Retrofit: How global minding help overcoming individual barriers?

**Scoping study on benefits of building energy retrofitting at a district level instead of an individual one**

**Case Study**

- **Individual** Reflection
  - A new building envelope is laid around the existing building.
  - Prefabricated module integrates ventilation and distribution systems.

- **Global** Reflection
  - A new building envelope is laid around the existing building.
  - Prefabricated module integrates ventilation and distribution systems.

### Benefits of a Systemic District Scale Approach

- **Concept**
  - Lower retrofitting duration / Multifunctional module

### Systemic Approach at District Scale

- **The whole supply chain should be automated**

### Comparative Study

- **Building 1**
  - Individual energy + individual air-source heat pumps
  - Global energy + Global district heating with centralised geothermal heat pumps
  - Significant heating potentials and synergies exploitation

- **Building 2**
  - Individual energy + individual air-source heat pumps
  - Global energy + Global district heating with centralised geothermal heat pumps
  - Significant heating potentials and synergies exploitation

### Impact on Life Cycle Cost

- **Global Approach**
  - Significant cost reductions when considering the whole lifecycle cost (investment + operation)

### Systemic Approach

- **On synergies exploitation**
  - Significant heating potentials and synergies exploitation

### Retrofitting Duration

- **Systemic Approach**
  - Significant improvements in terms of duration

### Energy System Design and Operation

- **Global Approach**
  - Significant heating potentials and synergies exploitation

### What about people and their decision?

- **Demonstrator**
  - Technical, Operation, Financing system, Investors

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**RenQuart**

- **Center in Energy and Municipal Research (CREM), Martigny, Switzerland**

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**Identification of Best Opportunities**

- Retrofit rate is smaller than 1% per year.

**Dynamic Methodology**

- **RenQuart Center in Energy and Municipal Research (CREM), Martigny, Switzerland**

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**Limitations and Innovations of Thermal Building Retrofitting**

- **Facts of Artisanal Building Retrofitting**
  - Lower investment costs.
  - Higher productivity.
  - Enhancement of the retrofitting processes.
  - A completely new approach?

**Research Programs and Existing Solutions**

- Dealing with this situation, the industrialization of thermal retrofitting is one of the alternatives considered at this time.

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**On Synergies Exploitation**

- Significant heating potentials and synergies exploitation.

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**What is Necessary**

- Lower investment costs.
- Higher productivity.
- Enhancement of the retrofitting processes.
- A completely new approach?

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**Mapping of buildings constructed between 1945 and 1980**

- Buildings with worst energy performances present the least architectural constraints.

- In addition, they represent the biggest part of SRE built (~30-40%).

- Systemic approach to district scale, taking benefits of complementarities between different heat demand load curves, lead to more efficient solutions.