

ECONOMIC PROSPECTS OF REHABILITATION OF UCH ASSETS IN PORTUGAL SEISMIC REPAIR-COST FUNCTIONS

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OUTLINE

INTRODUCTION

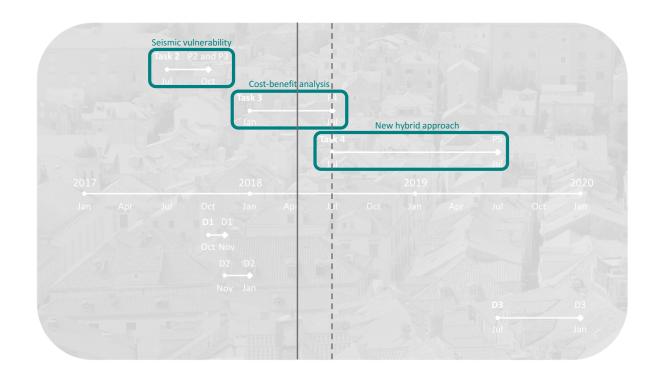
THE CONTEXT OF URBAN REHABILITATION IN PORTUGAL

SEISMIC REPAIR-COST FUNCTIONS

SEISMIC STRENGTHENING COSTS

MAIN CONCLUSIONS

FUTURE DEVELOPMENTS



TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIALS

EXTERNAL WALLS





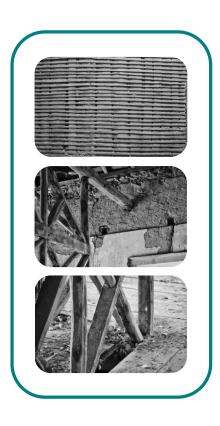


TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIALS

INTERNAL WALLS







TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIALS

HORIZONTAL STRUCTURE



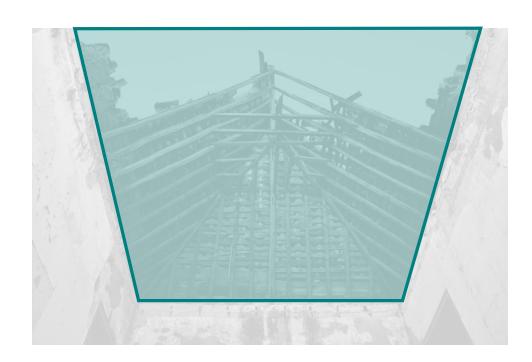


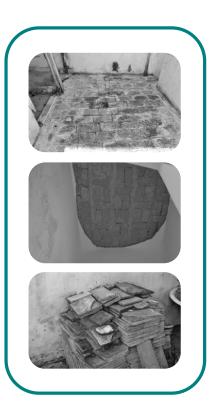


TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIALS

HORIZONTAL STRUCTURE







TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIALS

OTHER ELEMENTS



URBAN CULTURAL HERITAGE ASSETS

ACCREDITED CULTURAL VALUE

TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIALS

PREFERENTIALLY OF RESIDENTIAL USE

LOCATED WITHIN HISTORICAL CENTRES

RELATIVELY REGULAR BOTH IN-HEIGHT AND IN-PLAN

THE CONTEXT OF URBAN REHABILITATION IN PORTUGAL

WHAT HAS BEEN DONE?





- 22% in ruin or derelict
- 18% renovated.

THE CONTEXT OF URBAN REHABILITATION IN PORTUGAL

WHY IS THIS HAPPENING?

ACCEPTED FACTS:

- MODERN CONSTRUCTION TECHNIQUES ARE FAR MORE AUTOMATED AND THEREFORE REQUIRE FEWER RESOURCES;
- THE MAJORITY OF PROFESSIONALS LACK EXPERTISE ON HOW TO USE AND WORK WITH TRADITIONAL TECHNIQUES AND MATERIALS;

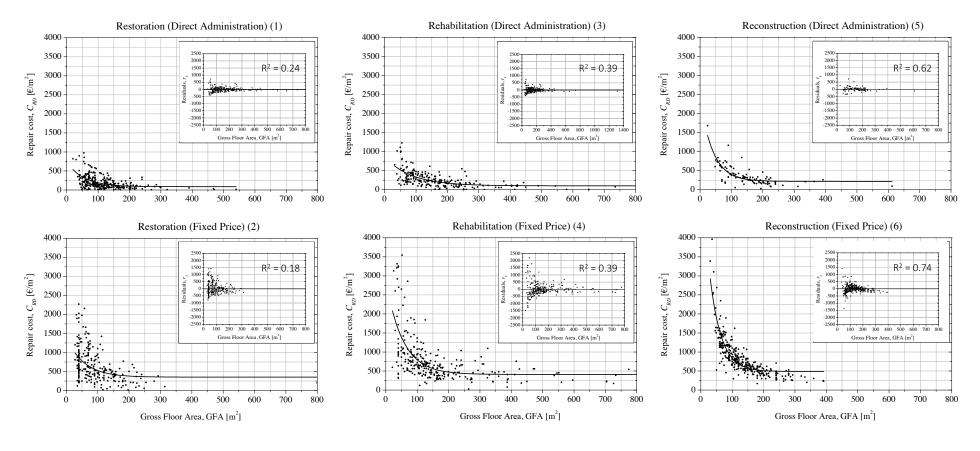
QUESTION MARKS:

- IS THE REHABILITATION OF UCH ASSETS BY USING TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIALS MORE ECONOMIC THAN "FAÇADISM" INTERVENTIONS?
- ARE THEY CAPABLE OF MEETING TODAY'S DEMANDS IN TERMS OF BOTH COMFORT AND STRUCTURAL/SEISMIC PERFORMANCE?
- MODERN CONSTRUCTION TECHNIQUES AND MATERIALS REQUIRE MORE OR LESS MAINTENANCE OVER TIME?

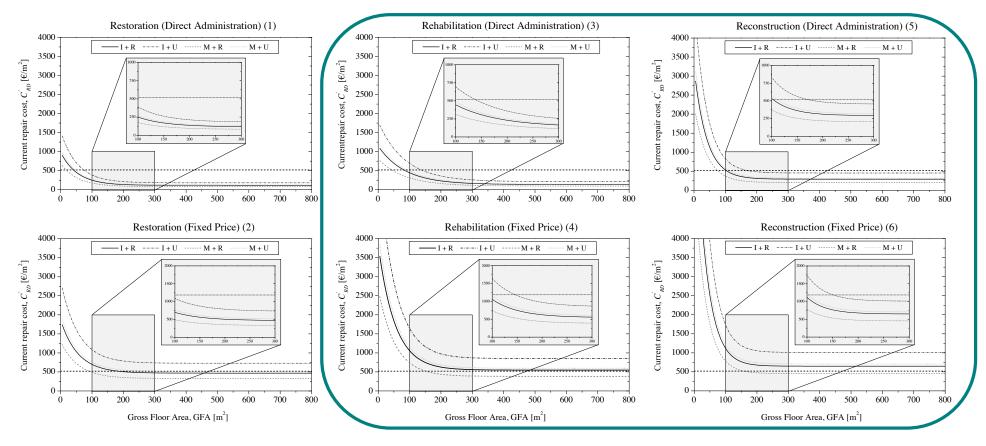
THE 1998 AZORES EARTHQUAKE DATABASE



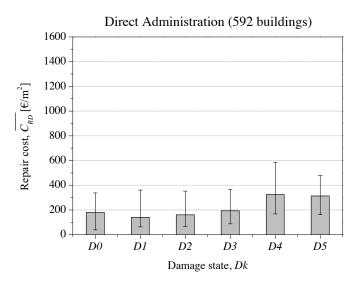
REPAIR COSTS vs GFA

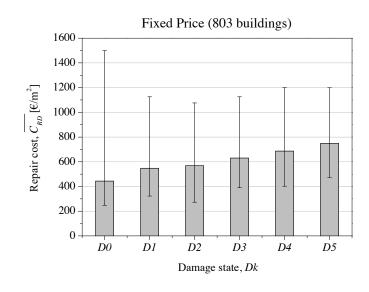


CURRENT REPAIR COSTS vs GFA



REPAIR COST vs DAMAGE STATES











D2 – Moderate damage



D3 – Heavy damage

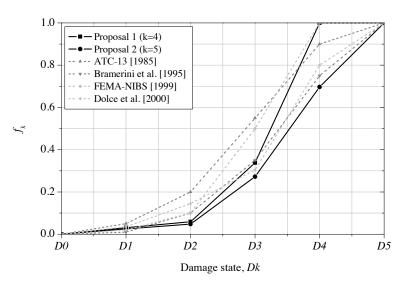


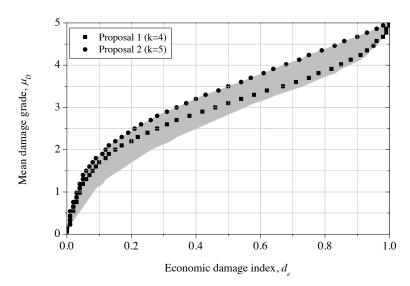
D4 – Very heavy damage



D5 - Collapse

REPAIR COST vs DAMAGE STATES















D1 – Slight damage

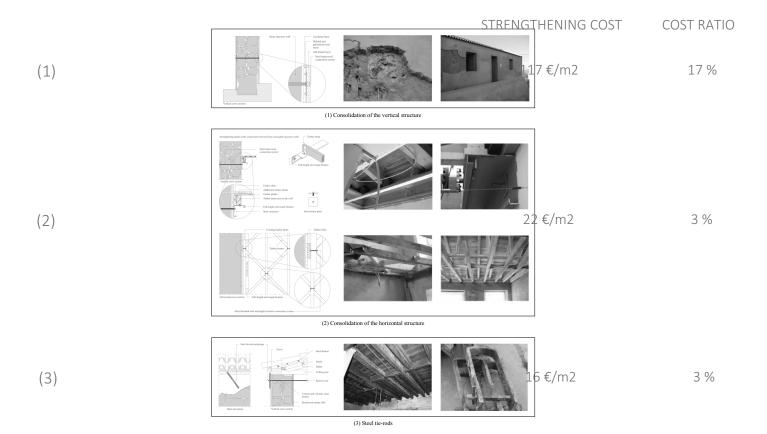
D2 – Moderate damage

D3 – Heavy damage

D4 – Very heavy damage

D5 - Collapse

SEISMIC STRENGTHENING COSTS



FINAL REMARKS

THE REHABILITATION OF UCH ASSETS BY USING TRADITIONAL CONSTRUCTION TECHNIQUES AND MATERIAL IS NOT NECESSARILY MORE EXPENSIVE THAN RESORTING TO MODERN TECHNOLOGIES

THESE REPAIR COST FUNCTIONS CAN BE EXTREMELY USEFUL FOR ACADEMIC PURPOSES AND STUDIES TO COME, AS WELL AS TO RAISE THE AWARENESS OF ALL STAKEHOLDERS INVOLVED IN THE REHABILITATION OF OUR BUILDING STOCK TO THE IMPORTANCE OF:

PRESERVING THE INTEGRITY OF HISTORICAL CENTRES AND OF UCH ASSETS BY CARRYING OUT INTERVENTIONS RESPECTING TRADITIONAL CONSTRUCTION TECHNIQUES AND EXISTING MATERIALS.

INTEGRATING SEISMIC STRENGTHENING DESIGN INTO SUCH INTERVENTIONS AND THE EVENTUAL CONSEQUENCES OF NOT DOING SO.

FUTURE DEVELOPEMENTS

VALIDATION WITH NEW DATA FROM CURRENT REHABILITATION COSTS

ENLARGE THE SAMPLE TO CALIBRATE THE SEISMIC STRENGTHENING COSTS

PERFORM COST-BENEFIT ANALYSES

BRING THE PATRIMONIAL VALUE OF UCH ASSETS INTO DISCUSSION



THANK YOU FOR YOUR ATTENTION

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