

## POLICY POINTERS

### Funders should:

**Actively encourage research** that takes an urban systems approach to key challenges in the built environment.

**Encourage consideration** of cross-cutting issues in built environment research.

**Bridge a crucial knowledge gap** by encouraging more research in the countries predicted to experience the highest urban growth rates.

**Take proactive measures** to support interdisciplinary research projects, building on positive experiences to date.

**Consider funding co-created, practiced-based participatory research and non-traditional research partnerships** which lend themselves to capacity building and encourage more diverse applicants.

## The challenge of complexity: strengthening research on the built environment and the SDGs

The built environment is critical to international development and to achieving the Sustainable Development Goals. By 2050, an estimated 68% of the world's population will live in towns and cities. The majority will dwell in small and medium-sized urban centres in Africa and Asia<sup>1</sup>, approximately half of which are yet to be built. This presents policymakers and built environment professionals with a huge challenge but also a significant opportunity: to change how towns and cities are built, incorporating affordable, low-carbon building techniques that are resilient to climate change and support the equitable and sustainable provision of basic services. Built environment research should be challenge-driven, inter- or trans-disciplinary, focused on rapidly urbanising countries and supportive of innovative, participatory methodologies that foster capacity building and research impact.

UK research funders have acknowledged the need to engage with the built environment, given its intersection with and impact on some of the most critical challenges the world faces, notably climate change, poverty reduction, sustainable development and rapid urbanisation. This briefing summarises the findings and recommendations of a review of research on the built environment and its intersection with the achievement of the Sustainable Development Goals (SDGs) in the global south<sup>2</sup>. IIED was commissioned by UKCDR to undertake the review to identify research gaps and provide recommendations to research funders.

Our review was informed by the following definition from the All-Party Parliamentary Group for Excellence in the Built Environment: 'The built environment encompasses all forms of building (housing, industrial, commercial, hospitals, schools, etc.,) and civil engineering infrastructure, both above and below ground and includes the managed landscapes between and around buildings.'<sup>3</sup> Given this broad definition, the comprehensive nature of the SDGs and the timescale of the review, IIED, in discussion with UKCDR, opted to focus on the impacts of the built environment on human development outcomes, as defined by the Human Development Index<sup>4</sup>: the ability of individuals to

have long and healthy lives, have knowledge and earn a livelihood.

We used four main tools to map out the built environment research and funding landscapes:

1. An expert-led assessment of recent outputs from centres of research expertise on the built environment and human development in the global south, covering 48 research centres and 336 projects.
2. A non-representative, open-ended survey of academics and built environment professionals, completed by 113 respondents
3. 17 key participant interviews with built environment academics and representatives of UK funding bodies, and
4. A consultation workshop with representatives from research funders, built environment professions and academia.

Our recommendations follow.

### Take an urban systems approach

The review process highlighted the importance of future-oriented research: understanding how the built environment intersects with a range of complex challenges – now and in the future –

will be critical to designing appropriate policy responses. To contribute to meeting the SDGs, built environment research in the global south must engage with rapid urbanisation, climate change, growing social and spatial inequality, the informal provision of shelter and services, challenges to urban food security and the degradation of urban ecologies and ecosystem services. Our review of research centre outputs suggests that the mainstreaming of gender and disability concerns into research on the built environment is not widespread and needs to be actively encouraged.

Survey respondents, interviewees and workshop participants drew attention to the complexity of interactions between people and built environments, particularly in densely populated, fast-growing towns and cities in the global south. A number of participants in the review highlighted the need for more problem-centred research that investigates the links between different urban systems:

*“We need to transition from thematic focused research to urban systems research. When you invoke urban systems research you can choose a combination of thematic areas, as long as there is a logic in terms of interactions between those sectors.”<sup>45</sup>*

This will require a change in framing, moving away from ‘projectised’ or ‘sectorialised’ approaches to the challenges at hand, to integrated approaches that generate ‘new ways of thinking, new ways of doing research, new methodologies that generate equilibrium between green, blue, and grey

infrastructure and the demands of populations’.<sup>6</sup>

### Encourage consideration of cross-cutting issues in built environment research

Many of the key issues shaping the built environment, and that need to be informed by built environment research, will affect and be affected by a range of other trends and processes. Of particular importance are: **informality** (of livelihoods, housing, transport and other basic services) **access and affordability** for low-income and marginalised groups, **climate change** and **migration** – both forced and economic. In particular, the review has demonstrated the need for the gender and inclusion dimensions of the built environment to be considered more widely. These are all live issues and priorities for overseas development assistance in general. They have been reflected in the roll-out of the Global Challenges Research Fund (GCRF) and should be critical concerns of built environment research in developing countries or research that considers the transferability of technological innovation to the global south.

### Encourage research where predicted urban growth will have the greatest impact on the built environment

The term ‘built environment’ is not synonymous with ‘urban’, but the complexity of human–infrastructure interactions in densely populated built-up urban areas means that towns and cities are a key concern for researchers and professionals within the broad field of the built environment. The focus of built environment research does not currently tally with countries undergoing the

## Box 1. Areas for further research

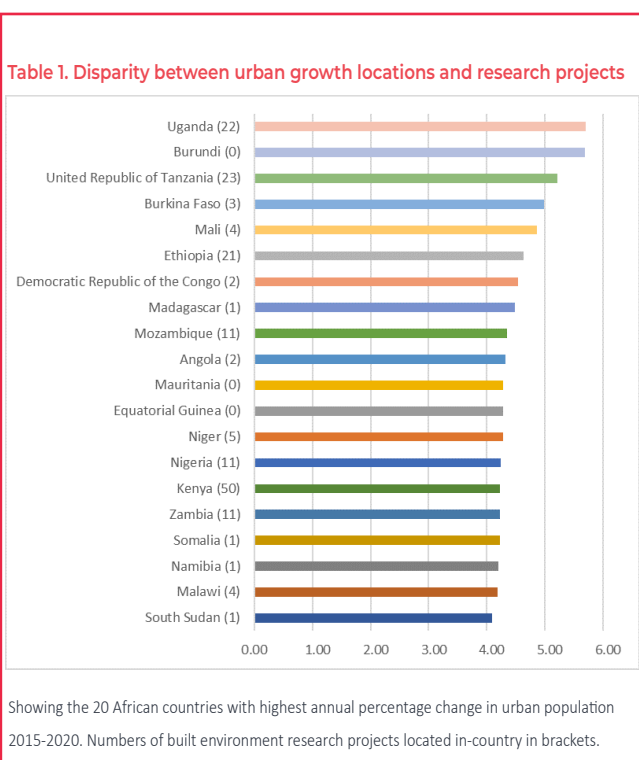
A number of areas were identified as possible gaps during the review of research centres or were highlighted by interviewees and survey respondents:

- ... **Ways in which informal settlements are growing in size and number** and are contributing to sprawl
- ... How **planning can respond to the growth of informal settlements**, including in promoting safety and security and mitigating climate change impact
- ... **Citizen and grassroots participation** in urban planning processes
- ... **Accessibility of transport infrastructure** for low-income groups, women, and people with disabilities
- ... **Low-income and informal housing**, specifically bringing together researchers focusing on affordability and access with those working on low-carbon, low-cost building techniques and materials.
- ... **Water and sanitation** that considers provision at a range of scales – communities, informal settlements and city-scale – and that brings together engineering with natural and social sciences.
- ... **Gendered dimensions** of water and sanitation infrastructure provision and access
- ... **Low-cost, low-carbon energy solutions for the urban poor**
- ... **Indoor air pollution** and its impacts on health
- ... The intersection of **ICT infrastructure with vulnerability and marginalisation**,
- ... **Urban food systems** and specifically the link between land use planning and food security.
- ... Factors that influence **waste generation**, including waste prevention and waste minimisation practices and activities.
- ... The impacts of the built environment on **mental health**
- ... **Urban ecology**, enhancing or combatting loss of urban biodiversity, and its role in alleviating poverty and enhancing climate change resilience.
- ... The role of **peri-urban areas** in promoting resilience and ecosystem services.
- ... How **climate change** might alter the impacts built environment interventions have on human development, and the adaptation measures needed.
- ... **Mitigation measures** that are affordable and appropriate for low-income groups.
- ... Spatial **implications of migration flows** in towns and cities in developing countries.

The need for greater research in these areas could be more fully validated through a series of more narrowly focused literature reviews.

most rapid urban transitions. Taking the African continent as an example, the Table 1 ranks the twenty countries experiencing the highest urban growth rates over the past five years and also shows, in brackets, the number of research projects identified during the review process that covered these countries during the same period.

New research on the built environment should be encouraged in countries with the highest predicted urban growth rates and urbanisation rates, based on data provided by the UN. This should be analysed in conjunction with overall population size and data on changes in land use to determine where existing infrastructure will be under most pressure and where there are critical levels of demand for new shelter and service provision. This will help to determine 'neglected geographies' where more research is warranted.



### Take proactive measures to support interdisciplinary research projects, building on positive experience to date

The complexity of urban systems, and of human interactions with the built environment, lends itself to an interdisciplinary or transdisciplinary approach. Many survey respondents put this idea forward; they also identified the challenges of undertaking and finding funding for it:

*“We need a better understanding of how infrastructures and services can work together to enhance human development. So, not just isolated work on say sanitation or energy, but work that considers how policy and practice can bring them together and with what impacts. The problem is that most practitioners and researchers operate with very narrow/confined systems boundaries.”*

*“Truly interdisciplinary approaches with teams of experts from different approaches are under-represented. Lack of funding is part of it, but more problematic are attitudes in relative discipline areas (along with funding and even home institutions) that don’t encourage or incentivize necessary interdisciplinary and multidisciplinary research.”*

These challenges are compounded by the fact that the research takes place outside the UK in challenging contexts:

*“Within the UK engineering community people get very excited about the latest material technologies. That’s how careers are made. But taking that technology and deploying it in a challenging social political context is not exciting or motivating for [most] UK- trained engineers.”*

The potential contribution that multiple disciplines could make to improving understanding of the built environment has been recognised in recent Global Challenges Research Fund (GCRF) calls related to cities and infrastructure. Research funders should build on this experience to expand the number and types of call that explicitly foster interdisciplinary approaches.

To support this, a new cadre of academics with the interest and ability to work across disciplines will also need to be developed and supported. A number of strategies may be required to achieve this, starting by engaging with universities to ensure masters courses and doctoral training recognise and value this approach. This could further be encouraged by the appointment of senior academics as trans-disciplinary ‘champions’.

Other strategies include:

- Doctoral training centres and PhD/early career fellowships to encourage interdisciplinary and/or transdisciplinary approaches
- Opportunities for ‘discipline hopping’ where researchers are supported to pursue an immersive experience in other disciplines and user environments
- Policy placements or internships for academics or doctoral students to spend time in non-academic institutions overseas; for example, ministries of urban development or planning departments of city governments.

Support for UK-based researchers to partner with institutions in the global south is also needed. This is particularly critical given the low numbers and limited capacity of built environment professionals in rapidly urbanising developing countries highlighted in two recent surveys of the architecture and planning professions.<sup>7</sup> Experience of supporting built environment research in developing countries varies greatly among research funders. The transfer of learning to funders who are new in this space could be encouraged.

## Consider funding co-created, practiced-based participatory research and non-traditional research partnerships

Many participants in the review process expressed the need for new ways to design research that reflect and can have a meaningful impact on the complexity of the built environment. As articulated by one workshop participant: 'Research should be designed in a context-specific way that takes into account how implementable the research findings are in the context of the political, social, economic environment and landscape'. This requires research that brings together different stakeholders (academics, policymakers, government stakeholders, communities) through a holistic or 'co-created' approach to research design. As another workshop participant put it: 'Co-creation is key to developing trust and ownership of the findings' and could also create a 'more sustainable approach to research partnerships.'

Related to this, workshops discussions covered the relevance of action and applied research, particularly research that involves low-income and vulnerable communities. One presentation during the workshop drew on experiences of an action research project that combined training for young professionals with a slum upgrading project that had gone on to have significant impact at the city scale. Summarising, he noted: 'Research funding needs to value collaborative approaches undertaken with vulnerable communities alongside traditional indicators for academic outputs.'

Survey respondents concurred:

*"We need more innovative means of research e.g. led by community organisations, to address their key issues. If we are too hung up on scientifically rigorous research, that blocks out the potential for valuable insight we can gain from more bottom up, community-driven research where they identify the research questions and collect the data. It may be messier as a process but it provides real insight into the lived reality on the ground that hasn't been mediated by the views of 'proper' researchers."*

*"Policy makers and researcher communities, [are] only just beginning to understand the complex interlinkages between human and non-human systems and their predictable and unpredictable outcomes. Funding institutions (and their reviewers) are still very much rooted in mainstream understandings of 'development' and ideal development pathways. They fail to recognise that alternatives are not only possible, but desirable, and that action research is sometimes the only plausible route to identify alternatives."*

When asked for examples of research impact in the field of the built environment, a large number of survey participants referred to multi-stakeholder, participatory action research. They highlighted routes to impact through 'close connections with local networks and intense participatory work', building 'bottom up meets top-down stakeholder networks (local organisations, universities, foundations, government, etc.)', and 'engaging with key stakeholders throughout the research and by working closely with locally selected community champions in the settlements [being] researched.' Practice-based research involving built environment professionals is also a way to support the development of a cadre of architects, planners and engineers that can respond to the new challenges of a rapidly urbanising world, as well as another way of achieving research impact.

Workshop discussions highlighted that the best-placed researchers for this type of work might not be UK universities. While UK research councils and universities have co-evolved over many years, other UK-based institutions, and universities and research centres in developing countries, may have different funding models and incentives. Research funders could consider how they can build flexibility into funding calls to facilitate the involvement of research institutes, think tanks and other actors (such as NGOs) that have research capacity but lack university status. This might also require placing greater value on the how research is carried out and with whom, rather than relying solely on traditional metrics of academic value.

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## Notes

1 United Nations Department of Economic and Social Affairs (16 May 2018) 68% of the world population projected to live in urban areas by 2050, says UN. [www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html](http://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html) / 2 Earle, L. and Goh, K. (2019) Overview of the built environment research landscape and funder recommendations. London: IIED. / 3 From: <http://cic.org.uk/services/all-party-parliamentary-group.php>. It should be noted that the term 'built environment' was not in particularly common usage within most research councils. Within EPSRC it is used to refer in a narrow sense to the design and operation of buildings. / 4 From: <http://hdr.undp.org/en/content/human-development-index-hdi> / 5 Key participant interview (August 2019) / 6 Key participant interview (August 2019) / 7 Commonwealth Association of Architects (2018) Survey of the architectural profession in the Commonwealth [https://issuu.com/comarchitect.org/docs/caa\\_survey\\_of\\_the\\_architectural\\_profession](https://issuu.com/comarchitect.org/docs/caa_survey_of_the_architectural_profession) Commonwealth Association of Planners (2018) Survey of the planning profession in the Commonwealth [https://issuu.com/comarchitect.org/docs/cap\\_survey\\_of\\_the\\_planning\\_profession](https://issuu.com/comarchitect.org/docs/cap_survey_of_the_planning_profession)