Tailoring MAGIC to end-users – results of breakout group discussion

Participants at our March 2019 Partners Meeting were broken into small-groups, each containing a mix of academic, business and policy stakeholders. Each group was given the same question to discuss: *Based on your knowledge of MAGIC so far, please provide examples of where you believe the MAGIC tools could be used to provide and/or improve decision making support, focusing on any of the following areas: (i) Data and monitoring, (ii) pollution exposures, and (iii) natural ventilation.*

After an hour of discussion each group presented back, and we gained a range of insights.

In terms of where the MAGIC Tools were best placed to add value, compared to existing packages, several ideas bubbled to the top:

- *Inside-Outside*: Building a better understanding of the relationship between inside and outside was seen as a vital area where MAGIC could add value, given that current tools do not provide sufficient information. This would cover not just CO_2, but also NOx and fine particulates. It was envisaged that MAGIC would be able to help people understand better how different interventions – building design, road layouts, and use of green- and blue- space, for example, could minimise pollution exposure both inside and outside buildings.
- *Changes in space and time*: It was also proposed that MAGIC would be able to provide detailed information on the spatial and temporal variation of pollution. So, for example, you could use MAGIC to understand in detail which floors of a building could be ventilated by opening windows, and to gather information on diurnal patterns that could impact the ventilation strategy.
- *Experimental design*: Various participants suggested that MAGIC's tools could be used to improve experimental design and monitoring, for example, for councils and other stakeholders deciding where to place sensors when monitoring air pollution. It was noted that this had the potential to result in significant cost-savings.
- *Costs and Benefits:* Finally, it was suggested that MAGIC tools could provide a more subtle understanding of the interaction between buildings and the environment, which could ultimately result in a better conversation around the cost/benefit analysis in terms of air pollution.

Some of the challenges in developing MAGIC as a user-focused set of tools were identified as follows:

- *Validation:* Many participants stressed the need for all work to be clearly validated, and open-source, so the results inspire confidence.
- *Speed*: Given that modelling in Fluidity is computationally expensive, to make MAGIC tools practical for teams working in councils and design agencies, for example, it was stressed that the ability to run these tools on a much faster Reduced Order Model would be critical. It was also suggested that the MAGIC team may want to provide best practice guidance and rules of thumb – design checklists, for example, in addition to the full modelling capability.
- *Sitting alongside existing tools*: Existing tools already have a high degree of uptake and 'loyalty'. In the UK, for example, many teams use IES. One approach might be for MAGIC to think about developing an urban flow model that can 'plug-in' to existing tools. It was also suggested that the MAGIC team should consider the other elements that make existing tools practical – IES, for example, is set up to deal with 'bottom-line' issues like meeting building regulations – to help inform how MAGIC would sit alongside and complement these tools.