

Shaping the built environment for vector- borne disease control

Dr Lucy Tusting

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE





10 minutes on... *Exploring the most effective means to localise multisectoral deployment*

1. How the built environment affects VBD
2. Opportunities for deployment
3. Challenges and new research

How the built environment affects VBD



Poorly screened houses
- malaria



Open water containers
- *Aedes*

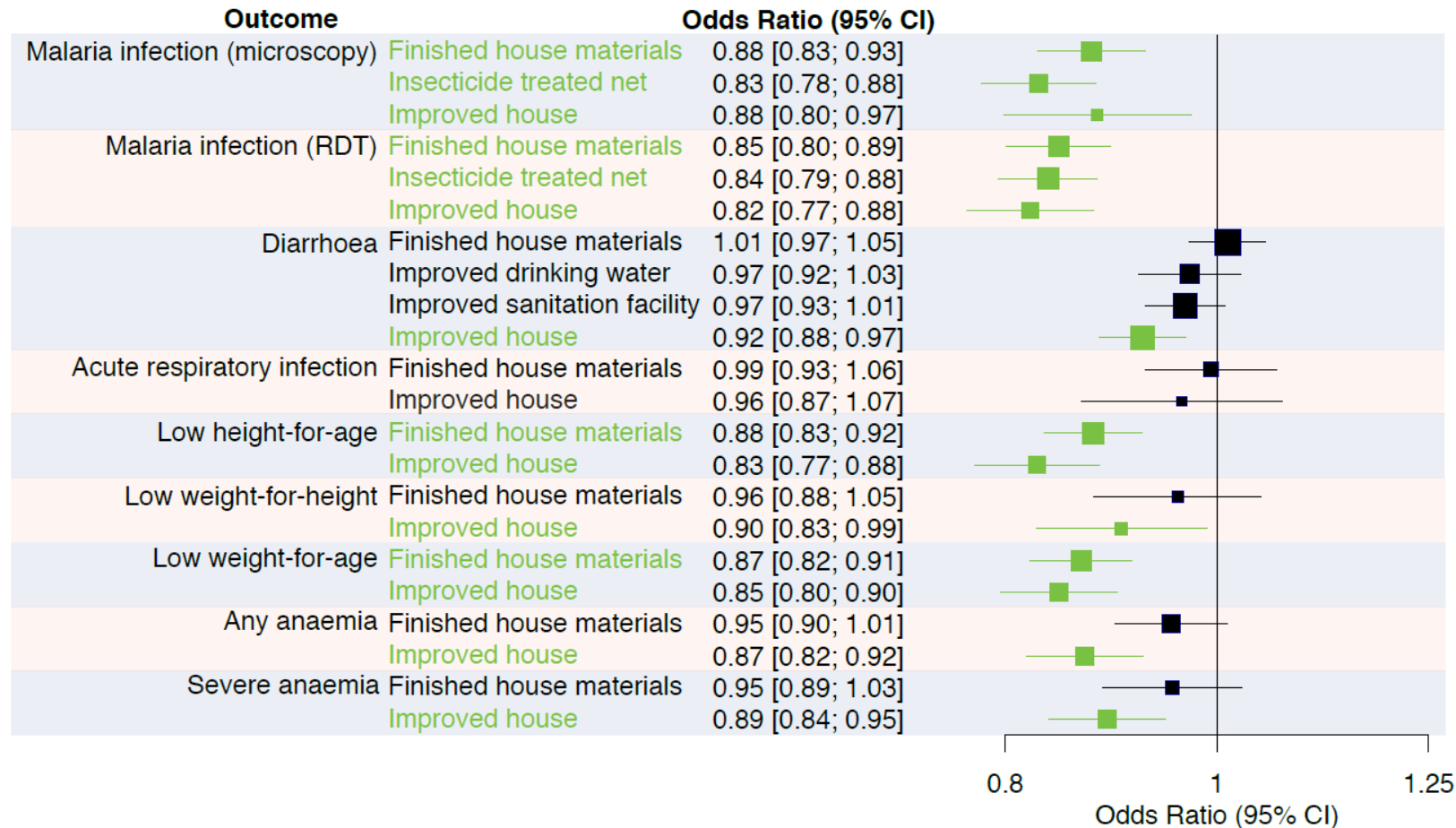


Solid waste
- sandflies



Waste water
- *Culex*

Potential benefits of improved housing for malaria, diarrhoea, anaemia and undernutrition

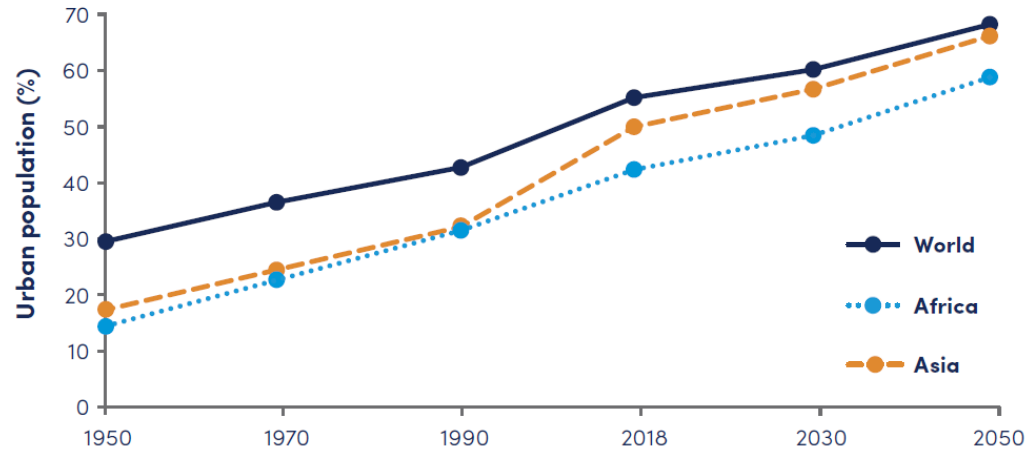


Data are from 824,694 children aged 0-5 years surveyed in 54 DHS surveys, 21 MIS surveys and 2 AIDS Indicator Surveys dating from 2001 to 2017 in 33 countries in SSA



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- 2. Opportunities for deployment**
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Housing changes in SSA & Asia



- Rapid urbanisation and population growth concentrated in Asia and SSA drive housing demand
- With economic growth households invest incrementally in their homes
- **Widespread new building & modernisation**

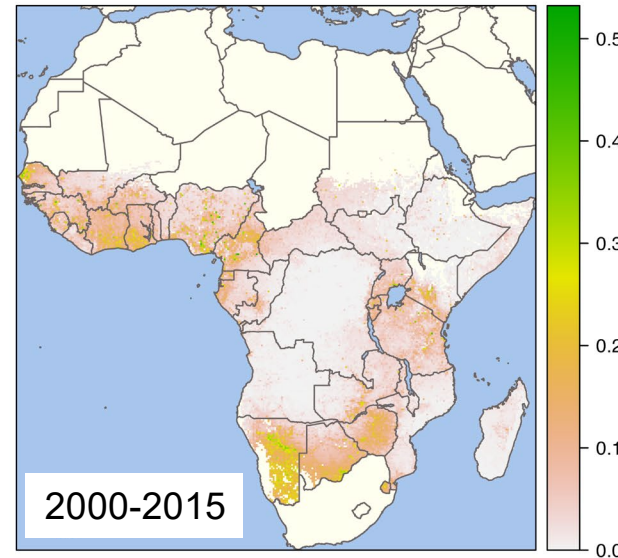


Steve Lindsay & Jakob Knudsen

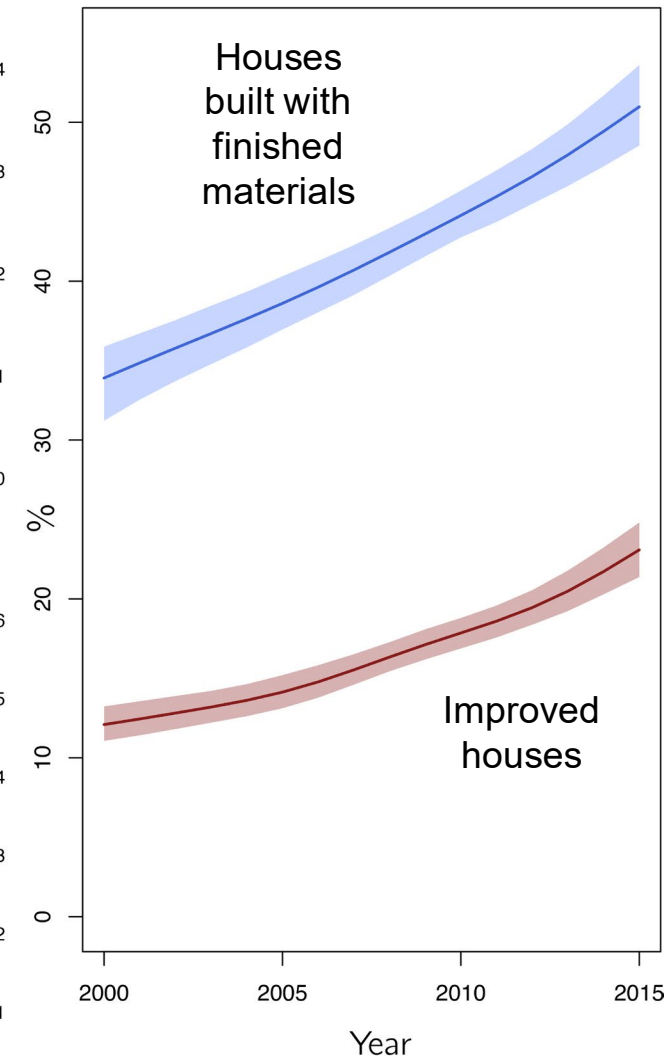
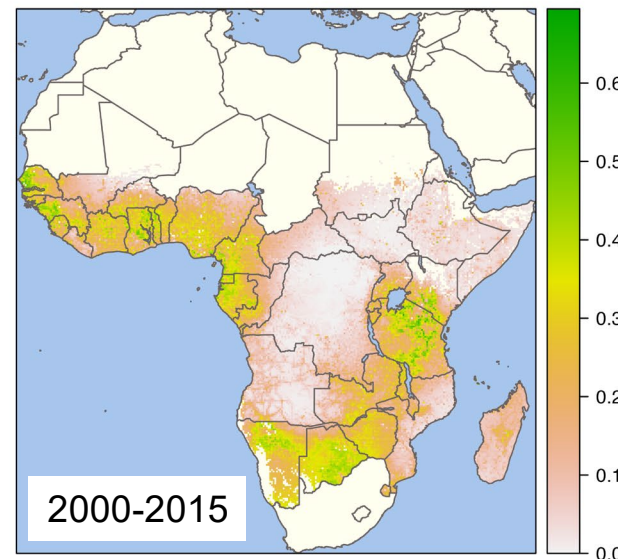
Change in housing over time



Improved houses



Houses built with finished materials



New global guidelines & guidance

1. **UN-Habitat 2016:** VBD included in the implementation plan for SGD11, to make cities inclusive, safe, resilient and sustainable
2. **WHO 2021:** conditional recommendation for house screening for malaria control
3. **WHO & UN-Habitat 2022:** new guidance for city leaders, health programs and urban planners to respond to rapid urbanization





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Challenges



Knowledge gaps

- What is the ideal house design
- Effect on other health outcomes
- How to build locally and work with vernacular architecture

Implementation

- How to work across sectors
- How to fund
- How to scale up



New research: 3 examples



Uganda Housing Modification Study, Jinja & Luuka, Uganda
RCT of full house screening & eave tubes vs no house changes (IDRC Uganda, CDC, PMI, LSTM)



Star Homes study, Mtwara, Tanzania
RCT of the impact of improved housing on family health (IHI, Royal Danish Academy, Mahidol-Oxford, Durham University)

Deep Cities study, Dar es Salaam
Risk mapping of urban VBD risk using remote sensing and longitudinal surveillance (IHI, LSHTM, Royal Danish Academy)



Summary

1. We can shape the built environment to control VBD
2. Urbanisation, housing modernisation in SSA and new global guidelines are important opportunities to leverage this potential
3. We need to overcome challenges in adapting housing locally and working across sectors to scale up



Jakob Knudsen