EPBD implementation and consequences for cultural heritage buildings

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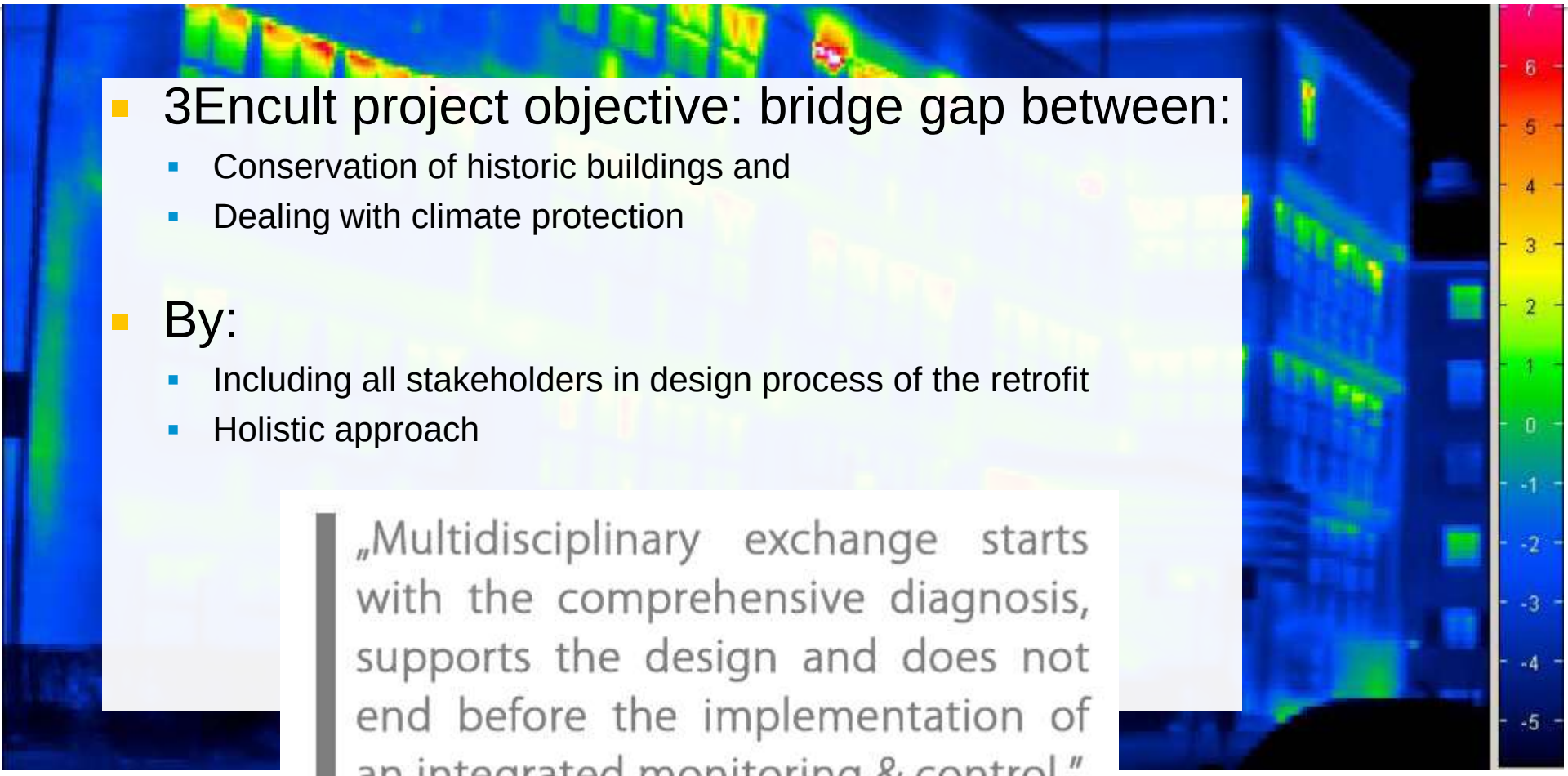
About 3Encult project



- 3Encult project objective: bridge gap between:
  - Conservation of historic buildings and
  - Dealing with climate protection
- By:
  - Including all stakeholders in design process of the retrofit
  - Holistic approach

> „Multidisciplinary exchange starts with the comprehensive diagnosis, supports the design and does not end before the implementation of an integrated monitoring & control."

Why energy legislation for historic buildings?

- Legislation → driving force → impact on large scale
- Integration historic buildings in EU legislation (EPBD) → > impact on energy saving in historic buildings

3ENCULT:

- Do we want to integrate historic buildings in the EPBD?
- How can we achieve this in a optimal way knowing what historic buildings need and don't need

EPBD: global content

EU:

- EPBD: framework
- Scope of:
  - Requirements
  - Tools/instruments

National/regional:

- Implementation: details
- Actual level of requirements
- Concrete specifications

EPBD: global content

Framework existing buildings:

- Major renovation → minimum energy performance requirements:
  - Building envelope, if retrofitted
  - Building systems, when installed / replaced / upgraded

- Energy performance certificate:
  - Buildings, when constructed / sold / rented
  - Buildings, if public and > 500m^2

- Large heating and air-conditioning systems:
  - Regular inspection

EPBD: implementation for historic buildings

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EFFICIENT ENERGY FOR EU CULTURAL HERITAGE

Mandatory for historic buildings:

- Large heating and air-conditioning systems:
  - regular inspection
- Major renovation:
  - Minimum system requirements for new, replaced or upgraded technical building systems (heating, cooling, ventilation, domestic hot water)

If technically, economically & functionally feasible

Exemption for historic buildings:

- Major renovation:
  - Minimum requirement for building envelope
- Energy performance certificate

- buildings officially protected as part of a designated environment or because of their special architectural or historical merit, in so far as compliance with certain minimum energy performance requirements would unacceptably alter their character or appearance;
- buildings used as places of worship and for religious activities;

TNO innovation for life

Possible requirements for historic buildings

- Not necessarily certain minimum energy requirements

- The obligation to do inspections on certain aspects of the building

- The obligation to make/display a certificate with an energy label
- The obligation to consider the technical, environmental and economic feasibility of certain measures via e.g. an analysis
  - Combined with impact analysis on cultural heritage value?

Pros and cons of optional requirements

- High level of force ←→ High impact

versus

- Low level of force ←→ Low impact

- Important question: What is the aim? What do we want to reach?
  - Different instruments lead to different goals
  - Or: Different goals are reached via different instruments

Aims of energy legislation

- To guarantee a minimum quality level, within reasonable boundaries
- To guarantee all (reasonable) energy saving potential is capitalized
  - Not only the frontrunners
  - But also the masses
  - And the back markers
- To encourage innovation
- …

(not exhaustive)

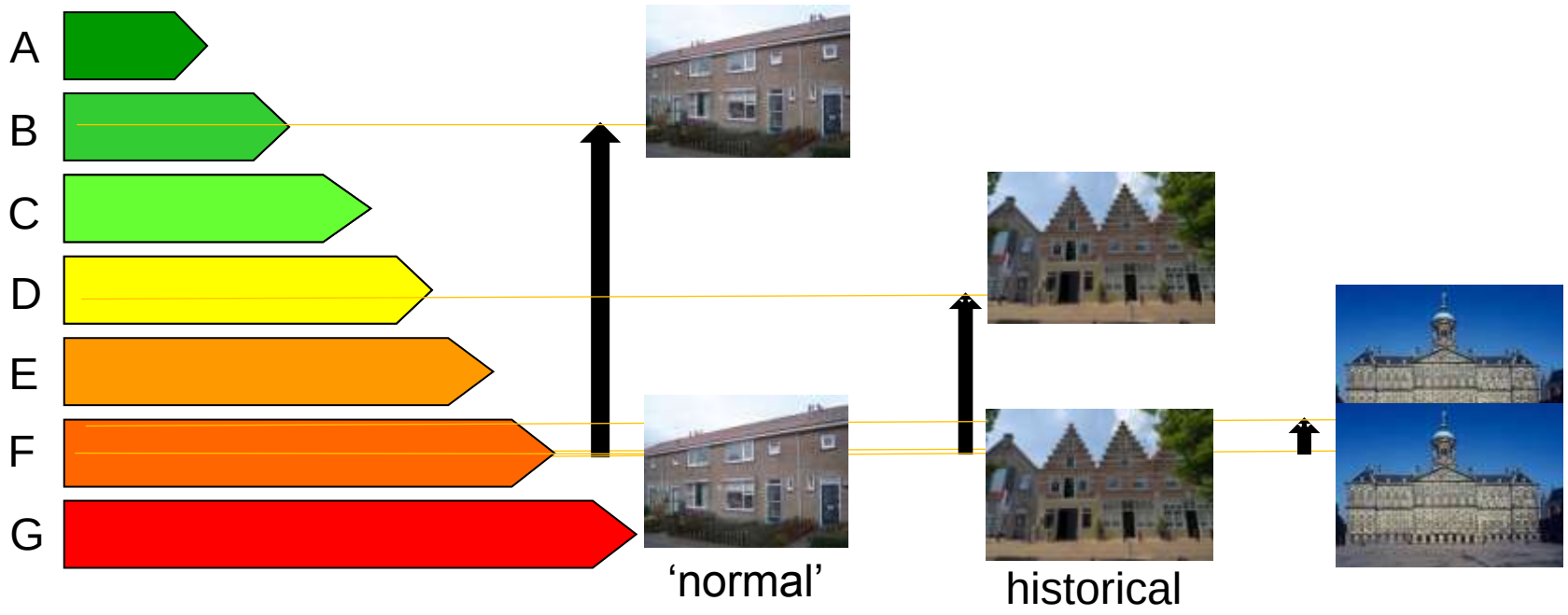
Energy assessment: rating

- It's not necessarily about reaching a certain ABSOLUTE minimum energy requirement (e.g. in MJ/m^2 or CO_2-emission/m^2)
- Should we judge/rate a historic building on an ABSOLUTE energy performance level?
- Is it possible instead to focus on: what energy performance level do we reach given the possibilities?
- So:
  - Not a focus on maximizing energy savings
  - But a focus on optimizing energy savings

- Aim rating methodology:
  - Visualize the effort that is taken to reach optimal energy saving potential
  - Make benchmarking possible
  - Encourage improvements and innovation
- Can the unique characteristics of historic buildings somehow be captured in the energy rating method?

Energy rating

Low energy use

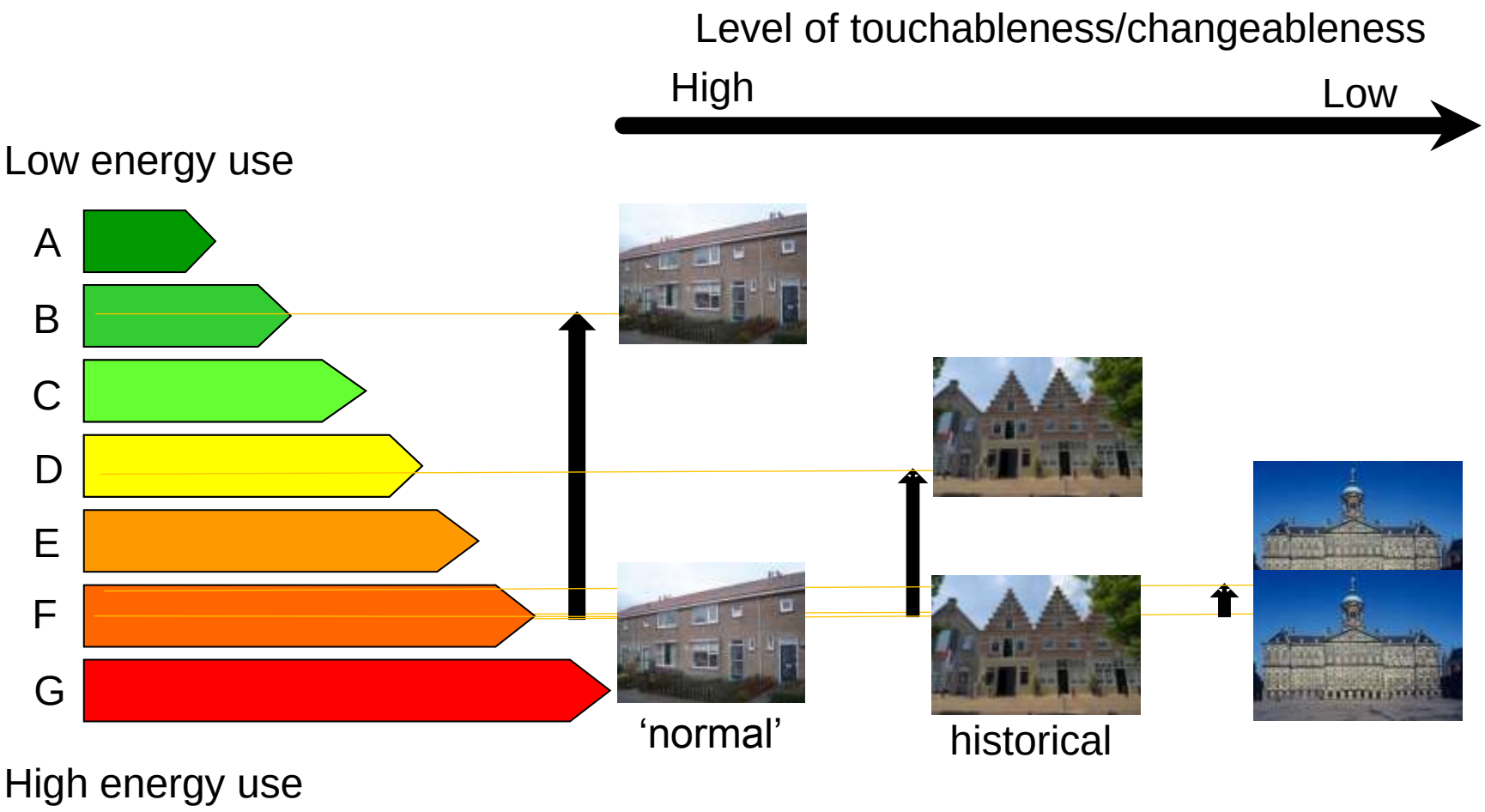


High energy use

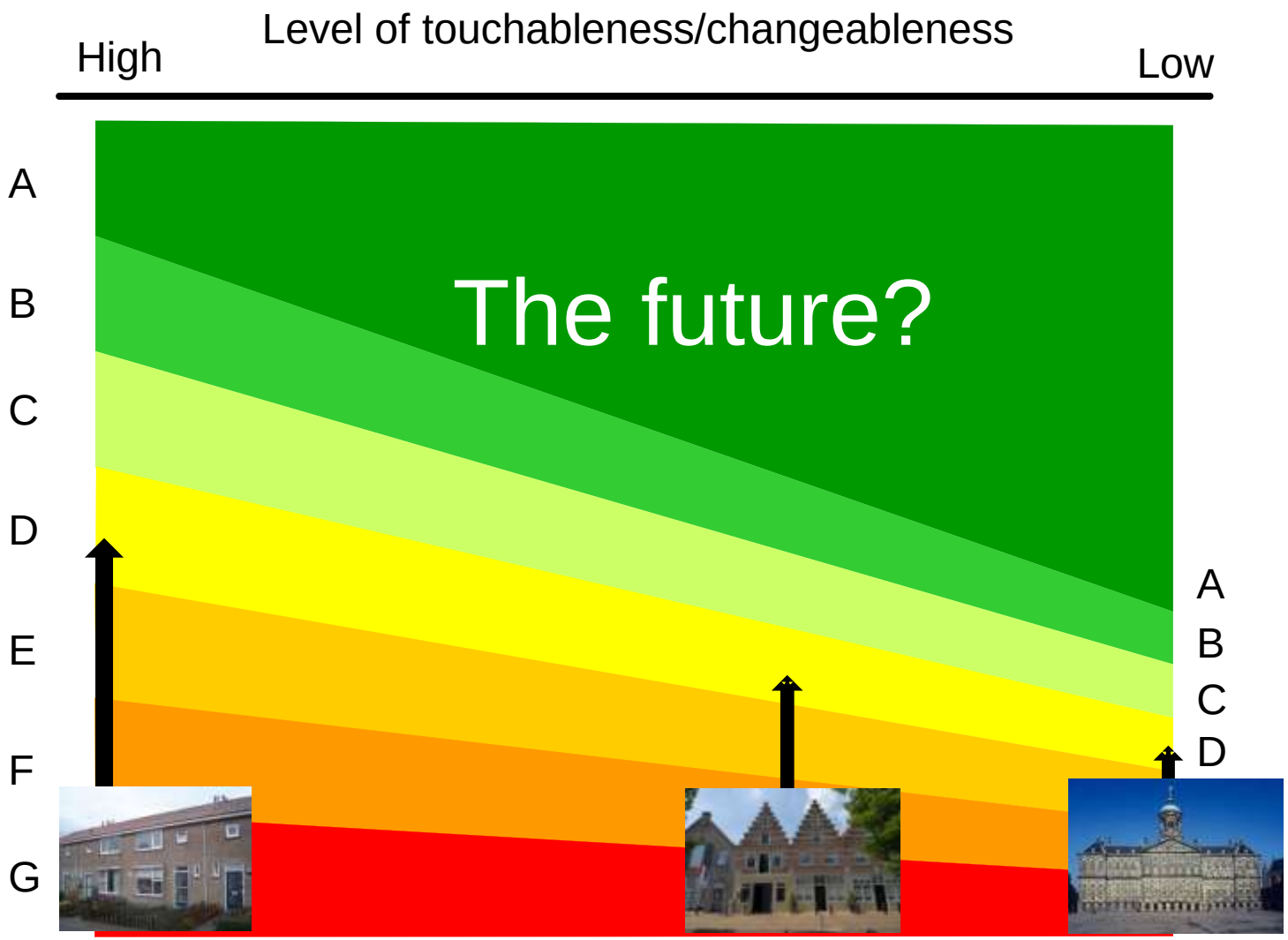
Danish study

Energibesparelse i procent ift. reference.	Fredede bygninger og bygninger med høj bevaringsværdi	Bevaringsværdige bygninger	Bygninger med enkeltstående arkitektoniske kvaliteter	Anonyme bygninger
Vinduer og solafskærmning				
Forsatsrammer med energiglas, U = 1,7	-	5 %	-	-
Lavenergi vinduer, U = 1,4	-	-	11 %	-
Superlavenergi vinduer, U = 1	-	-	-	14 %
Isolering og tæthed				
Hulmursisolering, - gavle, 75 mm	4 %	4 %	-	-
Delvis udvendig efterisolering af ydervægge, gavle, 200 mm + hulmursisolering 75 mm	-	-	8 %	-
Nye højisolerede kviste, 200 mm i vægge og 250 mm i tag	-	-	2 %	-
Total udvendig efterisolering af ydervægge + hulmursisolering, 75 mm + 200 mm	-	-	-	26 %
Tagetage efterisoleres u. ombygning: 200 mm på loft, 100 mm i skunke, 75 mm i skråvægge	16 %	16 %	16 %	-
Tagetage efterisoleres inkl. ombygning: 400 mm på loft, 250 mm i skunke, 200 mm i skråvægge - inkl. nye kviste	-	-	-	22 %
Tæthed, 0,4 h-1	-	3 %	-	-
Tæthed, 0,3 h-1	-	-	6 %	-
Tæthed, 0,1 h-1	-	-	-	12 %
Ventilation				
Kontroludsugning	- 2 %	- 2 %	-	-
Central ventilation	-	-	7 %	-
Decentral ventilation	-	-	-	9 %
Varme- og vandinstallationer				
Ny varmecentral, inkl. efterisolering af rør i kælder	13 %	13 %	13 %	13 %
Energibesparelse				
Samlet energibesparelse ift. reference ved udførelse af de markerede tiltag	29 %	37 %	51 %	73 %

Energy rating



Energy rating, weighing the level of possible changes



3ENCULT Study tours & workshops for Local governments

- **Exchanges with experts and your peers:**
  - **Building, energy, and cultural heritage experts** all have different perspectives, yet need to work together on energy efficient renovation in historic buildings.
  - **Local government political and technical representatives** in turn need to address this in a wider context, from strategy to planning, from implementation to monitoring.
- **We bring these groups together at study tours and workshops – join us!**
  - Next workshop and study tour planned for March 2013 - **Bologna, Italy (focus: warm climate).**
  - Later in 2013 or early 2014 events with an **Alpine climate focus** – workshop and study tour in Innsbruck (Austria) and Bolzano (Italy).
  - 2 additional workshops planned for **New Member States**. Interested in hosting? Sharing your city´s actions?
- **Interested in linking? Sharing approaches? Obtaning guidance?**
  - Contact: Giorgia Rambelli, ICLEI Europe
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Thank You!

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