

Effect of the type of clay and substitution materials on the physico-mechanical properties of compressed earth blocks (CEBs)

Philbert Nshimiyimana, Adamah Messan, Luc Courard

philbert.nshimiyimana@2ie-edu.org; pnshimiyimana@doct.uliege.be

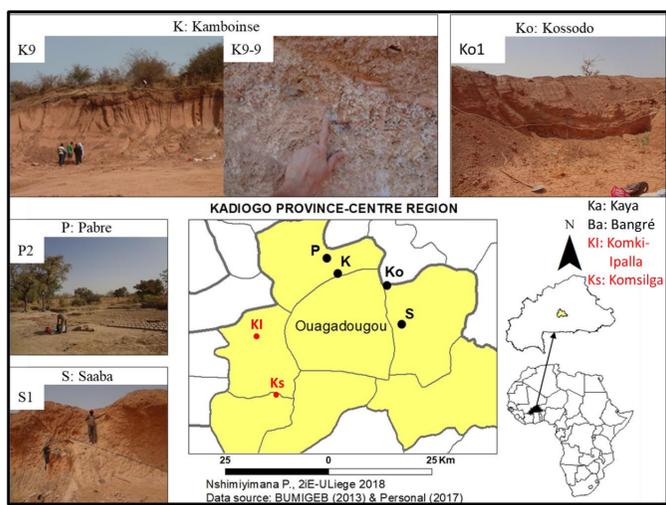
PARTENERS



ABSTRACT/CONTEXT

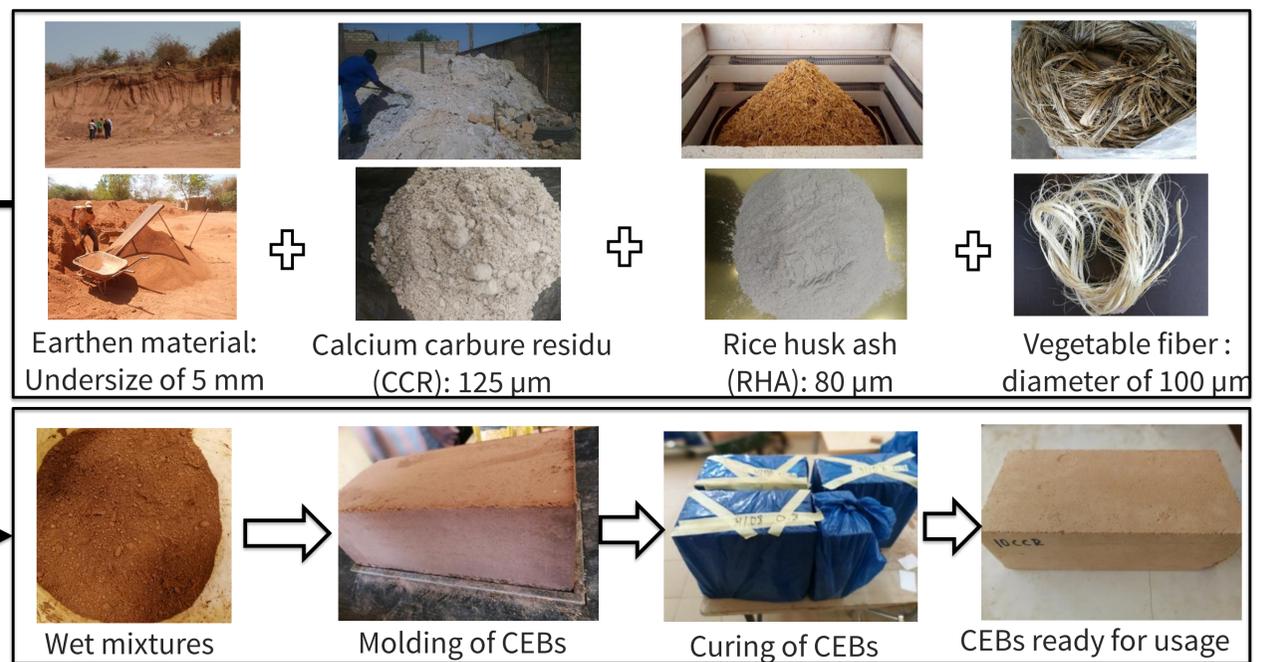
This thesis is part of a research and development project « *Improving the quality of earth based housing in Burkina Faso: PRD2016-2021*»; based on 3 approaches “Material”, “Architecture” and “socio-economic” analysis of earth based materials, usually considered “less modern” and “less durable”. The material approach, developed in this thesis, aims to improve the performances of CEBs produced from earthen materials stabilized by agro-industrial by-products locally sourced in the vicinity of Ouagadougou, capital city of Burkina Faso. By-product materials improved the mechanical and hygrothermal properties and durability of CEBs.

1. RAW MATERIALS

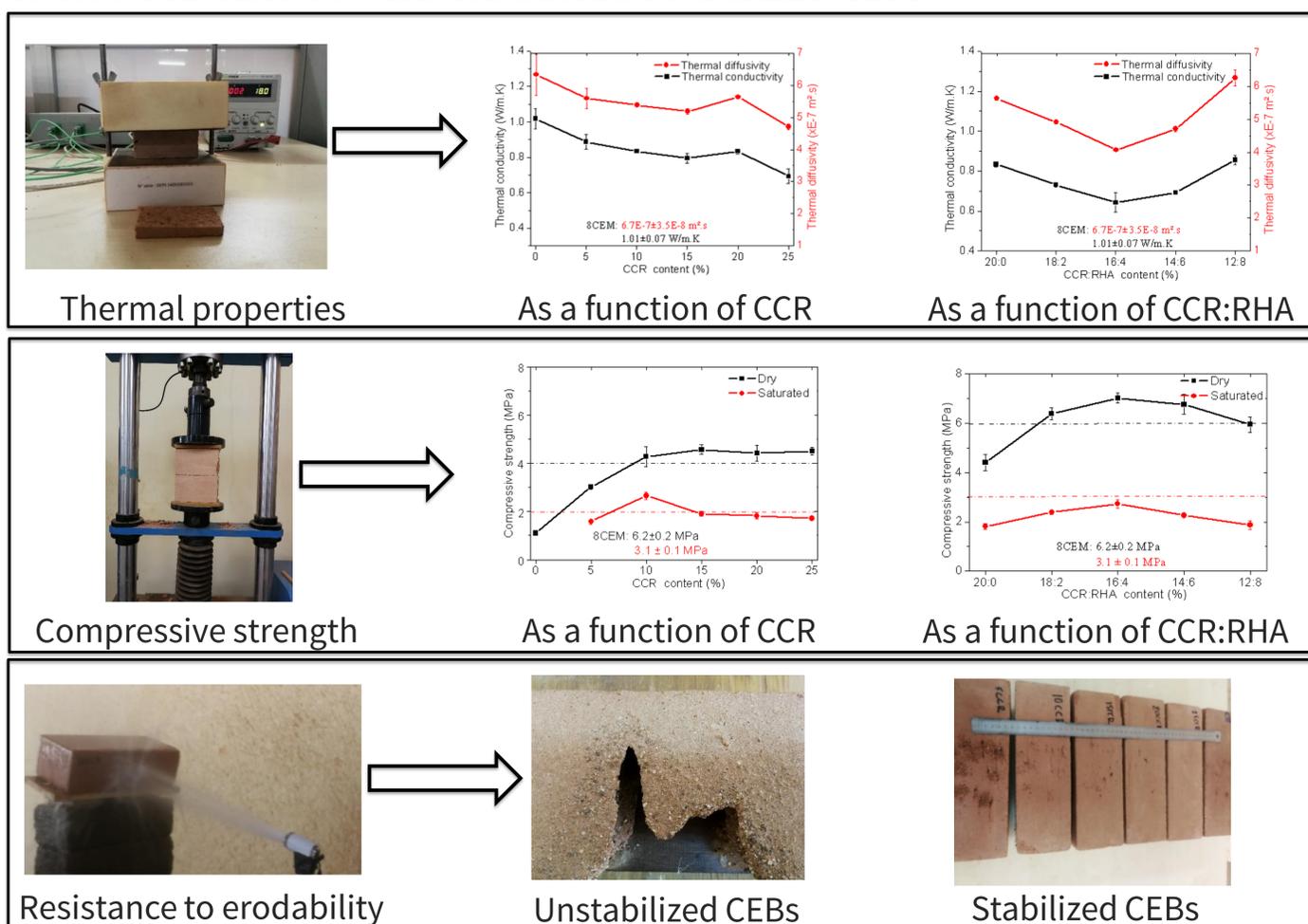


Availability of clayey earthen materials in the vicinity of Ouagadougou.

2. TREATMENT OF THE RAW MATERIALS & PRODUCTIONS OF CEBs



3. IMPROVEMENT OF PERFORMANCES STABILIZED CEBs



CONCLUSIVE REMARKS

- ✓ By-products (CCR & CCR:RHA) **improve the thermal properties** of CEBs by decreasing their thermal conductivity and diffusivity;
- ✓ By-products (CCR & CCR:RHA) **improve the mechanical** of CEBs by increasing their compressive strength for usage in construction of at least **two-storey building**;
- ✓ By-products (CCR & CCR:RHA) **improve the durability** of CEBs by reducing their erodability.