

# Health and Renovation

BE-READY/ReVALUE - A Danish interdisciplinary field study in Jutland, Zealand and Funen

GABEL C<sup>1</sup>, ELHOLM G<sup>1</sup>, JENSEN S R<sup>5</sup>, NEVE H<sup>3</sup>, RASMUSSEN M K<sup>6</sup>, KAMARI A<sup>5</sup>, PETERSEN S<sup>2</sup>, WANDAHL S<sup>3,4</sup>, KIRKEGAARD P H<sup>5</sup>, SIGSGAARD T<sup>1</sup>

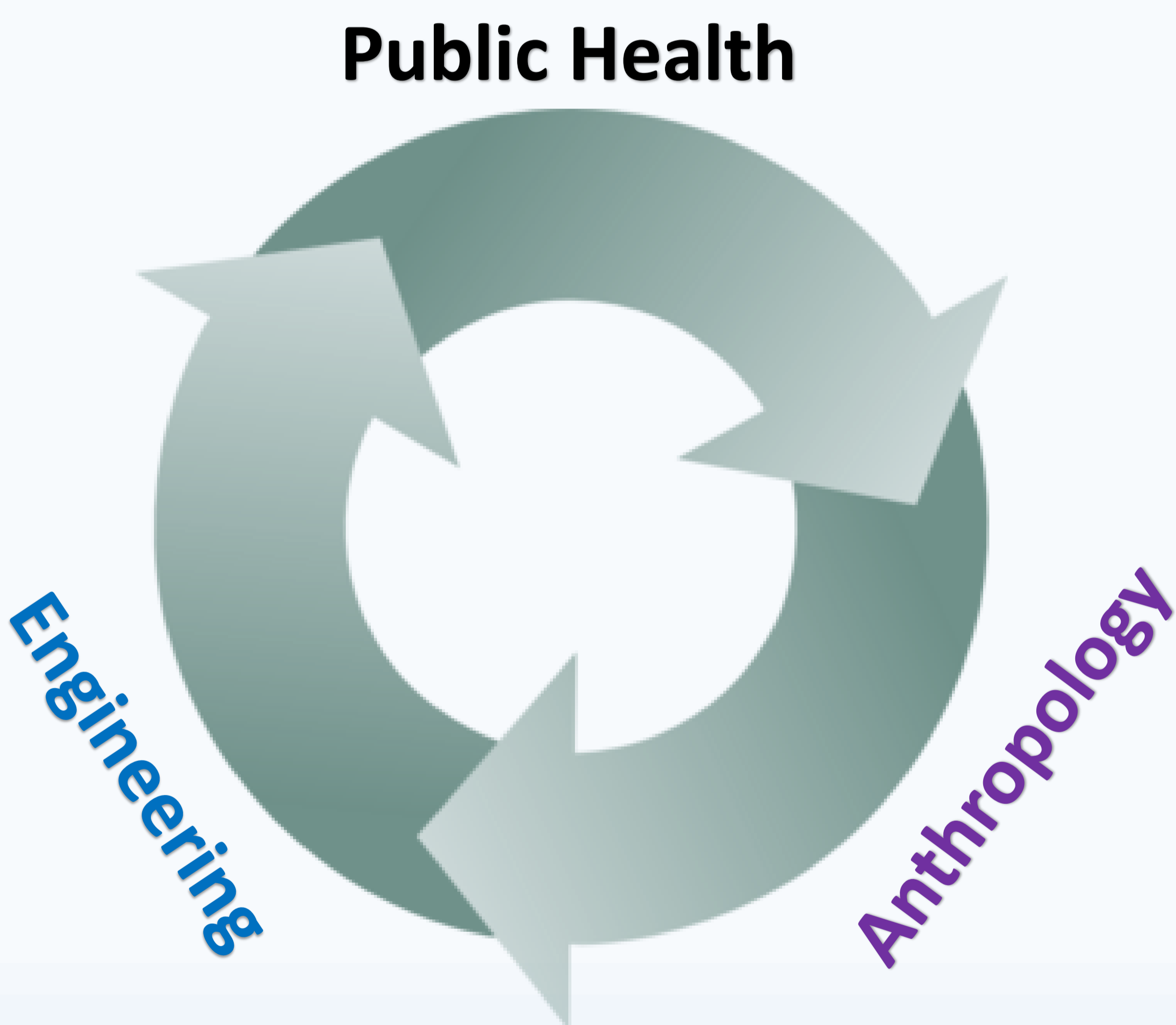
<sup>1</sup>Aarhus University, Department of Public Health, Section of Environment, Occupation and Health, <sup>2</sup>Aarhus University, Department Engineering Science, Indoor Climate and Energy, <sup>3</sup>Aarhus University, Department of Engineering Science, Construction Management, <sup>4</sup>Aarhus University, Department of Engineering Science, Civil and Architectural Engineering, <sup>5</sup>Aarhus University, Department of Engineering Science, Tectonics, <sup>6</sup>Alexandra Institute, Denmark

## Background

People spend 80-90% of their time indoors and 16h of these in their own home, why the extent of exposures from the indoor climate is of great importance to their health and comfort. Some energy renovation projects have led to impaired indoor climate. In order to avoid negative impact on health from energy renovation projects, it is crucial to investigate outcomes from current renovation projects. To achieve in-depth knowledge ReVALUE/BE-READY apply a mixed method approach and combine research from public health, engineering and anthropology. This methodology is novel in Danish field studies.

## Aim

Add knowledge to whether this type of methodology, improve the validation and characterization of dominant determinants of exposure from the indoor climate on the risk of health. Evaluate an energy renovation project and its impact on indoor climate and health.



## Acknowledgements

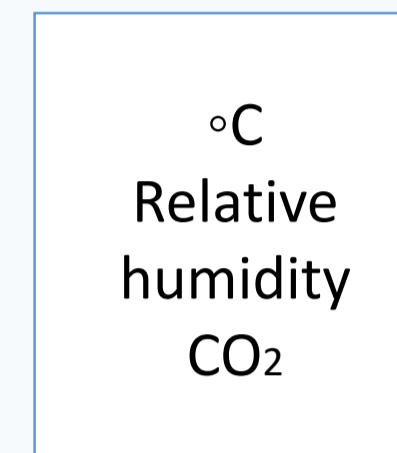
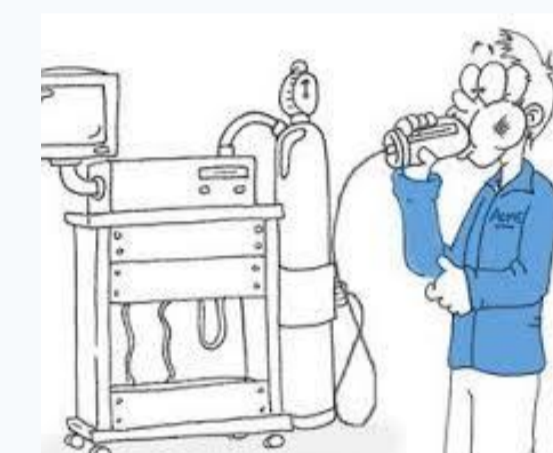
Innovationsfonden, Realdania, Brabrand Boligforening, Fyns Almennyttige Boligselskab, Boligforeningen Ringgåden, The former Ministry of Housing, Urban and Rural Affairs, Helhedsplanen Gellerup og Toveshøj, Helhedsplanen Trigeparken, AART, Alexandra Institutet, Airmaster, Amplex, DEAS, Develco Products, Enemærke & Petersen A/S, Idealcombi, Racell and Wicotec Kirkebjerg

## Before energy renovation (2017/2018)

### Subjective measures



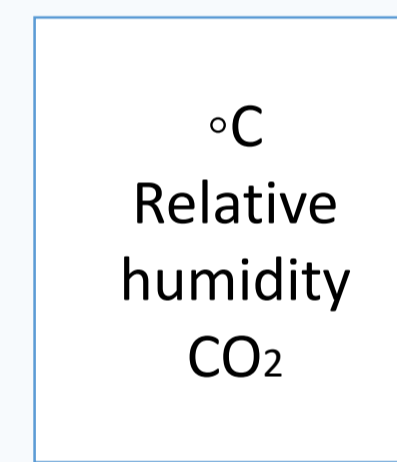
### Objective measures



Questionnaire and anthropologic interview Spirometry and indoor climate measures

## 1 year after energy renovation (2019/2020)

### Subjective measures



Questionnaire and anthropologic interview Spirometry and indoor climate measures

## Analyses and results

Analysis is based on a concurrent triangulation with mixed methods to compare research results and evaluate homogeneity between research methods and achieve in-depth knowledge. Currently the study includes 150 apartments with one participant from each home. Preliminary results indicate partial homogeneity between results and their home is not ventilated as much as they experience.

## References

- Skovgaard et al., *Indeklima og sundhed i boliger*, Realdania. 2016:32, Danmark
- Statens Byggeforskningsinstitut. *Indeklimaet påvirkninger – temperature, Lyd, Lys, Støv, Gasser, Fugtighed, Radioaktivitet, Elektricitet og Ventilation*; 1993
- Howe, Kenneth R., 2012, "Mixed methods, Triangulation, and Causal Explanation", *Journal of Mixed Methods Research* 6(2)89-96