Energy efficiency in public buildings
potential and costs | challenges and opportunities

Within “Support for Low-Emission Development in South East Europe (SLED project)”

Aleksandra Novikova, PhD
Institute for Climate Protection, Energy and Mobility (IKEM)

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Why buildings in Albania?

- **Albania develops rapidly**
  - Need for secure, affordable and sustainable energy supply
  - Need to use these limited resources wisely

- **Energy demand in buildings is a challenge**
  - 34% of final energy consumption
  - 73% of electricity available for final energy consumption

- **Contracting Member of the Energy Community Treaty**
  - Achieving targets requires very ambitious policy efforts, and
  - Larger investment into demand-side energy efficiency
The present and the future

- **Present patterns of public buildings**
  - Only a part of the used floor area is heated
  - This floor area is heated for a few hours a day only
  - Many public buildings do not have sanitary hot water

- **The future will see an increased comfort and... higher energy consumption**
  - Larger floor area is heated for longer hours
  - Space cooling is desired
  - Hot water is available in all buildings
Albanian public buildings

- 6.6 million m²
- 75% educational, 13% offices, 11% hospitals
- Coast 57%, mountains 17%, moderate zone 25%
The only way to hurdle the BAU change is to retrofit

![Bar chart showing primary energy demand by type of building.](chart)

- **Climate zone: mountains**

<table>
<thead>
<tr>
<th></th>
<th>Present state</th>
<th>BAU renovation</th>
<th>Improvement 1</th>
<th>Improvement 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dormitory</td>
<td>70.6</td>
<td>81.0</td>
<td>36.0</td>
<td>27.4</td>
</tr>
<tr>
<td>Hospital</td>
<td>81.7</td>
<td>109.8</td>
<td>52.8</td>
<td>19.1</td>
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<tr>
<td>Kindergarten</td>
<td>45.2</td>
<td>50.7</td>
<td>28.5</td>
<td>17.4</td>
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<tr>
<td>Office</td>
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<td>51.6</td>
<td>20.9</td>
<td>15.2</td>
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<tr>
<td>School</td>
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<td>University</td>
<td>32.1</td>
<td>33.4</td>
<td></td>
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</tr>
</tbody>
</table>
Retrofits in the cold climate are the priority.
EE pays back especially through other co-benefits

- Investment need is EUR 0.5 billion

- Saved energy costs are EUR 0.5 billion over measure lifetime

- Monetized co-benefits are > EUR 0.5 billion i.e. higher than saved energy costs even though only a few were quantified
  - GDP increase, labour income, air quality, CO2 avoided, improved comfort
  - On the top, ca. 75 thousand job places could be created
Thank you!

- **Reports are available**
  - [http://sled.rec.org/building.html](http://sled.rec.org/building.html)

- **Models are available on request**
  - [aleksandra.novikova@ikem.de](mailto:aleksandra.novikova@ikem.de)

- **International experts**
  - Aleksandra Novikova, Tamas Csoknyai, Zsuzsa Szalay, Miklós Horváth
  - Jozsef Feiler, Agnes Kelemen, Vaiva Indilaite

- **Albania**
  - Gjergji Simaku, Teuta Thimjo, Thimjo Plaku, Rodon Miraj
IKEM – Institut für Klimaschutz, Energie und Mobilität e. V.
Magazinstraße 15 – 16, 10179 Berlin
www.ikem.de
Results: details

- **Investment need is EUR 500 million**
  - The highest investment on the national scale are required by kindergartens and schools followed by offices and hospitals.
  - If classified by climate zone, the largest investment is required in zone A.

- **Energy cost savings are EUR 29 million/yr. or EUR 502 million over measure lifetime.**
  - Almost 45% of it is in the zone A due to its large number of buildings.
  - Saved energy costs per m2 in the climate zone C are more than twice higher than those in the zone A and 65% higher than in the zone B.
  - The highest energy cost savings per m2 are offered by dormitories and hospitals.