



Construction site

Feb 17, 2025 08:51 GMT

Using AI to cut construction waste and advance sustainability

Northumbria University is leading pioneering research to enhance sustainability in the construction industry by integrating artificial intelligence (AI) and innovative waste management strategies.

The research has secured £250,000 of research funding from the latest Horizon MSCA call from the European Commission and aims to improve waste recycling efficiency, reduce landfill dependency, and promote circular economy principles in the UK and beyond. It is being led by [Dr Pablo](#)

[Martinez Rodriguez](#) from the Department of Architecture and Built Environment at Northumbria.

Construction waste (CW) is a pressing environmental challenge, with construction, demolition, and excavation waste accounting for 62% of the UK's total waste—equivalent to 137.8 million tonnes. Across the European Union (EU), construction and demolition waste is the largest waste stream, amounting to 374 million tonnes. Despite high recovery rates, much of this waste is either landfilled or repurposed in low-grade applications, underscoring the need for more effective recycling and resource utilisation.

Dr Martinez, a leading researcher in sustainable construction, highlighted the significance of the project: "Sustainable construction is essential for addressing global environmental challenges. Our research harnesses AI to precisely track waste generation, optimise resource usage, and provide construction managers with real-time, data-driven insights to enhance waste management efficiency."

The project will develop advanced AI-driven decision-support systems to help construction managers identify waste generation points, implement effective handling strategies, and assess project sustainability through new key performance indicators (KPIs). These KPIs will measure waste handling efficiency, resource utilisation, and adherence to sustainable practices.

Beyond technological advancements, the research will establish best practices, industry guidelines, and policy frameworks to facilitate the adoption of sustainable construction methods. A strong focus will be placed on materials reuse and designing buildings for disassembly and reassembly, aligning with UN Sustainable Development Goal 12 Responsible Consumption and production.

Dr Martinez added: "By promoting circular economy principles, we aim to catalyse a global shift toward sustainable construction practices. This research will not only benefit the UK and EU but also set a benchmark for responsible construction worldwide."

Findings and recommendations from the study will be shared with policymakers, industry leaders, and sustainability advocates to drive meaningful change in construction waste management.

This latest project follows [existing research](#) by Dr Martinez Rodriguez and Dr Osama Mohsen from King Fahd University of Petroleum and Minerals in Saudi Arabia, which received funding from the [British Council's UK Saudi Challenge Fund](#) to investigate how AI can tackle construction waste in the UK and Saudi.

Northumbria University has a global reputation for research and teaching in AI. The University was recently awarded £9 million by UK Research and Innovation to establish a Centre for Doctoral Training in the field of AI. Known as the Citizen-Centred AI (CCAI), it focuses on the inclusion of citizens in the design and evaluation of AI – helping to make the rapidly advancing technology work for ordinary people.

For more information on research at Northumbria please visit www.northumbria.ac.uk/research

UNIVERSITY OF THE YEAR 2022 (Times Higher Education Awards)

Northumbria is a research-intensive university that unlocks potential for all, changing lives regionally, nationally and internationally.

Two thirds of Northumbria's undergraduate students come from the North East region and go into employment in the region when they graduate, demonstrating Northumbria's significant contribution to social mobility and levelling up in the North East of England.

Find out more about us at www.northumbria.ac.uk

--- Please contact media.communications@northumbria.ac.uk with any media enquiries or interview requests ---

Contacts



Rik Kendall

Press Contact
PR and Media Manager
Business and Law / Arts, Design & Social Sciences
rik.kendall@northumbria.ac.uk
07923 382339



Andrea Slowey

Press Contact
PR and Media Manager
Engineering and Environment / Health and Life Sciences
andrea.slowey@northumbria.ac.uk
07708 509436



Rachael Barwick

Press Contact
PR and Media Manager
rachael.barwick@northumbria.ac.uk
07377422415



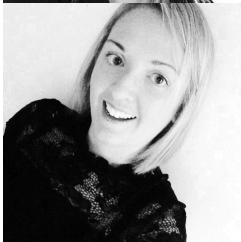
James Fox

Press Contact
Student Communications Manager
james2.fox@northumbria.ac.uk



Kelly Elliott

Press Contact
PR and Media Officer
kelly2.elliott@northumbria.ac.uk



Gemma Brown

Press Contact
PR and Media Officer
gemma6.brown@northumbria.ac.uk