GBPN
Global Buildings Performance Network

*Building Policies for a Better World*

# Reducing energy demand in existing buildings

## *benchmarking tool for best practice renovation policies*

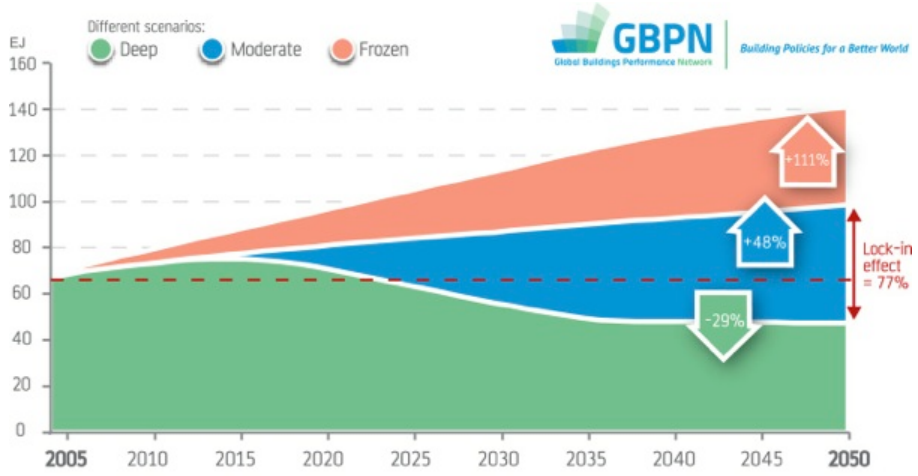
*3rd of June, 2015*

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# Large Risks at Stake
# Need for Fast Action

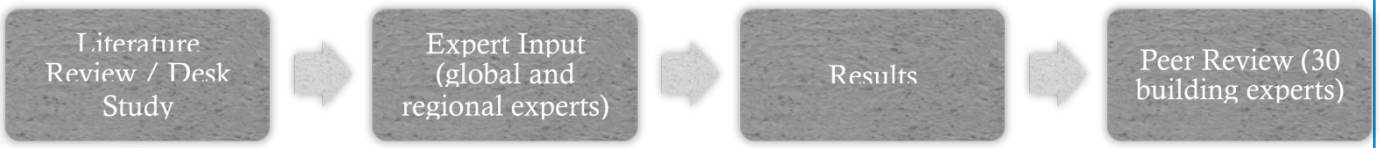
- Limiting climate change
- Buildings - more 1/3 of emissions
- GBPN & CEU – scenario analysis – best practice becomes standard
- Outcome- One path – "**DEEP SCENARIO**"




- By 2050, energy consumption in buildings can be **reduced by 30%** relative to today's levels
- **Renovations to be deeper and upscaled**
- Existing buildings will have to reduce consumption by 70% globally
- Recognise the need for **holistic policy packages** to support the movement
- Aim of project- identify **critical elements** when developing **future energy renovation policies**

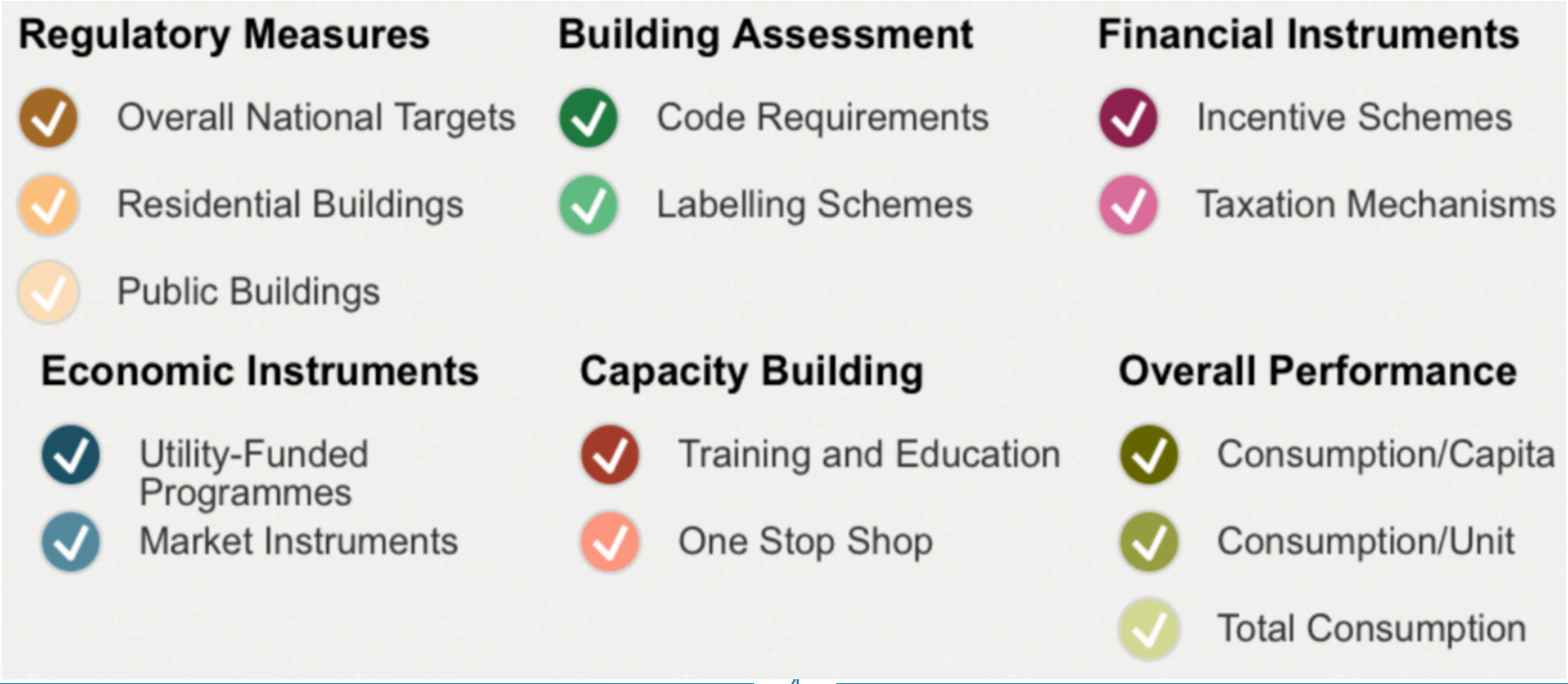
# Methodology

- PHASE 1 - IDENTIFY BEST PRACTICE CRITERIA SELECTION & EVALUATION
  - Identify key themes and elements that support the development of policy packages that drive the existing building stock towards deep renovation
  - Literature on policy packages, current best practice policies
  - Thirty building energy efficiency renovation policy experts
- PHASE 2 - SELECTION OF BEST PRACTICE STUDY REGIONS
  - Selected based on two main criteria:
    - Demonstration of a policy package with energy renovation elements
    - Reduction of residential energy consumption indicators
- PHASE 3 – DEVELOP POLICY TOOL FOR EXISTING BUILDINGS



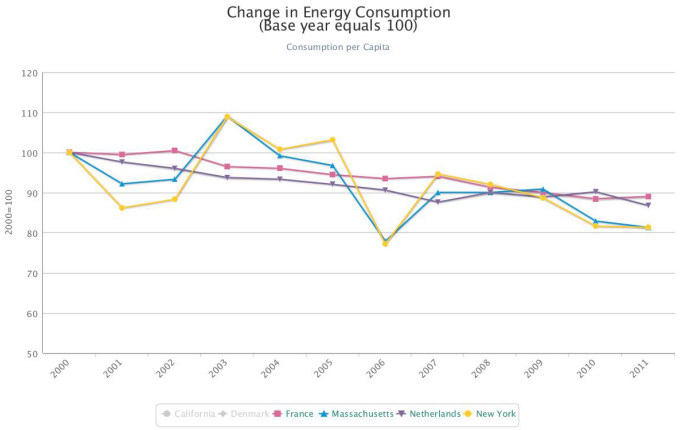
# Phase 1: Identifying Best Practice Criteria for Selection and Evaluation

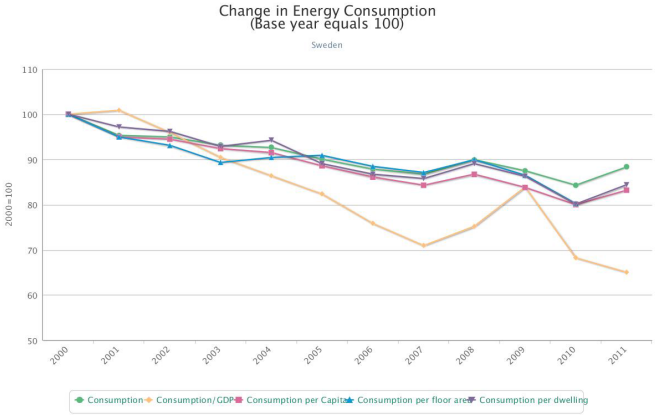
- Support a transformation of the building stock- Focus on holistic and ambitious building renovation policy packages
- 6 Themes & 14 Criteria used to score the best-practices



# Phase 2: Selection of Best Practice Study Regions

- Focussed on the EU and the U.S.A
  - The majority buildings standing in 2030 are already built
  - Renovation activity is already extensive and an essential measure
- **Europe: Denmark, France, Germany, the Netherlands, Sweden & the United Kingdom**
  - The consumption data sourced from ODYSSEE, energy efficiency database.
  - The data for population and floor area were sourced from Eurostat.
- **U.S.A: California, Massachusetts, New Jersey, New York, Oregon & Vermont**
  - Total consumption data sourced from U.S. Energy Information Administration (EIA).
  - Number of dwellings and population estimates sourced from the U.S. Census Bureau; the floor space sourced from Pacific Northwest National Laboratory (PNNL).



# Linking Criteria and Regions: The Scoring System

- Questions (sub-criteria) developed to assess each region using the same detail
- Each criterion was assigned a maximum score of **ten points** that were distributed according to the importance of the sub-criteria within the criteria.
- When scoring regions - to remove any subjectivity a three-tier process was used:
  - Desktop study -local experts & GBPN researchers
  - Peer reviewed - The scoring committee and experts
  - Scoring Workshop - Ten renovation policy specialists from the EU, the US and international scene
  - Eliminate any unrepresentative scores - Jurisdictions scores were reviewed against each other

# Scoring Criteria Template

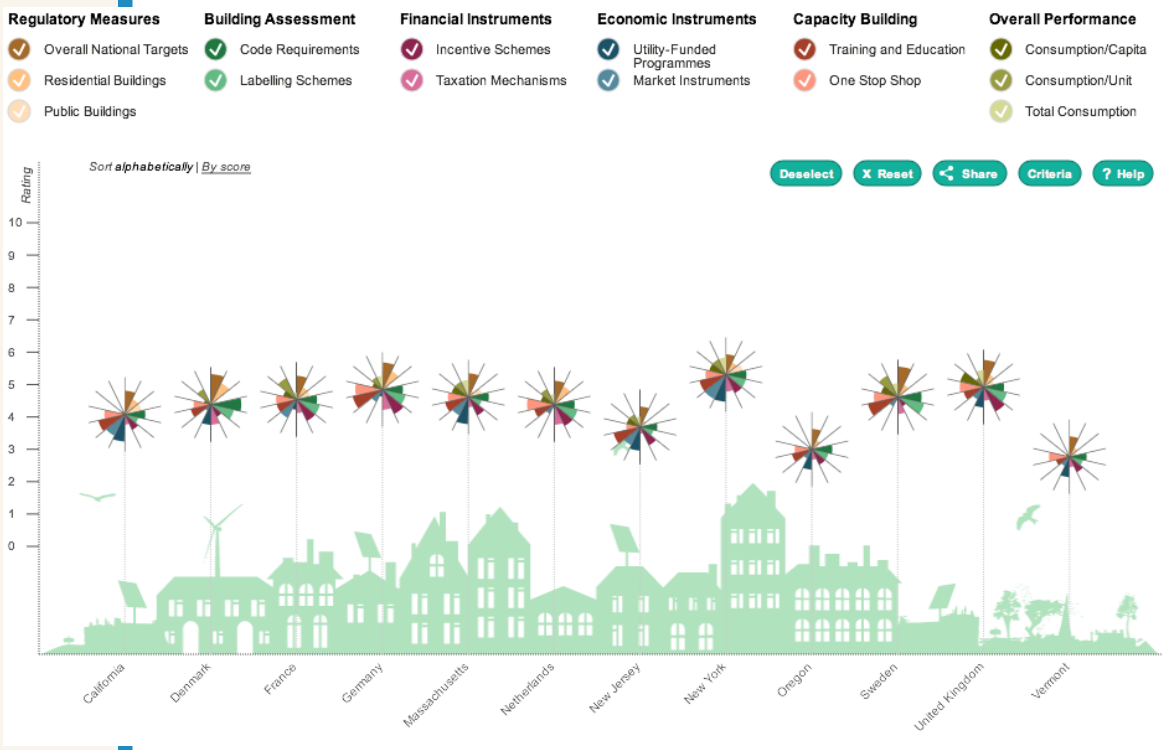
| SELECTION CRITERIA | SCORE | SCORING CRITERIA |
|---|---|---|
| **Theme 1 – Regulatory Normative Measures** | | |
| ***1. Overall country reduction targets*** | | |
| How committed to the target is the region? | 3 | An overall national target will set the level of ambition for the jurisdiction in terms of energy or CO2 savings. The overall reduction target is the umbrella for the different sectoral targets. The highest score is awarded to a jurisdiction with a binding target that is ambitious and supported by a national action plan. |
| How ambitious is the reduction target? | 4 | |
| Has political action been taken? | 3 | |
| Total Score | 10 | |
| ***2. Building & Renovation Targets (for existing residential building stock)*** | | |
| Has the Government set national carbon /energy / energy efficiency reduction targets for the overall building stock? | 3 | Governments should set clear, binding and ambitious targets (in terms of depth and scale) that provide direction to all parties involved and give a clear focus for investment and market development. Energy performance (EP) targets will require for the whole residential building stock to be improved/upgraded to a specific level in a certain number of years. The highest score will be given when a region has a full set of reduction and renovation targets for the existing building stock. |
| Are renovation targets included in the national carbon / energy / energy efficiency targets? | 3 | |
| Is there a roadmap leading to these targets? Y/N (Description of roadmap). Do the roadmaps integrate energy performance of buildings with broader societal goals (social issues such as health, job creation, etc.)? | 4 | |
| Total Score | 10 | |

# Best Practice Regions – Scores against each criteria

| Jurisdiction | Overall national | Residential buildings | Public buildings | Code requirement | Labelling schemes | Incentive Schemes | Taxation mechanisms | Utility-funded Programmes | Market instruments | Training and education | One stop shop | Consumption / capita | Consumption / unit | Total Consumption |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| California | 6 | 4 | 4 | 5 | 3 | 4 | 2 | 7 | 6 | 7 | 5 | 0 | 0 | 0 |
| Denmark | 8 | 6 | 1 | 8 | 6 | 3 | 5 | 5 | 1 | 5 | 4 | 1 | 4 | 0 |
| France | 6 | 3 | 3 | 5 | 6 | 6 | 3 | 2 | 5 | 5 | 5 | 3 | 6 | 1 |
| Germany | 7 | 5 | 1 | 5 | 6 | 7 | 5 | 1 | 3 | 8 | 7 | 2 | 3 | 3 |
| Massachusetts | 6 | 1 | 3 | 5 | 3 | 5 | 2 | 7 | 5 | 6 | 5 | 4 | 4 | 4 |
| Netherlands | 6 | 5 | 1 | 5 | 6 | 6 | 5 | 0 | 2 | 5 | 7 | 3 | 4 | 2 |
| New Jersey | 5 | 1 | 0 | 4 | 3 | 5 | 1 | 6 | 5 | 7 | 3 | 3 | 3 | 2 |
| New York | 5 | 3 | 4 | 5 | 5 | 5 | 4 | 7 | 7 | 7 | 5 | 4 | 4 | 4 |
| Oregon | 5 | 2 | 1 | 5 | 4 | 4 | 2 | 5 | 2 | 5 | 4 | 0 | 0 | 0 |
| Sweden | 8 | 3 | 1 | 6 | 7 | 2 | 4 | 0 | 2 | 8 | 6 | 4 | 6 | 3 |
| United Kingdom | 7 | 3 | 2 | 5 | 6 | 7 | 3 | 5 | 3 | 5 | 6 | 6 | 2 | 4 |
| Vermont | 5 | 2 | 1 | 4 | 3 | 4 | 2 | 5 | 2 | 3 | 5 | 0 | 0 | 0 |

# Phase 3: Policy Tool for Renovation

- Interactive Visualization of research & analysis
  - *Combines criteria and best practices in an online tool*
- You can analyse & compare
  - 12 best practice policy packages vs 14 defined criteria
- Three "tabs"
  - *Interactive Tool*
  - *Create Graphs*
  - *Policy Packages*



# Phase 3: The Policy Tool For Renovation - *tutorial*



# Key Findings from the Tool

1. Main outcome of the project – **the development of a set of fourteen criteria** define the key elements of a best practice policy package
2. Energy Renovation is an **emerging field-** scope for further progress
3. **Reduction in consumption** linked with **holistic policy packages**– address key aspects of renovation –trend in **6 key criteria** that represent carrots, sticks and tambourines
4. **No such thing as an overall "best"** package – Right **balance of elements** adapted to their **local context**
5. **Absence of clear and ambitious renovation targets**
6. Lack of full sets of **consumption data** to analyse the best practices
7. Tool shows positive actions are being taken - Each region can **learn from current best practices**

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# Thank you!

# Let's stay in touch ...

*Consult our web site: www.gbpn.org*

*Follow us on Twitter: @GBPNetwork*

*Send us an email: sophieshnapp@hotmail.co.uk*

| | National Targets | Res Targets | Public Targets | Code Reqs | Labelling | Incentives | Taxation | Utility-Funded | Market Instruments | Training & Educat | One-Stop-Shop | Con/Cap | Con/Unit | Total Con |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Consumption** | | | | | | | | | | | | | | |
| **Mass** | x | | | x | | x | | x | | x | x | | | |
| **NY** | x | | | x | x | x | | x | x | x | x | | | |
| **UK** | x | | | x | x | x | | x | | x | x | x | | |
| **Germany** | x | x | | x | x | x | x | | | x | x | | | |
| **Sweden** | x | | | x | x | | | | | x | x | | x | |
| **Consumption per Capita** | | | | | | | | | | | | | | |
| **UK** | x | | | x | x | x | | x | | x | x | x | | |
| **Mass** | x | | | x | | x | | x | | x | x | | | |
| **NY** | x | | | x | x | x | | x | x | x | x | | | |
| **Sweden** | x | | | x | x | | | | | x | x | | x | |
| **Netherlands** | x | x | | x | x | x | x | | | x | x | | | |
| **New Jersey** | x | | | | | x | | x | x | x | | | | |
| **France** | x | | | x | x | x | | | x | x | x | | x | |
| **Consumption per Unit** | | | | | | | | | | | | | | |
| **Sweden** | x | | | x | x | | | | | x | x | | x | |
| **France** | x | | | x | x | x | | | x | x | x | | x | |
| **Mass** | x | | | x | | x | | x | | x | x | | | |
| **NY** | x | | | x | x | x | | x | x | x | x | | | |
| **Netherlands** | x | x | | x | x | x | x | | | x | x | | | |
| **Denmark** | x | x | | x | x | | x | x | | x | | | | |
| **New Jersey** | x | | | | | x | | x | x | x | | | | |
| **Germany** | x | x | | x | x | x | x | | | x | x | | | |
| **REDUCTION IN ALL INDICATORS** | | | | | | | | | | | | | | |
| **Sweden** | x | | | x | x | | | | | x | x | | x | |
| **Mass** | x | | | x | | x | | x | | x | x | | | |
| **NY** | x | | | x | x | x | | x | x | x | x | | | |
| **UK** | x | | | x | x | x | | x | | x | x | x | | |