Switzerland‘s building programme

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Background

- Over 40% of Switzerland's energy consumption and CO$_2$-emissions are due to the building sector
- 1.5m buildings are in need of refurbishment (in absolute numbers: 3.8m) but only 1% of the buildings are energetically re-furbished yearly
- Constraints: investment costs, administrative costs, lack of knowledge etc.

  ⇔ High potential for energy efficiency and CO$_2$ reductions!

- Refurbishment programmes of the cantons
- 2005 – 2009: Swiss Climate Cent Foundation first building programme (175 Mio. CHF subsidies)
Politics

Switzerland's Building Programme
Switzerland's Building Programme

Introduction of the CO₂-tax on heating fuels

Investment of 100 Mio. CHF in the building sector

Revision of the CO₂-law

Implementation of the revised CO₂-law and the ordonnance
Organisation

- Federalism: constitution gives the cantons the main responsibility for building regulations
- Building renovation programme = divided into two parts:
  
  **A**
  Refurbishment of building shells (Agreement)

  **B**
  Renewable energies, waste heat recovery building services engineering (additional)

  200 Mio. CHF / year starting from 2014, 300 Mio. CHF / year possible
Financing

CO2 levy

1/3 of CO2 levy but max. 200 Mio CHF/a = amount RBPR

RBPR

Double the subsidies dedicated to the Subprogram B by the cantons but max. 1/3 of amount RBPR (ca. 67 Mio CHF/a)

Cantonal Budgets

By the cantons dedicated subsidies to the Subprogram B

min. 2/3 of amount RBPR (ca. 133 Mio CHF/a)

Sub-program A

dedicated to refurbishing existing buildings

Contracts with an attorney of all cantons

Sub-program B

dedicated to heating systems, use of waste heat, and services engineering

Contracts with every single canton (26)

RBPR = Refurbishment Building Program
Key data

• Duration of the programme: min. 10 years
• Common programme of the Confederation and the cantons
• Funds: 200 Mio. CHF / year + cantonal budgets (~100 Mio. CHF), starting from 2014…
• CO₂-reduction 2020: 1.5 - 2.2 Mio. t CO₂
• Triggering of yearly investments of ~ 1 Mia. CHF (~10’000 refurbishments)
Requirements

- Buildings have to be
  - built before 2000
  - heated
- Minimum standards of insulation materials and technologies have to be fulfilled (U-Values; fixed subsidy per m$^2$)
- Application for subsidies has to be made before the start of construction
- The subsidy per application has to be at least 3’000 CHF
- Remuneration only after handing in confirmation statements from building companies
Subsidies

- Roofs, walls, floors: 15% of the investment cost are covered
- Windows: 5% of the investment costs are covered

Additional savings through lower energy costs!
## Subsidies

<table>
<thead>
<tr>
<th>Measure</th>
<th>Requirements</th>
<th>Subsidies</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: replacement of the windows</td>
<td>U-value glass $\leq 0.7$ W/m$^2$K</td>
<td>30 CHF / m$^2$</td>
</tr>
<tr>
<td>B: walls, roof, floors</td>
<td>U-value $\leq 0.20$ W/m$^2$K</td>
<td>30 CHF / m$^2$</td>
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<tr>
<td></td>
<td>Insulation towards outside</td>
<td></td>
</tr>
<tr>
<td>C: walls, roof, floors</td>
<td>U-value $\leq 0.25$ W/m$^2$K</td>
<td>10 CHF / m$^2$</td>
</tr>
<tr>
<td></td>
<td>Insulation towards unheated rooms</td>
<td></td>
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</tbody>
</table>

_U-value = loss of heat of a building element at a difference in temperature of 1 K_
Experiences 2010-2012 (3 Years)

- More than 500 Mio. CHF paid to house owner
- Around 1.5 TWh of energy saved per year / 40 TWh of energy saved over lifetime of the measures
- Around 300’000 tCO2 saved per year/ 8 Mio. tCO2 saved over the lifetime of the measures

Overwhelming demand for subsidies caused already two adaptations of the programme (increase of efficiency)
For further information

www.dasgebaeudeprogramm.ch (d, f, it)
Definition U-Wert
(Wärmedurchgangskoeffizient)

Der U-Wert ist der Maßstab der Wärmédämmung,
und ein Faktor zur Berechnung der Wärmemenge, welche durch einen Bauteil verloren geht.

Einheit: Watt je Quadratmeter und Kelvin (W/m²K)

Ungedämmte Wand

Gedämmte Wand

Je kleiner der U-Wert, umso besser die Wärmédämmung und umso geringer die Heizkosten

Je kleiner der U-Wert, desto größer der Spar-Wert!!