



Politecnico
di Torino

AY 2022-23

GREEN BUILDING DESIGN A (AKA **Design within the limits of scarcity**)

PEOPLE

Architectural Design

Matteo Robiglio

DAD +FULL

Roberta Ingaramo

Elena Guidetti

Architectural Technology

Francesca De Filippi

DAD + FULL + CRD-PVS

Roberto Pennacchio

(Research Centre on Habitat in the Global South)

Building Physics

Marco Simonetti

DENERG «Galileo Ferraris» +

Stefano Fantucci

EC lab + FULL

Guests

Michele Di Marco

Anna Silenzi



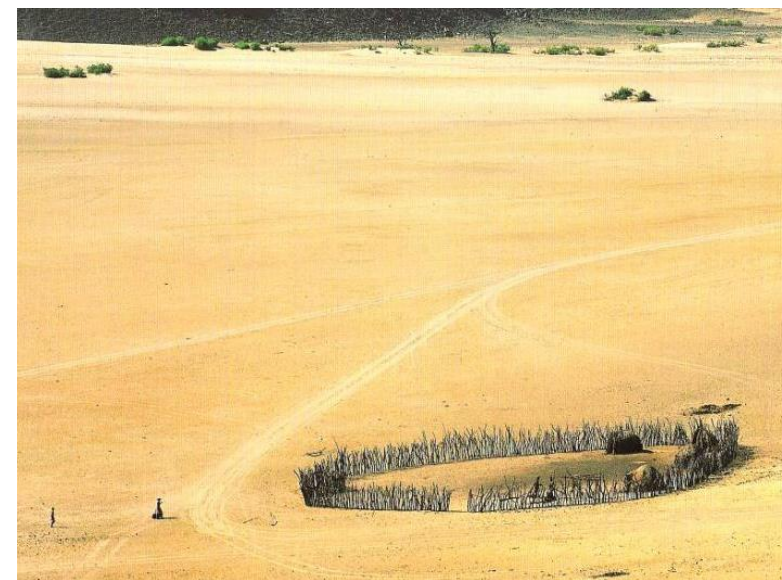
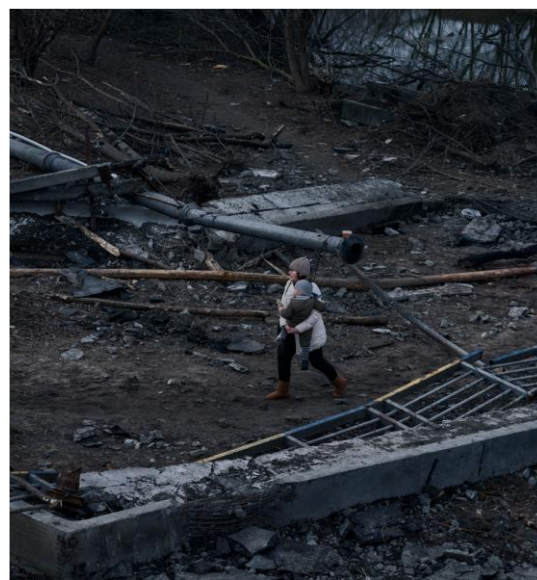
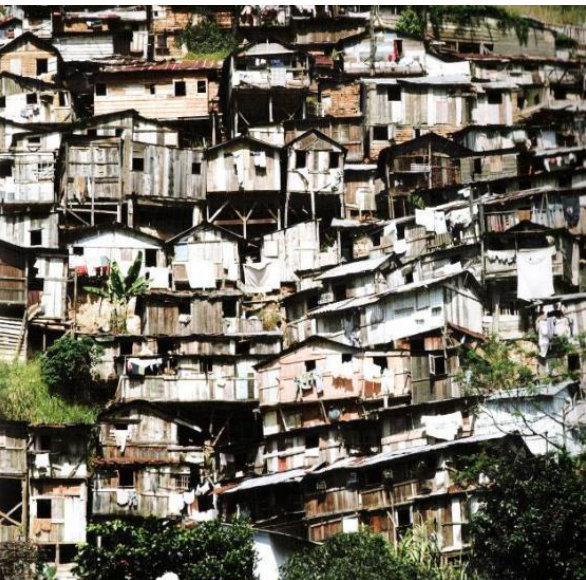
World Health
Organization

téchne
technical science
for health
network

THEME

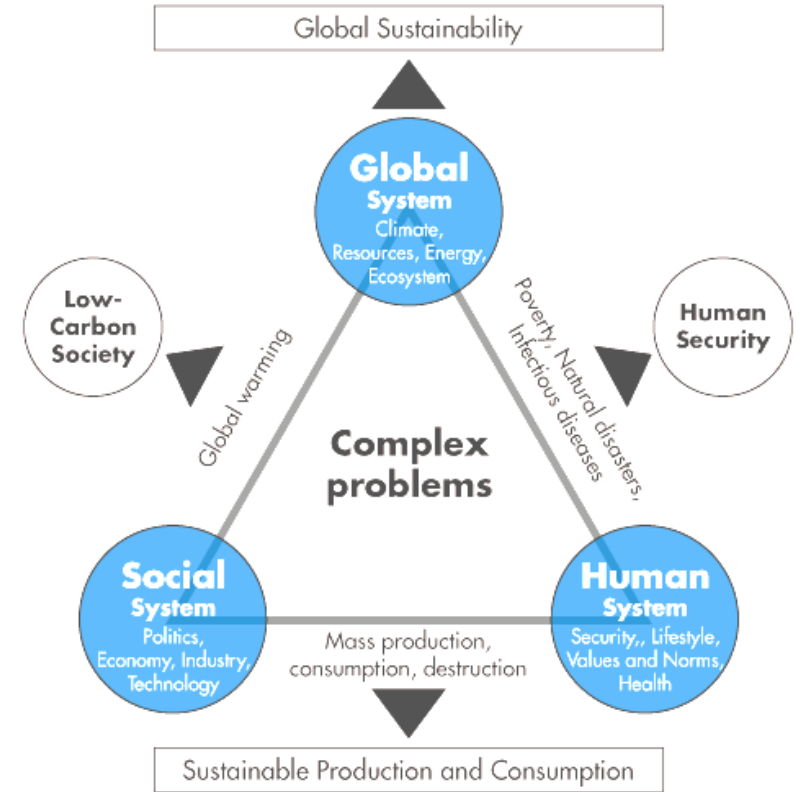
The **STUDIO** will explore the concept of **scarcity** and its relationship with **creativity** and **design**

- constraints = from limitations to design
- use of available resources to get appropriate solutions



TOPICS

- Human-centred design
- Design for/in emergencies
- Low tech/ high performance architecture
- Assisted/self-help construction
- Community participation
- Sustainable architecture
- Bioclimatic control design
- Safe and healthy environment





THIS YEAR CASE STUDY:

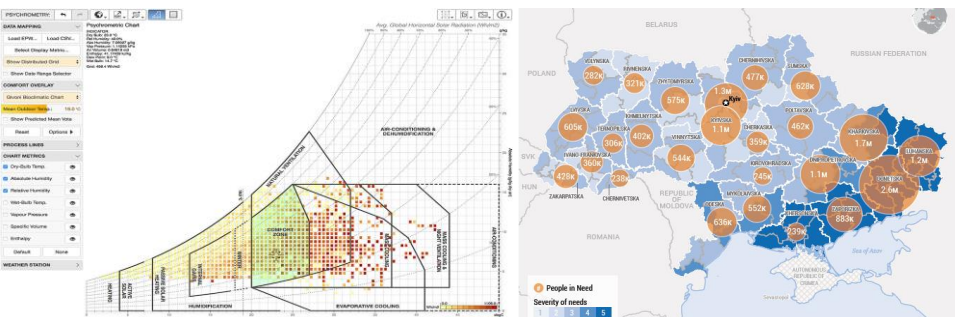
Post-conflict reconstruction of primary health care (PHC) facilities in Ukraine



Objectives:

- To provide access to primary healthcare facilities to communities that are under-served and have limited access to healthcare
- To promote the design and construction of functional and sustainable primary health care facilities in Ukraine
- To encourage architects, engineers and designers to think creatively about the unique challenges of designing primary health care facilities specifically for the Ukrainian context
- To raise awareness about the importance of primary health care and its impact on communities in Ukraine

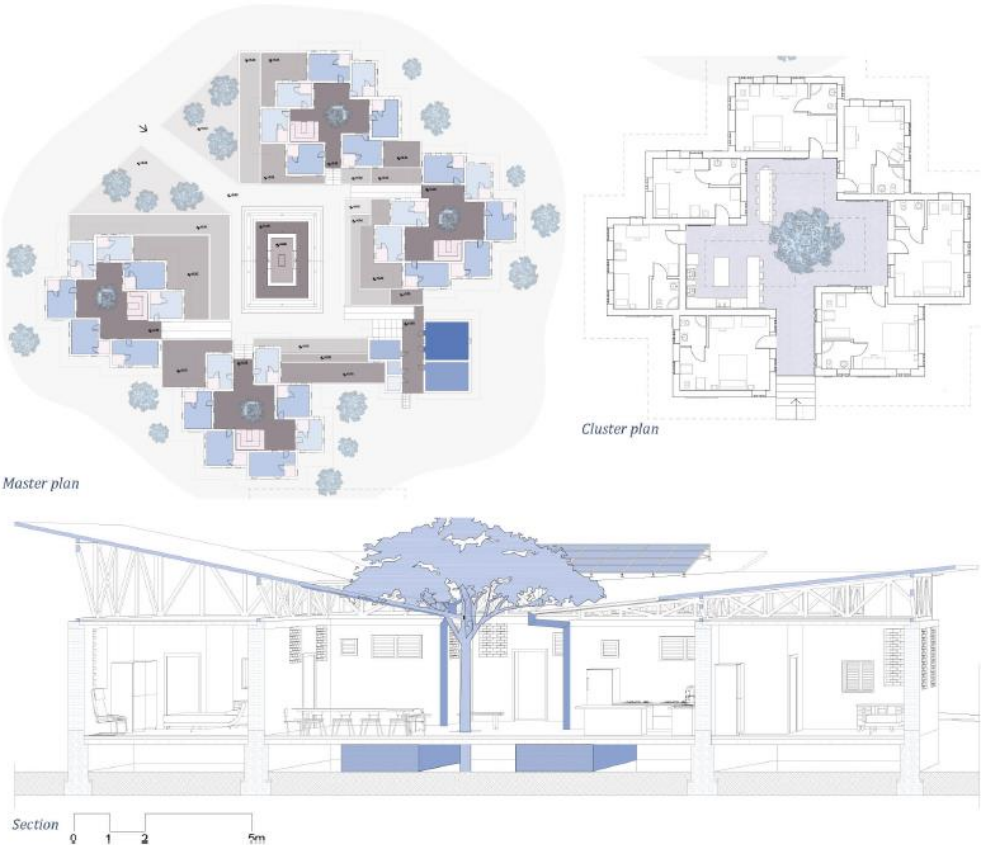
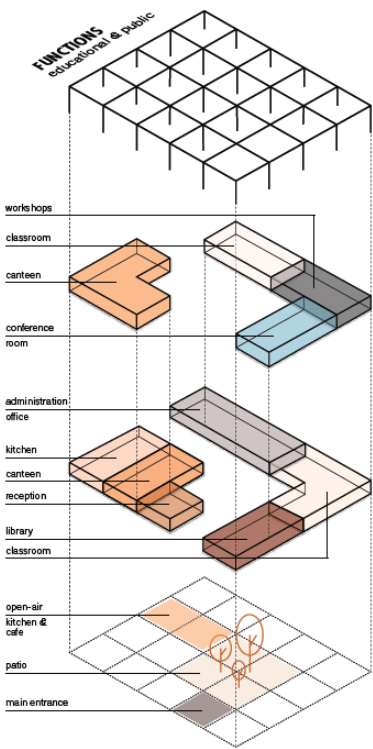
Context analysis



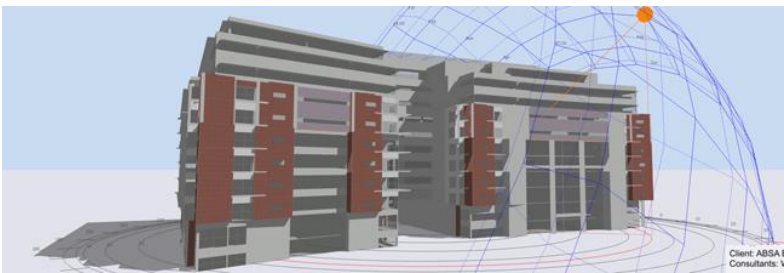
Methods

Design

Program



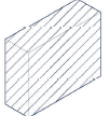
Numerical simulations (energy, comfort, healthy environment)



Performance assessment and comparison

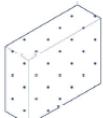
Tested Materials.

Compressed Earth Block



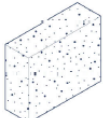
$\lambda=0.1 \text{ W/(m.K)}$
 $C=680 \text{ J/kg.K}$
 $d=750 \text{ kg/m}^3$

Adobe



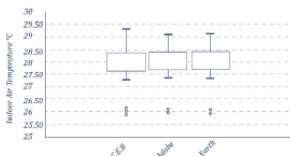
$\lambda=0.7 \text{ W/(m.K)}$
 $C=1000 \text{ J/kg.K}$
 $d=1800 \text{ kg/m}^3$

Rammed Earth

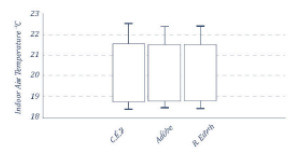


$\lambda=0.5 \text{ W/(m.K)}$
 $C=890 \text{ J/kg.K}$
 $d=1540 \text{ kg/m}^3$

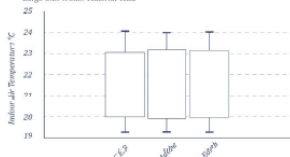
Medium Unit Winter Material Tests



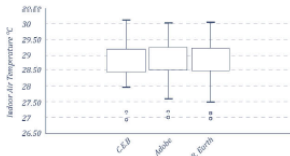
Medium Unit Summer Material Tests



Large Unit Winter Material Tests



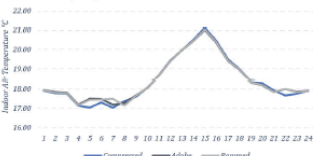
Large Unit Summer Material Tests



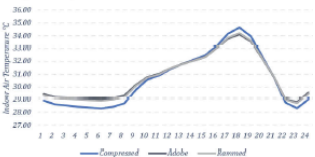
Medium Unit, 18 September



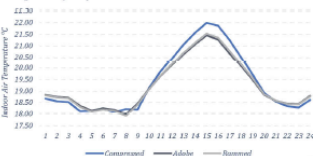
Medium Unit, 22 January



Large Unit, 18 September

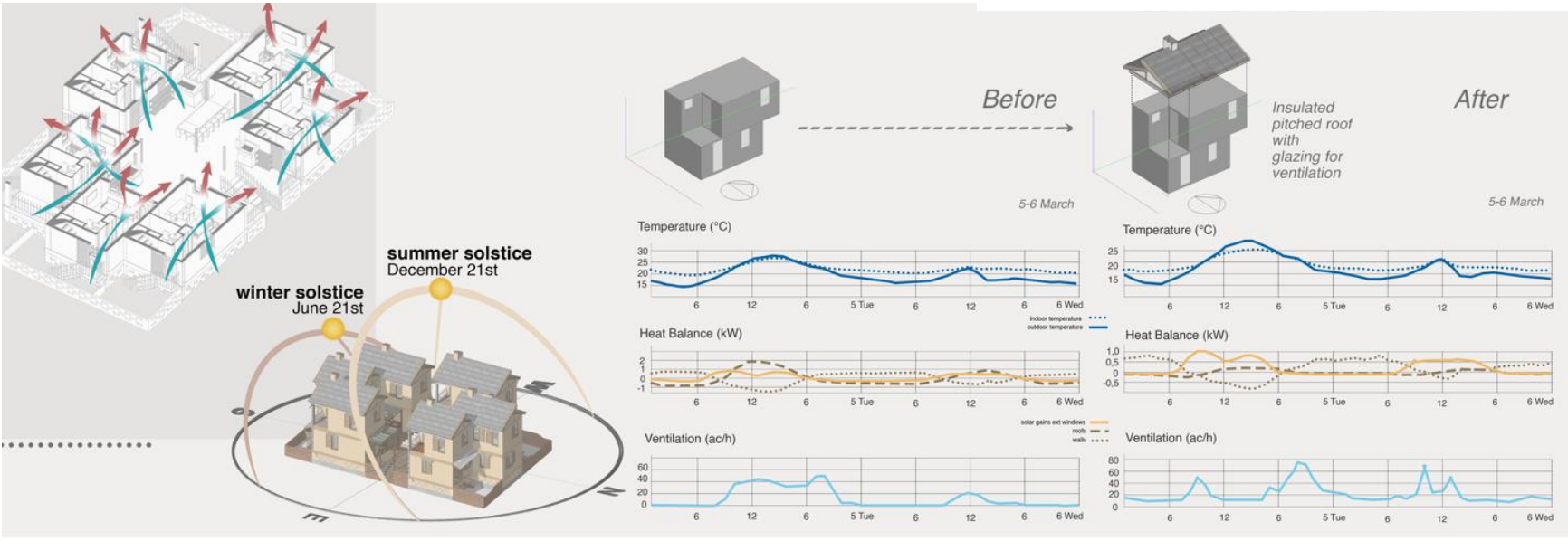
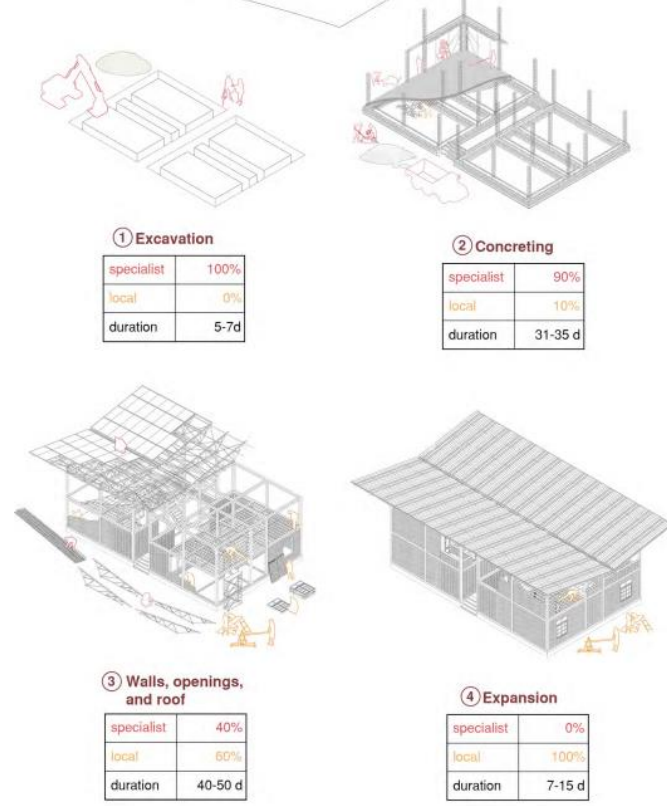
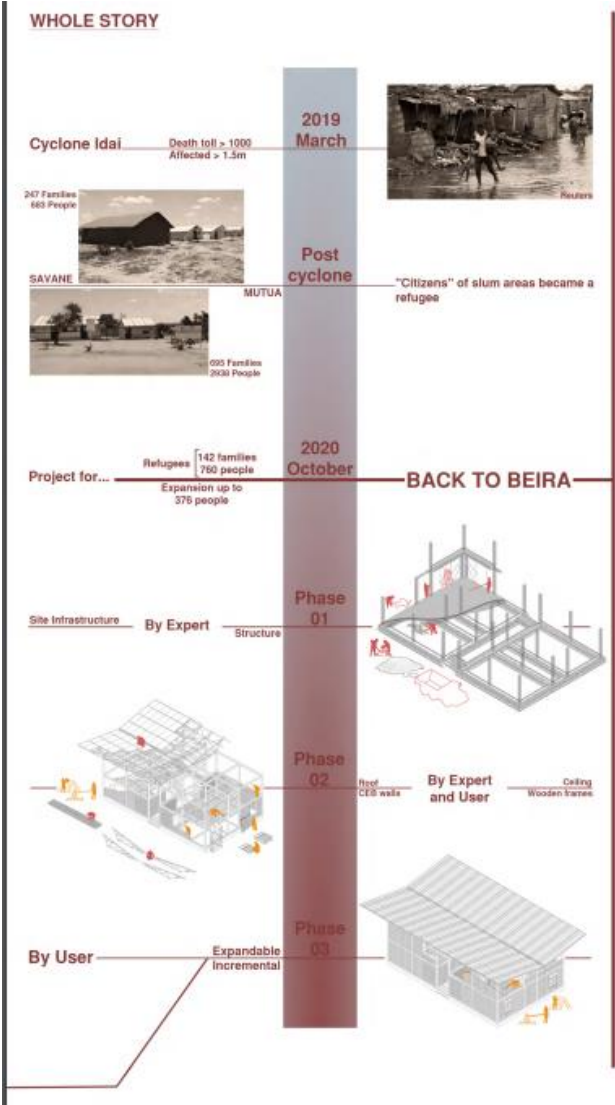


Large Unit, 22 January



A previous edition BEIRA - Mozambique

Studio Blog : <https://backtobeira.wordpress.com/>





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AA 2021-22

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