EEPPEE by atee

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on energy efficiency

Presqu'île de Giens,
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CONSUMPTION, EFFICIENCY& LiM!TS

Impacts and cost-effectiveness of major energy efficiency policies for existing buildings: what do we exactly know and what can we learn?

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Panel 8: Monitoring & Evaluation
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Outline

- Background and objectives
- Overview of the case studies
- Focus on the comparisons
- Conclusions and perspectives

Background

Evaluation of Efficiency of Public Policies on Energy Efficiency

What?

Initiative launched in 2015 by ATEE (association of French stakeholders of energy efficiency markets) with the support of ADEME

What for?

Promotion of practices and uses of evaluation in order to **favour evidence-based approaches** in the design and management of energy efficiency policies

Objectives of the study

- **what quantitative data** are available about the efficiency of public policies for energy efficiency in existing buildings?
- **how** are they **evaluated**?
- can they be **compared**? (and how?)

➔**Analysis of ex-post bottom-up evaluations** of 12 major EE policies for existing buildings (in 9 countries)

cases selected with the "successful policies" facility from the MURE database

Overview of the case studies

- Cases for detailed comparisons

ITALY Tax credit	FRANCE Tax credit	FRANCE Eco-PTZ (zero-interest rate loans)	GERMANY KfW programme
HOU-ITA30	HOU-FRA7	HOU-FRA31	HOU-GER33

Code in MURE

- Other case studies

BELGIUM Financial incentives	ENGLAND Warm Front	IRELAND Better Energy Homes	NETHERLANDS Covenant for rent sector
HOU-BEL30	HOU-UK5	HOU-IRL42	HOU-NLD27
UK **CERT (EEO 2008-2012)**	**AUSTRIA** **EPC for Federal buildings**	**UK** **CRC Energy Efficiency Scheme**	**DENMARK** **EEO scheme**
HOU-UK20	TER-AU12	TER-UK12	GEN-DK6

Overview of the case studies (2)

- Type of data reviewed

	HOU-ITA30 (tax credit)	HOU-FRA7 (tax credit)	HOU-FRA31 (eco-PTZ)	HOU-GER33 (KfW programme)	HOU-BEL30 (financial incentives)	HOU-UK5 (Warm Front)	HOU-IRL42 (Better Energy Homes)	HOU-NLD27 (covenant)	HOU-UK20 (CERT)	TER-AU12 (EPC for Federal buildings)	TER-UK12 (CRC EE Scheme)	GEN-DK6 (EEO scheme)
Public budget												
Administration costs												
Amounts of investments												
Cost per action type												
Number of actions or participants												
Statistics per action type												
Expected energy savings in 2020												
Total energy savings "achieved"												
Average energy savings per participant												
Estimates of CO2 emissions avoided												

Data found and clear

Data partially found and/or unclear

Data not found

Overview of the case studies (3)

- Examples of information about evaluation methods

MURE code (country)	Evaluation method (energy savings)	Type of baseline	Data about energy consumption	Adjustments / causality
HOU-FRA7	building stock modelling	scenario without the measure	conventional energy consumption	no adjustment; causality taken into account through the assumptions in the baseline scenario
HOU-FRA31				
HOU-GER33	detailed engineering calculations on a sample	energy consumption before the actions	conventional energy consumption	adjustment factor for "before" consumption; no causality assessment
HOU-ITA30	simplified engineering calculations	energy consumption before the actions	conventional energy consumption	no adjustment ; no causality assessment

Focus on the comparisons

	Italy	France	Germany
Cumulated savings	**Gross** final energy savings ≈ **0,96 Mtoe/y** thanks to actions implemented **over 2005-2014**	**"Net"** final energy savings ≈ **1,28 Mtoe/y** thanks to actions implemented **over 2005-2012** (**tax credit**) + 0,19 Mtoe/y for actions over 2009-2013 (eco-PTZ)	**Gross** final energy savings ≈ **1,18 Mtoe/y** thank to actions implemented **over 2007-2014**
New savings	≈ **0,13 Mtoe/y** of **"new"** final energy savings on average during 2008-2013	≈ **0,16 Mtoe/y** of **"new"** final energy savings on average during 2005-2012 (tax credit)	≈ **0,15 Mtoe/y** of **"new"** final energy savings on average during 2007-2014

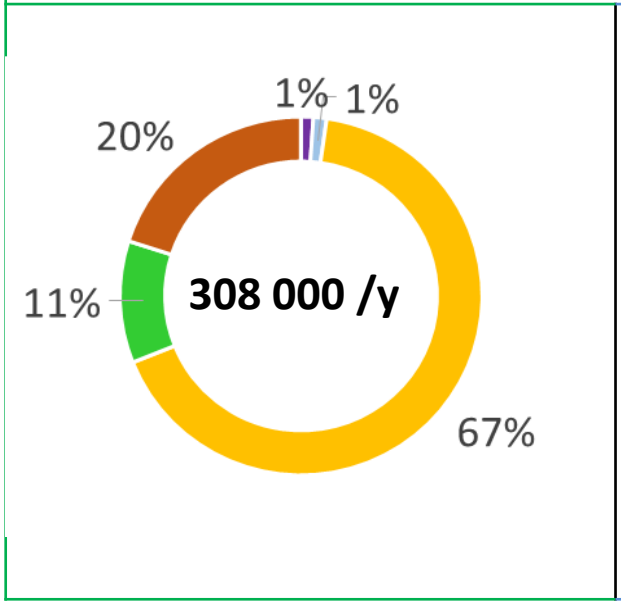
Data source: NEEAPs

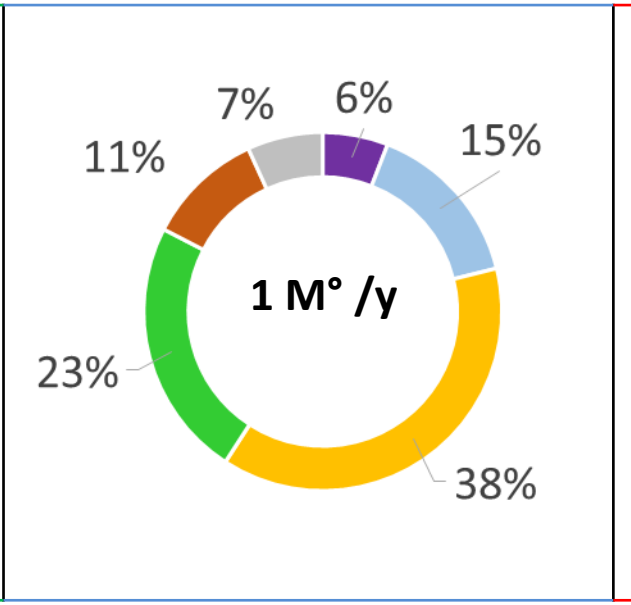
Results look similar but are **not comparable** !
+ **uncertainties** difficult to assess

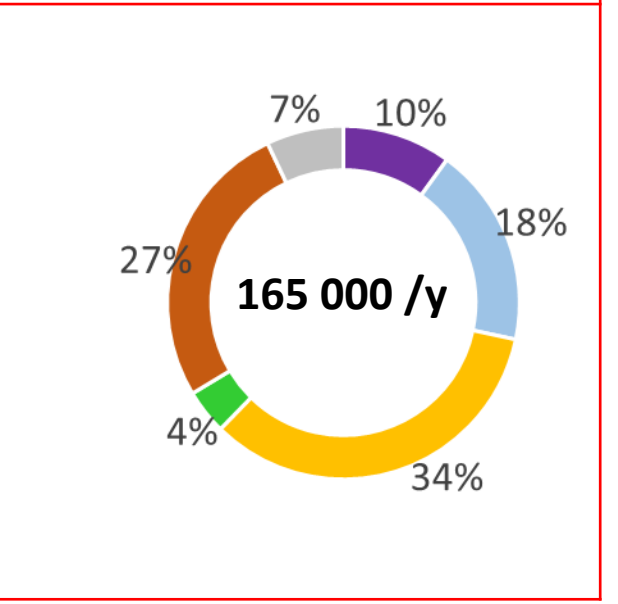
Focus on the comparisons (2)

Italy	France	Germany

Distribution of the number of individual actions for 2012-2014







Data sources detailed in the paper

- external walls
- roofs/lofts/floors
- windows/shutters/doors
- RES-heat and heat pumps
- other heating systems
- others

+ about 68 000/y for RES-heat in Germany (MAP – Marktanreizprogramm)

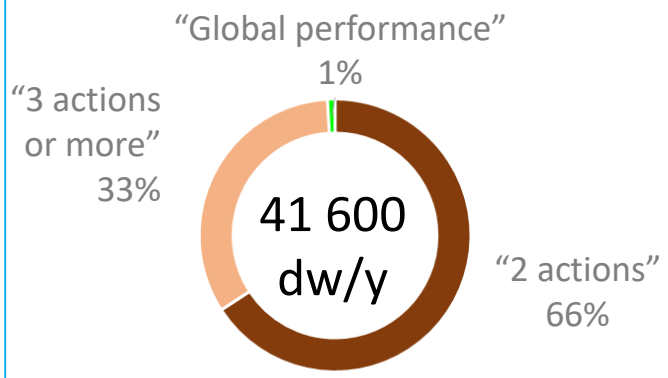
Focus on the comparisons (3)

- Details about “multi-actions” renovations

Italy

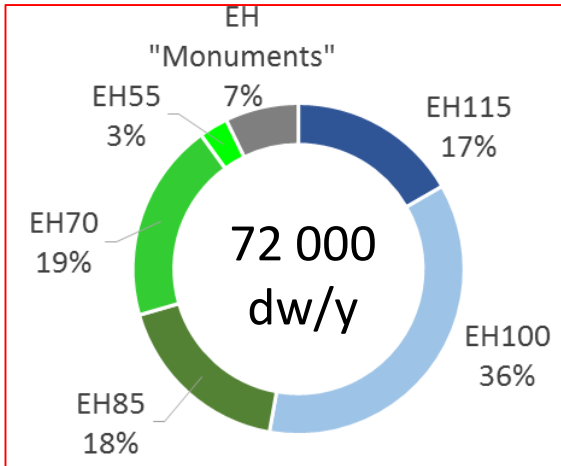
- < 3000 dwelling/y
- no detail about performance level
- focus on biomass heating systems

Minimum required ≈ 80 kWh/m².y (primary energy + f(HDD))



France (% of renovated dwellings)

Minimum required for “global performance” = 80 (or 150) kWh/m².y (primary energy)



Germany (% of renovated buildings)

Minimum perf. = EH115 (≈ 80 kWh/m².y primary energy)

Data sources detailed in the paper

	Rate for individual actions	Rate for multi-actions renovations
Italy	≈ 1.3%/y	≈ 0.02%/y
France	≈ 4.8%/y	≈ 0.20%/y
Germany	≈ 0.7%/y	≈ 0.25%/y

Conclusions (1): data & documentation

+ Many data available
in particular about public budget and energy savings (effect of EED reporting **?**)

- Definitions and documentation very heterogeneous (sometimes with inconstancies in the same source)
→ important barriers for an effective use of data

Different monitoring & evaluation practices because depending on different policy objectives (and evaluation objectives) but a common need clearly identified:

➢ **Organising data collection early enough** (= before launching the measure) **and taking into account what will be needed for the evaluation** (= planning the evaluation from the start)

Conclusions (2): evaluation methods

- **Predominance** of simplified engineering calculations based on **conventional energy consumption**
- **Diversity of methodological choices** (baseline, adjustments, …): depending on policy/evaluation objectives but also on **data availability**
- Development of **online data collection** (for data about participants and actions implemented)
- Few examples of comparisons between "estimated" and "measured" energy savings: **important gaps**, explanations need to be further investigated

- Large **uncertainties** on results → quantitative analyses to be taken with **caution**
- Challenge: **combining "engineering" and "statistics" expertise**

Conclusions (3): efficiency & indicators

- **Communication** mostly about **"gross" results** → biased view of the effectiveness of policies **(?)**
- **No silver bullet to assess "net" results** (causality) + no example found of quantitative assessment of spill-over or market transformation effects
- **Scope** of costs and benefits **not always consistent** (cf. "marginal" vs. "total", "direct" vs. "indirect") + **diversity in indicators** to monitor success
- Importance in decision making of **non-energy impacts** (for ex., impacts on public budget)

Useful to **distinguish** [**cost-effectiveness of actions**] and [**efficiency of policies**]

Perspectives

Need for…

- **a more transparent & robust documentation** for energy savings assessment
- **tools to collect data** (ICT) and ways to process them
- means to **verify energy savings** (and explanations)
- **broader view** (combination of engineering, statistics, market analysis)

➔New Horizon 2020 project: **EPATEE** (http://epatee.eu)
Evaluation into **P**ractice
to **A**chieve **T**argets for **E**nergy **E**fficiency

Thanks for your attention: time for discussions !

REMEMBER M&E INFORMATION IS USEFUL ONLY IF IT IS USED!

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