Energy Performance Certification of Buildings and Energy Labelling of Appliances

Green Building Certification – Experience in the Field of Construction and Real Estate

INOGATE Project
“Energy Saving Initiative in the Building Sector in Eastern Europe and Central Asia” (ESIB)
Workshop Kiev/ Ukraine, 18th-19th January 2011

Steffen Sendler, General Director of Drees & Sommer/ Board Member of RuGBC
Green Building Certification
Dependence of Dynamics of Cost and Sustainability

Share of personnel engaged in construction –

Share of construction in GDP -

Share of construction, real estate and real estate related services in GDP -
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**Insufficient Sustainability as a Reason of Cost Reduction**

<table>
<thead>
<tr>
<th>Ecology</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No energy efficiency!</td>
<td>- Mono-structures!</td>
</tr>
<tr>
<td>- Use of toxic materials!</td>
<td>- No flexibility!</td>
</tr>
<tr>
<td>- Impact on environment!</td>
<td>- No efficiency!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Society</th>
<th>Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No city integration</td>
<td>- High investment costs</td>
</tr>
<tr>
<td>- Minimum participation of the society</td>
<td>- Extremely high operating costs</td>
</tr>
<tr>
<td>- Impact on a city environment</td>
<td>- Unbalanced use</td>
</tr>
</tbody>
</table>

There is no sustainability!
Green Building Certification
Prospects: Life Cycle

Life Cycle

- Commissioning
- Construction
- Revitalisation
- Operation
- Site
- Targets/market
- Analysis of the best use
- Functions/concept
- Plan of step-by-step implementation
- Design project
- Master-plan

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Prospects: Life Cycle

Knowledge

Costs

Scope of influence

Knowledge activation

Preparation | Planning | Construction execution | Commissioning | Use
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Prospects: Life Cycle

Costs of the whole life cycle* are the costs of a whole life cycle of a real estate facility.

- Costs of fixed assets higher than cost of a turnover capital
- Averaged norm of operating costs
- Costs of the whole life cycle*
- Factual costs higher than calculated ones
- Cost of fixed assets higher than cost of a turnover capital
- Costs of renewal of fixed assets
  - classification by cost groups
  - assessment of state based on a remaining normative lifetime
  - consideration of a restoration cycle within a period examined
- Operating costs
  - determination of an annual percentage
  - experimental / technical data
  - indexation with a price increase
- Costs of repair works
  - annual percentage
  - state of a building in accordance with forecasts
  - indexation with a price increase
Green Building Certification
Green Building System

World Green Building Council

LEED
BREEAM
DGNB
CASBEE

LEED
HQS
TERI-GRIHA

BCA
Green Mark

Green Star
Green Star NZ
Green Building Certification
Green Building System

- Ecological Quality
- Economical Quality
- Technical Quality
- Process Quality
- Location Quality
- Socio-Cultural and Functional Quality

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation in Design

- Management
- Health & Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Pollution
- Land Use & Ecology
Green Building Certification
Green Building System

- Ecology
- Economy
- Social Culture
- Processes
- Technology
- Location

<table>
<thead>
<tr>
<th></th>
<th>DGNB</th>
<th>LEED</th>
<th>BREEAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economy</td>
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<td></td>
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<tr>
<td>Social Culture</td>
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<td></td>
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<tr>
<td>Processes</td>
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<td></td>
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<tr>
<td>Technology</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Location</td>
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</tr>
</tbody>
</table>
Green Building Certification

DGNB

- Ecological quality (22.5%)
- Economical quality (22.5%)
- Social and cultural functional quality (22.5%)
- Technical quality (22.5%)
- Process quality (10.0%)
- Location quality
Green Building Certification
International Approach

Climate zones?
Technologies of construction?
Local materials?
Markets?
 Cultures?
…

The world is different!

In any case –
- Use of international experience
- Know how transfer
- Compatibility
- International progress
Green Building Certification
DGNB system – presentation of a new level

<table>
<thead>
<tr>
<th>Criterion No.</th>
<th>Detailed Evaluation</th>
<th>Acc. System Scores</th>
<th>Impact Factors</th>
<th>Criteria Results</th>
<th>Category Percentage</th>
<th>Final Grade &amp; Partial Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>eg.: 7,5</td>
<td>eg.: x</td>
<td>eg.: 75</td>
<td>eg.: 22.5% for ecological quality</td>
<td>eg.: 1,0</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>5</td>
<td>y</td>
<td>5</td>
<td>1,5</td>
<td>1,5</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>10</td>
<td>z</td>
<td>20</td>
<td>2,0</td>
<td></td>
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<td>...</td>
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</tr>
</tbody>
</table>
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DGNB system – diversification

Why should we adjust to new conditions?

Example:
Production of 1 kW of electricity

Potential of global warming - 100 years (kg of CO2-equivalent)

Primary energy from renewable sources
Primary energy from resources
Green Building Сертификация
Система DGNB – Diversification

Why is it necessary to adjust to local conditions?

Example:
Costs

Comparison of building costs

<table>
<thead>
<tr>
<th>Country</th>
<th>Building costs in comparison to Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>1.06</td>
</tr>
<tr>
<td>Belgium</td>
<td>1.03</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>0.64</td>
</tr>
<tr>
<td>Croatia</td>
<td>0.58</td>
</tr>
<tr>
<td>Cyprus</td>
<td>0.83</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0.59</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.28</td>
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<tr>
<td>Estonia</td>
<td>0.86</td>
</tr>
<tr>
<td>Finland</td>
<td>0.98</td>
</tr>
<tr>
<td>France</td>
<td>1.46</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Labour costs in comparison to Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>1.03</td>
</tr>
<tr>
<td>Belgium</td>
<td>1.17</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>0.18</td>
</tr>
<tr>
<td>Croatia</td>
<td>0.44</td>
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<tr>
<td>Cyprus</td>
<td>0.84</td>
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<tr>
<td>Czech Republic</td>
<td>0.49</td>
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<tr>
<td>Denmark</td>
<td>1.21</td>
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<tr>
<td>Estonia</td>
<td>0.25</td>
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<tr>
<td>Finland</td>
<td>0.96</td>
</tr>
<tr>
<td>France</td>
<td>1.04</td>
</tr>
<tr>
<td>Germany</td>
<td>1.00</td>
</tr>
</tbody>
</table>
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Green is not simply a name, it is an added value

Case: Ecology

Standard approach
Requirements of SNiP (construction norms and rules), GOST (state standards) and other local normative requirements

Experimental standard 1
(Based on standards of German ENEV 2007)
Level of European standards 2007
- Good building insulation
- Reduction of energy consumption

Experimental standard 2
Innovative option
Optimisation of green construction
- Supply of alternative energy
- Maximum insulation of a building
- Special glazing of windows and facades
- Low energy consumption of materials

Office building, Sochi (sea coast)
Media Centre, Sochi (sea coast)
Ice Rink, Sochi (sea coast)
Hotel 3*, Sochi (sea coast)
Hotel 5*, Krasnaya Poliana (mountain resort hotel, 980 m)
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Green is not simply a name, it is an added value

Case: Ecology

Definition of energy efficiency standards for Sochi - 2014

Up to 60% of energy saving
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Green is not simply a name, it is an added value

Case: Economy

Green Building Design
10 000,00 m²
Business Centre in the heart of a city

43% of operating costs saved
Green Building Certification

Green is not simply a name, it is an added value

First comparative results at the markets of Russia and Ukraine

Costs

Operational costs

Construction costs

“Classical project”

Green Building

Added value from
Green Building

Added costs from
Green Technologies

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#### Win-Win Situation

<table>
<thead>
<tr>
<th><strong>Investors/ Developers</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Marketing and sales advantages</td>
<td></td>
</tr>
<tr>
<td>▪ Attention of clients</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Lessees</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Corporate image</td>
<td></td>
</tr>
<tr>
<td>▪ Operating costs</td>
<td></td>
</tr>
<tr>
<td>▪ A higher efficiency, smaller sickness rate among the staff, a higher attractiveness</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Consumer</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Corporate image</td>
<td></td>
</tr>
<tr>
<td>▪ Stable development of assets</td>
<td></td>
</tr>
<tr>
<td>▪ Operating costs</td>
<td></td>
</tr>
<tr>
<td>▪ Saving processes</td>
<td></td>
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<table>
<thead>
<tr>
<th><strong>Service-providers</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ New services</td>
<td></td>
</tr>
<tr>
<td>▪ Corporate approach</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Everybody</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Reduction of „CO2-footprint“</td>
<td></td>
</tr>
<tr>
<td>▪ Efficient space management</td>
<td></td>
</tr>
<tr>
<td>▪ Improvement of climate/system of conditioning</td>
<td></td>
</tr>
<tr>
<td>▪ Resource saving</td>
<td></td>
</tr>
<tr>
<td>▪ Quality of life</td>
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Contacts

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