

Making a "black box" transparent: role of the open data in the building sector



European Data Forum 2014

19 March 2014, Athens, Greece

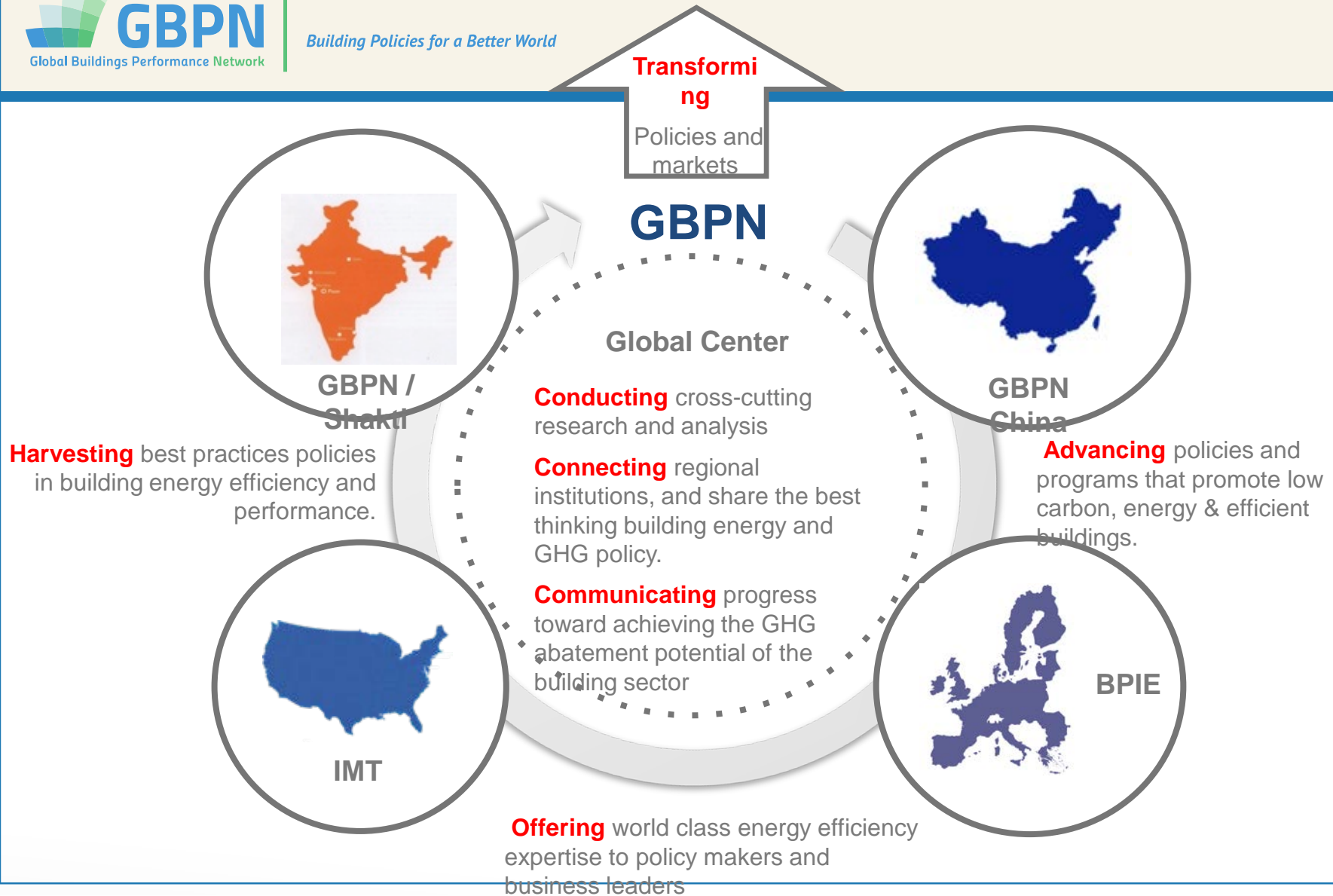
Ksenia Petrichenko

GBPN Building Policy Analyst

Working Globally but with Regional Presence



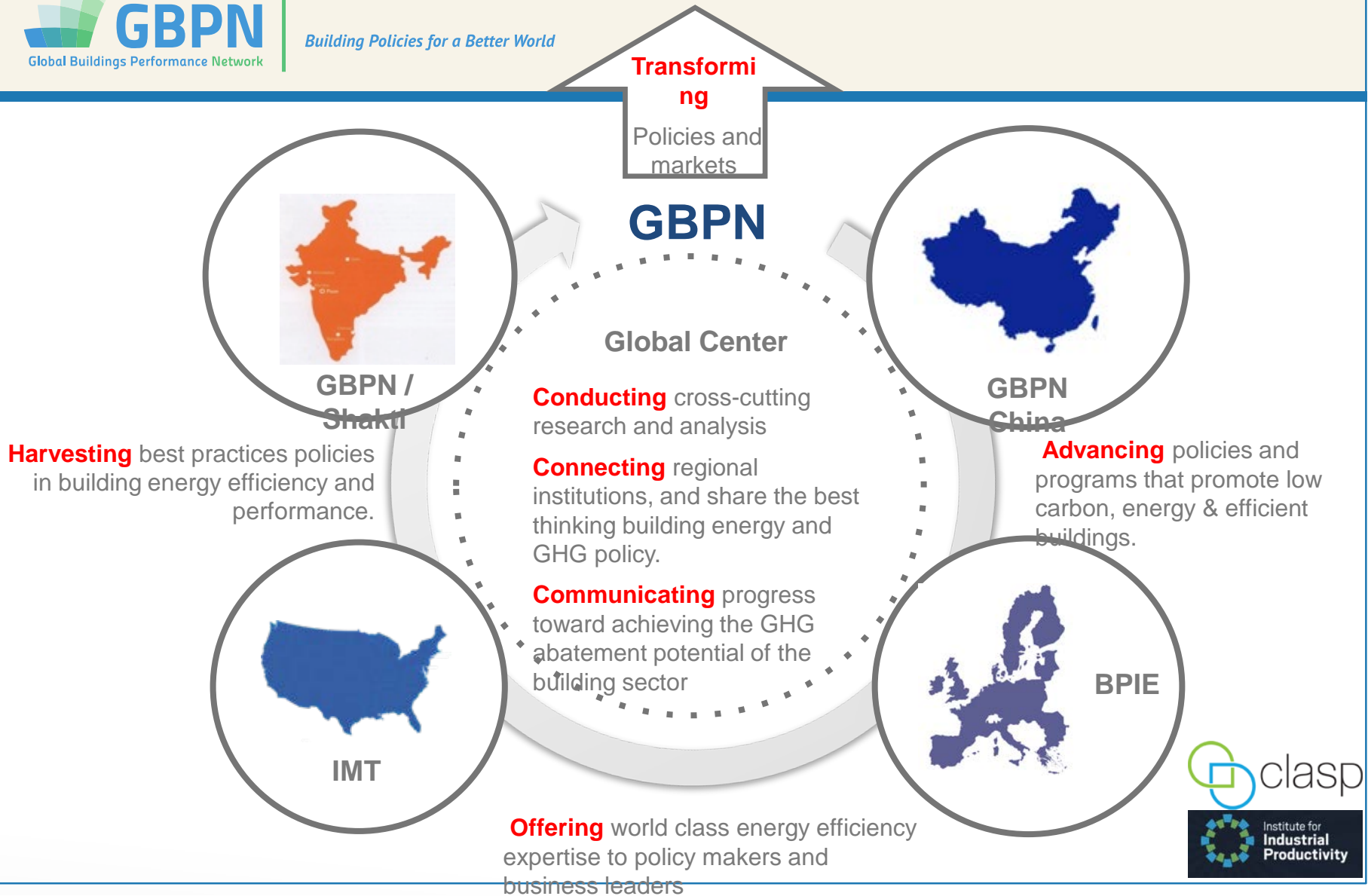
Building Policies for a Better World



Working Globally but with Regional Presence



Building Policies for a Better World



Transforming

Policies and markets

GBPN

Global Center

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

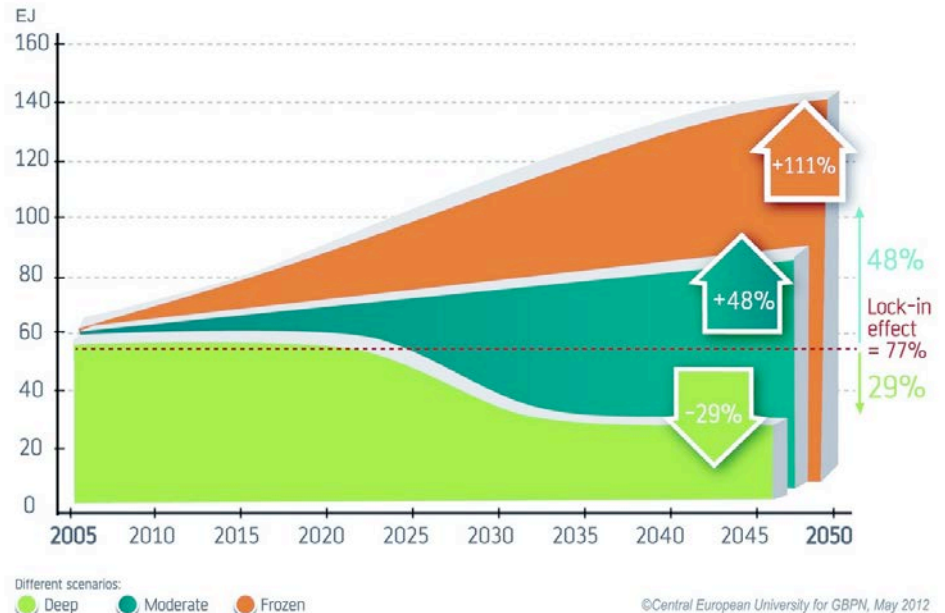


'To Save the World' Mission



Limiting global temperature rise to 2 degrees -> decreasing GHG

Buildings account for more than 1/3 of global energy use & GHG emission



Significant saving potential exists in the sector & solutions are available

GBPN's products aim at demonstrating potentials & providing solutions

Robust data is needed for each product

What's happening in Asia?

Where are the 'savings' ?

Where are the best policies

What is the state of the art?

What does business think ?

GBPN | Building Policies for a Better World
Great Buildings Performance Network

A COMPARATIVE ANALYSIS OF BUILDING ENERGY EFFICIENCY POLICIES FOR NEW BUILDINGS

February 2013

GBPN | Building Policies for a Better World
Great Buildings Performance Network

MITIGATION POTENTIAL FROM INDIA'S BUILDINGS

February 2013

GBPN | Building Policies for a Better World
Great Buildings Performance Network

BUILDING ENERGY EFFICIENCY POLICIES IN CHINA

July 2012

GBPN | Building Policies for a Better World
Great Buildings Performance Network

ROBUST BUILDING DATA: A DRIVER FOR POLICY DEVELOPMENT

February 2013

GBPN | Building Policies for a Better World
Great Buildings Performance Network

BEST PRACTICE POLICIES FOR LOW CARBON & ENERGY BUILDINGS BASED ON SCENARIO ANALYSIS

May 2012

GBPN | Building Policies for a Better World
Great Buildings Performance Network

BUILDING ENERGY EFFICIENCY: BEST PRACTICE POLICIES AND POLICY PACKAGES

October 2012

BERKELEY LAB
ENERGY EFFICIENCY NETWORK, UNIVERSITY OF CALIFORNIA

Economist Intelligence Unit | The Economist

Energy efficiency and energy savings

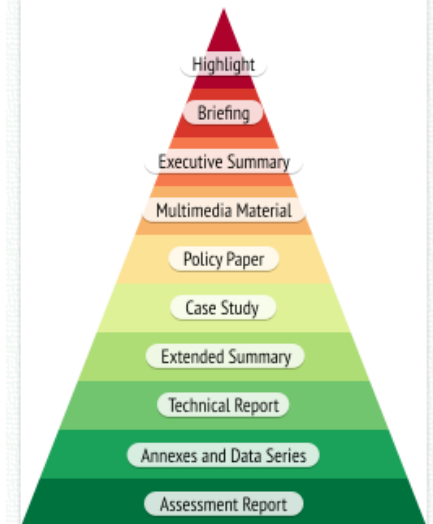
A view from the building sector

A report from the Economist Intelligence Unit

Product's creation flow



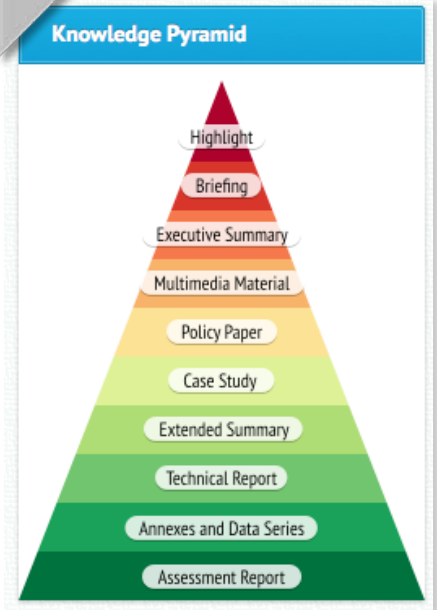
Knowledge Pyramid



Product's creation flow

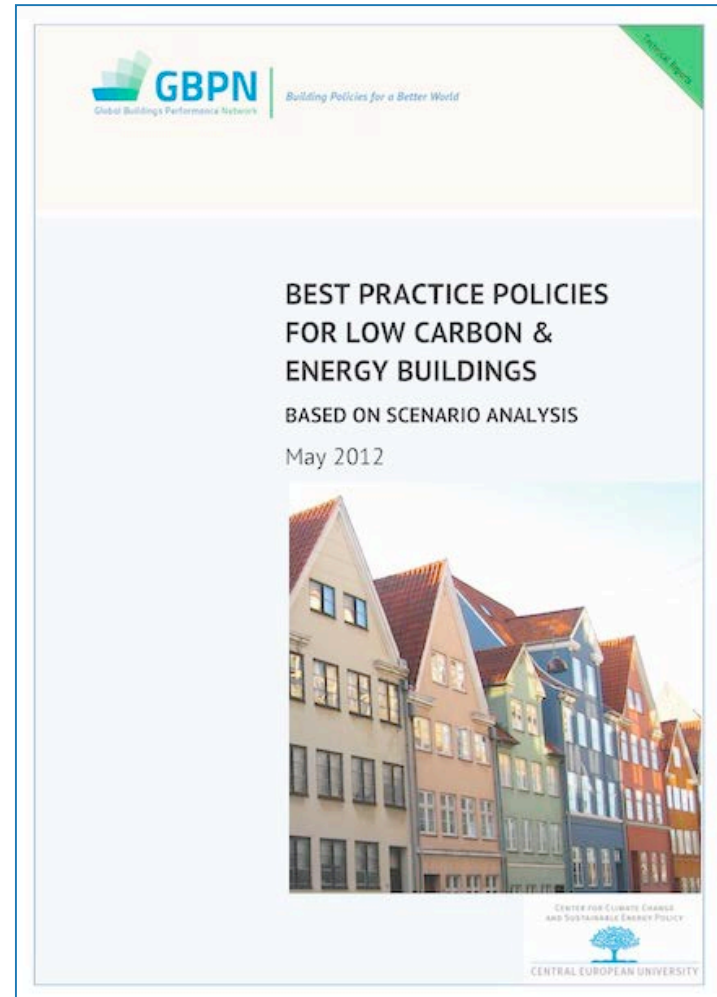


Work with data is in the core of a product creation



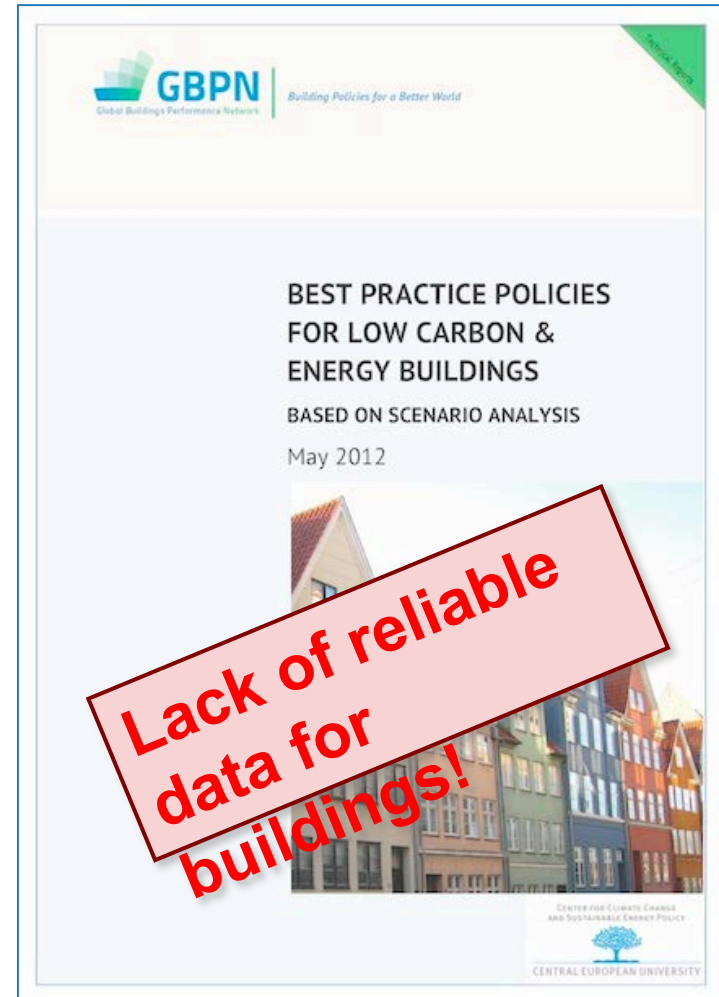
First Data Collection Challenge

- Together with CEUGBPN decided to develop scenarios to demonstrate the potential for the buildings sector to mitigate energy consumption in China, the EU, India and the USA.
 - Global coverage + 4 target regions
 - Up to 17 climate zones per region
 - 3 end-uses
 - 9 building types
 - 5 building vintages
- Data on floor area per capita, processes in the building sector, energy use in different exemplary buildings in different regions, climate zones, building types, etc. – **several thousands of datapoints to collect**



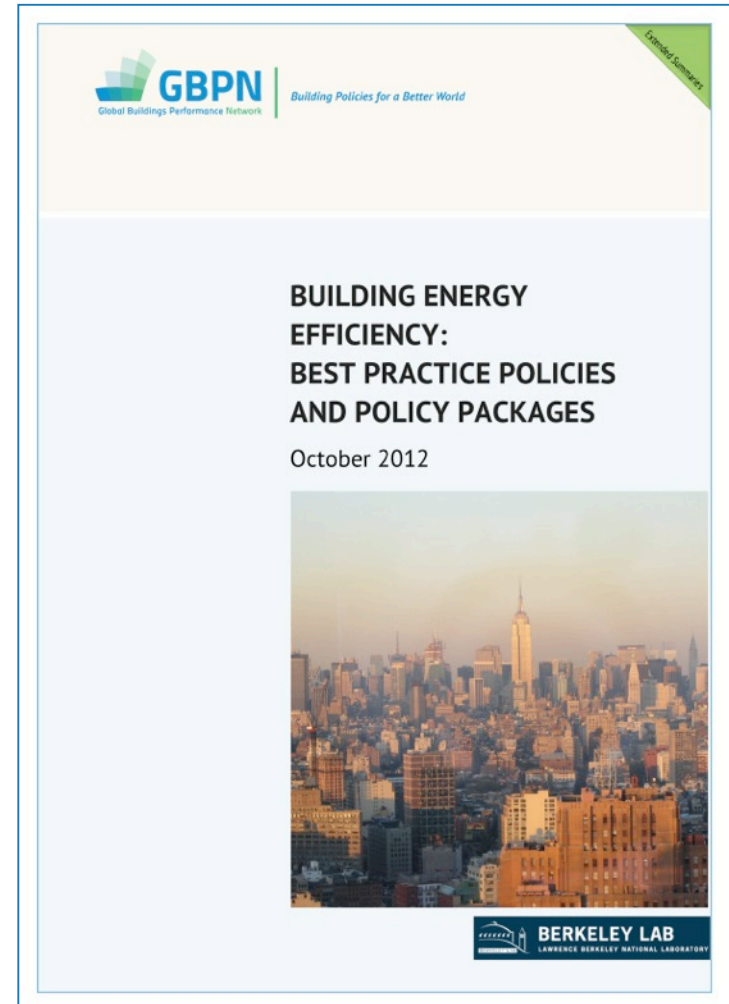
First Data Collection Challenge

- Together with CEUGBPN decided to develop scenarios to demonstrate the potential for the buildings sector to mitigate energy consumption in China, the EU, India and the USA.
 - Global coverage + 4 target regions
 - Up to 17 climate zones per region
 - 3 end-uses
 - 9 building types
 - 5 building vintages
- Data on floor area per capita, processes in the building sector, energy use in different exemplary buildings in different regions, climate zones, building types, etc. – **several thousands of datapoints to collect**



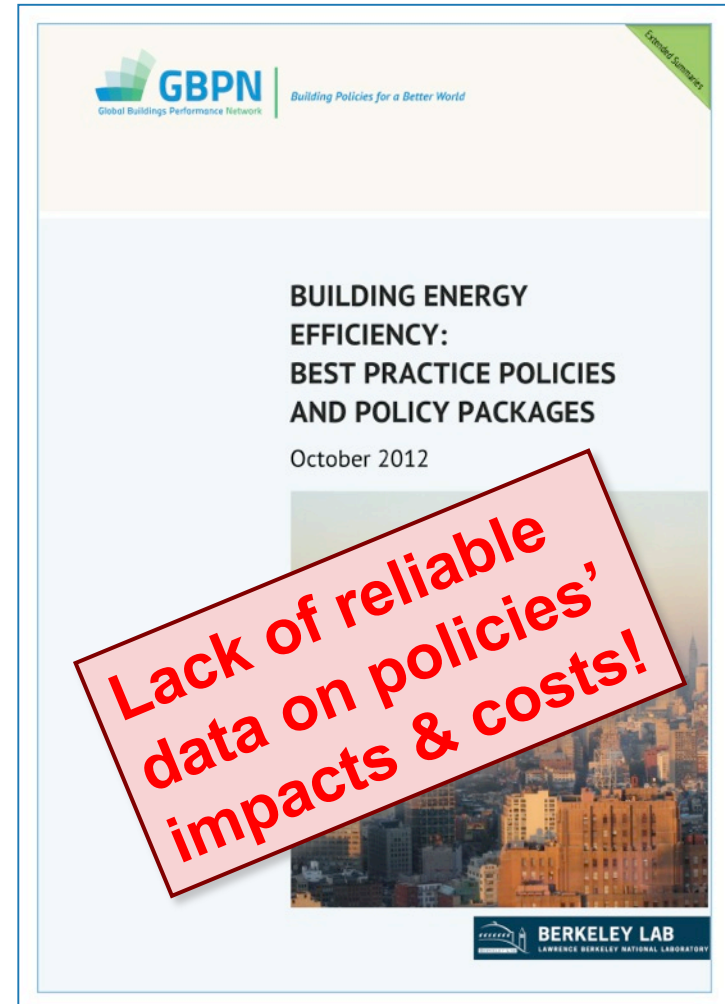
Need To Change Policies

- GBPN wanted to document impact and costs of energy efficiency policy instruments in 4 target regions
 - Risk of acting
 - Cost of not acting
- A comprehensive review of different policy instruments & best-practices for reducing GHG emissions from buildings
- Politicians want documentation
- Significant efforts for data collection



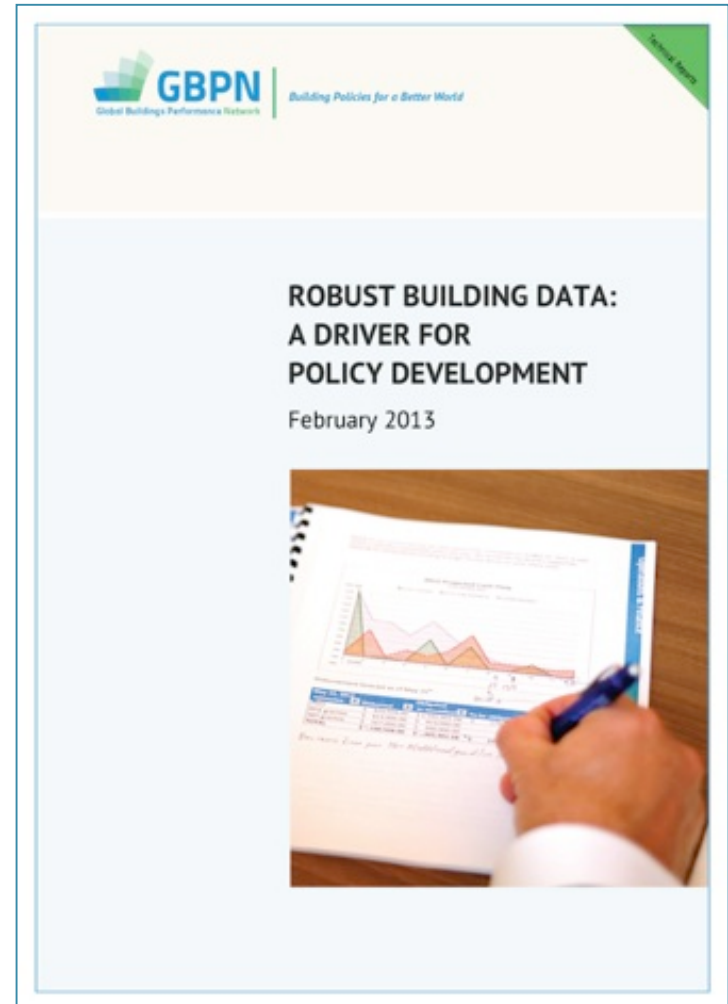
Need To Change Policies

- GBPN wanted to document impact and costs of energy efficiency policy instruments in 4 target regions
 - Risk of acting
 - Cost of not acting
- A comprehensive review of different policy instruments & best-practices for reducing GHG emissions from buildings
- Politicians want documentation
- Significant efforts for data collection



Research in Data Quality

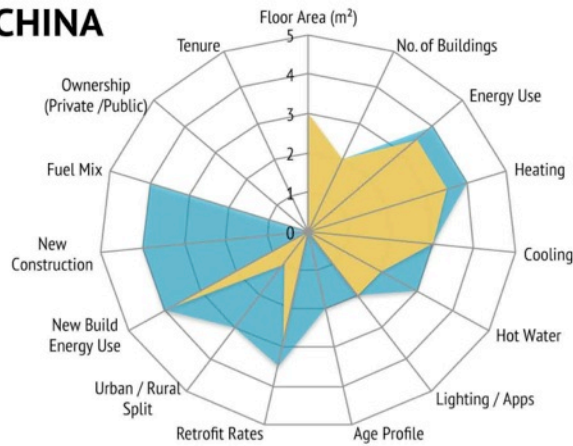
- Our own research constantly confirms this
 - Lack of data on impact
 - Lack of data on actual consumption
 - Lack of data on costs
- Not available for our research
- Survey on the data experience of the key organizations and modelers in energy efficient buildings



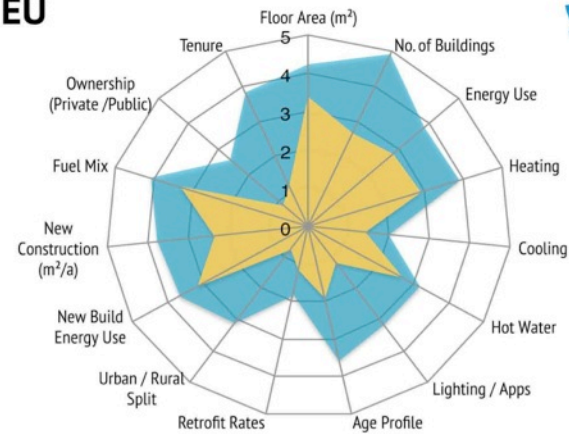
Status of Data Quality & Availability



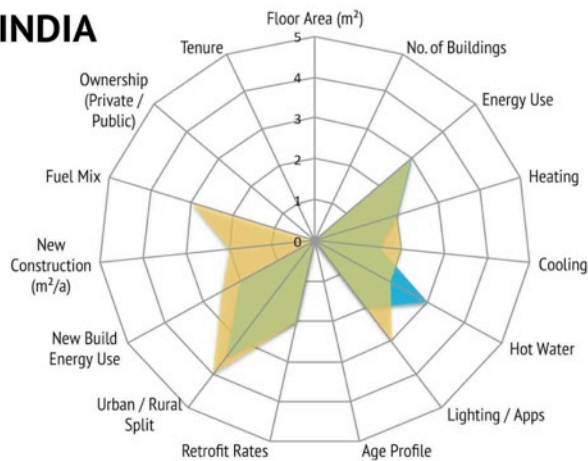
CHINA



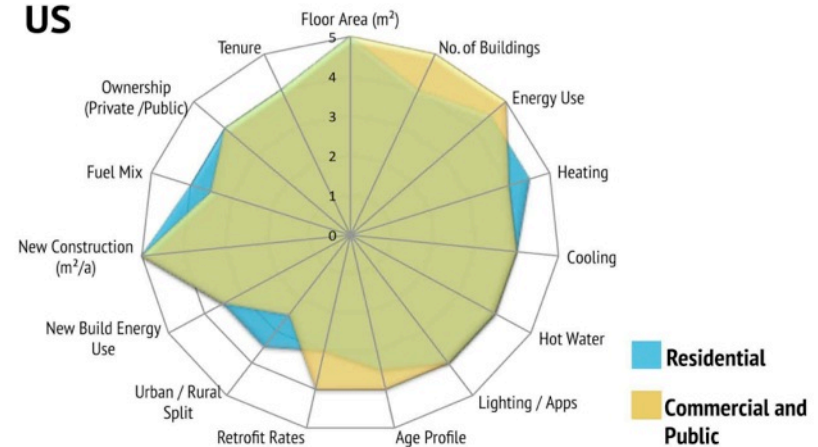
EU



INDIA



US

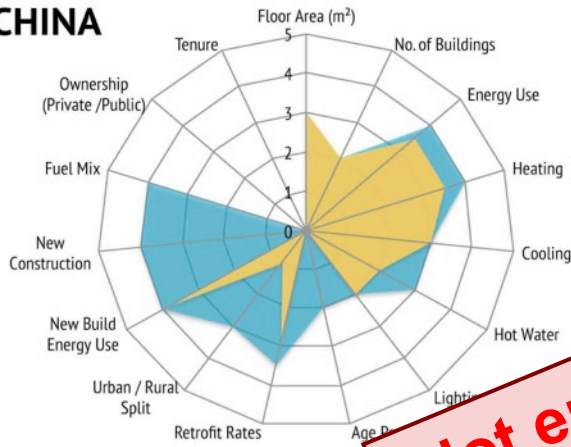


■ Residential
■ Commercial and Public

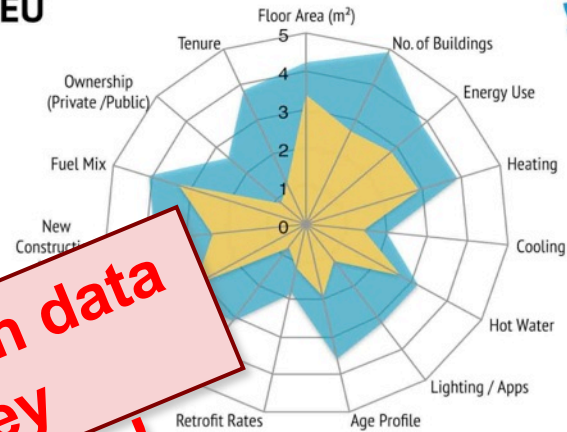
Status of Data Quality & Availability



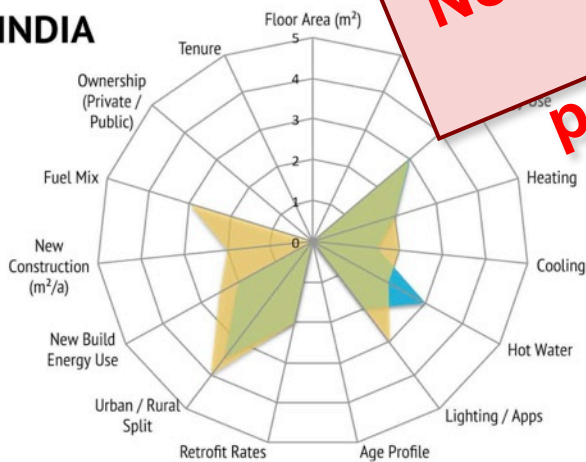
CHINA



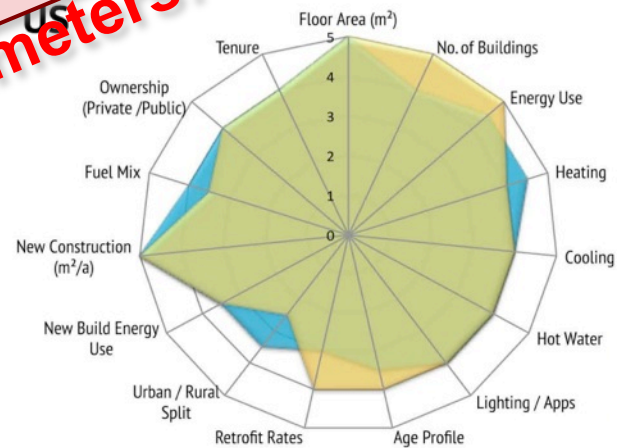
EU



INDIA



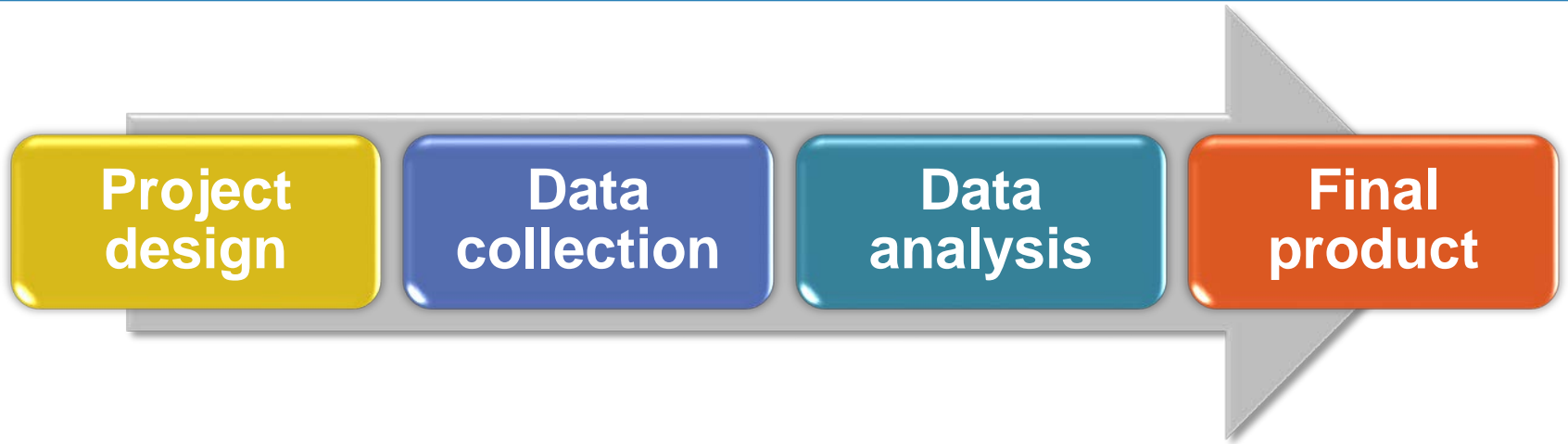
US



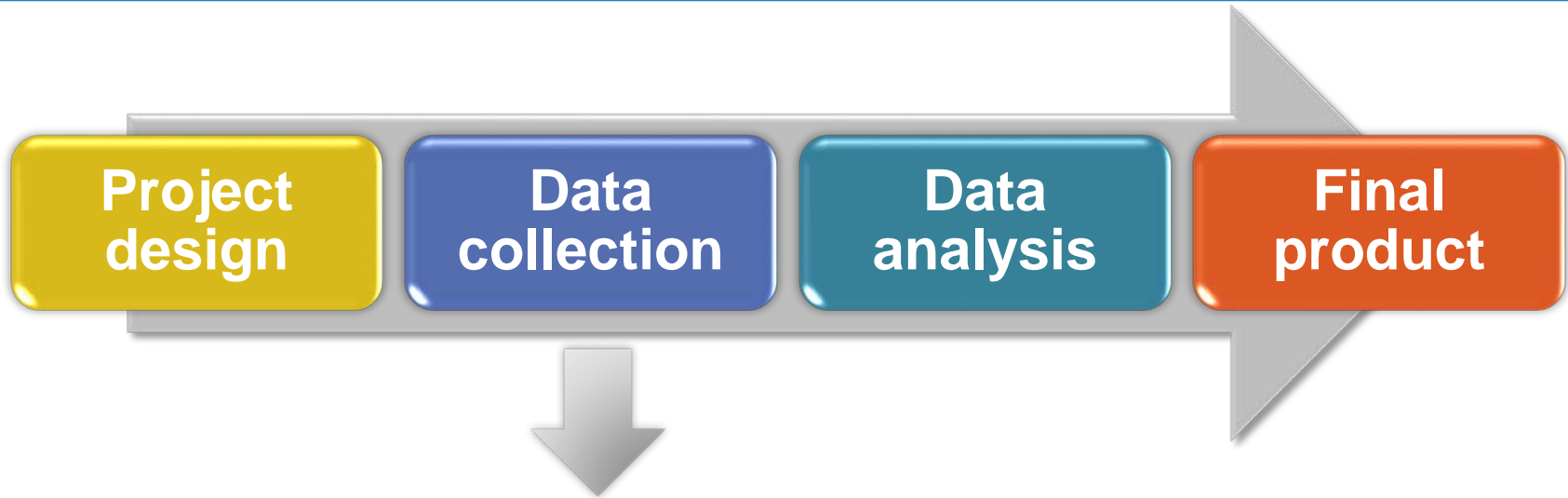
Not enough data on key parameters!

Residential
Commercial and Public

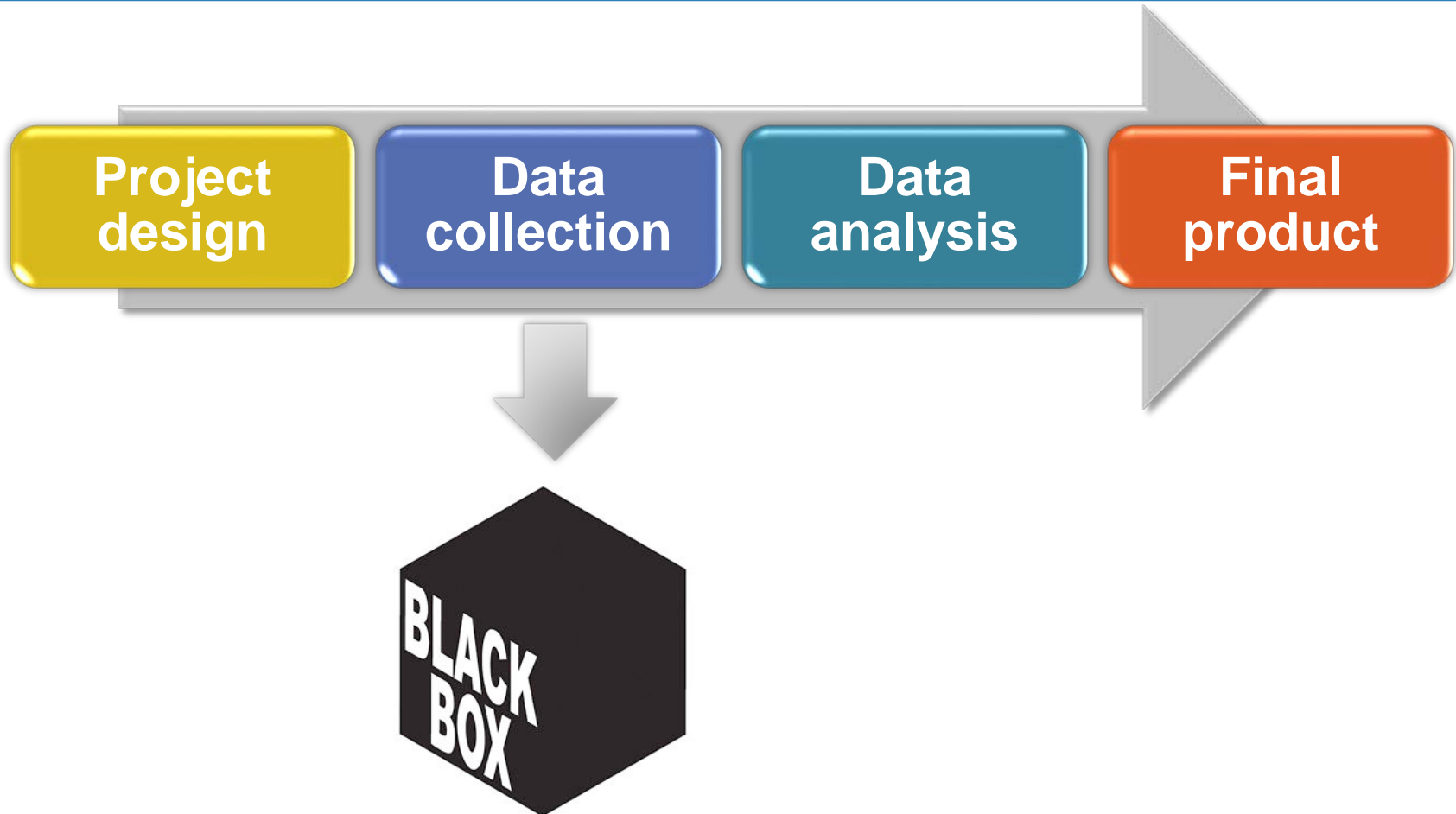
Where does the flow get stuck?



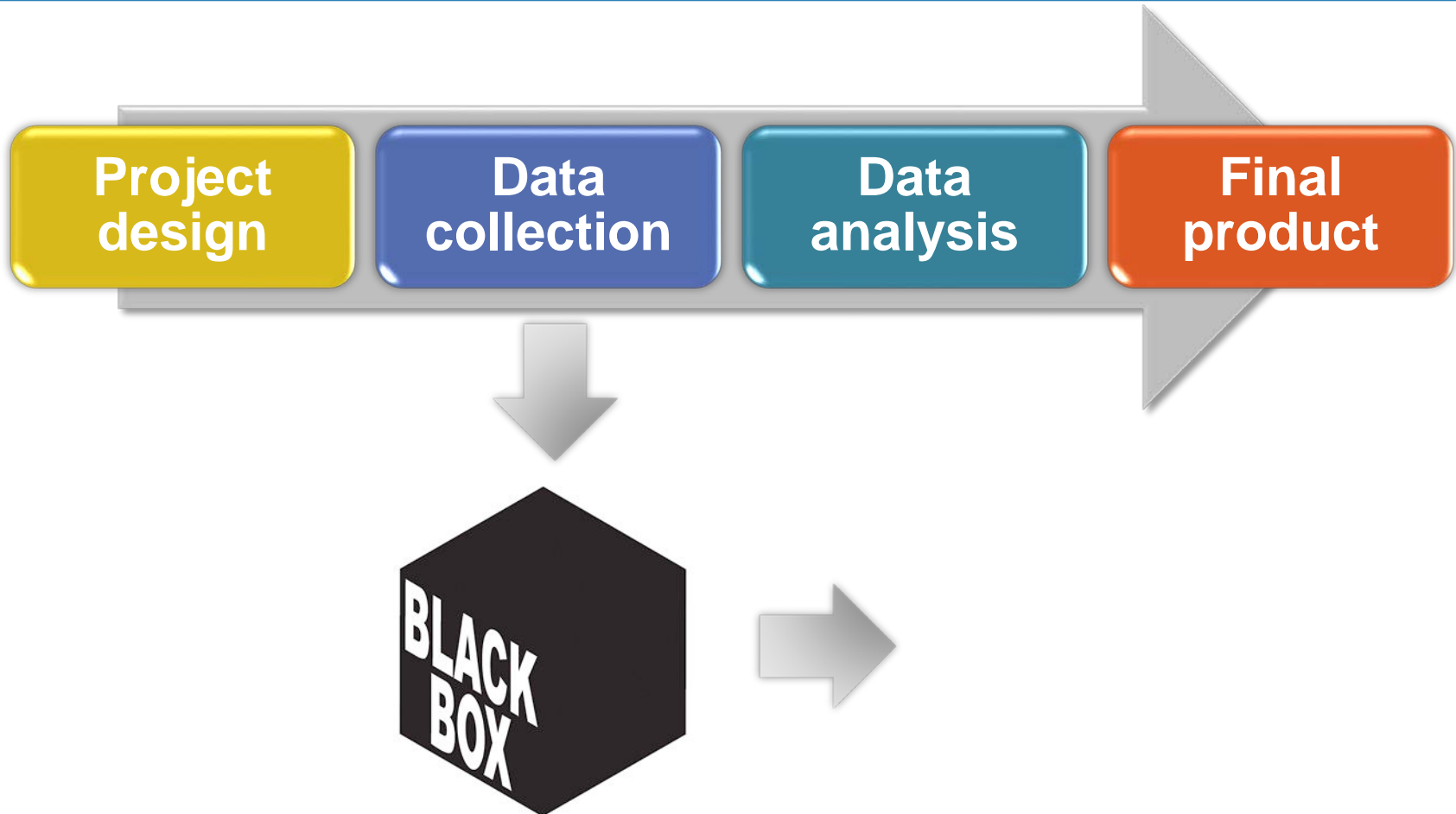
Where does the flow get stuck?



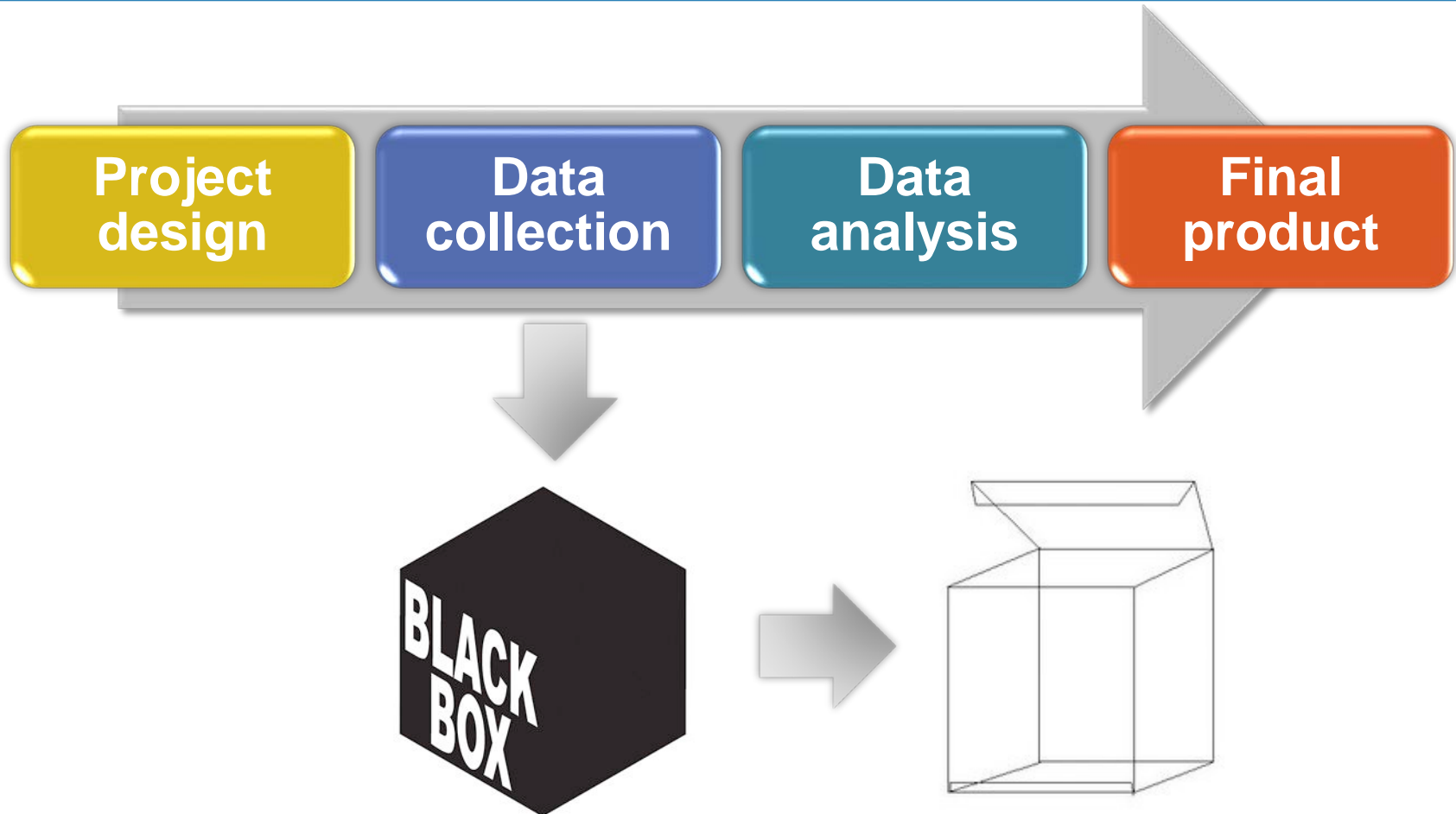
Where does the flow get stuck?



Where does the flow get stuck?

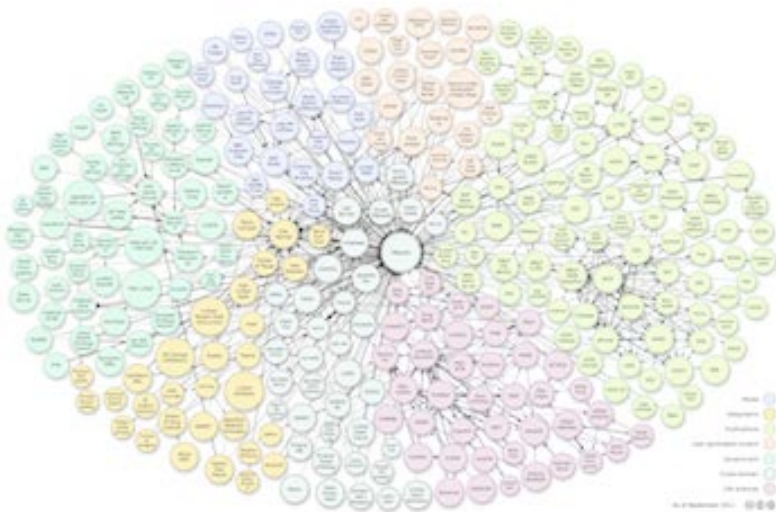


Where does the flow get stuck?



Community for Better Data on Buildings: LOD and website

- Connection to best resources, data and information on buildings energy performance policies worldwide
- Transparency to data & research
- Acceleration of knowledge & information sharing for better policy-making



GBPN Building Policies for a Better World

Subscribe to Newsletter | Login | Register

English / 中文

About Activities Reports Databases & Tools Laboratory Newsroom Blog

Search

Policy Paper

Why Buildings hold the key to a low-carbon future? Consult the GBPN Policy Paper "Buildings for Our Future. The Deep Path for Closing the Emissions Gap in the Building Sector" (June 2013)

Read the Report

DATABASES & TOOLS

POLICY COMPARATIVE TOOL

GLOSSARY

DATAHUB FOR EUROPE

RATING POLICIES

See more

NEWS

CHINA COULD CUT CARBON EMISSIONS SIGNIFICANTLY WITH INCENTIVES FOR ENERGY EFFICIENT BUILDINGS

06-08-2013 | CHINA

New Report by the Economist Intelligence Unit and the Global Buildings Performance Network Identifies Key Issues for Scaling Up Efficiency in Buildings in China

Read more

NEWS

WHY BUILDINGS HOLD THE KEY TO A LOW-CARBON FUTURE

23-06-2013 | GLOBAL

New GBPN Policy Paper shows that implementing ambitious performance building policies can achieve deep reductions in energy consumption and CO₂ emissions and sets out the necessary steps towards a "Deep market transformation".

Read more

LABORATORY: PROJECTS

MORE AND DEEPER RENOVATION

Buildings represent around a third of the total global energy use and the energy-related CO₂ emissions, existing buildings account for... [Read more](#)

POSITIVE ENERGY BUILDINGS

The nearly zero energy lab seeks to build GBPN's comparative analysis of building energy efficiency codes and policy packages for new buildings... [Read more](#)

BUILDING PERFORMANCE DATA

This Laboratory seeks to improve collaboration amongst building data experts, modellers and all interested stakeholders in order to... [Read more](#)

LABORATORY: COMMENTS

HOLLISTER STOCKHOLM SVERIGE 59444-VERB DE OCKS DESSA

11-09-2013 | DATA COMMUNITY

ver.r de ocks? dessa 7 ett underbart spel som 7ra en b? [Read more](#)



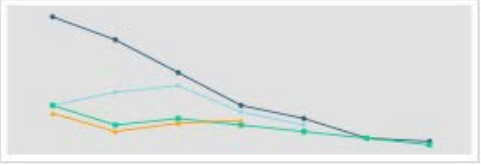

Interactive Analytic Website

[About](#) [Activities](#) [Reports](#) **[Databases & Tools](#)** [Laboratory](#) [Newsroom](#) [Blog](#)

[Home](#) / [Databases & Tools](#)

Databases & Tools

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

- POLICY TOOL FOR NEW BUILDINGS**

- GLOSSARY**

- DATAHUB FOR EUROPE**

- RATING POLICIES**


[Policy Tool for New Buildings](#)

[Glossary](#)

[Renovation Policy Tool](#)

[Tool for Building Energy Use Scenarios](#)

Interactive Analytic Website

The screenshot shows the website's navigation menu with 'Databases & Tools' highlighted. Below the menu, the breadcrumb 'Home / Databases & Tools' is visible. The main heading is 'Databases & Tools', followed by a descriptive paragraph: 'Check out and browse our data on buildings energy performance policies through our interactive Databases and Tools.' The content is organized into four grid items: 'POLICY TOOL FOR NEW BUILDINGS' with a city skyline and colorful wind turbines; 'GLOSSARY' with a word cloud featuring 'energy', 'buildings', and 'policy'; 'DATAHUB FOR EUROPE' with a line graph showing data trends; and 'RATING POLICIES' with a world map highlighting various regions.

[Policy Tool for New Buildings](#)

[Glossary](#)

[Renovation Policy Tool](#)

Coming soon

[Building Energy Use Scenarios](#)

Policy Tool for New Buildings

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

Overall Performance

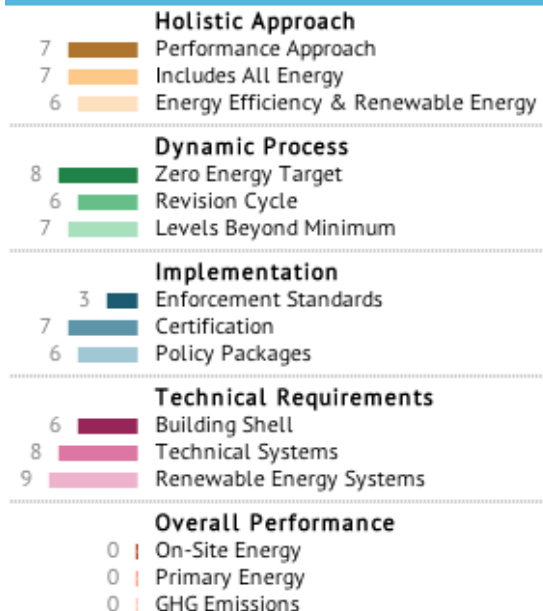
- On-site energy
- Primary Energy
- GHG Emissions



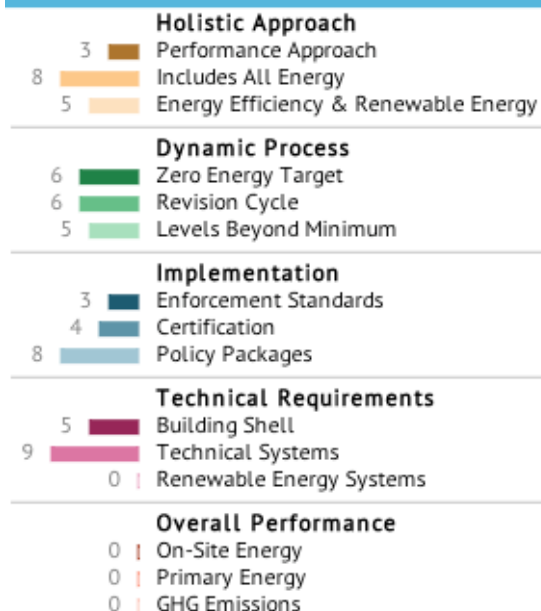
15 Criteria

Holistic Approach	Dynamic Process	Implementation	Technical Requirements	Overall Performance
✓ Performance Approach	✓ Zero Energy Target	✓ Enforcement Standards	✓ Building Shell	✓ On-Site Energy
✓ Includes All Energy	✓ Revision Cycle	✓ Certification	✓ Technical Systems	✓ Primary Energy
✓ Energy Efficiency & Renewable Energy	✓ Levels Beyond Minimum	✓ Policy Packages	✓ Renewable Energy Systems	✓ GHG Emissions

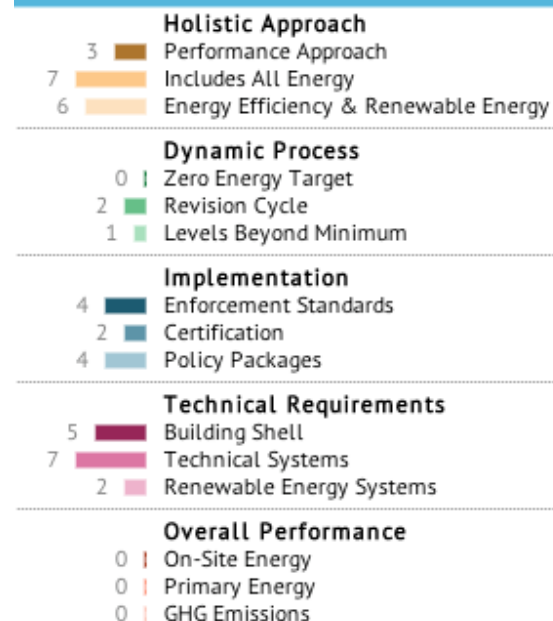
Germany



Austin



China Severe Cold



64 international from experts from international and regional organisations involved

Other opportunities of the Tool

U-value table

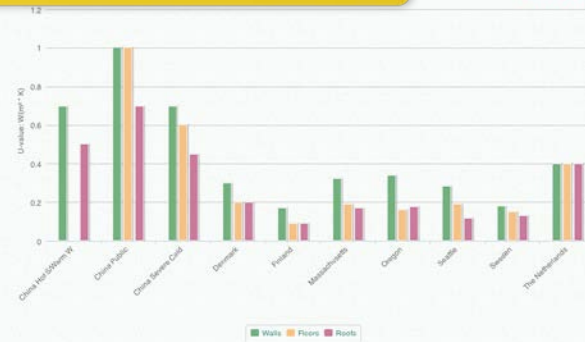
Refine Search

U-Value Tables

BEEC	U-value Floors	U-value Walls	U-value Roofs	U-value Windows
China Hot S/Warm W		0.7	0.5	2
China Public	1	1	0.7	2.5
China Severe Cold	0.6	0.7	0.45	3.1
Denmark	0.2	0.3	0.2	1.4
Finland	0.09	0.17	0.09	1
Massachusetts	0.19	0.32	0.17	1.99
Oregon	0.16	0.34	0.18	1.99
Seattle	0.19	0.28	0.12	1.95
Sweden	0.15	0.18	0.15	1.5
The Netherlands	0.4	0.4	0.4	1.4

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.

U-value chart



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 profile

Summary

The DIB is a performance-based code that requires a mandatory energy frame calculation to establish the expected primary energy consumption of residential and non-residential building as well as existing buildings undergoing renovation (25-58% higher than new builds). The allowable primary energy frame depends on the type of building and the ventilation system used (strict 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 (Länder) since the 1970s. The first nationwide performance-based code was introduced in 2006, to be individually implemented by each of the Länder. 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

- China
- Europe
- India
- India
- United States
- Rest of World

Scoring

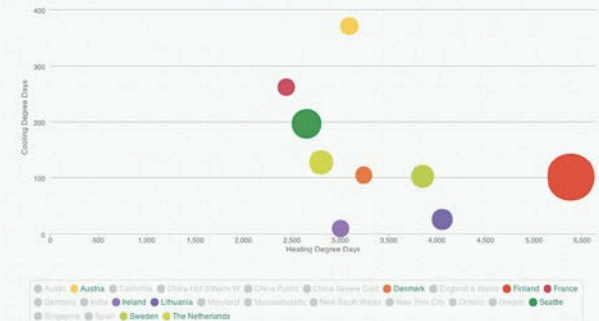


Performance values

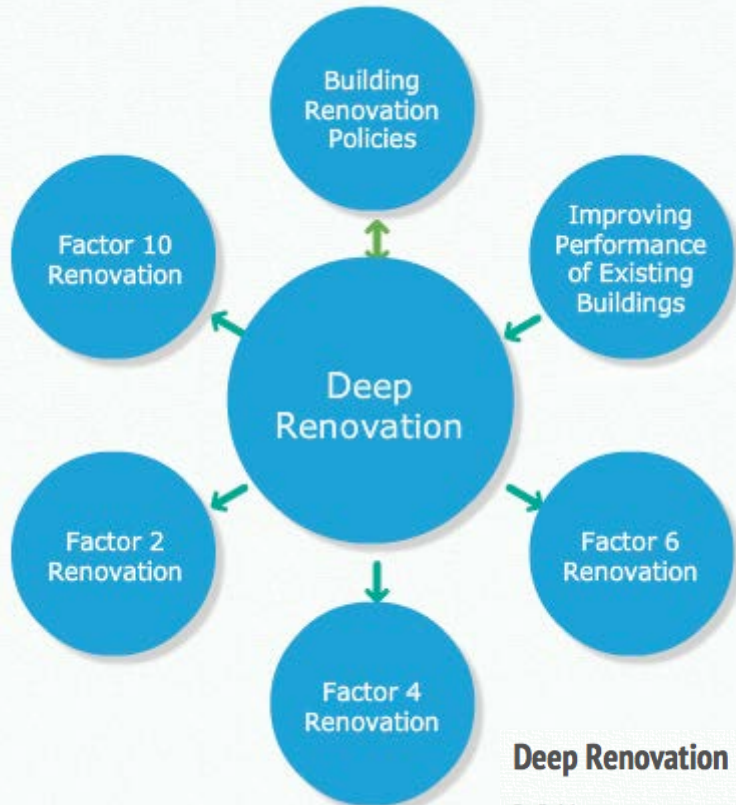
Refine Search

Performance Values

(The size of the markers specifies the Energy performance value)



Glossary



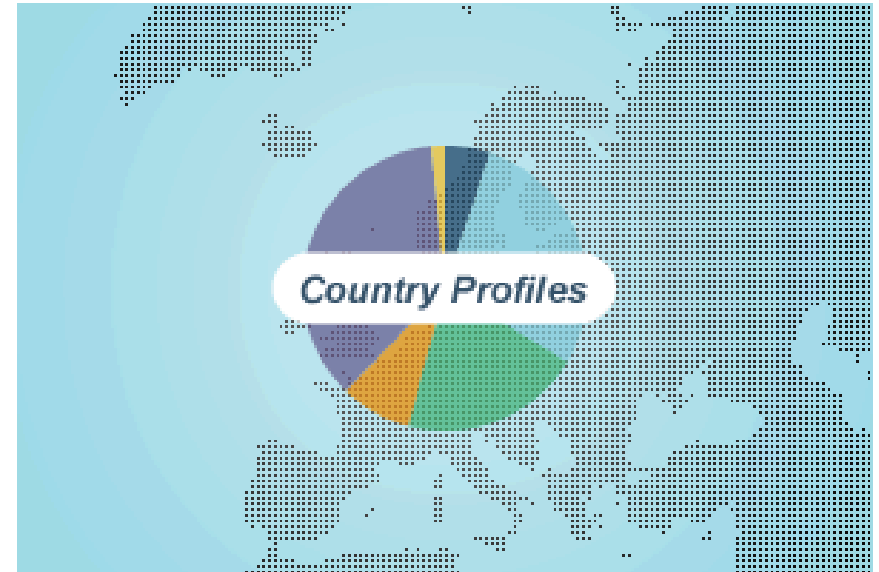
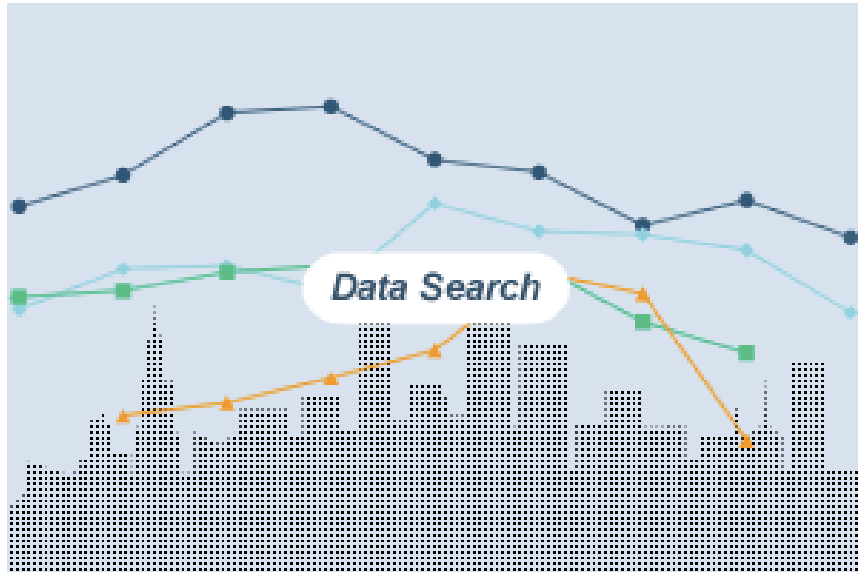
Deep Renovation

Definition

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 75% 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]

- The aim is to facilitate collaboration on the development of ambitious energy efficiency measures by clarifying definitions and highlighting common terminology
- A common understanding of words is critical for working together
 - Words and relations
 - Definition
- Collaboration on text and Data
 - Avoiding duplication
- Available in Chinese

BPIE Datahub



IMT - BuildingRating.org



Members:

[What is a BuildingRating.org Member?](#)
[Lost Password?](#) [Create Free Account](#)

- Home
- About »
- Find Documents »
- Existing Policies »
- Resources »
- About Rating »
- Blog
- News
- Contact

Welcome to BuildingRating.org

Rating and Disclosure : ('rā-tīng ænd dis-'klo-zər) **noun**.

"The practice of evaluating the relative energy efficiency of a home or building and making this information known to consumers."

Document Library 🔍

Policy Map 🌐

Policy Graphics 📄

Energy Label Gallery 📋

- ▶ What is this site?
- ▶ What is Rating & Disclosure?
- ▶ Where is this happening?

Policy Map

Use our Map feature to find out what kinds of **rating policies** exist worldwide.

IMT - BuildingRating.org



Members:

[What is a BuildingRating.org Member?](#)
[Lost Password?](#) [Create Free Account](#)

- Home
- About »
- Find Documents »
- Existing Policies »
- Resources »
- About Rating »
- Blog
- News
- Contact

Welcome to BuildingRating.org

Rating and Disclosure : ('rā-ting ænd dis-'klo-zər) **noun**.

"The practice of evaluating the relative energy efficiency of a home or building and making this information known to consumers."

Document Library

Policy Map

Policy Graphics

Energy Labels

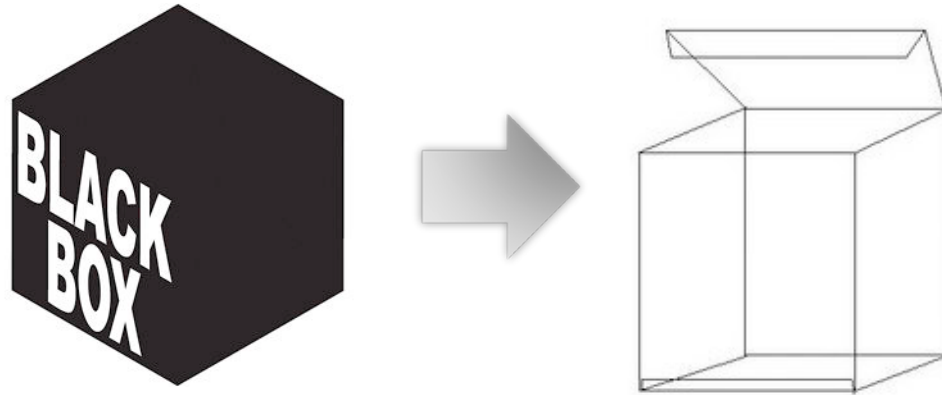
- ▶ What is this site?
- ▶ What is Rating & Disclosure?
- ▶ Where is this happening?

Policy Map

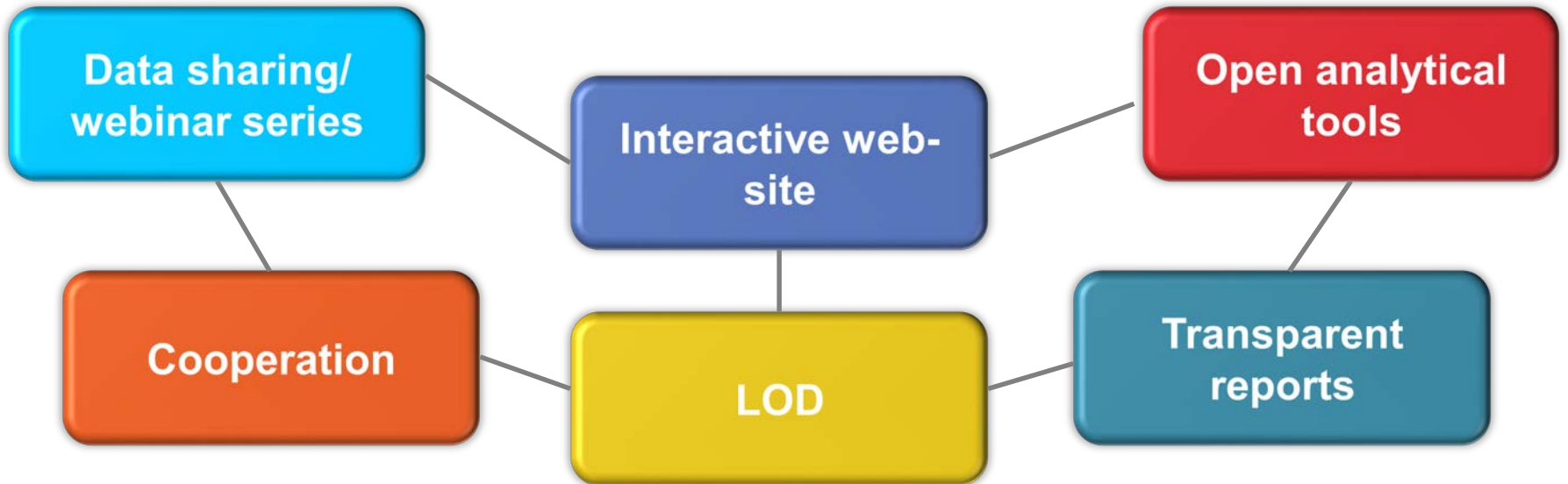
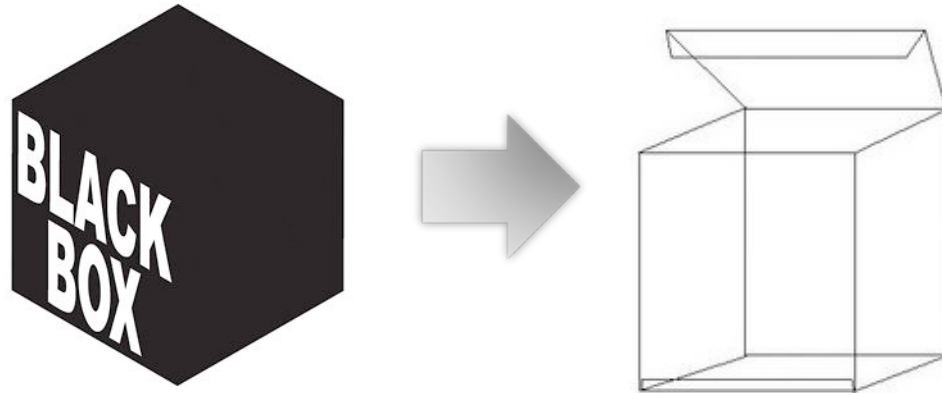
Use our Map feature to find out what kinds of **rating policies** exist worldwide.

Under reconstruction – thesaurus will be integrated

So how does GBPN make the black box transparent?



So how does GBPN make the black box transparent?





Building Policies for a Better World
Thank you!

**A long walk starts with one
step**

Consult our web site: www.gbpn.org

Follow us on Twitter: @GBPNetwork

Send us an email: info@gbpn.org

Join work or communities on GBPN labs