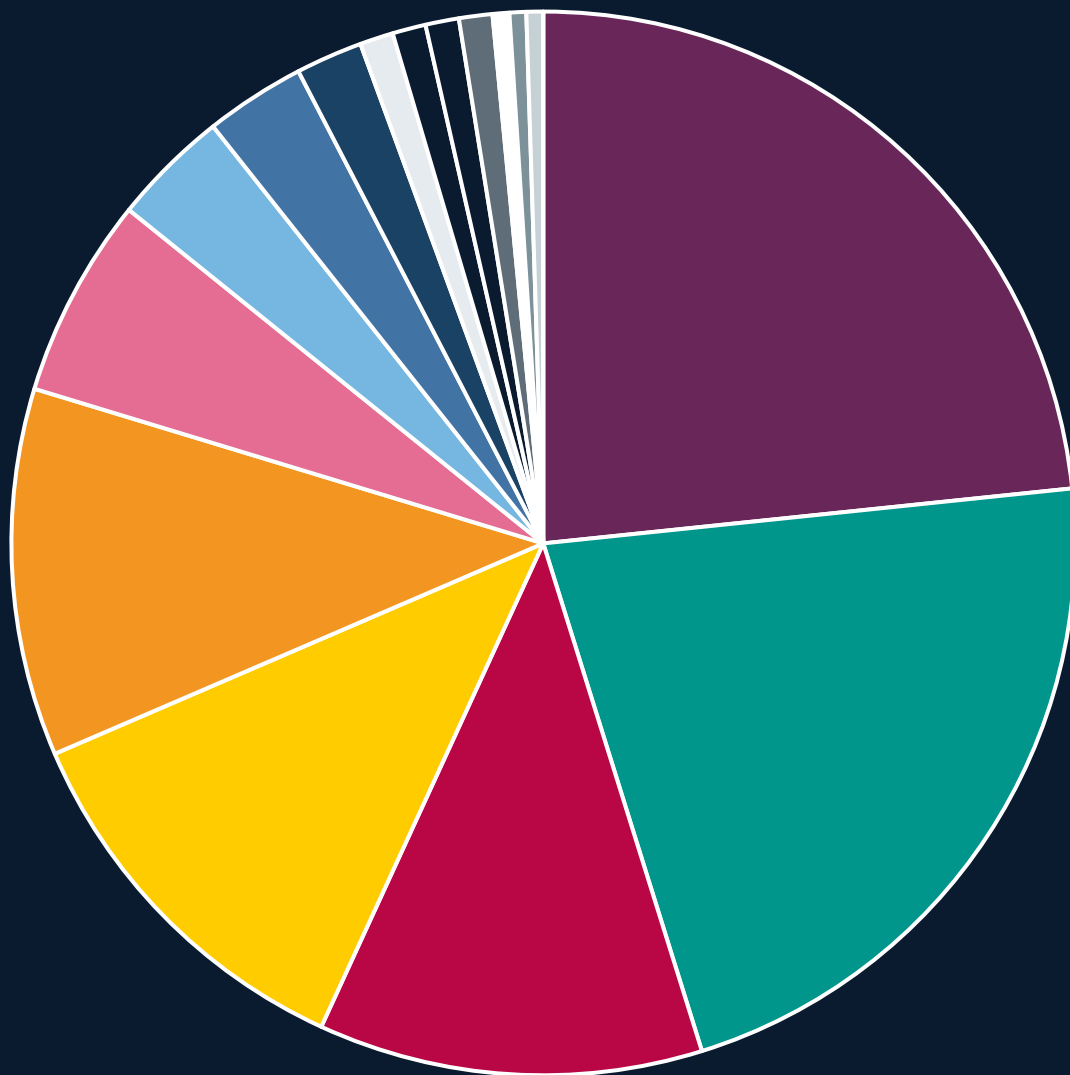
Tretsiakova-McNally, S, Rasouli Sadabad, H, Zhang, J & Nadjai, A 2025, ANYONE FOR A COCKTAIL? UNDERSTANDING THE IMPACT OF TOXIC CHEMICALS ON EXPOSURE OF FIREMEN TO POST-FIRE CONDENSATE. in 5th International Fire Safety Symposium (IFireSS 2025)., 106, Ulster University, Belfast, pp. 490-500, 5th International Fire Safety Symposium, Belfast, United Kingdom, 25/06/25.
<https://doi.org/10.21251/03828a0d-6ceb-4fce-ba02-e93ccb60d4fc>

Woodward, WDH 2025, 'Evolution of the embryonic asphalt surface contact patch into early life', Paper presented at 3rd International Symposium on Pavement Functional Design and Management, Delft, Netherlands, 2/07/25 - 4/09/25.



SUSTAINABLE DEVELOPMENT GOALS

Universities and knowledge institutions globally have a critical role to play in the achievement of the United Nations Sustainable Development Goals (SDGs). Here is a breakdown of the Research Outputs for the Belfast School of Architecture and the Built Environment, according to their SDGs.



- SDG 11 - Sustainable Cities and Communities
- SDG 9 - Industry, Innovation, and Infrastructure
- SDG 12 - Responsible Consumption and Production
- SDG 3 - Good Health and Well-being
- SDG 4 - Quality Education
- SDG 6 - Clean Water and Sanitation
- SDG 16 - Peace, Justice and Strong Institutions
- SDG 5 - Gender Equality

- SDG 7 - Affordable and Clean Energy
- SDG 13 - Climate Action
- SDG 8 - Decent Work and Economic Growth
- SDG 10 - Reduced Inequalities
- SDG 1 - No Poverty
- SDG 14 - Life Below Water
- SDG 2 - Zero Hunger
- SDG 15 - Life on Land

4. RESEARCH FUNDING

Portfolio of Research Grants awarded during period 1 August 2024 - 31 July 2025

UoA MEMBER(S)	PROJECT TITLE	FUNDER	VALUE	AWARD DATE
Svetlana Tretsiakova Ali Nadjai Jianping Zhang	Investigation of toxic chemicals transfer through clothing layers of fire suits	UL Research Institutes	£442,550.91	28 Aug 2024
Paul Sargent Angela Rolfe	Circular Economy-friendly concRetes using municipal waste, calciNed clays and graphenE for Floating Offshore Wind applications	Institution of Civil Engineers	£35,166.30	29 Aug 2024
David Coyles	NBC PhD: Exposing the unseen architecture of interfaces and barriers in Northern Ireland's rural communities and towns	Arts & Humanities Research Council (AHRC)	£48,564.67	19 Sep 2024
Gavan Rafferty Linda McElduff	DS3 - Digital Services Digital Support and Digital Spaces	EU Programme for Peace and Reconciliation in Northern Ireland and the Border Region of Ireland (PEACEPLUS)	£749,987.90	25 Sep 2024
Ali Nadjai Naveed Alam	Numerical Modelling of the Thermo-mechanical behaviour of external & internal wall types	Byrne Rapid Build Homes	£9,738.38	26 Sep 2024
Adrian Pugsley Mervyn Smyth	Switchable Insulation Innovations: TRL6-7 transition	Royal Academy of Engineering	£77,950.00	8 Jan 2025

Neale Blair	RETROFIT UK: Scaling up place-based adaptations to the built environment through the planning and development system	Economic & Social Research Council (ESRC)	£43,027.60	8 Jan 2025
Naveed Alam	Transforming concrete Resilience: Investigating High-Temperature Effects on Self-Healing Properties	Horizon Europe Marie Skłodowska-Curie Actions	£232,211.67	17 Feb 2025
Gavan Rafferty	Disaster Risk Reduction 2024	International Centre for Local and Regional Development	£3,025.47	10 Mar 2025
Inna Vorushylo Neil Hewitt	Demand Flexibility for Efficient Northern Ireland Energy Systems	NI Department for the Economy	£37,080.00	24 Mar 2025
Aaron Lawson Marie Vaganay Miller	Tender - VALUE OF ENVIRONMENTAL HEALTH	Chartered Institute of Environmental Health	£10,018.00	20 Jun 2025
Saul Golden Aaron Lawson Lindsay Shaw Marie Vaganay Miller	PEACE-Air - Partnership for Evidence and Action on Clean Air	EU Programme for Peace and Reconciliation in Northern Ireland and the Border Region of Ireland (PEACEPLUS)	£383,307.10	8 Jul 2025
Jayanta Mondol Trevor Hyde Chiara Salaris Aggelos Zacharopoulos	Design and Experimental Evaluation of Innovative Concentrating Photovoltaic Glazing (CoPVG) Systems	The Royal Society	£12,000.00	8 Jul 2025

5. NOTE FROM THE ASSOCIATE DEAN

The 2024-25 Annual Research Report for the Belfast School of Architecture and the Built Environment reflects the continued commitment of Ulster University to deliver impactful research excellence in areas that actively contribute to the economy of Northern Ireland and to society more generally.



The scope and scale of the research undertaken by colleagues in the School is reflected in the high-quality outputs reported here. The positive impact this research is having on society is evident in the attainment of competitive grant income; PhD graduations; partnerships with industry and in collaborations with other national and international research institutions. Importantly, the new contributions to knowledge that have been made span the full range of United Nations Sustainable Development Goals (SDGs).

The University Strategy: 'People, Place and Partnership' seeks to deliver 'Sustainable Futures for All' with research and innovation central to its success. The associated University Research Strategy (2023-2028) focuses on how our core values of Collaboration, Enhancing Potential, Inclusion, and Integrity underpin a sector-leading environment for the continued development of talent and opportunity across our designated research themes.

"As we move closer to [REF2029] we are focused on further increasing our world-leading and internationally excellent research"

As we move closer to the 2029 UK Research Excellence Framework exercise (REF2029), we are focused on further increasing our world-leading and internationally excellent research across relevant Units of Assessment in a way that impacts both locally and globally with the ethos of Open Research at its core.

Professor Brian J. Meenan

Associate Dean, Research and Innovation

REF 2021



REF 2021



ARCHITECTURE,
BUILT ENVIRONMENT
AND PLANNING
(REF 2021)



ULSTER UNIVERSITY
(REF 2021)

Research Centres and Groups

Centre for Sustainable Technologies (CST)

Research on Property and Planning (RPP)

Fire Safety Engineering Research and Technology Centre (FireSERT)

Hydrogen Safety Engineering and Research (HySAFER)

Architecture Research Group (ARG)

Digital Built Environment Research Group (DBERG)

