EVALUATION OF BUSINESS MODELS FOR THE LARGE-SCALE IMPLEMENTATION OF NEARLY ZERO-ENERGY BUILDINGS IN EUROPE

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• Nearly zero-energy buildings (nZEBs) seen as one central possibility for achieving the energy and GHG emission reduction targets (Global, European, National)

• nZEBs will be standard for all new buildings by 2021 (new public buildings by 2019)

• nZEBs still have low market share, even though technologies needed are already available today

• Possible reasons for current struggle in market uptake: comparably high efforts for planning and constructing, high initial investments, lack of adequate business models for accelerating the nZEB market

• Analysis of existing business models of different stakeholders in lifecycle and development of new nZEB business models for accelerating nZEB market in Europe
• Analysis of business with multilevel approach:
  1. Analysis of the macro- and micro-environment
  2. Delphi-Survey: Business Model Canvas (BMC)
  3. Problem-solution-fit
  4. Consistency Check
  5. MICMAC analysis
  6. Attractiveness portfolio
Scope and Methodology

**KEY PARTNERS**
- Urban Planners
- Construction Company
- Planners

**KEY ACTIVITIES**
- Strategy
- Facility Managers
- Planners
- Tenants/Users

**VALUE PROPOSITION**

**CUSTOMER RELATIONSHIP**
- Facility Managers
- Tenants/Users
- Owners

**DISTRIBUTION CHANNELS**

**KEY RESOURCES**

**COST STRUCTURE**

**REVENUE STREAMS**
• Currently 13 BMs available:
  • Real Estate Developers
  • Planners
  • General Contractors
  • Engineering and Construction
  • Facility Management
  • Urban Planning
Following results exemplary for company based in Germany and Austria:

• BM “Lifecycle cost and CO$_2$ optimisation in early design stage”

• Development of energy concepts for nZEBs
• Target customer segment: building owners, operators and users; reached by direct contact and personal assistance

• Customer relationship: contract for energetic consultation and evaluation of building project

• Revenues depending on specific contracts and project (size, number of variants, effort of investigation)

• Key activities: simulation and evaluation of energy related performance indicators, thermal and daylight simulations

• Key resources: personnel know-how, software (partly own developments)
BM-Analysis – External environment
Analyzed BMs, Results of DELPHI-Survey, Detailed BM-Analysis

• Austria
  • Macro-environment: PESTE analysis (political, economic, socio-cultural, technical and environmental factors)
  • Micro-environment: Porter’s Five Forces analysis
BM-Analysis – External environment

Analyzed BMs, Results of DELPHI-Survey, Detailed BM-Analysis

- Austria
  - Seems to have rather high environmental awareness and responsibility
  - Politically and economically stable
  - Industry attractiveness:
    - Threat of new entries is rather high ➔ low entry barriers (access to distribution channels, governmental restrictions, height of start-up costs)
    - Threat of substitutes can be predicted as low despite low switching costs
  - High bargaining power of buyers
<table>
<thead>
<tr>
<th>Customer pains</th>
<th>Customer gains</th>
<th>Jobs-to-get-done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rising costs for energy</td>
<td>Saving energy costs</td>
<td>Investment for future (price stability)</td>
</tr>
<tr>
<td>High investment costs for building</td>
<td>Reasonable investment costs</td>
<td>Independency of fossil fuels</td>
</tr>
<tr>
<td>Energy costs staying equal compared to standard house</td>
<td>High durability of technologies</td>
<td>Building house environmental friendly sources</td>
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<tr>
<td>Slow amortization of investments</td>
<td>Less risk of obsolescence</td>
<td>Security due to reliable energy sources</td>
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<td>Inefficient energy system</td>
<td>Guarantee for cost and energy savings</td>
<td>Increase “ecological footprint”</td>
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<td>Spending much time and effort on finding information about subsidies for additional costs</td>
<td>Carefree planning process due to experienced planners</td>
<td>Being perceived as ‘one-step-ahead’</td>
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<tr>
<td>Incompetent consultancy</td>
<td>Easy usability of technologies</td>
<td>Taking responsibilities for future generations</td>
</tr>
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<td>Lack of awareness</td>
<td>Being a role model to others</td>
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| 4/8                                               | 4/8                                                | 6/7 |

14/23 = 60.8 %
BM-Analysis – Consistency check

Analyzed BMs, Results of DELPHI-Survey, Detailed BM-Analysis

Customer Segment: building owners

- Value Proposition:
  - cost reduction
  - appreciation
  - risk reduction

- Channels:
  - direct contact

Customer Relationship:

Key Activities:
- energetic evaluation
- thermal simulation
- daylight simulation

Key Resources:
- simulation software
- LCC tool
- expertise of employees

Partners:
- architects
- planners of building services

Cost structure:
- Personell expenditures
- Generell office costs

Revenue Streams:
- reward
BM-Analysis – MICMAC analysis

Analyzed BMs, Results of DELPHI-Survey, Detailed BM-Analysis

Influence-dependence-chart

- optimised energy concept
- no extra efforts for marketing
- no expensive channels
- usage of innovative soft wares
- reduced lifecycle costs
- enhanced building quality and worth
- comparably high personal expenditures
- few orders per year
- reduced CO2 emissions
- own LCC Tool
- skilled employees
- high degree of customization
BM-Analysis – MICMAC analysis

Analyzed BMs, Results of DELPHI-Survey, Detailed BM-Analysis
BM-Analysis – Attractiveness portfolio

Analyzed BMs, Results of DELPHI-Survey, Detailed BM-Analysis

Attractiveness Portfolio

- Pursue
- Adapt
- Discard

Customer Value
Business Model Value
LCC + CO2 optimisation in early design stage
• Method enables to get holistic overview indicating the success potential and allows comparison of BMs

• Weak points of each relevant requirement can be spotted and solutions to enhance a BM can be deduced.

• Each tool can easily be extended in order to make results more reliable and detailed.

• Tool/ methodology for experts! ➔ Know-how and data important!
Next steps:

- Analysis of profitability and attractiveness portfolio
- Challenge: detailed quantitative information about revenue streams and cost structure and thereby profitability difficult to determine
- Analysis of additional BMs and cross comparison → identification of success factors for nZEB-BMs
Thank you for your attention!
Questions?

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