

Technical workshop
“Energy audits in buildings – from theory to practice”
Radisson Blu Hotel, Tashkent, 18 October 2023

**Quality assurance of energy audits in
buildings**

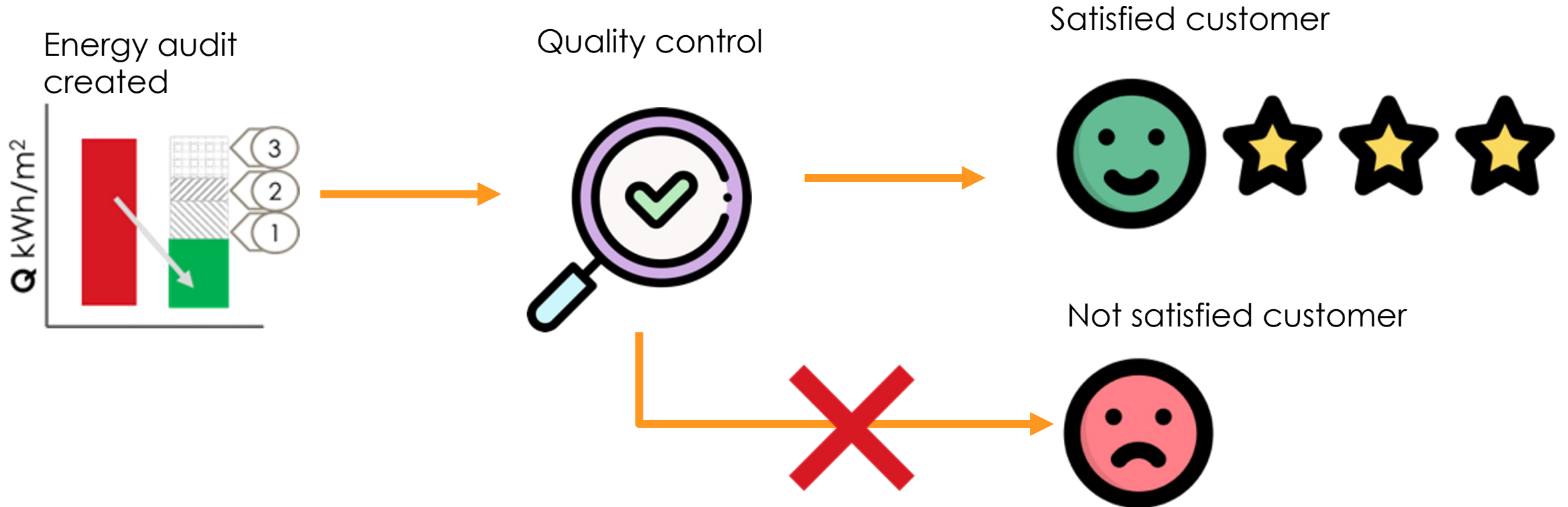
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THE OUTLINE OF PRESENTATION



- How do you understand the purpose of quality control?
- Why quality control is important for energy audits to deliver the benefits and value?
- How high quality is enabled?
- What are the core elements of a quality management system?
- What is the role of methodology
- How quality could be improved and measured?
- What are additional elements helping to improve the quality
- How the quality-improving elements could be seen in different time and scale horizons?

THE QUALITY CONTROL IS NEEDED TO ENSURE HIGH QUALITY ENERGY AUDITS IN THE MARKET

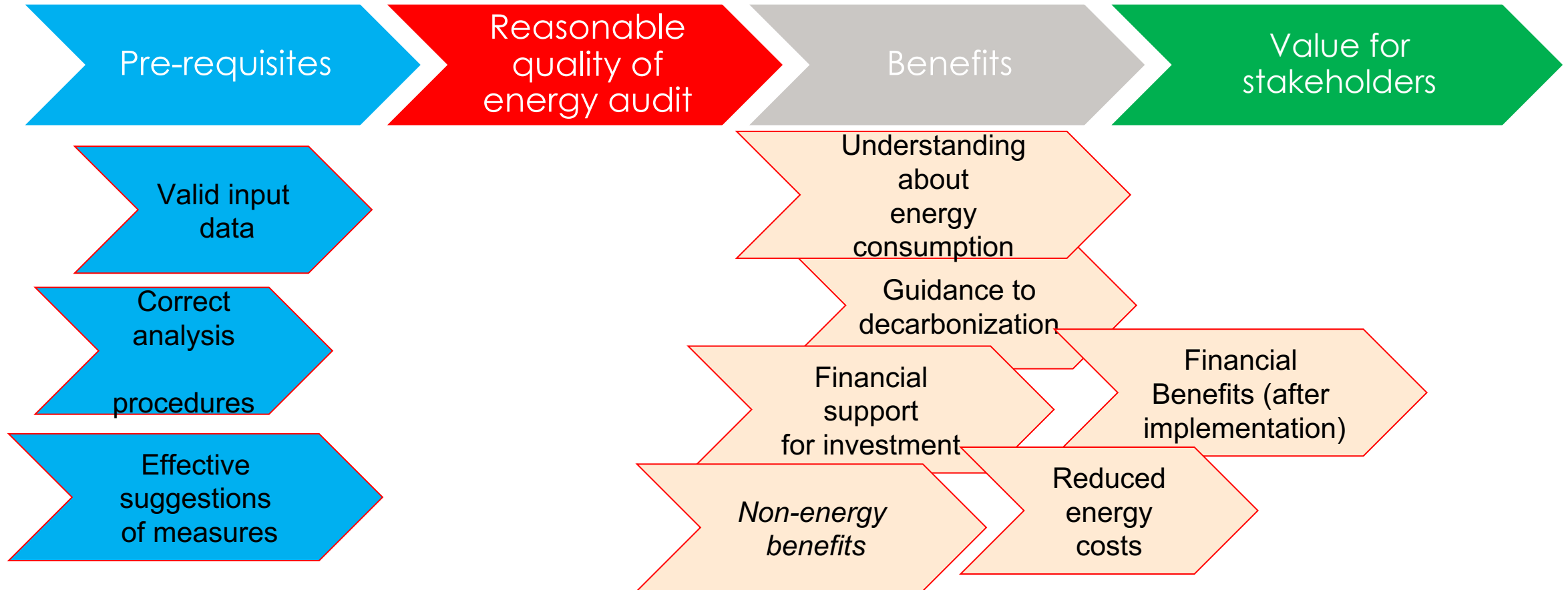


HIGH-QUALITY ENERGY AUDIT - an energy audit that meets the minimum requirements, is performed independently by qualified professionals, and provides significant benefits for all stakeholders involved, while being **cost-effective**

HIGH QUALITY IS NEEDED TO DELIVER THE BENEFITS THAT ENERGY AUDITS UNLOCKS

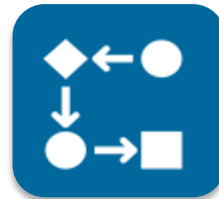


Value chain of energy audits:



Value to stakeholders is created by delivering the benefits to them. Only high-quality energy audit could help to enable the most benefits.

AUDITORS, PROCEDURES AND QUALITY CONTROL ENABLES HIGH-QUALITY ENERGY AUDITS



Quality of auditors	Clarity of procedure	Quality control of reports
<ul style="list-style-type: none">▪ Requirements for certification▪ Auditor specialization▪ List with certified auditors▪ International colaboration	<ul style="list-style-type: none">▪ Legal requirements▪ Guidelines▪ Templates	<ul style="list-style-type: none">▪ Basic validation▪ Spot checks of quality▪ Subcontracting

Factors with influence on the quality of energy audits include the qualification of auditors, the requirements to both content and structure of the audit reports as well as the regularity and depth of audit quality checks.

CORE ELEMENTS OF A QUALITY MANAGEMENT SYSTEM HELP TO MEASURE THE LEVEL OF QUALITY



Minimum requirements for energy audits



Automated Check



Template for energy audit



Quality screening checklist



In-depth quality assessment



On-site visit

METHODOLOGY SETS THE BASIS FOR QUALITY CONTROL CRITERIAS



Requirements stated in the methodology:

- WHAT specifically must be done
- HOW should it be reflected in the report



Quality control checklist

- Are the specific actions done?
- Is the specific information provided in the documentation
- Is it accurate
- Are the assumptions are backed by...

In principle, it is difficult to ask the Energy Auditor to follow specific requests if it is not stated in a legal document.

THE QUALITY COULD BE IMPROVED AND MEASURED BY APPLYING DIFERENT METHODS



 - Based on data provided by energy auditor with report

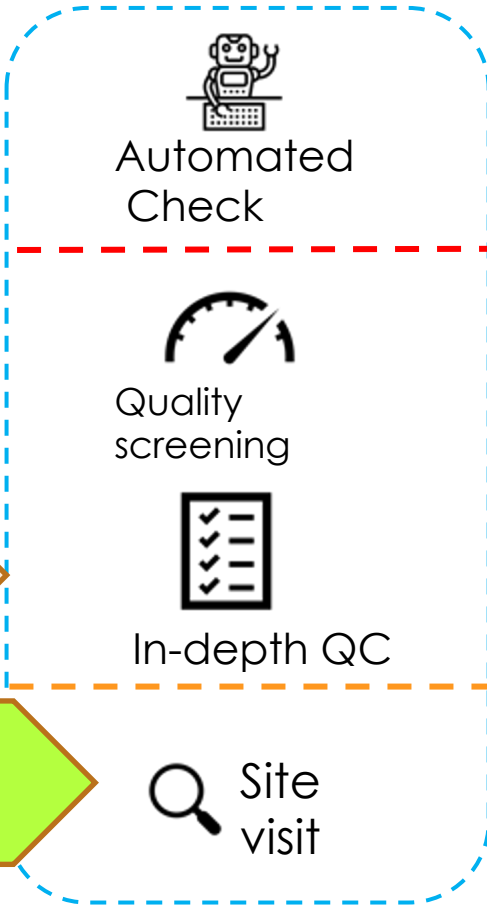
1. Are the required input data provided?

2. The validity against minimum requirements is fulfilled?

3. Correctness of calculations and used assumptions?

4. Correct/realistic data is provided?

Quality assessment



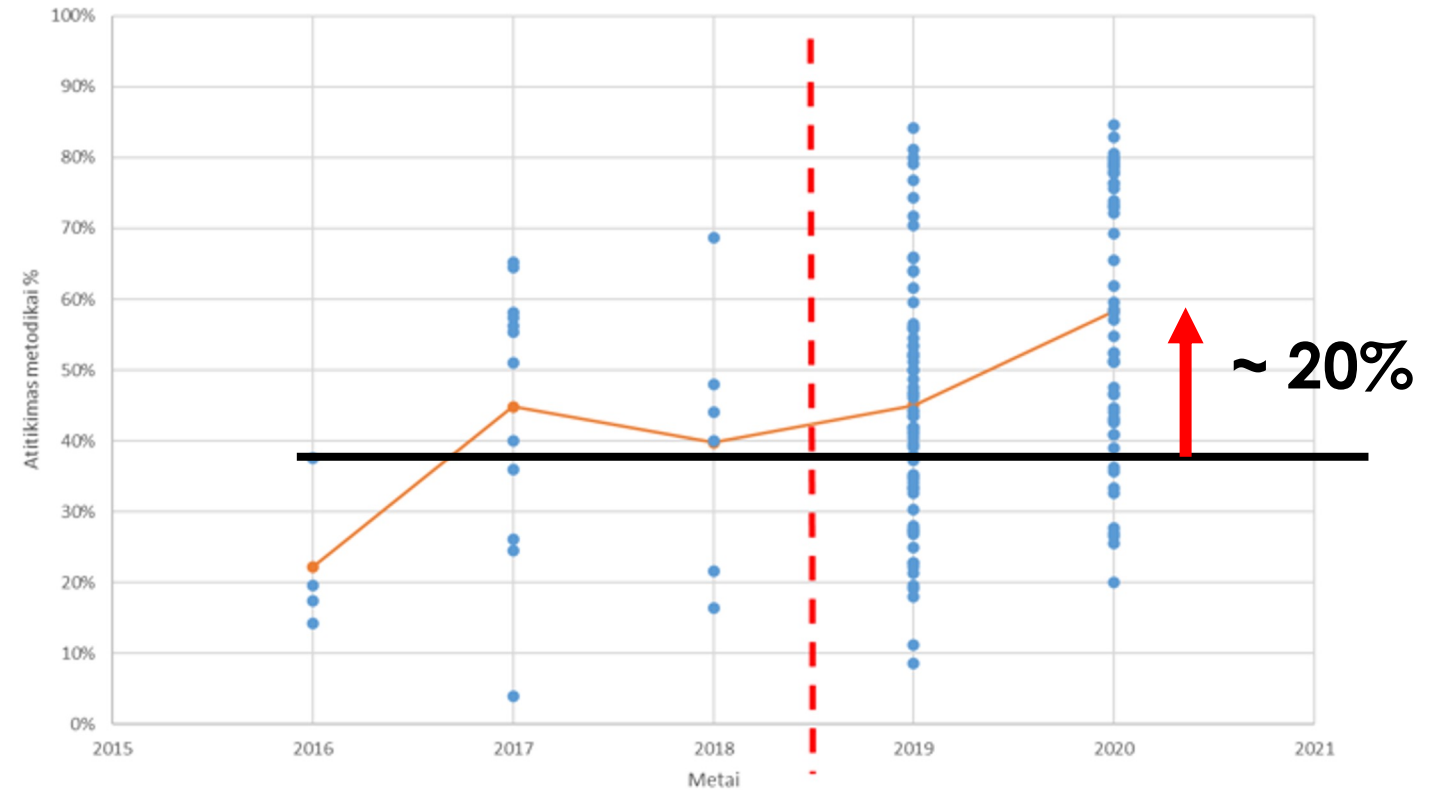
$$I_s = \text{Number of criteria}$$

 - Checked on-site

MEASURING THE QUALITY LEVEL OF AUDITS HELPS TO IDENTIFY THE IMPACT OF QUALITY MANAGEMENT TOOLS



$$IS = \frac{\text{Satisfied criteria}}{\text{Number of criteria}}$$



- Quality level is often discussed, but measurement is rarely measured
- Example of Lithuania shows that measurement enables to understand and act on quality improvement

**The quality could be known and improved only when measured.
Measured value helps to understand the need for additional actions for quality improvement.**

ADDITIONAL ELEMENTS MAY BE USED TO IMPROVE THE QUALITY OF PROVIDED ENERGY AUDITS IN BUILDINGS



Minimum requirements for energy audits



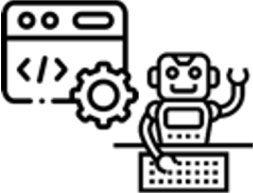
Template for energy audit



Internal overview checklist



Client's input



Provided calculation tool with validation



Quality screening checklist



In-depth quality assessment



On-site visit



Awareness rising

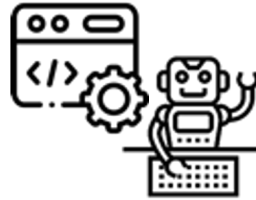


Guidelines for energy auditors

TECHNICAL ELEMENTS ALSO HELPS TO IMPROVE BUILT IN QUALITY OF ENERGY AUDITS



Internal overview checklist



Provided calculation tool with validation

- The same checklist used for quality screening could be shared for energy auditors as an internal overview checklist (by doing that *Transparency* of the QC process is increased)
- In order to reduce human error and workload to perform the calculations – a software tool could be provided for building cases. It enables simplified input data validation to be integrated into the software tool



Client's input

The clients provide the information about facility, its consumption and other reliable information.

Check list for the client – the information that will be needed for energy audit:

DIFFERENT AWARENESS RISING METHODS SUPPORTS THE QUALITY IMPROVEMENT



Awareness rising

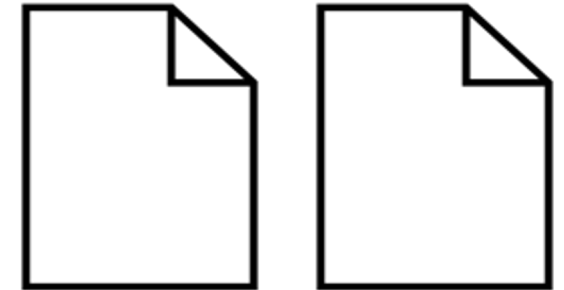
Possible topics to cover in conferences, panel discussions, and online events with audit clients:

- Value that energy audit delivers
- Future role of energy efficiency in enterprises
- How to maximise the gains from energy efficiency
- Success stories
- How to save energy in high price situation
- How does the responsible body handle the information of the energy audit clients

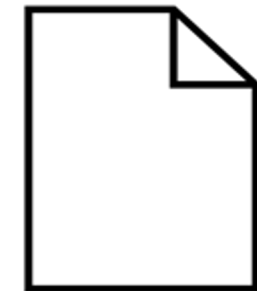


Guidelines for energy auditors

Solutions for the most common issues identified during quality control are reflected in the guidelines:



Methodical guidelines how to perform energy audits, additional training material ,




IMPROVEMENTS OF THE OVERALL QUALITY COULD BE PERFORMED AT INDIVIDUAL AND MULTI-PERSON SCALE




Example:

Multiple
scale

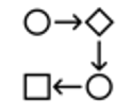
 Awareness raising of Energy auditors and clients

 Guidelines for Energy auditors

 "Best Energy Auditor" awards or public recognition

 Provide support tools to improve evaluation practice


 Sufficient training programs


 Clearly defined processes and procedures in legislation

 Continuous training events

Individual
scale

 Warnings and penalties

 Individual feedback about the quality of a single EPC

 Remove the right to act as EPC assessor

 Additional checks if non-conformities are identified

Short term

Long term

SUMMARY: KEY TAKE AWAYS



- THE QUALITY CONTROL IS NEEDED TO ENSURE HIGH QUALITY ENERGY AUDITS IN THE MARKET
- HIGH QUALITY IS NEEDED TO DELIVER THE BENEFITS THAT ENERGY AUDITS UNLOCK
- AUDITORS, PROCEDURES, AND QUALITY CONTROL ENABLE HIGH-QUALITY ENERGY AUDITS
- CORE ELEMENTS OF A QUALITY MANAGEMENT SYSTEM HELP TO MEASURE THE LEVEL OF QUALITY
- METHODOLOGY SETS THE BASIS FOR QUALITY CONTROL CRITERIA
- THE QUALITY COULD BE IMPROVED AND MEASURED BY APPLYING DIFFERENT METHODS
- MEASURING THE QUALITY LEVEL OF AUDITS HELPS TO IDENTIFY THE IMPACT OF QUALITY MANAGEMENT TOOLS
- ADDITIONAL ELEMENTS MAY BE USED TO IMPROVE THE QUALITY OF PROVIDED ENERGY AUDITS IN BUILDINGS
- IMPROVEMENTS OF THE OVERALL QUALITY COULD BE PERFORMED AT INDIVIDUAL AND MULTI-PERSON SCALE

QUALITY ASSURANCE OF ENERGY AUDITS IN BUILDINGS



***THANK YOU FOR
YOUR ATTENTION
!***



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„Helping to Unlock the Value of Energy Efficiency and Sustainability for a More Resilient Future “



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