

# The European Union – Uzbekistan Sustainable Energy Days

International Conference

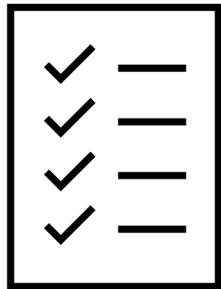
Energy Efficiency in Uzbekistan: prospects and challenges

Radisson Blu Hotel, Tashkent, 27 June 2023

## Energy audits in industry – role and quality assurance

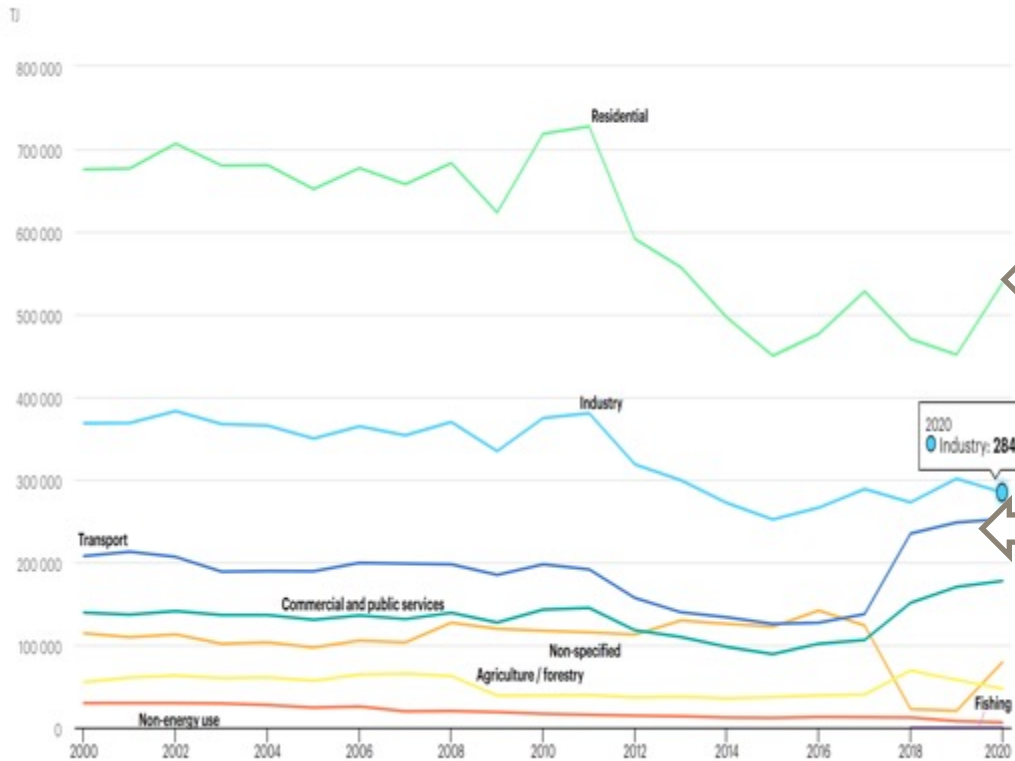
Karolis Janusevicius, Expert in energy audits, EU-funded Technical Assistance Project “Support of the Georgian Energy Sector Reform Programme” (GESRP)

# PRESENTATION OUTLINE



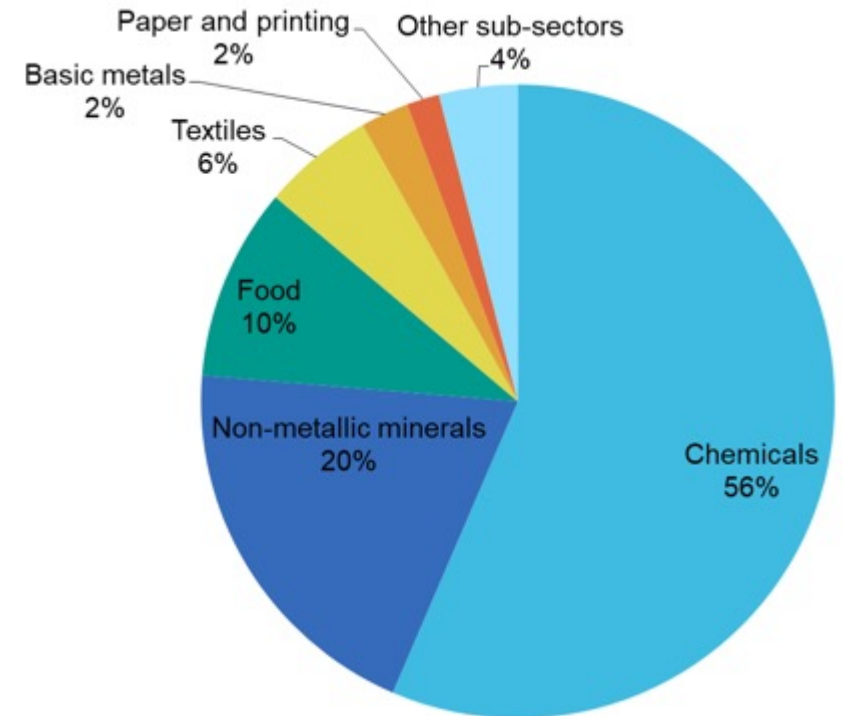
1. What drives energy consumption in Uzbekistan?
2. What is the place of energy audit and energy management in the development of enterprise?
3. How to understand energy audit?
4. How may the energy audit system help in the planning of energy sector?
5. What benefits could be gained from energy audits?
6. How typically high quality is enabled?
7. What should be responsibilities of energy auditor?
8. What is appropriate way to do energy audit?
9. What are key elements of quality assurance system?
10. How to know the level of quality?
11. Who should lead the process and ensure the quality improvement?

# WHAT DRIVES ENERGY CONSUMPTION IN UZBEKISTAN?



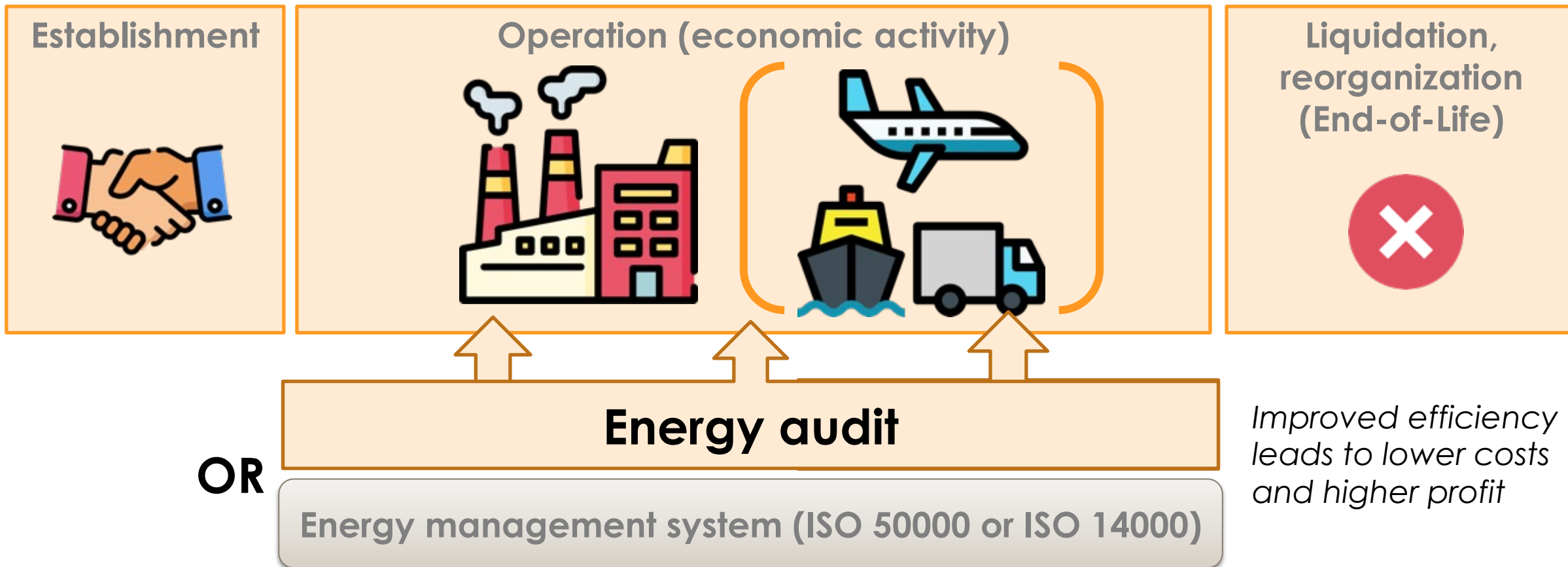
Total - **384,6 TWh**

## Energy consumption distribution in Industry sector



The Industry is the second largest energy consumer. It influences approx. 21% of total energy consumption. And this sector is mostly (76%) driven by Chemical and Non-Metalic minerals industries

# WHAT IS THE PLACE OF ENERGY AUDIT AND ENERGY MANAGEMENT IN THE DEVELOPMENT OF ENTERPRISE?



Enterprises may gain a competitive advantage by performing energy audits and implementing cost-efficient measures. It also enables raising awareness about energy use and demand reduction potential.

# HOW TO UNDERSTAND ENERGY AUDIT?

**ENERGY AUDIT** - systematic procedure with the purpose of obtaining adequate knowledge of the energy consumption profile of a facility, identifying and quantifying cost-effective energy saving opportunities, and reporting the findings.

In other words – a procedure which aims to document **energy flows and losses** and then **identifies ways to reduce or eliminate those losses** by proposing cost-effective measures.

**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**

**An energy audit is a tool that helps unlock cost-effective energy efficiency improvements. Quality must be ensured to deliver significant benefits.**

# HOW MAY THE ENERGY AUDIT SYSTEM HELP IN THE PLANNING OF ENERGY SECTOR?

## DATA FOR ENERGY PLANNING AND SHAPING THE POLICY MEASURES

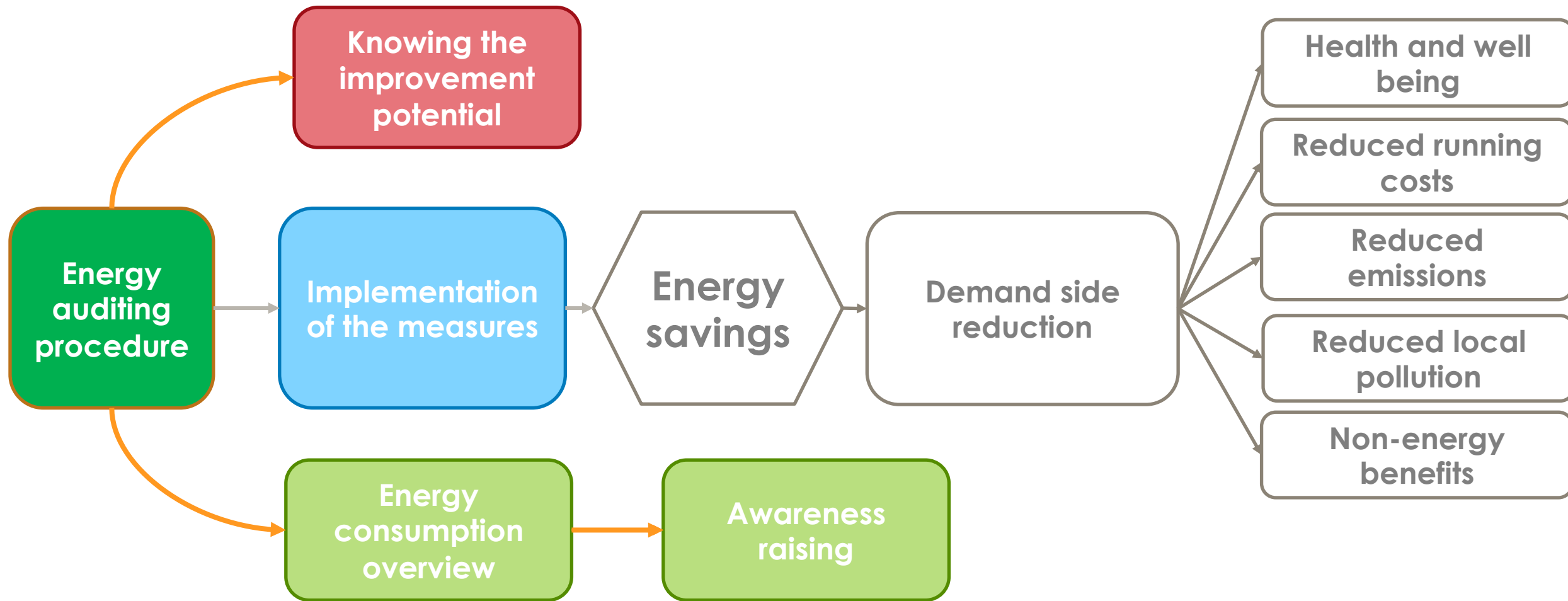
1. Helps to **identify specific consumption** of produced goods
2. Provides data for **comparing** the local consumption **with** int. **best practices** – enables to know **improvement potential**
3. Helps to **understand** what measures **need** for **financial support**

## DATA FOR ENERGY CONSUMPTION MODELING AND FUTURE PREDICTIONS

1. Provides **data for** country and sector-level **energy modelling**
2. Helps **to** monitor the performance change and rely not only on financial data
3. **Quantify energy consumption** in the national energy balance
4. **Data-based estimations** of future energy savings

**Energy audits system also delivers additional benefits for energy planning modelling and energy planning activities needed for policy making.**

# WHAT BENEFITS COULD BE GAINED FROM ENERGY AUDITS?

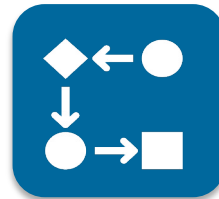


# HOW HIGH QUALITY IS ENABLED?



## Quality of auditors

- Requirements for certification
- Auditor specialization
- List with certified auditors
- European cooperation



## Clarity of procedure

- Legal requirements
- Guidelines
- Templates



## Quality control of reports

- 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.**



# RESPONSABILITIES OF ENERGY AUDITOR?

Energy audit could be performed by the single person, but there should not be forbidden to include (or outsource) another specialist:

Action step	Energy auditor	Auditor assistant	Measurement specialist	Solution providers	Cost estimator	Business analyst
General responsibility for process and reporting (as project manager)	X					
Data collection about <i>actual status</i> of systems and process	X	X				
Collection of operational parameters: temperature, air flows, etc.	X	X				
<b>Measurement of parameters influencing energy consumption</b>	*	*	X			
Quantification of energy flows and energy balance	X	X				
Energy demand calculation model	X	X				
Calibration of energy consumption model	X	X				
Normalization of consumption data (for comparability)	X	X				
<b>Identification energy saving measures</b>	X	X		*		
Calculation of actual energy saving rates per measure	X	X				
<b>Financial cost estimation of measures</b>	*	*			X	
<b>Cost benefit analysis of identified measures</b>	*	*				X
Recommendations for decision making	X					

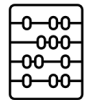
**A high-quality audit, which provides cost-efficient, investment-grade advice that delivers customer value, should not be limited to single person's knowledge and competence.**

# WHAT IS APPROPRIATE WAY TO DO ENERGY AUDIT?

## Energy audit process



Performing energy audit and preparing the report



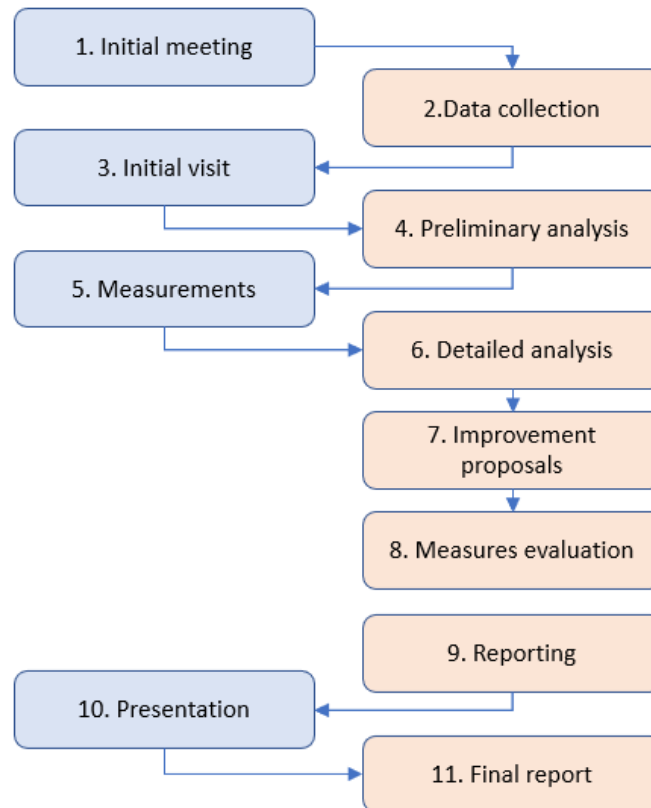
Tools



Templates



Checklists



Need for mutual understanding

Importance for collaboration

Need to provide general picture

Pin-point the important details

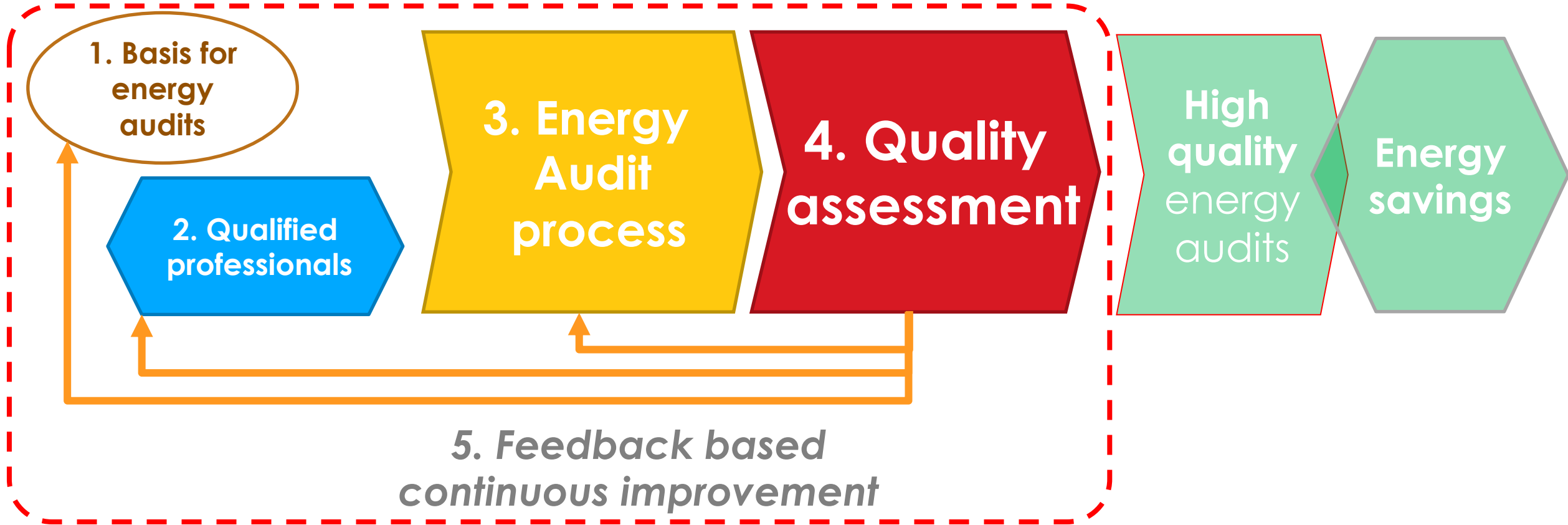
Identify the most reliable measures

Ensure that the analysis and proposals are well understood and will be implemented

**Energy audits should be done in a standardized way but individualized for every case. Good results are often achieved when an energy professional end client collaborates.**

# WHAT ARE KEY ELEMENTS OF QUALITY ASSURANCE SYSTEM?

## Quality assurance system



Quality could only be ensured with regulations, qualified professionals, defined processes, quality assurance and continuous improvement.

# HOW TO KNOW THE LEVEL OF QUALITY? (1/2)

 - 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



Automated Check



Quality screening



In-depth QC



Site visit

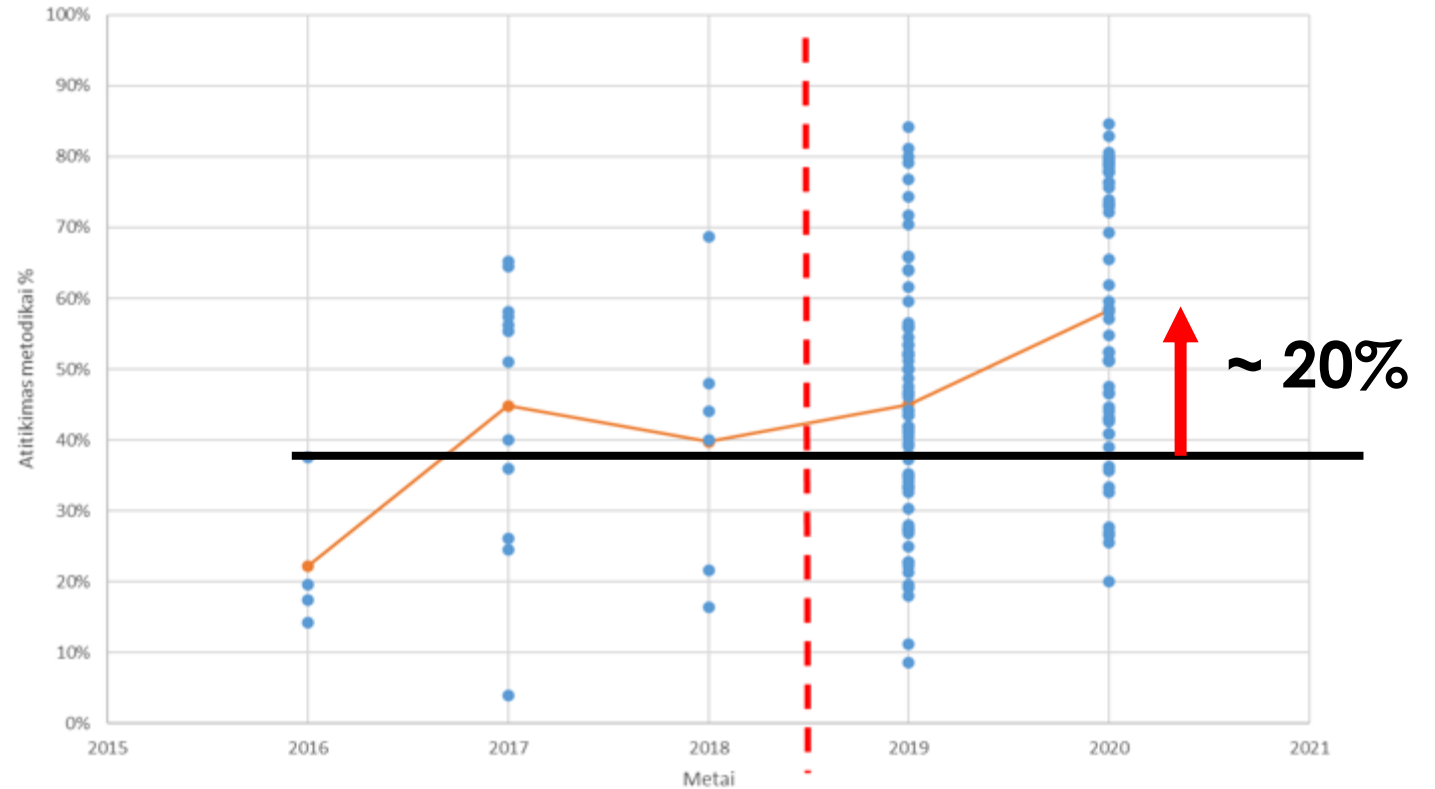
$$I_s = \frac{\text{Satisfied criteria}}{\text{Number of criteria}}$$



- Checked on-site

# HOW TO KNOW THE LEVEL OF QUALITY? (2/2)

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



- 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.**

# WHO SHOULD LEAD THE PROCESS AND ENSURE THE QUALITY IMPROVEMENT?



## Role of energy auditors:

1. Performs audits.
2. Does internal quality assurance.
3. Submits reports to the client.
4. Registers the report.
5. Interacts with quality checking procedure.
6. Provides feedback on legal framework and support tools, and shares client insights.

## Role of implementation body:

1. Provides technical support for the regulatory body.
2. Supervises training process.
3. Checks the quality and gives feedback.
4. Measures professional and market quality.
5. Aggregates and shares quality checking results.
6. Generates and collects insights.
7. Acts to improve quality.

**The agency or other policy implementation body should act (and take leadership) on running the energy audit system.**

# SUMMARY: KEY TAKE AWAYS (1/2)

1. The Industry is the second largest energy consumer in Uzbekistan. It influences approx. 21% of total energy consumption. And this sector is mostly (76%) driven by Chemical and Non-Metallic minerals industries
2. Enterprises may gain a competitive advantage by performing energy audits and implementing cost-efficient measures. It also enables raising awareness about energy use and demand reduction potential.
3. An energy audit is a tool that helps unlock cost-effective energy efficiency improvements. Quality must be ensured to deliver significant benefits.
4. Energy audits system also delivers additional benefits for energy planning modelling and energy planning activities needed for policy making.
5. Energy audits are typically viewed as an enabler of multiple benefits. But it only helps to unlock the values if high-quality are ensured.

## SUMMARY: KEY TAKE AWAYS (2/2)

6. 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.
7. A high-quality audit, which provides cost-efficient, investment-grade advice that delivers customer value, should not be limited to single person's knowledge and competence.
8. Energy audits should be done in a standardized way but individualized for every case. Good results are often achieved when an energy professional end client collaborates.
9. Quality could only be ensured with regulations, qualified professionals, defined processes, quality assurance and continuous improvement.
10. Measured value helps to understand the need for additional actions for quality improvement.
11. The agency or other policy implementation body should act (and take leadership) on running the energy audit system.



# CLOSING REMARK

**We often miss opportunity because it's dressed in a simple way and looks like work.**

*- Thomas Edison*

# THE ROLE OF HIGH- QUALITY ENERGY AUDITS IN THE PROMOTION OF ENERGY EFFICIENCY IN BUILDINGS AND INDUSTRY

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



**Karolis Januševičius, PhD** ⚡

Energy consultant | Energy efficiency professional

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



Karolis Januševičius



karolis.janusevicius@gmail.com



<http://karolis.janusevicius.lt>



Funded by  
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