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**CALL FOR PAPERS: special issue**

## **Education and training: mainstreaming zero carbon**

**Guest editors: Alison Kwok (U of Oregon) and Fionn Stevenson (U of Sheffield)**

**E-mails: [akwok@uoregon.edu](mailto:akwok@uoregon.edu) and [f.stevenson@sheffield.ac.uk](mailto:f.stevenson@sheffield.ac.uk)**

Built environment education is at a critical juncture to ensure that the workforce has the capacities and capabilities (knowledge and skills) to rapidly decarbonise built environments and reduce environmental degradation, for both new construction and the existing building stock. A rapid transition is needed in universities and training colleges in order to address the Climate Emergency through the scope and nature of the knowledge and skills that are provided to students and existing professionals / workers. Currently, a workforce<sup>1</sup> without the appropriate low-carbon skills at national and global levels is delivering immediate and long-term negative consequences due to the longevity of buildings, infrastructures and cities. The decisions and designs made now and over the next few years will continue to impact for 60+ years.

The achievement of ambitious energy and environmental targets requires a rapid and wide extension of the necessary knowledge and the related skills. The window of time to achieve this change in the workforce is just a few years and must be addressed now as a matter of urgency.

The present systems of professional and vocational knowledge creation and transfer (which varies considerably from country to country and program to program) need to be challenged to produce very different forms of interdisciplinary and disciplinary knowledge and skills. Opportunities for synchronicity and rapid propulsion need developing – both within disciplinary boundaries and between disciplines.

Current and future students need to be rapidly upskilled with appropriate knowledge to create zero carbon<sup>2</sup> buildings, neighbourhoods, cities and infrastructure, working with practice and industry. Even more importantly, new knowledge and skills are required to retrofit the vast existing building stock and infrastructure associated with it. This means providing such knowledge to vocational workers and professionals, but almost no education and training programmes address this. The upskilling of the existing workforce is also a vital component, particularly to ensure that the skills of current / future students mesh with those already in practice.

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<sup>1</sup> Professionals, vocational workers and technologists tasked with creating, operating and maintaining the built environment, as well as retrofitting existing building stocks.

<sup>2</sup> The term 'zero carbon' is used here to acknowledge a radical reduction in embodied and operational carbon. There are a variety of terms and different approaches: net-zero, carbon positive, etc but the focus of this special issue is on creating capabilities and capacity. The determination of appropriate metrics and targets is the focus of a forthcoming *Buildings & Cities* special issue: Carbon Metrics for Buildings and Cities. <https://www.buildingsandcities.org/calls-for-papers/carbon-metrics-for-buildings-and-cities.html>

This raises new needs for the present educational and training pedagogies, curricula and practices for planning, design, engineering, operation, construction and facility management professionals as well as vocational workers, building operators, managers, maintainers and clients. How can education and training be rapidly changed to ensure the creation of zero-carbon built environments? How can this transition be implemented successfully? What positive examples and models can be drawn upon or adapted?

Papers in this special issue will address key questions and offer solutions in these key areas:

- **Mainstreaming:** What are the lessons from other examples of rapid transitions in education and training? What assistance is required to quickly transition existing vocational and academic courses? What are best-case examples of education and training for zero-carbon built environments? How can these curricula be mainstreamed?
- **Policy and leadership:** How can government and institutional bodies respond to set zero carbon criteria for education? Are the governance structures for individual professional and vocational education systems fit to identify and implement new syllabi and curricula for zero-carbon built environments within an interdisciplinary paradigm? How can goals and criteria within and between various disciplines be aligned? What can be done to overcome institutional inertia towards such a change? Can higher education lead this change and influence government and the professional institutes / organisations? What new models and incentives are needed? What societal needs (e.g. retrofitting of the building stock) require new courses and new credentials? How can curricula knowledge transfer between different countries be agreed and accelerated? What cultural barriers and other problems are encountered in knowledge transfer? What are the needs for assistance in least developed economies and developing economies?
- **Transitioning:** What shared understandings are needed for the delivery of zero-carbon built environments, particularly between different disciplines? How does the selection of learning tasks / projects and their evaluation influence learning in this area? What communication and brokering skills are needed for collaborative transitioning between disciplines? Who in higher education should deliver this transition and at what level? What support is needed for other educators lacking this knowledge and skill set? What external partnerships and participatory structures are needed for setting and evaluating syllabi and curricula? What are successful examples of implementing these changes and key lessons learned?
- **Teaching:** What are the roles of individual teachers / staff in leading change? What resistance and difficulties do they meet? How can educators overcome these barriers? What training and education is appropriate for existing teachers to leverage rapid upskilling and change? What is the role of students in developing rapid change? How can education and training emphasize actual outcomes and incorporate feedback loops?
- **Upskilling:** What criteria (and supporting curricula) are needed to provide the necessary knowledge, skills and know-how to existing professionals / workers? How can this be implemented and paid for? What forms of assistance do micro- and SMEs need? How can professional and licensing organisations mandate and manage the training of their existing members? What new forms of collaboration between industry and the academy can facilitate rapid upskilling in the area zero-carbon built environments?
- **Certification:** are different / alternative processes of certification required for educational courses? Do professionals and vocational workers need different / additional / alternative qualifications to show they have the appropriate new skills? How will new responsibilities / requirements for guaranteed energy / carbon performance impact on the training and certification of vocational and professional workers?

## Briefing Note for Contributors

You are invited to submit an abstract for a journal paper in this special issue of *Buildings & Cities*. In the first instance, please send a **500 word (maximum) abstract** defining the scope, methods and results to editor **Richard Lorch** [richard@rlorch.net](mailto:richard@rlorch.net) by **07 November 2019**. The initial submission must include:

- the author's and all co-author's names, affiliations and contact details
- the question(s) in this Call for Papers that the abstract and intended paper address
- the abstract (300 - 500 words maximum)

Abstracts will be reviewed by the editors to ensure a varied, yet integrated selection of papers around the topic of the special issue. Authors of accepted abstracts will be invited to submit a full paper (6000-7500 words), which will be subject to a double-blind review process.

## Timeline

<b>Deadline for abstract submission:</b>	<b>07 November 2019</b>
Full papers due:	03 February 2020
Referees' comments:	03 April 2020
Final version due:	11 May 2020
Publication:	July 2020

## Buildings & Cities

*Buildings & Cities* is an international, open access, double-blind peer-reviewed research journal. Its focus is the interactions between buildings, neighbourhoods and cities by understanding their supporting social, economic and environmental systems. More information including its Aims & Scope and Editorial Board can be found online: [www.buildingsandcities.org](http://www.buildingsandcities.org)

*Buildings & Cities* is an open access journal and has an article processing charge of £950. If you do not have institutional support, please contact the editor to discuss. We endeavour to assist those without funding to publish in our journal.

## Questions?

If you have a question, please contact:

**Richard Lorch** [richard@rlorch.net](mailto:richard@rlorch.net) **Alison Kwok** [akwok@uoregon.edu](mailto:akwok@uoregon.edu) **Fionn Stevenson** [f.stevenson@sheffield.ac.uk](mailto:f.stevenson@sheffield.ac.uk)

## Further reading

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