The group’s expertise is diverse and spans various fields including the following research areas:

- Energy efficiency in buildings
- Rehabilitation of existing stock to improve energy, carbon and comfort performance
- Sustainable building materials and sustainability assessment
- Fire risk and risk analysis
- Social and economic performance of buildings and cities
- Impact of climate change on buildings and cities

Led by Dr Rohinton Emmanuel, a Reader in Sustainable Design and Construction with research interests in energy efficiency and sustainable urban development, the Sustainable Urban Environments Research Group has active research projects in areas including building performance, the indoor environment, conservation, carbon management and sustainability.

Working with colleagues across GCU, the group has established itself as preferred partner for Energy Efficiency specialist advice for the Communities and Analytical Services Division (CASD) of the Scottish Government.

The group’s work in sustainability and climate change in urban environments has led Glasgow Caledonian University (GCU) to become a partner, alongside Lahti University of Applied Sciences (Finland), and the University of Salento (Italy), in a three-year Erasmus Lifelong Learning Programme grant to develop a curriculum reform project.

The ‘Reform of Education in Sustainability & Climate in Urban Environments’ (RESCUE) curriculum reform project addresses the need for an integrated approach to adapt to and mitigate local and global climate change realities in a sustainable manner, by feeding three thematic strands (Science, Planning and Management) into a set of core urban modules intended for a Europe-based international Masters programme.

Over the course of the project, consortium partners and associates will gauge the nature and breadth of the industry needs in climate sensitive urban sustainability and develop
and pilot a postgraduate level programme to inculcate multidisciplinary thinking in students, an essential characteristic of next-generation urban professionals responsible for managing the impacts of climate change. The role of such professionals will be managing physical interventions incorporating knowledge of the impacts of climate change in a sustainable and equitable way.

GCU researchers in the areas of sustainable and low carbon buildings are also partners in a European Regional Development Fund (ERDF) supported project under its Northern Periphery Programme identifying and championing leading natural and sustainable products, processes and technologies from the NPP region to enhance building energy efficiency.

The Sustainable Urban Environments Research Group has longstanding expertise in urban sustainability with special emphasis on urban heat island research and mitigatory approaches to reduce its overheating potential.

As a result, the group secured £32,000 of funding from Glasgow Clyde Valley Green Network Partnership (GCVGNP) to explore the potential of green infrastructure to tackle the overheating problem likely in the near future, due to climate change augmented by urban warming in the Glasgow and Clyde Valley region. The group will identify the historic trends in climate in key urban areas in the Glasgow and Clyde Valley region, establish the likely problematic areas where overheating could be significant, suggest green infrastructure approaches to mitigate and/or enhance adaptive capacity in the region, and evaluate the sensitivity of these options to various planning scenarios.

Additional commissioned research has included ‘Support to RPP2 Housing Futures’ by the Scotland and Northern Ireland Forum for Environmental Research (SNIFER) on behalf of ClimateXChange, an ambitious initiative to coordinate policy-relevant research on climate change in Scotland and broker knowledge exchange between the research community and policy-makers.

The work was divided into two tasks: To scope what Scotland’s housing stock can be expected to look like in terms of energy efficiency by 2020; and to assess the abatement potential of Scotland’s housing stock from 2020-2030 in the context of a trajectory to 2050. GCU produced a full research report, which will support the Scottish Government in its development of cost effective delivery scenarios to meet climate change targets in housing from 2020 to 2030. The group’s work in building performance analysis, which spans thermal, energy and moisture properties, is supported with unique indoor climate and health testing and analysis facilities. Clients requiring robust data on thermal performance of traditional buildings have included Historic Scotland.

GCU’s Environmental Chambers help place the university at the forefront of UK research working with colleagues across GCU, the group has established itself as preferred partner for energy efficiency specialist advice for the communities and analytical services division (CASD) of the Scottish Government.

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At Glasgow Caledonian University, we work with industry and public sector partners to ensure our expertise responds to the need for real-world innovation. GCU’s strategic business development and knowledge transfer teams work with academic experts in our Schools and Research Institutes to support businesses with a problem-solving approach.

Contact us to find out more about building a brighter future with GCU at www.gcu.ac.uk/business.

FURTHER INFORMATION:
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SUSTAINABLE URBAN ENVIRONMENTS RESEARCH GROUP into the performance of building materials and diagnostic methods of testing material failure.

Thermal Conductivity equipment allows the rapid and precise determination of the thermal conductivity of materials ranging from insulation to dense concrete. The equipment is used both in research and development of advanced materials and for consultancy work.

X-ray absorption apparatus at GCU enables high resolution moisture content measurements under transient conditions, e.g. the wetting and drying behaviour of sandstone. GCU also precisely measures water vapour transmission rates of building products such as vapour permeable membranes.

WORKING WITH COLLEAGUES ACROSS GCU, THE GROUP HAS ESTABLISHED ITSELF AS PREFERRED PARTNER FOR ENERGY EFFICIENCY SPECIALIST ADVICE FOR THE COMMUNITIES AND ANALYTICAL SERVICES DIVISION (CASD) OF THE SCOTTISH GOVERNMENT.