EDITORIAL

Greater than the sum of its parts: carbon reductions, health and wellbeing in the housing sector

The housing sector impacts on all spheres of our lives. At the most basic level we are all touched by it as we all have to live somewhere. It plays a significant role not only in climate change mitigation but also in maintaining our physical and mental health, and wider wellbeing. In 2017, the residential sector accounted for some 60% of total carbon emissions in the building sector, which made for 28% carbon emissions globally, with main energy demand attributed to space and water heating (34% and 19%) and cooking (20%) (IEA, 2018). The residential sector has 'the highest immediate mitigation potential in terms of absolute reductions in carbon emissions by 2030 at a cost of less than US$ 100 per ton of carbon when compared to carbon reduction in sectors such as transport, agriculture, industry, forestry, overall energy supply and waste management' (IPCC, 2018, p.256). Housing is intrinsically linked to human health and wellbeing. Lack of housing affordability is related to mental health conditions (Robinson and Adams, 2008); the quality of housing is key to physical health and security; housing overcrowding is associated with risks of mental stress and respiratory infections (Krieger and Higgins, 2002); and a dwelling's poor energy performance is linked to fuel poverty (i.e. the household's inability to maintain minimum standards of thermal comfort), poor quality of life and wellbeing (WHO, 2007).

This needs to be put in the wider perspective of rapid urban and demographic changes that we experience globally today. The world population is ageing, in both expanding and shrinking cities and regions. We are also urbanising at a fast pace and unequally, in terms of geographic distribution. We need more housing, but more often we need a different kind of housing to respond to different types of households, health requirements and so on. This bears an impact on the way we live, work and move around and so, on housing as we know it. The World Health Organisation (WHO) see housing as increasingly important to human health and wellbeing, a major entry point for inter-sectoral public health programmes and primary intervention related to housing construction, renovation, use and maintenance (WHO, 2018). Housing can save lives, prevent disease, increase quality of life, reduce poverty, but also mitigate climate change, while contributing to Sustainable Development Goals such as Health (SDG 3) and Sustainable Cities (SDG 11).

But how can housing 'kill so many birds with one stone'? In other words, how can the residential sector contribute to climate change mitigation while meeting important health, wellbeing and wider sustainability goals? It does so in a number of ways:

- Resource-efficient dwellings can significantly reduce carbon emissions, while reducing the transmission of infectious disease and help prevent many non-communicable diseases.
- Housing refurbishment or upgrading such as energy retrofit programmes improve both health and sense of wellbeing.
- Health can act as an economic driver of housing investment. While climate gains in terms of carbon reductions are mostly reaped in the future, many of the health gains are immediate and quantifiable. These include savings to households and health systems, and economies in terms of reduced illness, fewer medical visits and sick days off work and school.

- Health equity is major co-benefit of resource-clean and energy-efficient housing. For example, cleaner cooking stoves can help save the lives of nearly 2 million people annually who die from respiratory diseases related to household air pollution, including chronic pulmonary diseases and pneumonia (WHO, 2011).
- Better spatial planning for housing can reduce macro-energy costs of housing while improving access to affordable, securely-sited, safely-constructed homes with utility and transport services, as well as green spaces for physical activity and positive social interaction. These in turn can help prevent illnesses related to heat waves, unaffordable housing and poor urban environments that impact on wider societal wellbeing.

To sum up what I am trying to say here is that a two-way alignment between climate change and health and well-being related objectives in the housing sector is important and makes for more than the sum of its parts. By looking at them together synergies could be capitalised on and, more importantly, trade-offs mitigated. For example, housing energy retrofits are mostly depicted as efficient interventions for climate mitigation/carbon reduction in the sector. While their positive health and wellbeing outcomes such as less cold related deaths due to warmer homes and less fuel poverty are well acknowledged, their trade-offs are less documented. These include lack of housing affordability due to increased housing prices and rents and the 'renoviction' of poorer households (Grosmann, 2019; Polanska, 2017) and respiratory related deaths due to 'too insulated or air-tight' energy-efficient housing (Hamilton I. et al, 2015).

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Catalina's research sits at the intersection between urban studies and urban science with expertise on housing, indicators, energy and health. Catalina co-chairs the ENHR Working Group on Environmental Sustainability and Energy Efficiency of Housing.

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