

AGENT-BASED MODELING FOR STUDYING THE CHOICES OF HOUSEHOLDS IN SWITZERLAND

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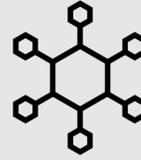
CURRENT ISSUE IS:

1/3 of the global final energy consumption and CO2 emissions comes from buildings: housing plays a fundamental role in the transition towards a more sustainable society.

The discrepancy between the demand and the supply in the market trends of rental apartments in Switzerland is an obstacle to this transition. Reasons for this mismatch have been identified:

- Lack of acceptability and acceptance
- Mismatch between building durability and changing lifestyles
- Resistance to innovation from the housing providers

THERE IS A NEED FOR:



Gap 1

interdisciplinary framework
systemic approach



Gap 2

simulation of scenarios
stakeholders' involvement



Gap 3

practical tools
implementable solutions

RESEARCH QUESTIONS ARE:

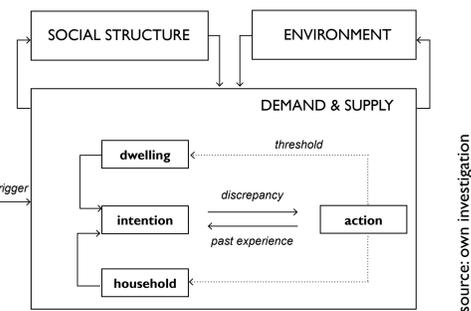
RQ1 How to integrate households' decision patterns and the priorities of housing providers?

RQ2 Which tools can be provided to each actor of the housing sector?

The aim of this research is to feed and develop a model representing the way households make decisions concerning their residential situation.

Based on the model, solutions are evaluated and proposed, supporting the transition towards housing sustainability in Switzerland.

HOW DOES IT WORK?



source: own investigation

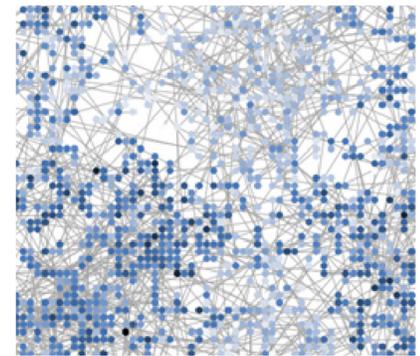
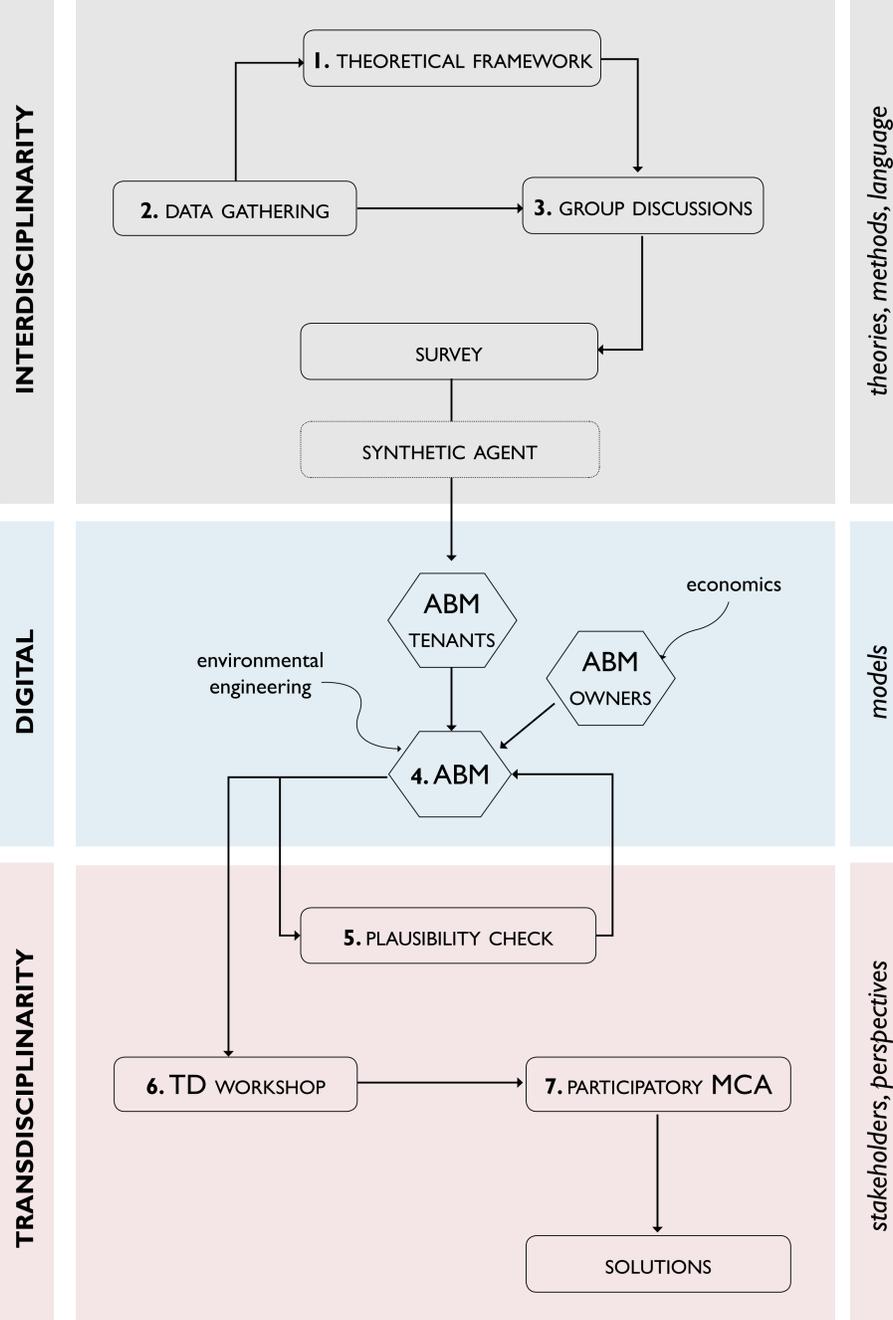
1. INTERDISCIPLINARY THEORETICAL FRAMEWORK
Psychology, sociology



2. & 5. DATA AND KNOWLEDGE EXCHANGE
Mobiliar and the technical administrations



3. GROUP DISCUSSIONS
Partners' tenants in Vaud and Zurich



4. TRANSDISCIPLINARY ABM
Integration of ABMs and plausibility check



6. DEVELOPMENT OF MEASURES
Transdisciplinary workshop Forum Thun



7. ASSESSMENT OF THE SCENARIOS
Participatory Multi-Criteria Assessment

DESIGNING NEW SOLUTIONS: OPPORTUNITIES AND CHALLENGES

INTERDISCIPLINARITY

- Interdisciplinary framework representing the factors that influence tenants' decisions where and why to move.
- Group discussions (qualitative methods) with the tenants of our partners to test and enrich the framework.
- Co-design of a survey (quantitative methods) in order to provide a base for the model.

CHALLENGE: theories and methods integration, shared language

DIGITAL

- Collaborative framework operationalization and feeding of the model with survey data.
- Households' and Owners' ABM integration into a collaborative ABM performing LCA of the buildings for the dynamic quantification of the building stock environmental impact.

CHALLENGE: complexity of modeling tools, disciplinary integration

TRANSDISCIPLINARITY

- Model plausibility check with project partners.
- Measures design in a transdisciplinary workshop: simulations based on measures and/or desired performance of indicators.
- Scenarios assessment with housing stakeholders, using a Participatory Multi-Criteria Assessment (PCMA).

CHALLENGE: stakeholders' coordination, perspective integration