Using Linked Open Data in GBPN Network

OKCon 2013, September 2013
Geneva 18 September 2013

Jens Laustsen
Technical Director
From the point of a user

- As Technical Director of GBPN I’m a user of LOD and open access information
  - For our research
  - And to impact policy development

- Also representing a website GBPN.org, which can illustrate some examples

- Happy to follow Florian and Martin
Working Globally but with Regional Presence

GBPN

Global Center

Transforming Policies and markets

Conducting cross-cutting research and analysis

Connecting regional institutions, and share the best thinking building energy and GHG policy.

Communicating progress toward achieving the GHG abatement potential of the building sector

Offering world class energy efficiency expertise to policy makers and business leaders

Harvesting best practices policies in building energy efficiency and performance.

Advancing policies and programs that promote low carbon, energy & efficient buildings.

GBPN / Shakti

GBPN China

IMT

BPIE
We Need Data and Information

- Funded by ClimateWorks
- Mission to prevent climate change
  - By support to governments to adopt better policies
  - Adoption of international agreements
- Philanthropy
  => Linked and Open!
- Fits with our mission
Influencing Policy Development With Information on Best Practice

What’s happening in Asia?

What does business think?

Where is the Data?

Where are the ‘savings’?

What is the state of the art?
Large Risks at Stake
Need for Fast Action

Limiting climate change to 2 degrees
Buildings account for more 1/3 of emission
Need To Change Policies

- GBPN wants to document impact and costs of energy efficiency
  - Risk of acting
  - Cost of not acting
- Politicians want documentation
- We use data for this research
- We provide data
- We use data to convince others

Not enough information on impact of policies!
Research in Data Quality

- Our own research constantly confirms this:
  - No data on impact
  - No data on actual consumption
  - No data on costs
- Not available for our research
- We asked key organizations and modelers in energy efficient buildings...
Status of Data Quality & Availability

Not enough data on efficiency in buildings!
GBPN want to develop a community for Better Data on Buildings and Use our website in this project

“Zero Energy Building seen through a Passive House Window”
Interactive Analytic Website

Databases & Tools

Check out and browse our data on buildings energy performance policies through our interactive Databases and Tools.

- Policy Comparative Tool
- Glossary
- Datahub for Europe
- Rating Policies

GBPN policy-comparative-tool
GBPN glossary
64 international from experts from international and regional organisations involved
# Status of State of the Art Codes

<table>
<thead>
<tr>
<th>Holistic Approach</th>
<th>Dynamic Process</th>
<th>Implementation</th>
<th>Technical Requirements</th>
<th>Overall Performance</th>
</tr>
</thead>
</table>

[Image of graph showing different states and metrics]
Dynamic and Holistic Elements

- Holistic Approach
  - Performance Approach
  - Includes All Energy
  - Energy Efficiency & Renewable Energy

- Dynamic Process
  - Zero Energy Target
  - Revision Cycle
  - Levels Beyond Minimum

- Implementation
  - Enforcement Standards
  - Certification
  - Policy Packages

- Technical Requirements
  - Building Shell
  - Technical Systems
  - Renewable Energy Systems
  - GHG Emissions

- Overall Performance
  - On-site energy
  - Primary Energy
  - GHG Emissions
Enforcement
Enforcement

No jurisdiction scored good in this one!

No independent survey of compliance!

Why?
Dynamic Building Codes

• Recommendations:

• Best practice codes:
  - Sets ambitious targets
  - Has regular updates
  - Roadmap with achievable targets
  - Part of policy package
  - Holistic approach
# U Values - table

## BC Hard Fact Comparison

### U-Value Tables

<table>
<thead>
<tr>
<th>BEEC</th>
<th>U-value Floors</th>
<th>U-value Walls</th>
<th>U-value Roofs</th>
<th>U-value Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>China Hot S/Warm W</td>
<td>0.7</td>
<td>0.5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>China Public</td>
<td>1</td>
<td>1</td>
<td>0.7</td>
<td>2.5</td>
</tr>
<tr>
<td>China Severe Cold</td>
<td>0.6</td>
<td>0.7</td>
<td>0.45</td>
<td>3.1</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Finland</td>
<td>0.09</td>
<td>0.17</td>
<td>0.09</td>
<td>1</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>0.19</td>
<td>0.32</td>
<td>0.17</td>
<td>1.99</td>
</tr>
<tr>
<td>Oregon</td>
<td>0.16</td>
<td>0.34</td>
<td>0.18</td>
<td>1.99</td>
</tr>
<tr>
<td>Seattle</td>
<td>0.19</td>
<td>0.28</td>
<td>0.12</td>
<td>1.95</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.15</td>
<td>0.18</td>
<td>0.13</td>
<td>1.3</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>1.4</td>
</tr>
</tbody>
</table>

This table presents u-values for all building elements for the building codes selected. Where building codes have multiple sets of u-values the most representative set of values have been included.
Graph – U values

This graph compares u-values for selected building elements across selected building codes. Each color represents a building element. Where building codes have multiple sets of u-values the most representative set of values have been included.
Country Report - Austria

Austria

Summary

The OIB is a performance-based code that requires a mandatory energy frame calculation to establish the expected primary energy consumption of residential and non-residential buildings as well as existing buildings undergoing renovation (25-38% higher than new builds). The allowable primary energy frame depends on the type of building and the ventilation system used (stricter requirement for ventilation systems using heat recovery). The code addresses thermal envelope requirements and energy using systems in the calculation, including, HVAC, hot water, lighting and bio-climatic design.

Austria has had prescriptive energy efficiency requirements for buildings within each of the 9 regions (Land) since the 1970’s. The first nationwide performance-based code was introduced in 2006, to be individually implemented by each of the Land. The latest 2011 code and supporting policies encompass many dynamic aspects including, air-tightness testing, thermal bridging considerations, well-established EPC programs and incentive schemes, voluntary low energy classes and the implementation of Passive House standards by 2015 for residential buildings.

General Information
Remit of Code
Coverage
Type of Building Code
Energy Covered
Enforcement
Values for New Buildings
Code History and Future Targets
Supporting Measures
Link to Other Databases

Scoring

- Holistic Approach
- Performance Approach
- Intensives All Energy
- Energy Efficiency & Renewable Energy
- Dynamic Process
- Zone Energy Target
- Revision Cycle
- Levels Beyond Minimum
- Implementation
- Enforcement Standards
- Obligation
- Policy Patchwork
- Technical Requirements
- Building Shell
- Technical Systems
- Renewable Energy Systems
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- On-site energy
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Interactive Analytic Website

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POLICY COMPARATIVE TOOL

GLOSSARY

DATAHUB FOR EUROPE

RATING POLICIES

GBPN policy-comparative-tool

GBPN glossary
GBPN Thesaurus
Understanding and Linking
GBPN Glossary

- A common understanding of words is critical for working together
  - Words and relations
  - Definition

- Collaboration on text and Data!

**Deep Renovation**

Synonyms: Deep Energy Renovation

Deep Renovation or Deep Energy Renovation is a term for a building renovation that captures the full economic energy efficiency potential of improvements. This typically includes a focus on the building shell of existing buildings in order to achieve very high-energy performance. The renovated building consumes 73% less primary energy compared to the status of the existing building before the renovation. The energy consumption after renovation for heating, cooling, ventilation, hot water and lighting, is less than 60 kWh/m²/yr. (Definition often used in Europe) [Source: GBPN, 2012]

**Deep Retrofit**

Synonyms: Deep energy retrofit

Deep retrofit or Deep Energy Retrofit implies replacing existing systems in a building with similar ones that are of higher quality and performance, which leads to a better energy performance of an existing building. The primary energy consumption includes energy used for heating, cooling, ventilation, hot water, lighting, installed equipment and appliances. After the deep retrofit the buildings consume 50% less primary energy compared to the status of the existing building(s) the retrofit (Definition mainly used in US). [Source: GBPN, 2012]
Understanding Different Cultures

In GBPN we link regions together

Found big differences
- Cross Atlantic barriers
- And crossing the Chinese Wall

Will be available in Chinese in October

Btu/ft²
Mtoe/ pers
kWh/m²
Construction is Locally
Want to share experience
Globally

3 examples on use of Thesaurus to link data and information
Building Sector
REPORT BUNDLE / BUSINESS, CARBON EMISSIONS REDUCTION TARGETS, POLICIES, POLICY PACKAGES, ROADMAPS / GLOBAL
AUTHORS: GBPN

With the goal of addressing climate concerns through lower carbon use, the GBPN shows that with ambitious improvements in the energy performance of buildings, it is possible to reduce their CO₂ emissions by one third by 2050. The technology is there but policy priorities need re-setting and there must be a more concerted effort to learn from, and apply best practice policies to deliver this significant mitigation potential from buildings.

Read more

Achieving Scale in Energy-efficient Buildings in US: A View from the Construction and Real Estate Sectors
REPORT BUNDLE / BUSINESS / UNITED STATES
AUTHORS: GBPN

An EIU U.S. survey of building sector executives commissioned by the GBPN in collaboration with IMT finds that tackling rising energy consumption in U.S. buildings will require a more coordinated and coherent approach to energy efficiency codes and regulation, one that is more focused on retrofits—where most potential gains lie.

Read more
Buildings For Our Future, The Deep Path for Closing the Emissions Gap in the Building Sector

REPORT BUNDLE / BUSINESS, CARBON EMISSIONS REDUCTION TARGETS, POLICIES, POLICY PACKAGES, ROADMAPS / GLOBAL
AUTHORS: GBN

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Related News
• Why Buildings Hold the Key To a Low-Carbon Future

Related Laboratory Projects
• Positive Energy Buildings
• More and Deeper Renovation
• Building Performance Data

Related Blogs
• SMART BAHGS for Policy Makers: How to Build up a Credible S.O.S?
Thank you!

A long walk starts with one step

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