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Editorial

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Editorial

At a time when scientists in the journal *Nature* say that the rate of ice loss in Greenland is greater than has happened in over 12,000 years, Ireland is way behind the curve in reducing harmful emissions. In fact, our emissions per head for buildings is significantly higher than the EU average. While the Irish governance framework objective is to reduce emissions by at least 7% per annum over the next 10 years and reach carbon neutrality by 2050, it remains to be seen if the legislation is truly ground-breaking, as is claimed by government. However, responsibility also rests with building professionals to reduce our impact on the built environment.

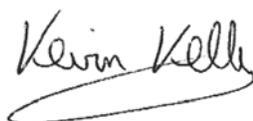
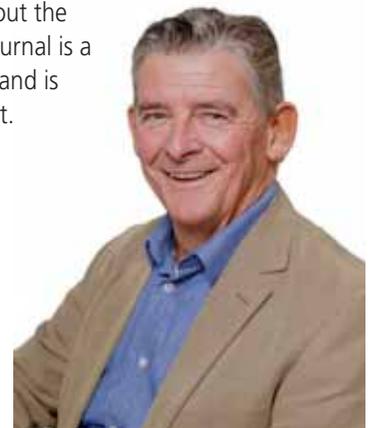
Given our new Covid world, a massively-changed economy and work practices, not to mention Brexit, the only constant ahead is change. That said, decarbonisation will offer opportunities for environmental entrepreneurs who can identify future trends and public demand. The built environment requires innovative responses and resilient buildings, with the public demanding safer, healthier indoor environments. Building retrofitting, renewables and energy storage all figure high in future opportunities.

How we heat our buildings will change dramatically. Better insulated homes need less heat while greener generation in Ireland is progressing well. Ireland's wind generation continues to increase and plans are advanced for solar power to provide renewable electricity for 230,000 homes by 2030 – 10% of Irish households. The use of heat pumps and lower temperature heat emitters in buildings will increase as our energy mix in the electrical supply system becomes more and more renewable based.

Climate change has a parallel with Covid-19 in that it knows no borders. Ireland's agricultural emissions are five times those of the EU but the question must be asked ... who is the polluter? The farmer or the consumer? Irish people do not consume five times the food of our European neighbours. If Ireland is an environmentally-friendly farming environment, then emissions should surely be allocated to the consumer.

Likewise with regard to data centres. If Ireland is a good location globally to locate data centres due to free cooling, then emissions should be allocated based on who data is stored for. Otherwise, we would be allocating CO2 emissions on a disproportionate scale to oil-producing countries and that is not what happens, nor should it.

Finally, unlike larger countries such as the UK, Ireland does not have the economy of scale to respond with the same breadth and depth to the challenges of global warming. However, we still have an important position within the EU, and we also need to maintain international collaborations inside and outside the EU. This includes the UK post-Brexit. Where would our building industry be without the research, Codes and Guides published by CIBSE? This journal is a joint publication between TU Dublin and CIBSE Ireland, and is underpinned by CIBSE UK. That will continue after Brexit.

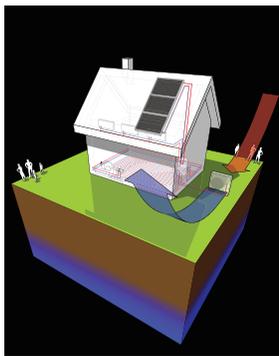



Readers' Guide

Non-visual effect of lighting – Ben Ransley, a post-graduate research student in UCL, provides an excellent literature review of recent research findings in the nascent research area of the non-visual effects of lighting. Those responsible for lighting our buildings need to understand that neuroscientific research is informing us about how our circadian rhythms are influenced by the lighting in our buildings and outside. Ben compares two new metrics, EML and CS, which will be of particular interest to lighting designers. However, this paper will appeal to a much broader audience because of the wellness aspects that apply to all of us.



Superhomes and heat pumps – As the energy mix in Ireland shifts to a more renewable mix, the demand for



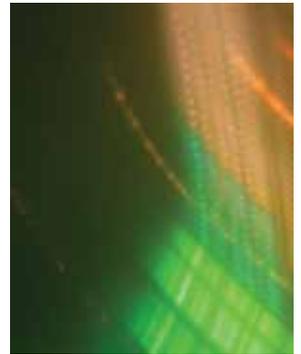
heat pumps will increase. This will become a more prominent source of heating for our buildings. Here, Seamus Hoyne, Padraic O'Reilly and Michael O'Shea from Limerick Institute of Technology, explain how to ensure that these systems are reliable and effective in their installations. This impressive research project examines

residential retrofits in Ireland. The paper highlights the areas where air source heat pump systems can underperform and how to deal with these by making recommendations on how to ensure systems operate to their full potential and so minimise CO2 reductions.

Realising low-energy buildings – Professor Brian Norton and Steve N.G. Lo explain how solar gains can help us achieve near zero energy buildings by optimising built form, internal layout, position, type and area of windows. Solar gains can displace heating and lighting energy in most non-domestic buildings. The authors show how such approaches have been adopted to successfully realise many low-energy buildings.



Light, spaciousness and enclosure – We are delighted to welcome our first paper from Sweden to the *SDAR Journal*. This is an interesting paper by Ulrika Wänström Lindh, Monica Billger and Myriam Aries based on a complex space study with insightful findings about light and its impact on feelings of spaciousness and enclosure. It is an explorative study that has generated several new hypotheses, one of them being that the experience of space is not equal to the boundaries of the physical built room. It also sets the context and pointers for future research and studies on the topic.



BIM – To help the construction industry, which generates 33% CO2 emissions and 40% of global energy, to be more innovative in responding to the challenges of sustainability, a multidisciplinary team from TU Dublin and Belfast Metropolitan College show how BIM training can be implemented in the built environment. BIM integrates sustainability and renewable concepts. This paper targets the broader skills gap agenda.



How to get published in the *SDAR Journal*

The *SDAR Journal* is intended as a platform for you, as working engineers and building professionals, to publish your innovative work. It is a free-to-publish journal that is listed in the *Directory of Open Access Journals* and it is thus free to download papers from it.

The *SDAR Journal* is a joint publication between Technological University Dublin and CIBSE Ireland. We have generous support from CIBSE UK, our reviewers, editorial team and editorial board, all of whom contribute their time and input free.

We are here to support you publish your insightful cutting-edge designs and post-occupancy evaluations of low energy design. Your interests are our interests, with the intention of moving engineers from ideologically-based green initiatives towards evidence-based sustainable built environment solutions. Authors will critically reflect on their own work.

We want to publish your work if it will help contribute to a more sustainable world. We will also help and support you to do that.