



# What can we learn from the application of tools in real-world projects?

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# Agenda

- ✔ Main questions studied and methodology
- ✔ Pilot projects used
- ✔ Main results
- ✔ Ask the experts - real-world projects across Europe. Q&A session



# Approbation of criteria

- ✔ **Test** application of criteria in real energy service projects.  
Incorporation of technical quality criteria into tenders and service contracts
- ✔ **Obtain feedback** from Clients, ESCO's and Facilitator in qualitative and quantitative manner
- ✔ **Support** energy service providers and clients in developing their projects

Test criteria and support pilot projects  
our target

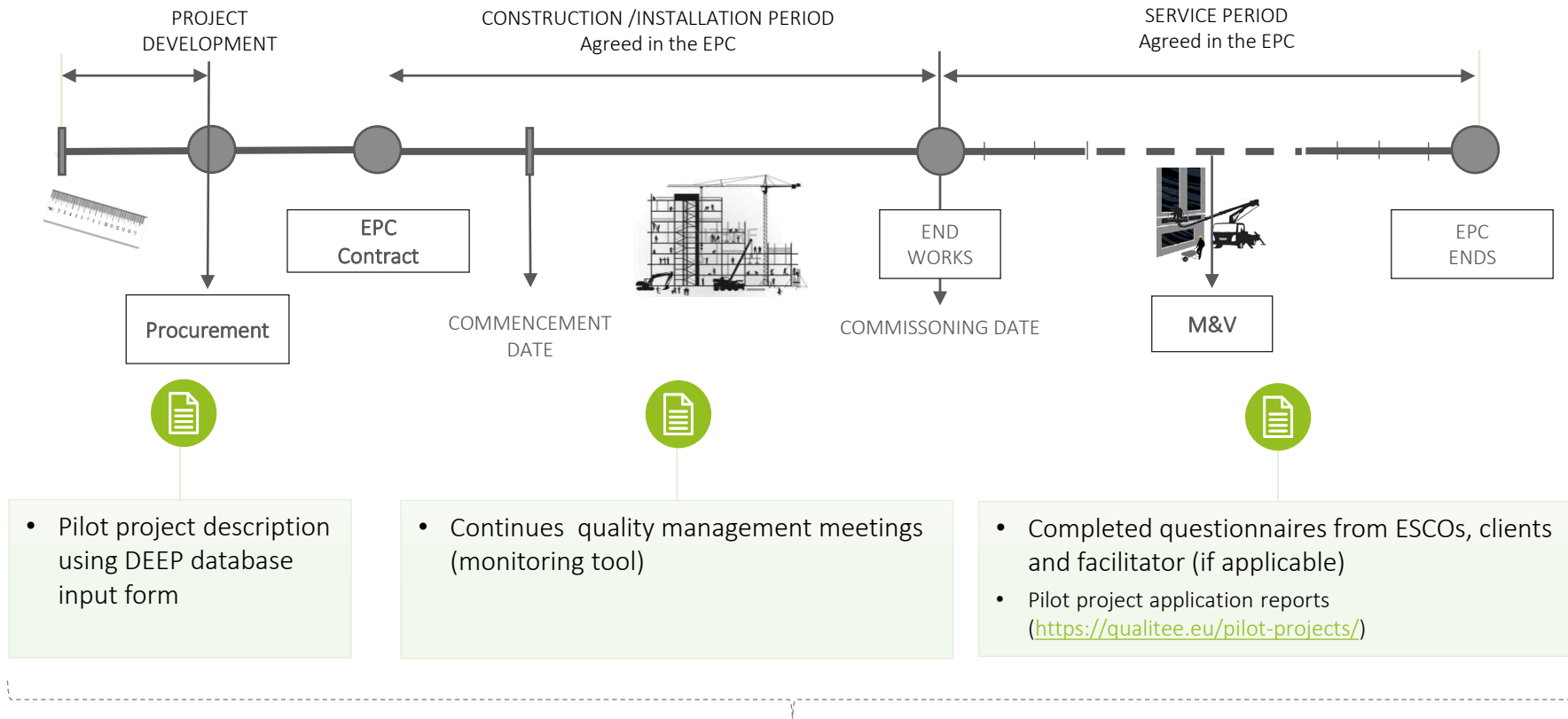


24 pilot projects



# Main questions studied and methodology

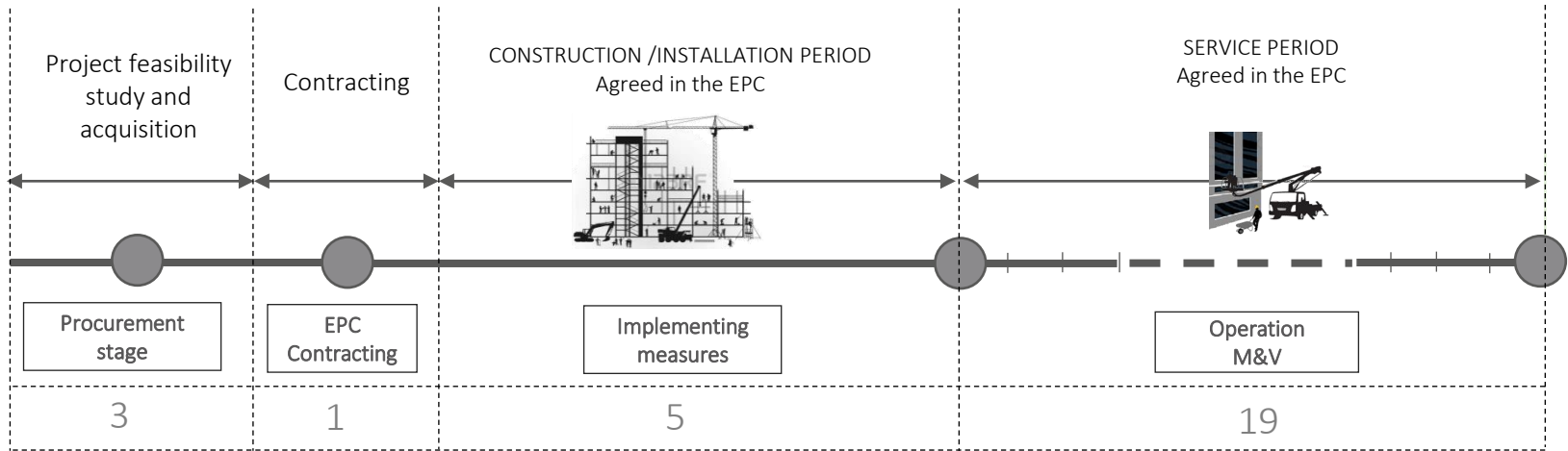
- ✓ Importance of criteria
- ✓ Possibilities to **assess** and **provide evidence**
- ✓ Time and resources needed to evaluation criteria
- ✓ How many and which of the criteria were used
- ✓ Something needs to be changed **removed / added**



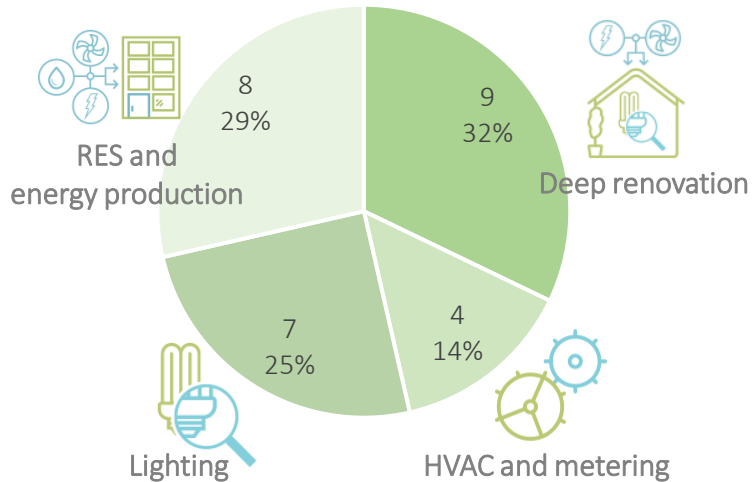
continues feedback



# In total 28 pilot projects from 11 EU countries



## Type of projects



## Size of investments



from 4 000 EUR to 8.6 million EUR

# Pilot projects

## United Kingdom



PV car ports, EV charging, ground source heat pump & various efficiency measures for municipal offices in Cambridgeshire



Efficiency measures, CHP and PV for eight public buildings owned by Dundee City Council

## Czech Republic



Dormitory building complexes of Czech Technical University in Prague



Retrofit of 11 000 m<sup>2</sup> buildings of Academy of Fine Arts in Prague

## Bulgaria



Kindergarten in Sadovo Municipality



School in Kostinbrod Municipality



Efficient refrigeration at distributional centre Ruvela, Sofia

## Belgium



Municipal buildings in City of St. Niklaas



University Campus VUB, Brussels



# Pilot projects

## Greece



Energy upgrade of the heating and cooling system for 1 792 m<sup>2</sup> big office building in Athens.



Re-design of the indoor lighting 103 m<sup>2</sup> retail clothing shop in Athens.



Energy upgrade of the indoor lighting system in 171 m<sup>2</sup> office

## Germany



- Lighting renovation Office building in Wiesbaden
- Lighting renovation of 2 000 m<sup>2</sup> office building and warehouse in Mainz-Kastel
- Lighting renovation of 3 500 m<sup>2</sup> factory building in Bochum
- Lighting renovation of 6 200 m<sup>2</sup> factory building in Bochum
- Lighting renovation in Furniture industry in Bochum

## Latvia



Deep retrofit of residential building in Riga



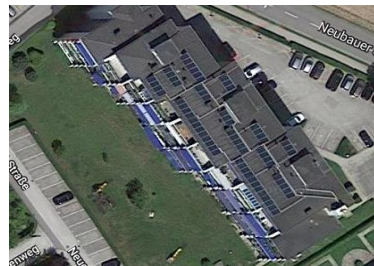
PV for Gulbene municipality office building

# Pilot projects

## Austria



Change of building heating boilers, lighting system and optimization of building control Triumph international, Wr. Neustadt



Energy source and optimization of building control in Residential building Hörsching

## Slovenia



Deep energy retrofit of a 6675 m<sup>2</sup> dormitory in Maribor



Centre for School and Outdoor Education (CŠOD), Bohinj

## Slovakia



Deep retrofit of municipal building in Nováky with floor area of 829,2 m<sup>2</sup>



New heating management system implementation in Psychiatric Hospital of P. Pinel

## Spain



Monitoring and telemetric measurement in supermarket chain



PV for newspaper building



Deep retrofit of student dormitory ŠD5 - Starohájska 2900/8 in Bratislava





# Results achieved

Investments triggered	Annual primary energy savings	Annual CO <sub>2</sub> emissions savings
~ 33 million EUR	~ 33 GWh/year	~ 9 000 tons



PV car ports, EV charging, ground source heat pump & various efficiency measures for municipal offices in Cambridgeshire, UK



Re-design of the indoor lighting in Greece



School renovation in Bulgaria



# Main questions studied



Importance of criteria



Possibilities to **assess** and **provide evidence**



**Time and resources** needed to evaluation criteria



How many and **which** of the criteria were used

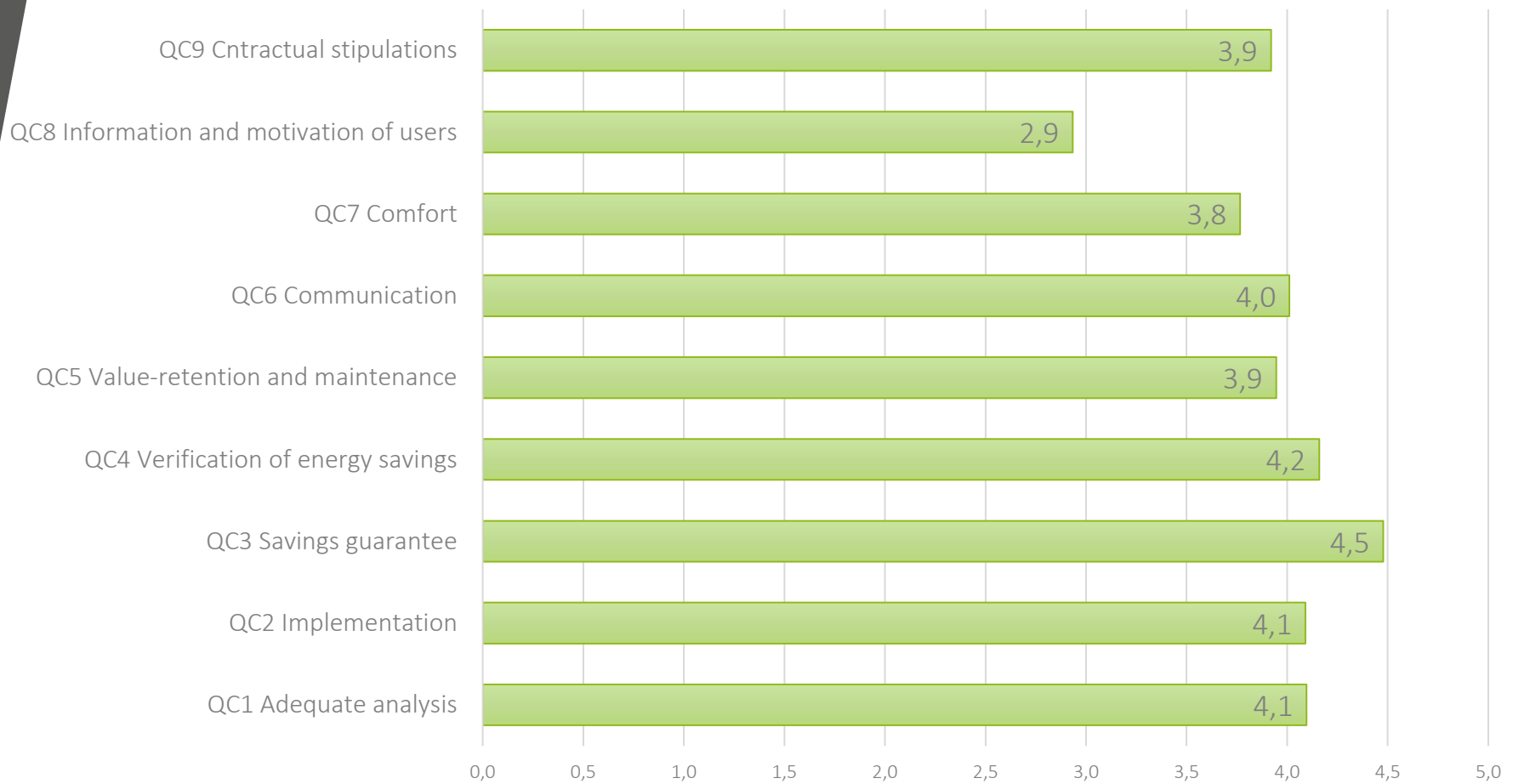


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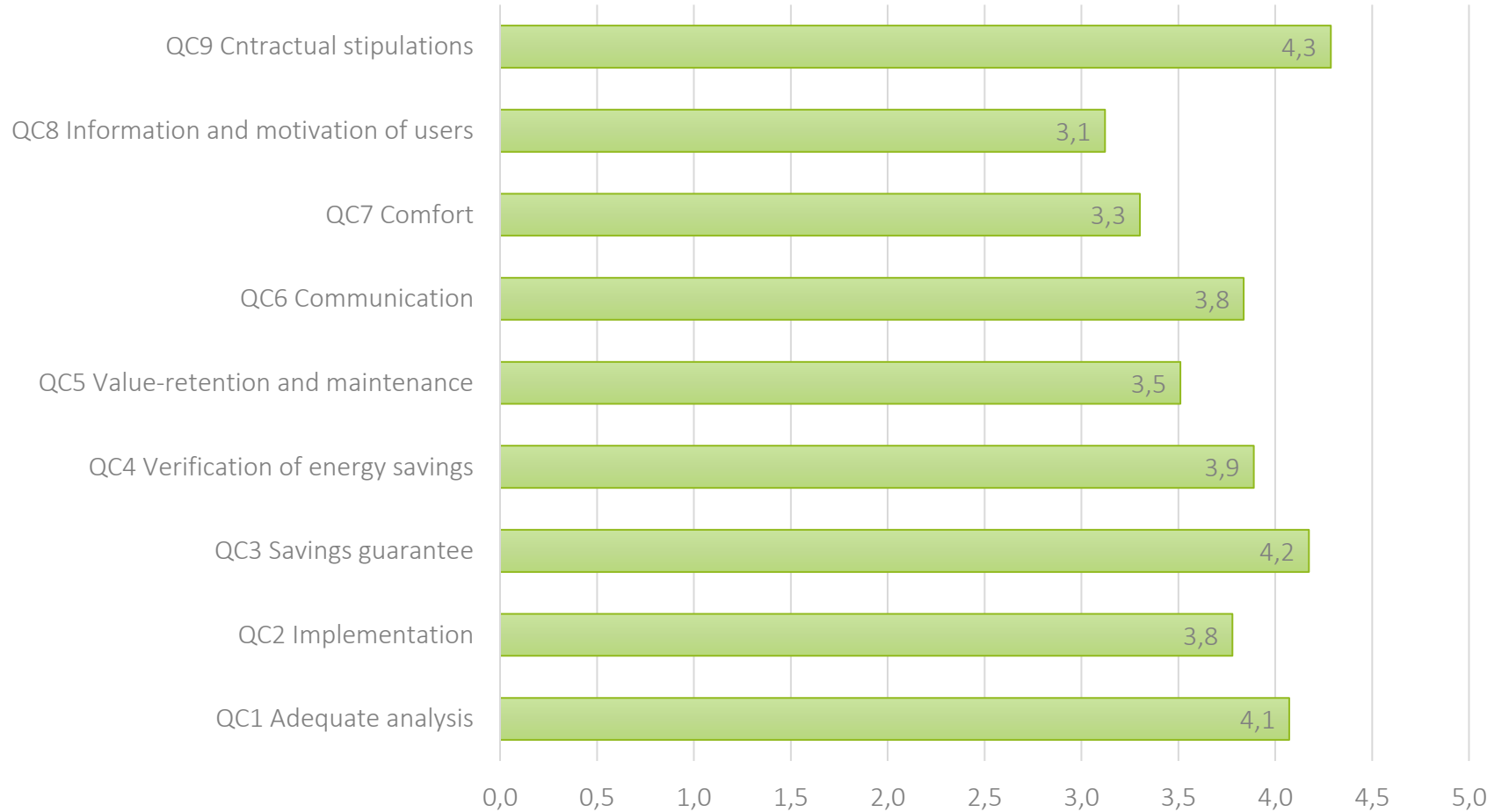
## ARE THE CRITERIA SPECIFIC ENOUGH?

SCALE: 1=NOT SPECIFIC - 5=VERY SPECIFIC



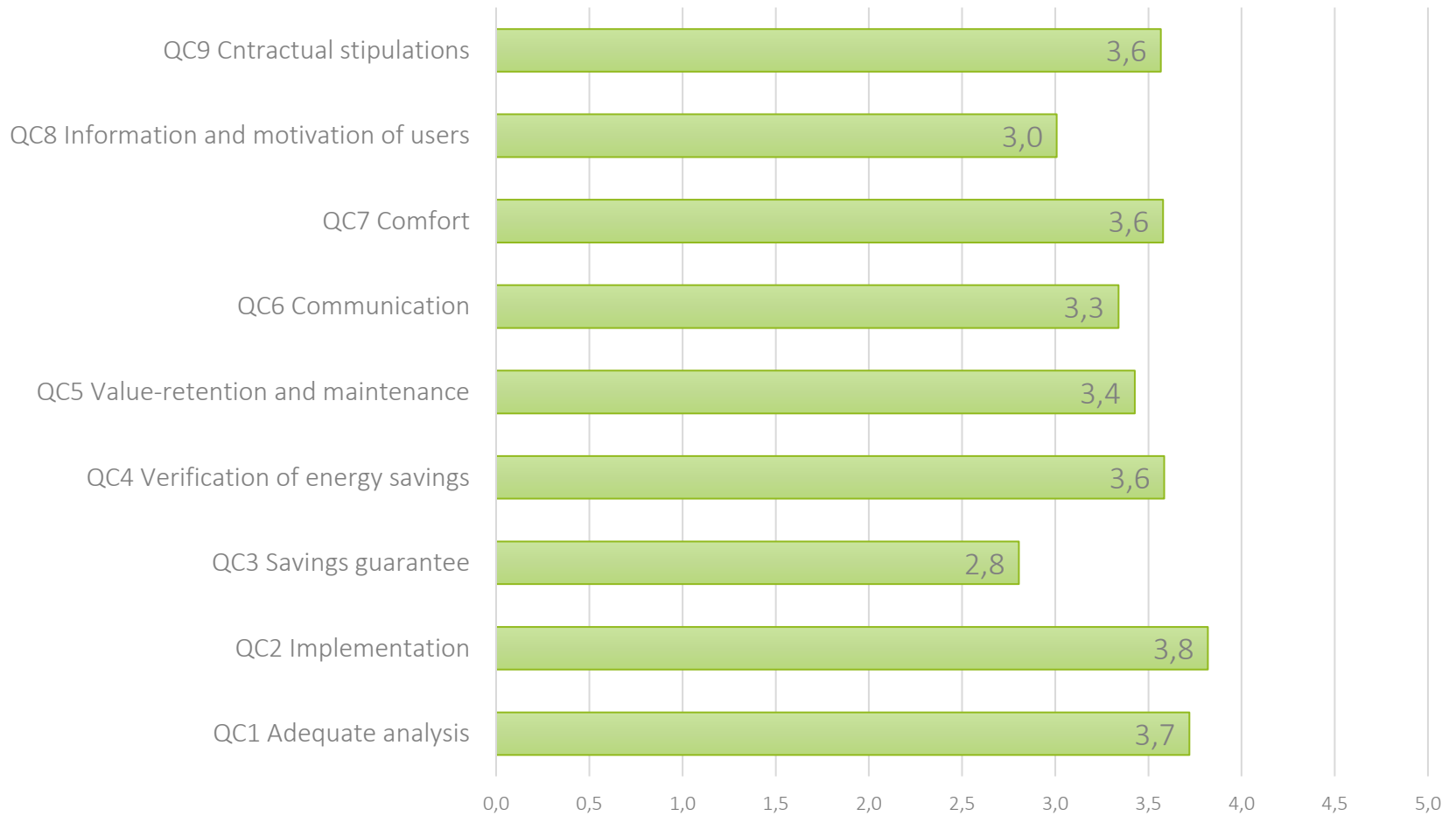


## HOW EASY IS IT TO FIND EVIDENCE? SCALE: 1=NOT EASY - 5=VERY EASY





## HOW TIME CONSUMING IS IT TO EVALUATE? SCALE: 1=VERY TIME CONSUMING - 5=NOT TIME CONSUMING







# General conclusions

- ✔ Most of the criteria were relevant and used during the pilot projects;
- ✔ The application of criteria depends from the project to project, for example sometime QC1 (Adequate analyses) is done by facilitator and not by the ESCO (CZ; BG). Work with users (motivation, comfort) are relevant only if the building operation is part of the contract (AT);
- ✔ **QC3 (Savings guarantee) and QC3 (Verification of energy savings) were identified as the most important categories in assessing the quality;**
- ✔ Criteria around QC3 (Savings guarantee) and QC4 (Verification of energy savings) were identified as the most specific. Although criteria around QC3 were consider most time consuming to evaluate;



# General conclusions

- ✔ Criteria related to **QC8 (Information and motivation of users)** were considered less specific. However, most of the respondents considered QC8 as important often criteria were not used. Similar with criteria around **QC7 (comfort)**.
- ✔ Respondents find it difficult to find evidence for criteria related to QC8 (Information and motivation of users) and QC7 (comfort);
- ✔ Several respondents suggested that, although questions about **QC7 (Comfort)** and **QC8 (Information and motivation of users)** are very important, they are not often included as part of the EPC contract. *It seems that it is not really clear how to measure and assess such quality criteria. Some respondents recommended distinguishing between mandatory criteria and the rest of the criteria (EL; BG)*
- ✔ Quality criteria could be too technical if they should be analyzed by clients, in this case certified quality label should be developed and/or ESCO register (EL);



# Real-world energy service projects across Europe.

## Q&A session

✔ Pilot project application reports: <https://qualitee.eu/pilot-projects/>

Country	Pilot projects
Austria	<ul style="list-style-type: none"><li>• Triumph International</li><li>• Residential building Hösching</li></ul>
United Kingdom	<ul style="list-style-type: none"><li>• South Cambridgeshire District Council</li><li>• Dundee City Council</li></ul>
Slovenia	<ul style="list-style-type: none"><li>• Centre for School and Outdoor Education, Bohinj</li><li>• Dormitory building, Maribor</li></ul>
Germany	<ul style="list-style-type: none"><li>• Light Service for 20 offices in Wiebaden</li><li>• Light Service fo Mainz-Kaste</li><li>• Light Service factory building in Bochum</li><li>• Light Service factory building in Bochum</li><li>• Light Service administration building in Bochum</li></ul>
Greece	<ul style="list-style-type: none"><li>• Commercial shop, Parabita S.A (now have 16 months of measurements and results)</li><li>• Office Building, Fysiko Aerio Attikis (Natural Gas Company of the Region of Attica)</li><li>• Central offices of the ETHER Applications Ltd Company</li></ul>
Latvia	<ul style="list-style-type: none"><li>• Gulbene municipal building</li><li>• Apartment building in Riga</li></ul>
Slovakia	<ul style="list-style-type: none"><li>• Service Centre in Nováky town</li><li>• Psychiatric Hospital of P.Pinel</li><li>• Building of student dormitory ŠD5 - Starohájska 2900/8 in Bratislava</li></ul>
Spain	<ul style="list-style-type: none"><li>• Swap&amp;Play (monitoring and metering)</li><li>• Grupo PRISA (PV plant)</li></ul>
Czech Republic	<ul style="list-style-type: none"><li>• Academy of Arts, Prague</li><li>• Czech Tehnical University, Prague</li></ul>
Belgium	<ul style="list-style-type: none"><li>• Municipal buildings in City of St.Niklaas</li><li>• University Campus VUB, Brussels</li></ul>
Bulgaria	<ul style="list-style-type: none"><li>• School in town of Kostinbrod;</li><li>• Kindergarten in town of Katunits</li><li>• Efficient refrigeration a distributional centre in a food retail enterprise</li></ul>



# Wrap up

- ✔ Thank you to all speakers and participants
- ✔ Presentations and recordings will be sent in a follow up email and available on our website. [qualitee.eu](https://www.qualitee.eu) > publications > final conference

- ✔ **Session 3: How can we build trust in Energy Efficiency Services?**

**Date:** 19 June 2020

**Time:** 10:00 – 11:00 Central European Time